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Unemployment, tax evasion and the slippery slope framework

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Abstract The proposed theoretical work introduces the basic insights of the 'slippery slope' framework into the benchmark macroeconomic model of the labour market in order to study the relation between tax compliance, tax evasion and unemployment. This paper shows that the firm's decision to evade taxes also depends on trust in tax authorities and affects one of the most important macroeconomic variables: the unemployment rate. Also, the model is able to mimic the crucial interaction between trust and power and its effects on tax compliance. The main result is that with the 'right mix' of policy tools of deterrence, trust in tax authorities is maximised, tax compliance increases and a reduction of tax evasion may decrease unemployment.

Keywords Tax evasion · Tax compliance · Trust and power · Unemployment

Jel Classification H26 · J64 · K42

1 Introduction

This paper introduces the basic insights of the 'slippery slope' framework into the baseline matching model *à la* Pissarides (2000) in order to study the relation between tax compliance, tax evasion and unemployment.

The 'slippery slope' framework was born in the field of Economic Psychology to explain the high level of tax compliance rather than the high level of tax evasion, thus highlighting that: (a) some tax compliance is voluntary and depends on trust in

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tax authorities and (b) the standard mechanism of enforced compliance (monitoring probability and expected penalty)[1] alone cannot explain the overall tax compliance (Kirchler 2007; Kirchler et al. 2008a, b; Muehlbacher and Kirchler 2010).[2]

This theoretical work captures the importance of the interaction of power and trust for tax compliance. Also, it shows that the firm's decision to evade taxes also depends on trust in tax authorities and affects one of the most important macroeconomic variables: the unemployment rate. The main result of this paper is that with the 'right mix' of policy tools of deterrence, trust in tax authorities is maximised, tax compliance increases and a reduction of tax evasion may also decrease unemployment. The 'right mix' of policy tools of deterrence is defined as the level of authorities' power that is high enough to foster belief in the effectiveness of their work but not so high that exertion of power corrodes trust.

2 Model with tax evasion and unemployment

We consider a basic matching framework *à la* Pissarides (2000) with a continuum of homogeneous workers of measure one. The creation of employment occurs in a labour market characterised by trading frictions due to costly and time-consuming matching of workers and firms. As usual (see Pissarides 2000; Petrongolo and Pissarides 2001), an aggregate matching function is used to summarise these frictions. Precisely, the number of job matches formed per unit of time is $m = m(u, v)$, where u is the number of unemployed workers and v is the number of vacancies. The matching function is strictly increasing, but concave in both arguments and displays constant returns to scale. It follows that the labour market tightness is given by $\vartheta \equiv v/u$. Hence, $q(\vartheta) \equiv m\{v, u\}/v = m\left\{1, \vartheta^{-1}\right\}$ and $g(\vartheta) \equiv m\{v, u\}/u = m\{\vartheta, 1\}$ are the probability of filling a vacancy and of finding a job, respectively.[3] To ensure that unemployment exists in steady state, it is assumed that job destruction occurs at the exogenous separation rate δ. Therefore, in steady state, the matching and job destruction rates allow us to obtain the steady-state unemployment rate:

$$\dot{u} = \delta \cdot (1 - u) - g(\vartheta) \cdot u \Rightarrow u = \delta/(\delta + g(\vartheta)) \tag{1}$$

Obviously, the unemployment rate depends positively on δ and negatively on ϑ.

The value functions specified to find infinite horizon steady-state solutions are as follows:

[1] As in the traditional economic models of tax evasion *à la* Allingham and Sandmo (1972). For a review see Sandmo (2005).

[2] The 'slippery slope' framework distinguishes two forms of tax compliance: voluntary and enforced compliance. Voluntary compliance depends on trust in tax authorities, whereas enforced compliance depends on the power of tax authorities to clamp down on tax evaders. Trust (in) and power (of) tax authorities, as well as their interaction, are decisive for tax compliance.

[3] Standard technical assumptions are assumed: $lim_{\vartheta \to 0} q(\vartheta) = lim_{\vartheta \to \infty} g(\vartheta) = \infty$, and $lim_{\vartheta \to 0} g(\vartheta) = lim_{\vartheta \to \infty} q(\vartheta) = 0$.

value of a vacancy: $rV = -c + q(\vartheta) \cdot (J - V)$
value of a filled job: $rJ = y - \tau \cdot (y^D - w) - \rho\varphi \cdot e - w - c(e) + \delta \cdot (V - J)$
value of searching for a job: $rU = b + g(\vartheta) \cdot (W - U)$
value of being employed: $rW = w + \delta \cdot (U - W)$

where $r > 0$ is the exogenous discounted rate; c is the vacant job cost; y is the true productivity, while y^D is the declared one; τ is the company (corporate) income tax; $e \equiv y - y^D$ is the evaded income; w is the wage rate (tax deductible); b is the benefit of being unemployed; ρ is the rate whereby tax authorities detect tax evasion and levy the penalty φ, with $\varphi > \tau$; and $c(e)$ is the concealment cost, with $c'(e) > 0$. Intuitively, the higher the evaded income, the greater the penalty and the concealment cost.

