Tax avoidance and evasion in a dynamic setting

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- Avoidance also significant: 4% of GDP in Europe (EPRS, 2015), latest IRS and Treasury claim figures up to 500 billion
- Tax Evasion and Avoidance tend to be stable in time, so consumption and saving decisions are likely to take non-compliance into account
- We develop a model to study the optimal evasion and avoidance decision in an inter-temporal setting

Related Literature

- Contributions in a static framework (joint avoidance/evasion):

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  - Bernasconi et al. (2015; 2019) study roles of uncertainty and habit

Research Goals

- Characterize optimal avoidance and evasion

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- Analyze how deterrence instruments affect compliance and revenues

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- Analyze how deterrence instruments affect compliance and revenues
- Characterize optimal fiscal parameters for the government under various objectives
    - minimizing evasion
    - minimizing non-compliance
    - maximizing revenues
    - maximizing growth

Model

Modelling features and assumptions

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- The effect of compliance on revenues is overlooked

Consumer's preferences

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- Lower risk aversion when c_t is higher (DARA)
- Higher risk aversion when either δ or c_m is higher

Capital Accumulation

Expected capital variation is equal to production minus expenses:

$$\mathbb{E}_t\left[dk_t\right] = \left[y_t - c_t - \tau y_t\left(1 - e_t - a_t\right) - f\left(a_t\right)y_t\right]dt -$$

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Expenses:

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- Linear tax on declared income $\tau y_t\left(1 - e_t - a_t\right)$

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- Fine costs

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- Fine costs
  - Expected cost of fine in case of detection is $\eta\tau y_t\left[e_t + \left(1-\beta\right) a_t\right]$

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- Fine costs
  - Expected cost of fine in case of detection is $\eta \tau y_t [e_t + (1 - \beta) a_t]$
  - Audits follow a Poisson jump process $d\Pi_t$ with frequency λ

The optimization problem

$$\max_{\{c_t, e_t, a_t\}_{t \in [t_0, \infty[}} \mathbb{E}_{t_0} \left[\int_{t_0}^{\infty} \frac{(c_t - c_m)^{1-\delta}}{1-\delta} e^{-\rho(t-t_0)} dt \right]$$

under the capital dynamics:

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Analysis

Optimal solution

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Where:

$(f')^{-1}$	Inverse of the marginal cost of avoidance

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$$e_t^* = \frac{k_t - H}{\tau\eta A k_t}\left[1 - (\lambda\eta)^{\frac{1}{\delta}}\right] - (1-\beta)\,a^*,$$

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$(f')^{-1}$	Inverse of the marginal cost of avoidance
$H := \frac{c_m}{A[\tau\beta a^* - f(a^*) + (1-\tau)]}$	PDV of future c_m discounted by TFP corrected by tax and avoidance

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$$e_t^* = \frac{k_t - H}{\tau\eta A k_t}\left[1 - (\lambda\eta)^{\frac{1}{\delta}}\right] - (1-\beta)\,a^*,$$

$$c_t^* = c_m + (k_t - H)\left(\frac{\rho+\lambda}{\delta} + \frac{\delta-1}{\delta}\left\{\frac{1}{\eta} + A\left[(1-\tau) + \tau\beta a^* - f(a^*)\right]\right\} - \frac{1}{\eta}(\lambda\eta)^{\frac{1}{\delta}}\right)$$

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Optimal avoidance and evasion

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- Two risks: to be audited and avoidance to be (un)successful
- Risk to be audited affects equally a_t and e_t
    - Optimal risk management uses the tool with higher correlation

Optimal avoidance and evasion

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- Two risks: to be audited and avoidance to be (un)successful
- Risk to be audited affects equally a_t and e_t
    - Optimal risk management uses the tool with higher correlation
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Optimal avoidance and evasion

