

[Tax Evasion as Contingent Debt](#)

CFM-DP2019-03

Christos Kotsogiannis^{3,4} and Xavier Mateos-Planas^{1,2}

¹Centre For Macroeconomics, ²Queen Mary University of London, ³TARC, ⁴University of Exeter

Rapidly mounting levels of unpaid tax arrears underscore ongoing governmental efforts to improve tax collection. Gaining a sound quantitative understanding of the level and patterns of tax evasion acquires thus pressing policy relevance. Although tax evasion is notoriously hard to measure, there is evidence that non-compliance is substantial and varies with individual characteristics like age and income. The US Internal Revenue Service's comprehensive estimates point to a difference between the theoretical tax liability and the amount of taxes collected (i.e., the tax gap) in the order of 20%. Empirical studies find that the ratio of under-reported tax to true-tax liability declines sharply with true income. On the other hand, younger tax payers seem to show higher average levels of non-compliance. Understanding these facts and their implications is the subject of this paper.

We build a quantitative model to study tax evasion from a macroeconomic perspective that takes into account a rich cross section of individual characteristics, and where the evasion decision results in the household accumulating tax arrears as long-term contingent debt, a feature of actual tax systems. We use this framework to address a number of fundamental questions. Under which circumstances can we explain measured levels of evasion given existing enforcement mechanisms? Can the explanation account for observed patterns of evasion over the life cycle and across income? Which inferences may we draw about evasion along other dimensions like individual wealth? We also seek to assess the significance of non-compliance for macroeconomic outcomes and welfare, and explore the effectiveness of a flat-tax reform for grappling with evasion.

We introduce evasion in a general equilibrium life cycle model of heterogeneous households with idiosyncratic risk and incomplete markets. There is a non-linear tax code on the income generated from households' labour supply and assets. One novel aspect of our framework is that households can choose to underreport their tax liabilities and accumulate tax arrears as a consequence. These arrears are debt that becomes due in the event of the household being subject to an audit. Households are audited randomly and penalties are proportional to the value of unpaid tax arrears. Tax arrears decay only gradually at some constant rate reflecting the length of the statutory prescription period.

Tax arrears resulting from concealing tax liabilities become therefore a form of long-term contingent debt. As such they are part of a joint portfolio choice that also includes the standard one period risk-free bond. Risk considerations will therefore become a central force for determining behaviour. Positive yet partial arrears may arise even for households that are not credit constrained. Borrowing via tax evasion carries an implicit interest smaller than the risk-free interest on savings but, since debt in arrears has an element of risk, it becomes optimal to evade only part of individual earnings.

The model is calibrated to match, in addition to standard macroeconomic aggregates, estimated levels of evasion, given a quantitatively realistic setting for tax enforcement in the U.S. In this baseline setting, the distribution of evasion rates over taxes due is skewed - for which there is some supporting evidence - with more intensive evasion concentrated at the low end of the income and wealth distribution, involving the younger cohorts and also households near retirement. The implied degree of recovery is also empirically plausible.

Turning to implications from the stationary distribution of households, this calibrated model does a notable job at producing evasion rates that decline both with working-life age and with individual earnings, in a way that closely resembles the available evidence on the two dimensions. The model also delivers novel implications for how evasion varies in the cross sectional distribution of wealth. The level of evasion generally increases with the wealth decile, but evasion as a proportion of taxes due decreases with wealth. Empirical counterparts are scarcer on this dimension though.

We investigate the effect of eliminating evasion on macroeconomic variables, risk sharing, and ex-ante welfare. We find that zero-evasion implies considerable gains in welfare and in the level of consumption, which all depend critically on the general-equilibrium downward adjustment of tax rates as the government budget position improves when evasion is removed. The sign of consumption volatility changes varies across types of agents, with more volatile consumption being experienced by agents relying more heavily on evasion, to be found mainly among the very young and the pre-retirement age groups.

Finally, we consider a flat-tax policy reform, and find that, in spite of the incentives to evade less under this less progressive system, the fact that the reform causes households to save more renders the change in overall evasion modest. Once again, the aggregate effects mask considerable variation across types of households.

This paper shares the approach of a vibrant body of macroeconomics research on taxation within general equilibrium models of heterogeneous households and incomplete markets. One contribution of the present paper is to consider evasion and accumulated arrears, and analyse their implications, within that framework. In so doing, this analysis also echoes ideas long entertained in the public finance literature, and builds them into a fully specified quantitative setting.