Although the 'original' slippery slope framework (Kirchler et al. 2008a, b) adopts an individual perspective (individual tax payers), modelling trust in tax authorities as a determinant of tax evasion makes sense even for small firms. Also, it is relevant for (the managers of) large or mid-sized firms.

Firms' tax evasion decision is based on expected profits maximisation. Hence, the optimum amount of income tax evasion is obtained by the value of y^D, which maximises the present value of a filled job, that is:

$$\max_{\{y^D\}} J \Rightarrow \tau = \rho\varphi + c'(e) \tag{2}$$

unsurprisingly, at the optimum, the marginal tax saving has to equal the sum of the expected risk of tax evasion and the marginal concealment cost. It follows that there is no tax evasion if the expected risk is greater than or equal to the tax rate, that is, if $\tau \leq \rho\varphi$, whereas, on the other hand, with $\tau > \rho\varphi$, it is always optimal for firms to under-report income. We will concentrate on the non-trivial case where there is tax evasion (i.e. $y^D < y$), but it is not optimal for the firm to evade all of the income (i.e. $y^D > 0$). This implies that $\tau > \rho\varphi$ and the concealment cost is convex, namely $c''(e) > 0$. These assumptions enable us to obtain an interior solution with positive evaded income.

As usual (see Pissarides 2000), the equilibrium value of market tightness (ϑ^*) is given by the value of a filled job under the *free-entry* (*or zero profit*) *condition* $V = 0$:

$$\frac{c}{q(\vartheta^*)} = \frac{y - \tau \cdot y^D - \rho\varphi \cdot e - (1 - \tau) \cdot w - c(e)}{(r + \delta)} \tag{3}$$

Note that a reduction in tax evasion (i.e. an increase in y^D) increases market tightness and reduces unemployment, that is $\partial\vartheta/\partial y^D > 0$, if $-\tau + \rho\phi + c'(e) > 0$, otherwise it reduces ϑ and increases unemployment. Intuitively, if the level of taxation is lower than the cost of tax evasion, then to under-report income is not profitable for firms; also, with fewer taxes, more vacancies will be posted by firms.[4]

[4] From a macroeconomic point of view, a higher tax evasion implies a larger shadow economy which damages economic growth (see La Porta and Shleifer 2008). Eventually, a lower growth leads to a higher unemployment.

Finally, wage is the outcome of a bilateral matching problem described by the *Nash bargaining solution*,

$$w = argmax\left\{(W-U)^{\beta}\cdot(J-V)^{1-\beta}\right\} \Rightarrow (W-U) = \frac{\beta}{(1-\beta)}\cdot(J-V) \qquad (4)$$

where $\beta \in (0,1)$ is the bargaining power of workers. Obviously, $\partial w/\partial \vartheta > 0$.

3 Extension to the 'slippery slope' framework

In this extension of the baseline matching framework developed in the second section, we try to capture the importance of the interaction of power and trust for 'overall' tax compliance, thus introducing the basic insights of the 'slippery slope' framework.

The 'slippery slope' framework stresses the crucial interaction of power and trust (Kirchler et al. 2008a, b; Muehlbacher and Kirchler 2010). Indeed, empirical analysis shows that trust and power positively influence tax payments, in particular, trust increases and power decreases voluntary compliance, whereas power increases and trust decreases enforced compliance (Wahl et al. 2010).

Following Muehlbacher and Kirchler's (2010) insight, we assume that too frequent tax audits and rigorous penalties may corrode the trust of honest taxpayers in tax authorities, but at the same time, no audits at all may bring up doubts about the power of tax authorities and cause distrust in the effectiveness and credibility of tax authorities' work. Formally, we assume that trust in tax authorities (η) is given by[5]:

$$\eta = a\cdot\rho\varphi - b\cdot(\rho\varphi)^2 \qquad (5)$$

with $a, b > 0$. In short, trust in tax authorities increases with the power of tax authorities until the latter becomes overwhelming. From that point onwards, trust decreases in power, *ceteris paribus* (see Fig. 1).

Therefore, the optimal level of policy tools of deterrence (penalty and monitoring rate), which maximises trust in tax authorities, is given by:

$$\max_{\{\rho\varphi\}}\eta \Rightarrow \frac{\partial\eta}{\partial\rho\varphi} = 0 \Rightarrow a - 2\cdot b\cdot\rho\varphi = 0 \Rightarrow \rho\varphi^{*} = \frac{a}{2\cdot b} \qquad (6)$$

Hence, the 'turning point' for power depends on the parameters of trust in tax authorities' reaction function.

