Norms, Enforcement, and Tax Evasion*

Timothy Besley†
LSE and CIFAR

Anders Jensen‡
Harvard Kennedy School and NBER

Torsten Persson§
IIES and CIFAR

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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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†t.besley@lse.ac.uk

‡anders_jensen@hks.harvard.edu

§torsten.persson@iies.su.se

"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 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 reputation among peers. 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 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.

Theory Section II 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]

Data Section III 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

[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.

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 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 – exactly as the theory in Section II predicts.

This result does not reflect pre-trends in the data. We also discuss, and rule out, alternative explanations for the observed time patterns of evasion, including differences or dynamics in the fiscal capacities of high-evasion and low-evasion councils.

Section IV concludes the paper. Details on institutions, data construction, and auxiliary empirical findings are relegated to an Online Appendix.

2 Theory

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

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-

[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.

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

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

Hence, from any initial value λ_0, the rate of evasion, λ_t, 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.

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

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

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

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

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

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

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

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

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

The relative social payoff defined in Subsection II.A becomes

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

In the language of Benabou and Tirole (2011), $\delta(\lambda) = [E(0,\lambda) - E(1,\lambda)] > 0$ 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, $\delta(\lambda)$ is "adjusted" for imperfect observability when $e = 1$.

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

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

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 II.A. 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.

[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 the Online Appendix). 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

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

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

[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 discusses our data, core empirical analysis, and a discussion of alternative explanations for the findings.

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 does not have individual-level evasion, and hence focus on average council-level evasion as predicted by the model. Specifically, we construct a measure of tax evasion across three tax regimes: the 1980-89 (property-based) domestic rates, the 1990-92 (person-based) poll-tax, and the 1993-2009 (property-based) council-tax. The Online Appendix describes our data construction in detail.

A short primer on local U.K. taxation Throughout our sample period, the local council had responsibility for collecting local taxes from households and businesses.[12] Prior to the poll

[12] Councils directly collected the revenue from business-property taxes only up until 1989. Under the 'national non-domestic rates' from 1990, the business-property tax was still enforced by the council, but the revenue was transfered to central government, and then partially redistributed back, according to a centrally set formula.

tax, local taxes known as "rates" were levied on owners of domestic and business properties. In a system that went back to 1601, these rates were determined by the rental value of a property. In 1990, the rates were abolished and replaced by poll tax, formally known as the "community charge". This was a flat-rate, per-head tax levied on any resident in a given council, regardless of their dwelling size, wealth and income, with very few exemptions and deductions. The poll tax caused extreme controversy and was abolished in 1993. A new system (which still remains in place) charged occupants – whether renters or owners – "council taxes" for domestic properties and "business rates" for non-domestic properties. It re-established the link between the tax liability and the property values that was present in the pre-1990 system but absent in the poll tax.[13]\

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 B, 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.[14]

[13] The Online Appendix gives more detail on the different tax regimes.

[14] Another difference between the poll tax and the council tax is that the former was levied on individuals

3.2 Empirical Analysis

The prediction at the end of Section II 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:

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

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% of the poll tax, and local inequality in property values may have affected the

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.

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 $\{\gamma, \boldsymbol{\theta}\}$ using OLS from the 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.

[Table 1 about here]

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.

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% confidence intervals.

[Figure 3 about here]

3.3 Alternative Explanations

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. But, the results could also reflect other factors not captured by our model and we now discuss some alternative explanations for the observed patterns.

Endogenous differential 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 an increase in evasion. In the Online Appendix, we construct a measure of local tax enforcement and show that its within-council correlation with evasion is significantly negative (at -0.61). This suggest that the declining difference between evasion in high poll-tax-evasion councils and low poll-tax-evasion councils in Figure 3 is not driven by gradually higher levels of enforcement in high poll-tax-evasion councils (as this would imply a positive within-council correlation).

Political confounders We have already emphasized the importance of political motives, and adjusted our measure of conditional poll-tax evasion for relative Conservative-Labour 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.[15]

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 4 shows that this is not the case.

