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Macroeconomic implications of the dynamics between power and trust: a theoretical formalisation of the ‘slippery slope’ framework

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Abstract

This paper aims to provide a thorough theoretical formalisation of the ‘slippery slope’ framework in order to highlight the effects and the macroeconomic implications of the dynamics between power and trust. In particular, the proposed model is able to differentiate between coercive and legitimate power, thus elucidating the dynamics between power and trust and its influence on tax climate and tax compliance. Also, by introducing trust in tax authorities as a determinant of tax compliance, the decision to under-report income is no longer based on expected profits maximisation and thus the tax compliance problem can not be explained by a pure economic approach. The main results of the model are the following: (i) trust-building actions are better than deterring measures for overall tax compliance, since they establish a cooperative tax climate and lead to a legitimate power, while too much power corrodes trust; (ii) in a society where trust is maximised and tax authority benefits from a legitimate power, both employment and economic growth are higher since tax evasion and shadow economy are lower and the level of taxation can be reduced.

JEL CLASSIFICATION A12, A13, E26, H26, K34, K42

KEYWORDS trust (in) and power (of) tax authorities, tax compliance, tax evasion
macroeconomics variables

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1. Introduction

The 'slippery slope' framework (Kirchler, 2007; Kirchler *et al.*, 2008a; Muehlbacher and Kirchler, 2010) was born in the field of Economic Psychology to explain the puzzling findings in tax compliance decisions, viz.: the high degree of tax compliance in many countries where the level of deterrence is too low (Torgler, 2007; Slemrod, 2007); the huge differences in tax compliance between countries or regions despite the same tax and punishment policies (Rothstein, 2000).

Traditional economic models of income tax evasion *à la* Allingham and Sandmo's (1972) (for a review see Sandmo, 2005), based above all on monitoring probability and expected penalty, predict far too little compliance and far too much tax evasion (Feld and Frey, 2002). Furthermore, the empirical support for the deterrent effect of audits and fines is unclear and unstable (Kirchler, 2007; Kirchler *et al.*, 2008b). Hence, not only the well-studied instruments of deterrence, such as audits and penalties (economic determinants of tax compliance), but also psychological determinants, such as social norms, vertical and horizontal trust, affect (leads to) tax compliance (Wenzel, 2005). Trust in tax authorities, in particular, is necessary to foster and stabilise the voluntary cooperation of honest taxpayers (Kirchler, 2007; Kirchler *et al.*, 2008a; Muehlbacher and Kirchler, 2010). In short, the problem of tax compliance is much too complex to be explained by a pure economic approach (Kirchler *et al.*, 2008b) and thus it needs to be analysed within a larger pattern of human behaviour (Molero and Pujol, 2012).

By considering the psychological determinants of tax compliance, the 'slippery slope' framework changes the perspective of the analysis since it aims to explain the high level of tax compliance rather than the high level of tax evasion. This approach distinguishes two forms of tax compliance: voluntary and enforced compliance. Voluntary compliance depends on trust in tax authorities, whereas enforced compliance depends on the effectiveness of tax authorities to clamp down on tax evaders. Hence, trust (in) and power (of) tax authorities are the major determinants for each form of compliance. Furthermore, the 'slippery slope' framework stresses the crucial interaction of power and trust which increases the overall tax compliance (Kirchler *et al.*, 2008a; Muehlbacher and Kirchler, 2010).¹

¹ A related idea was proposed by Braithwaite, Valerie (2003a, 2003b) who suggests that taxpayers follow very different behavioural attitudes in paying their taxes. While some may voluntarily pay their taxes as a contribution to the society, others enjoy tax evasion. Hence, the taxpayers who are driven by the latter postures should be pursued with full rigor of the law.

Recently, attempts have been made to formalise the assumptions from the ‘slippery slope’ framework regarding the effects of trust (in) and power (of) tax authorities on tax compliance (Prinz *et al.*, 2012; Lisi, 2012b). The slippery slope framework, however, remains silent on the dynamics between power and trust, i.e. how power and trust may increase or decrease each other, and how this pattern affects the relationship between tax authorities and taxpayers (the so-called tax climate). In particular, a thorough theoretical formalisation is missing (Gangl, Hofmann, Pollai and Kirchler, 2012). On the one hand, power may corroborate trust and thus facilitate cooperation (in case of legitimate power); on the other hand, power may damage trust and thereby cooperation (in the case of coercive power). Furthermore, the tax climate which prevails in a society is crucial for the effectiveness of power and trust. In a climate of distrust, in fact, high power of tax authorities is needed to enforce tax compliance and high fines and audits may be the right policy. In a trustful tax climate, instead, confidence-building measures are sufficient and high fines and audits may also have the opposite effects to those intended (Kirchler *et al.*, 2008b; Muehlbacher *et al.*, 2011).