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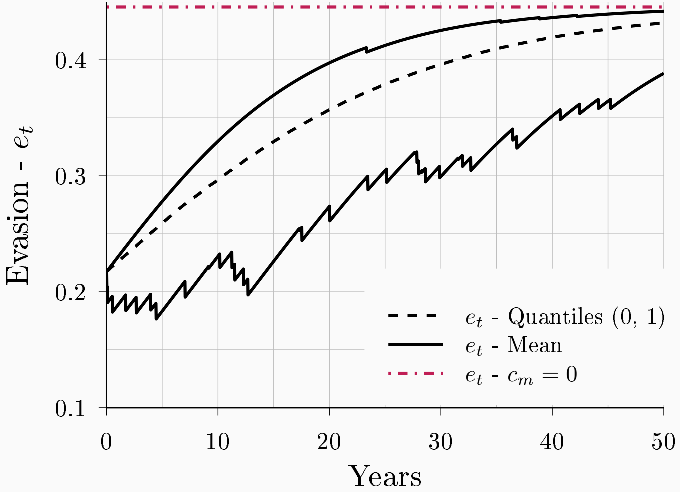
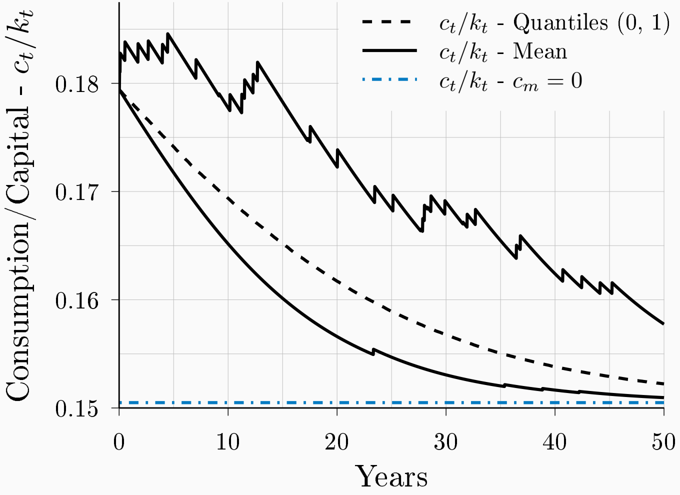
Evasion dynamics



Consumption dynamics



Comparative Statics

	a^*	e_t^*	$E_t^* = a^* + e_t^*$	$\mathbb{E}_t\left[dT_t\right]$
λ				
η				
β				
τ				

$\frac{\partial \text{Col}}{\partial \text{Row}}$ Derivatives of column with respect to row

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Where:

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are expected revenues collected:

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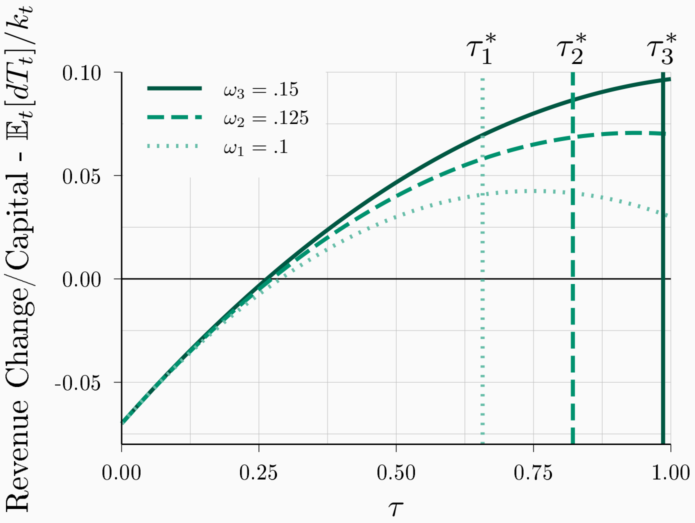
The Avoidance Laffer Curve



Ratio of expected revenues collected to capital by τ and $f(a_t) = \omega a_t^\gamma$

Conclusion

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Fines and audits are ineffective against tax avoidance $\Rightarrow$ focus on f, β, τ

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- Leads to the emergence of a Laffer curve
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Avoidance deterrence might entail an increase of evasion

Thank you!

Questions?