[Figure 4 about here]

Enforcement and 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 enforcement over time may gradually have eliminated those capacity differences. Local councils also have responsibility for collecting business taxes. Hence, if that were the case, 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 vs. 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.[16] There is no evidence of similar evasion dynamics on this tax base. This specification also provides reassurance that Figure 3 does not just capture an initial lack of enforcement capacity in some councils which is eliminated over time.

3.4 Bottom Line

The empirical results that we present are consistent with the prediction of our model. 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 experiment, we use the average tax evasion over councils and years in the domestic-rate period as a counterfactual evasion rate. We then apply this evasion rate to all councils from 1990 onwards and compute actual

[15] The Online Appedix shows that the qualitative results of our model would still hold up in an extension where enforcement m is endogenous rather than exogenous.

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

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 experiment 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.

4 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 empirical measure of intrinsic motives, the poll-tax shock is plausibly interpretable as a shock to the intrinsic compliance motive due to the perceived unfairness of the new tax base. Non-parametric estimates suggest that the compliance shock induced higher tax evasion for about a decade after the abolition of the poll tax. Specifically, councils with high poll-tax evasion had higher evasion throughout this decade then councils with low poll-tax evasion. This is in line with the impulse-response function predicted by our theory for a temporary shock to intrinsic compliance motives.

Our findings fuel debates about the importance of social norms in sustaining fiscal capacity.[17] 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 policymakers violate them at their peril.

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

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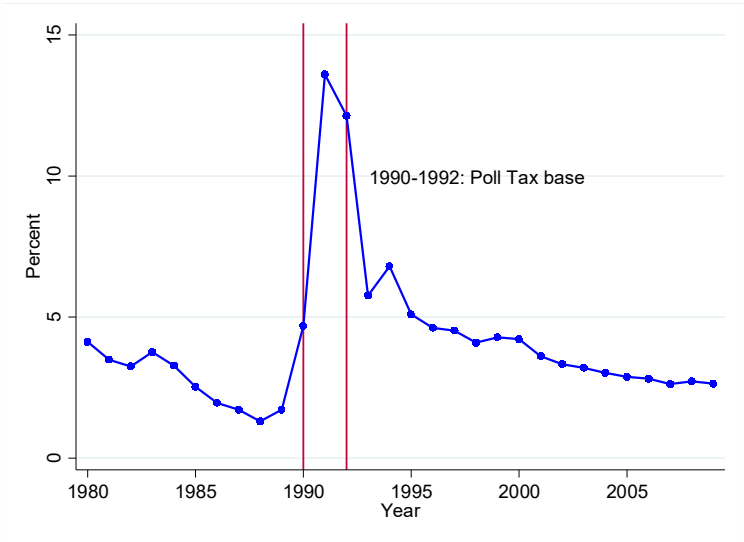
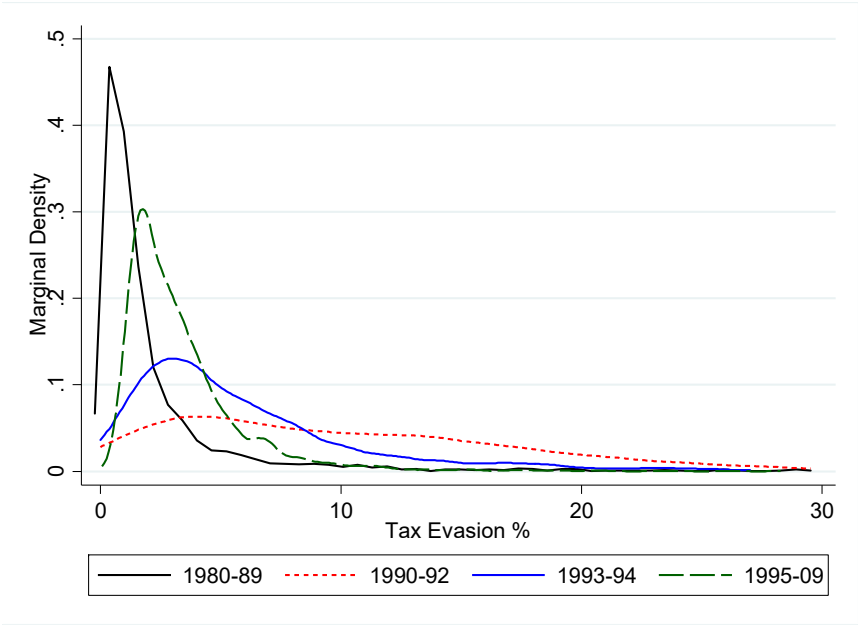
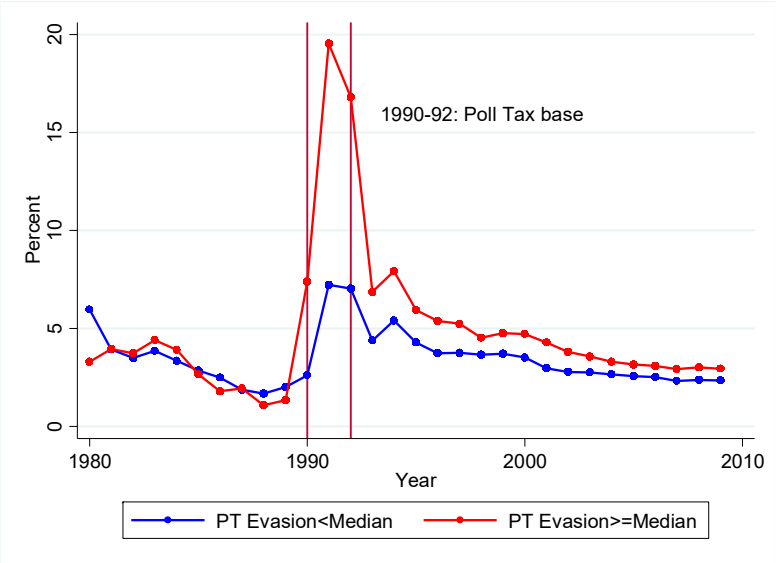
Figure 1