Although the slippery slope framework postulates a positive relationship between power of tax authorities and tax compliance, empirical evidence is less clear and contradictory results are gathered (Park and Hyun, 2003; Webley *et al.*, 1991; Slemrod *et al.*, 2001; Andreoni *et al.*, 1998). Indeed, audits and penalties may guarantee enforced compliance but bear the risk of destroying existing voluntary compliance (Hofmann, Hoelzl, and Kirchler, 2008). Instead, in general, evidence shows that trust in tax authorities is positively correlated with tax payments (Hammar *et al.*, 2009; Torgler, 2003).

Following the valuable insights by Muehlbacher and Kirchler (2010) and Gangl, Hofmann, Pollai and Kirchler (2012), this paper aims to provide a thorough theoretical formalisation of the ‘slippery slope’ framework in order to highlight the effects and the macroeconomic implications of the dynamics between power and trust. In particular, the proposed model is able to differentiate power into coercive and legitimate, thus making the dynamics between power and trust and its influence on tax climate and tax evasion clearer. The legitimate power is defined as the level of tax 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, thus becoming coercive power. By introducing trust in tax authorities as a determinant of tax compliance, the decision to under-report income is no longer based on

expected profits maximisation and thus the tax compliance problem can not be explained by a pure economic approach. Also, implications regarding horizontal trust and the main macroeconomics variables are obtained from the trust and power dynamics.

The main results of the model are the following: (i) trust-building actions are better than deterring measures for overall tax compliance, since they establish a cooperative tax climate and lead to a legitimate power, while too much power corrodes trust; (ii) in a society where trust is maximised and tax authority benefits from a legitimate power, tax compliance, employment and economic growth are higher; while, tax evasion, shadow economy and unemployment are lower. Moreover, in such a society, the level of taxation can be reduced.

First and foremost, therefore, tax authorities should increase the trust of taxpayers in their work. A situation where too much power corrodes trust is in fact not desirable; instead, a situation where a high trust leads to a reduction of audits and penalties would be an ideal outcome since there would be no need for power and almost all of taxpayers would pay taxes voluntarily.

The link between the psychological determinants of economic behaviour and the main macroeconomics variables is anything but weak. According to Zingales (2012), in fact, *“the moral question (in Italy) is no longer about policy alone: it is the main cause of the lack of economic growth of the last ten years”*.

The rest of the paper is organised as follows: section 2 presents the macroeconomic model with income tax evasion where trust in tax authorities plays a key role; section 3 extends the model to the dynamics between power and trust and its effects on tax climate, tax compliance and the main macroeconomics variables; while section 4 concludes.

2. A macroeconomic model with tax evasion

2.1 *The baseline model*

We consider a basic matching framework *à la* Pissarides (2000) with a continuum of homogeneous workers of measure one and free-entry of small firms (i.e. one firm = one job). The use of a matching framework instead of another macroeconomic model is due to the main aim of this paper. The matching approach, in fact, focuses on one of the main macroeconomic variables: the unemployment rate. Also, given the close link between unemployment, growth and shadow economy, the macroeconomics implications become

straightforward. Furthermore, since taxation can have important effects on firm creation and on the development of small (and also medium-sized) enterprises, tax evasion of small businesses is a relevant problem (Schuetze and Bruce, 2004).

As usual in this kind of model (see Pissarides, 2000; Petrongolo and Pissarides, 2001), the creation of employment is characterised by trading frictions due to costly and time-consuming matching of individuals (workers and firms) and an aggregate matching function is used to summarise these frictions. Precisely, the number of 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. This common assumption allows us to introduce the key variable of the model, $\vartheta \equiv v/u$, more commonly known as ‘market tightness’. It follows that $q(\vartheta) \equiv m\{v, u\}/v = m\{1, \vartheta^{-1}\}$ and $g(\vartheta) \equiv m\{v, u\}/u = m\{\vartheta, 1\}$ are the probability of filling a vacancy and of finding a job, respectively.² To ensure that unemployment exists in steady state, it is assumed that job destruction occurs at the exogenous rate δ . Therefore, in steady state (where the variables do not change over time) the matching and job destruction rates allow us to obtain the unemployment rate:

$$\dot{u} = \delta \cdot (1 - u) - g(\vartheta) \cdot u \Rightarrow \dot{u} = 0 \Rightarrow u = \frac{\delta}{\delta + g(\vartheta)} \quad (1)$$

where \dot{u} is the evolution of unemployment over the course of time and $(1 - u)$ is the share of employed workers. Clearly, the unemployment rate depends negatively on market tightness ϑ .