Furthermore, we assume that trust in tax authorities increases the size of declared income, since tax compliance is (also) based on a trustful relationship towards tax authorities (Muehlbacher and Kirchler 2010). Hence, let us treat y^{D} as a function of trust η:

$$y^{D} = y^{D}(\eta) \qquad (7)$$

[5] One could assume that trust in tax authorities also depends on a parameter which takes into account the fact that not all firms share the same mentality to tax paying, i.e. not all of them react in the same way to measures of tax enforcement. This realistic hypothesis would not change the qualitative results of the analysis.

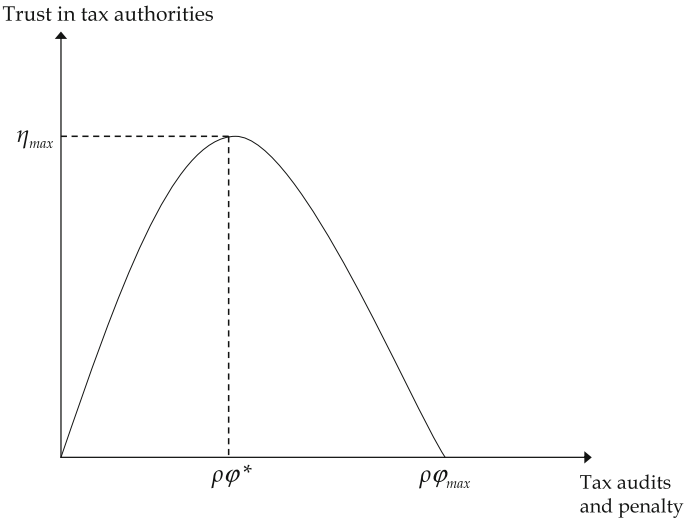

Fig. 1 The 'slippery slope' of trust and power

with $\partial y^D/\partial\eta > 0$, $lim_{\eta\to\eta_{max}} y^D < y$ and $lim_{\eta\to 0} y^D > 0$, since there is tax evasion, but it is not optimal to evade all of the income (see Sect. 2). Hence, if the policy maker sets $\rho\varphi = \rho\varphi^*$, then trust is maximised; vice versa, if $\rho\varphi > \rho\varphi^*$ or $\rho\varphi < \rho\varphi^*$, then trust is below the optimal level, and thus the level of tax compliance is low. In particular, if $\rho\varphi > \rho\varphi^*$, then power decreases tax compliance (since $\eta < \eta_{max}$), while the maximisation of trust decreases power, since $\rho\varphi$ must be reduced (see Fig. 1). The model is thus able to mimic the interaction between power and trust.

As a result, with the right mix of policy tools of deterrence (penalty and monitoring rate), trust in tax authorities is maximised, tax compliance increases, and thus a fair and profitable interaction between tax authorities and taxpayers could be achieved (Muehlbacher and Kirchler 2010). Furthermore, if the power of tax authorities, which maximises trust is such that $\rho\phi^* + c'(e) > \tau$, then a decrease in tax evasion increases labour market tightness and decreases unemployment.

4 Conclusions

This theoretical paper introduces the basic insights of the 'slippery slope' framework into the benchmark macroeconomic model of the labour market in order to study the relation between tax compliance, tax evasion and unemployment. It shows that the firm's decision to evade taxes also depends on trust in tax authorities and affects one of the most important macroeconomic variables: the unemployment rate. Also, the model is able to mimic the crucial interaction between trust and power and its effects on tax compliance. The main result of this analysis is that with the 'right mix' of policy tools of deterrence, trust in tax authorities is maximised, tax compliance increases and a reduction of tax evasion may decrease unemployment.

References

Allingham MG, Sandmo A (1972) Income tax evasion: a theoretical analysis. J Public Econ 1(3–4): 323–338

Kirchler E (2007) The economic psychology of tax behaviour (Cambridge). Cambridge University Press, UK

Kirchler E, Hoelzl E, Wahl I (2008a) Enforced versus voluntary tax compliance: the 'slippery slope' framework. J Econ Psychol 29(2):210–225

Kirchler E, Muehlbacher S, Kastlunger B, Wahl I (2008b) Why pay taxes? A review of tax compliance decisions. In: Martinez-Vazquez J, Torgler B, Alm J (eds) Developing alternative frameworks for explaining tax compliance. Routledge, Abingdon

La Porta R, Shleifer A (2008) The unofficial economy and economic development. Brookings Pap Econ Act 39(2):275–363

Muehlbacher S, Kirchler E (2010) Tax compliance by trust and power of authorities. Int Econ J 24(4):607–610

Petrongolo B, Pissarides CA (2001) Looking into the black box: A survey of the matching function. J Econ Lit 39(2):390–431

Pissarides CA (2000) Equilibrium Unemployment Theory, 2nd edn. The MIT Press, Cambridge, MA

Sandmo A (2005) The theory of tax evasion: a retrospective view. Natl Tax J 58(4):643–663

Wahl I, Kastlunger B, Kirchler E (2010) Trust in authorities and power to enforce tax compliance: an empirical analysis of the "slippery slope" framework. Law Policy 32(4):388–406