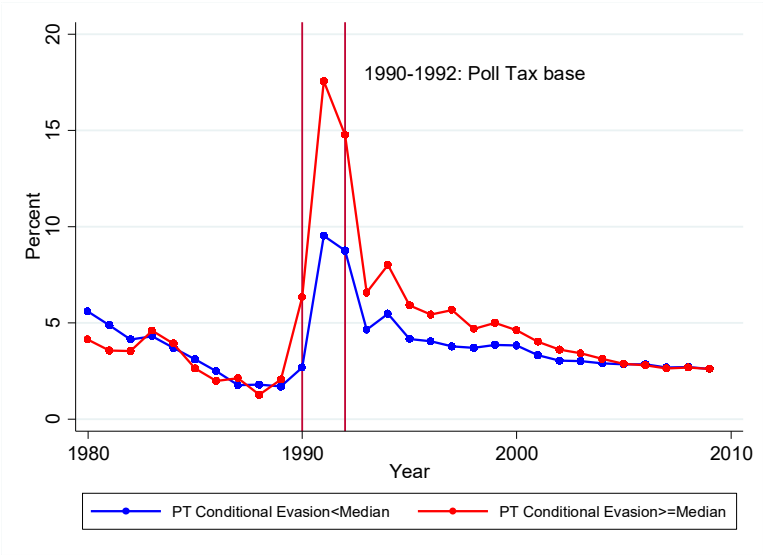




Notes: In the left graph, each observation is a yearly average across all councils of our tax evasion measure, the difference between net collected tax revenue and net tax liability on the local tax base. During 1990-1992, a property tax was replaced by the poll tax, which was levied at a flat rate per 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 99.99th percentile).