In order to find ϑ , we need to introduce the value functions, i.e. the expected marginal values associated with the differing conditions of market participants. The value functions specified to find infinite horizon steady-state solutions are the following:³

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

² Standard technical assumptions are assumed: $\lim_{\vartheta \rightarrow 0} q(\vartheta) = \lim_{\vartheta \rightarrow \infty} g(\vartheta) = \infty$, and $\lim_{\vartheta \rightarrow 0} g(\vartheta) = \lim_{\vartheta \rightarrow \infty} q(\vartheta) = 0$.

³ Compared to the baseline matching model, we only introduce the cost and benefit of tax evasion in the value of a filled job.

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 opportunity cost of employment; ρ is the rate whereby tax authorities detect tax evasion and levy the penalty φ , with $\varphi > \tau$; $c(e)$ is the concealment cost, with positive first derivative $\partial c(e)/\partial e > 0$. Intuitively, the higher the evaded income, the greater the penalty and the concealment cost. The income declared by firms y^D is partly declared voluntary and partly declared because of enforcement by tax authorities. Hence, tax compliance y^D can be the same, but motivation for the behaviour varies. Thus, y^D represents the overall tax compliance of firms rather than the voluntary tax compliance. The equilibrium value of market tightness is given by the value of a filled job under the *free-entry (or zero profit) equilibrium condition* $V = 0$ (see Pissarides, 2000):

$$[q(\vartheta)]^{-1} = \frac{y - \tau \cdot y^D - \rho\varphi \cdot e - (1 - \tau) \cdot w - c(e)}{c \cdot (r + \delta)} \quad (2)$$

with $\partial \vartheta / \partial w < 0$, since $[q(\vartheta)]^{-1}$ is increasing in ϑ , being $q(\vartheta)$ decreasing in ϑ .

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

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

where $\beta \in (0, 1)$ is the bargaining power of workers. Simple manipulations thus yield the formulae of wage:

$$\begin{aligned} \frac{w + \delta \cdot U}{r + \delta} - U &= \frac{\beta}{(1-\beta)} \cdot \left[\frac{y - \tau \cdot (y^D - w) - \rho\varphi \cdot e - w - c(e) + \delta \cdot V}{r + \delta} - V \right] \\ w - rU &= \frac{\beta}{(1-\beta)} \cdot [y - \tau \cdot (y^D - w) - \rho\varphi \cdot e - w - c(e) - rV] \\ w &= \frac{(1-\beta) \cdot rU + \beta \cdot (y - \tau \cdot y^D - \rho\varphi \cdot e - c(e) - rV)}{(1-\beta \cdot \tau)} \end{aligned} \quad (3)$$

with $\partial w / \partial \vartheta > 0$, since $\partial V(\vartheta) / \partial \vartheta < 0$, and $\partial U(\vartheta) / \partial \vartheta > 0$. From (3), we get two important results. The wage is negatively related to tax evasion, i.e. $\partial w / \partial e < 0$. The case of Italy, where tax evasion is very large, provides the clearest example of this result. According to Eurostat and OCSE, in fact, in Italy the wages (both real and nominal) are very low compared to the other EU countries. Instead, the sign of $\partial w / \partial \tau$ is *a priori* ambiguous. In fact, an increase in

taxation causes two opposite effects on wages. First, the taxation reduces the value of a filled job; therefore, the wage which depends positively on J is lower (*negative effect*). Second, the wage is tax deductible and thus if the taxation is higher, the firm agrees to increase wages in order to benefit from increased tax deduction (*positive effect*).

This model works as follows (see Pissarides, 2000): the intersection of the functions $\vartheta = \vartheta(w)$ and $w = w(\vartheta)$ gives the equilibrium values of market tightness and wage. Finally, given the equilibrium value of ϑ , the equilibrium value of the unemployment rate is determined.

2.2 A pure economic approach to tax compliance

Following a pure economic approach, the tax evasion decision of firms is based on expected profits maximisation. In short, given the level of taxation, the probability of being discovered, the penalties and the concealment cost, the firm decides the optimum amount of income tax evasion, $e \equiv y - y^D$. Formally, the firm solves this problem by choosing the value of y^D which maximises the present value of a filled job, i.e.:

$$\max_{\{y^D\}} J \Rightarrow \tau = \rho\varphi + \partial c(e)/\partial e \quad (4)$$

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, i.e. if $\tau \leq \rho\varphi$; whereas, on the other hand, with $\tau > \rho\varphi$ it is always optimal for firms to under-report income. Thus, in order to obtain an interior solution with positive evaded and declared income (i.e. $y^D < y$ but $y^D > 0$), it needs to assume that $\tau > \rho\varphi$ and a convex concealment cost (namely a positive second derivative, $\partial^2 c(e)/\partial e^2 > 0$). These assumptions give the following (intuitive) results: $dy^D/d\tau < 0$, $dy^D/d(\rho \cdot \varphi) > 0$, $de/d\tau > 0$, $de/d(\rho \cdot \varphi) < 0$.

As a result, in a pure economic approach where the firm chooses the optimal amount of declared income, tax compliance has no effects on ‘real economy’, namely market tightness.

2.3 The psychological determinants of tax compliance

Although economists stress the relevance of tax rate, monitoring probability and penalties (*external variables*), psychological determinants of tax compliance (*internal variables*) are of

similar importance (Kirchler, 2007). Indeed, empirical evidence for the validity of a pure economic approach is rather weak (see the review by Kirchler, 2007). Citizens' knowledge of tax law, their attitudes towards the government and taxation, personal norms, perceived social norms and fairness, and motivational tendencies to comply are in fact important factors for tax compliance and can be understood as contributing to trust in the tax authorities (Hofmann, Hoelzl and Kirchler, 2008). Indeed, since tax compliance is also based on a trustful relationship between taxpayers and tax authorities (Muehlbacher and Kirchler, 2010), we assume that trust in tax authorities T increases the size of declared income. Hence, let us treat y^D as a function of trust:⁴

$$y^D = y^D(T) \quad (5)$$

with $\partial y^D / \partial T > 0$, $\lim_{T \rightarrow T_{max}} y^D < y$ and $\lim_{T \rightarrow 0} y^D > 0$, since we concentrate on the non-trivial case where there is tax evasion but it is not optimal to evade all of the income. Hence, trust positively affects the optimal amount of declared income and negatively affects the optimal amount of tax evasion, $e \equiv y - y^D(T)$.

By also considering psychological determinants of tax compliance, in addition to the economic determinants (audits, penalty and the concealment cost), the pure economic equilibrium condition, i.e. equation (4), is no longer valid since the declared income depends on trust in tax authorities. In short, the problem of tax compliance is too complex to be solved through a rational (and optimal) choice of taxpayers. It follows that the important effect of tax compliance on market tightness can not be neglected:

$$\begin{aligned} \frac{\overbrace{(-1) \cdot \partial q(\vartheta) / \partial \vartheta}^{>0}}{q(\vartheta)^2} \cdot d\vartheta &= \frac{-\tau + \rho\varphi \cdot +\partial c(e) / \partial e \cdot \partial y^D(T) / \partial T}{c \cdot (r + \delta)} \cdot dy^D \\ \Rightarrow \frac{d\vartheta}{dy^D} &= \frac{-\tau + \rho\varphi \cdot +\partial c(e) / \partial e \cdot \partial y^D(T) / \partial T}{c \cdot (r + \delta)} \cdot \frac{q(\vartheta)^2}{(-1) \cdot \partial q(\vartheta) / \partial \vartheta} \end{aligned} \quad (6)$$

$$\text{which is: } \begin{cases} > 0 & \text{if } -\tau + \rho\varphi \cdot +\partial c(e) / \partial e \cdot \partial y^D(T) / \partial T > 0 \\ < 0 & \text{if } -\tau + \rho\varphi \cdot +\partial c(e) / \partial e \cdot \partial y^D(T) / \partial T < 0 \end{cases}$$

An increase in tax compliance, i.e. an increase in y^D , increases market tightness and reduces unemployment if the level of taxation is lower than the cost of tax evasion (otherwise, we

⁴ The "original" slippery slope framework (Kirchler et al., 2008a; 2008b) adopts an individual perspective (individual tax payers). Nevertheless, modelling trust in tax authorities as a determinant of tax evasion (tax compliance) makes sense even for small (one-job) firms. Indeed, it is relevant also for (the managers of) large or midsized firms.

get a negative relationship between market tightness and tax compliance). Hence, the sign of the relationship between ϑ and y^D depends on the monitoring and penalty rates, the level of taxation and the concealment cost, as well as on trust in tax authorities.