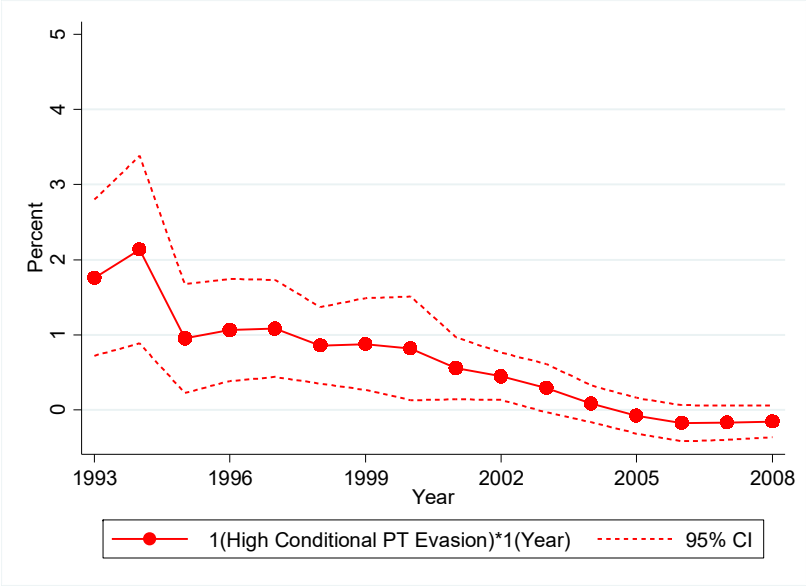
Figure 2





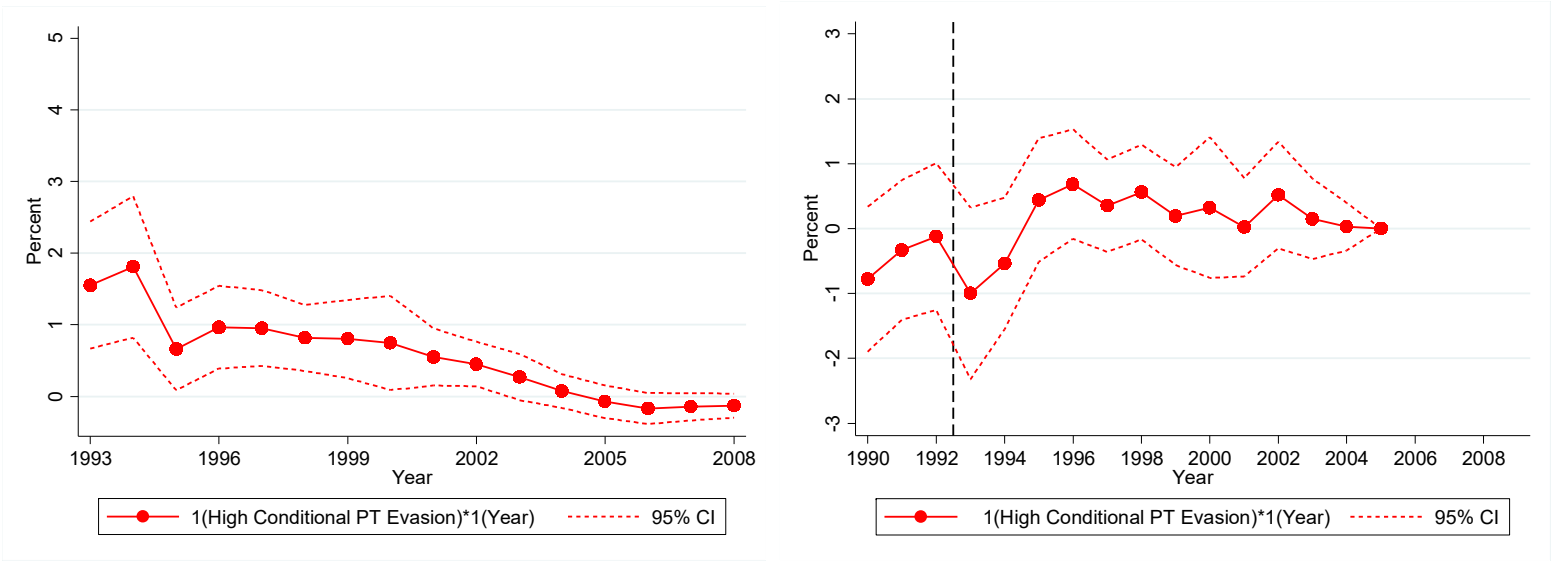
Notes: Each yearly observation in the left (right) graph is an average of tax evasion across all councils in one of two subsamples: the blue line refers to councils where average tax evasion (average conditional tax evasion) in the poll-tax period was below the median; the red line refers to councils 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: 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.