3. Modelling the dynamics between trust and power

In this section we further extend the model developed in the second section by introducing the interplay between trust and power.

3.1 Trust, legitimate power and coercive power

The ‘slippery slope’ framework stresses the importance of power and trust and their interaction for “overall” tax compliance (Kirchler *et al.*, 2008a; 2008b; Muehlbacher and Kirchler, 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 and penalties at all may bring up doubts about the power of tax authorities and cause distrust in the effectiveness and credibility of the tax authorities’ work. In a situation of no trust, in fact, power can be a first starting point for the emergence of trust (Nooteboom, 2002). Formally, therefore, we assume that trust in tax authorities (T) is given by:

$$T = a \cdot \rho\varphi - b \cdot (\rho\varphi)^2 \quad (7)$$

with $a, b > 0$. It follows that 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*.⁵ The parameters a and b are indicators of the quality, effectiveness, fairness and transparency of state and its institutions (quality-quantity of public goods and services offered, level of bureaucracy and corruption, effectiveness of legal institutions, etc.). Hence, the higher a and/or the lower b , the longer the relationship between trust and power remains positive, since taxpayers are aware of the benefits and services provided to them by the state.⁶

⁵ Obviously, audits and penalties are exogenous variables since they are determined by policy-makers.

⁶ If governments act in the interest of their citizens, if the public decisions-making procedures are felt to be fair (In a nutshell, if the trustworthiness and quality of the government is higher), then trust in the government is higher (Schaltegger and Torgler, 2005). Also, as observed by Alesina and La Ferrara (2002), in a society where legal institutions are effective, individuals will trust more because they will feel more protected.

The optimal level of power (monitoring rate and fines) which maximises trust is thus given by:

$$\max_{\{\rho\varphi\}} \eta \Rightarrow \frac{\partial \eta}{\partial \rho\varphi} = 0 \Rightarrow a - 2 \cdot b \cdot \rho\varphi = 0 \Rightarrow \rho\varphi_{optimal} = \frac{a}{2 \cdot b} \quad (8)$$

Hence, the “turning point” for power in trust in the tax authorities’ reaction function crucially depends on the parameters a and b . We define the optimal level of power, namely the level of policy tools of deterrence (tax audits and penalties) which maximises trust, as the *legitimate power*. In words, the legitimate power is the level of tax 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, thus becoming *coercive power*. Hence, we are able to differentiate between coercive and legitimate power (Gangl, Hofmann, Pollai and Kirchler, 2012).

The dynamics between trust and power can thus be summarised as follows (see *Figure 1*): when power is not equal to the legitimate power ($power \neq power_{optimal}$) then power decreases tax compliance, since $trust < trust_{max}$; whereas, the maximisation of trust decreases power, if $power > power_{optimal}$ since the level of tax audits and penalty must be reduced in order to increase trust, and it increases power, if $power < power_{optimal}$ (for the opposite reason). Hence, power increases trust if $power < power_{optimal}$.

===== *Figure 1 about here now at the end* =====

This simple model is thus able to mimic the important interaction between power and trust. In particular, the slippery slope dynamics is driven by trust in tax authorities rather than power of tax authorities. Hence, it could be stated that trust is more important than power for overall tax compliance since $y_{max}^D = y^D(T_{max})$, *ceteris paribus*. Empirical evidence shows that trust is crucial for a better fiscal performance (Schaltegger and Torgler, 2005). Indeed, from an empirical point of view, a “slippery slope” situation emerges with respect to trust: in fact, Lisi (2012a) finds that an increase in trust significantly increases tax compliance, while an increase in power has a lower positive effect on tax compliance.⁷ Hence, this dynamic emphasises the importance of trust and a fair interaction between tax authorities and their clients, so as to shift from “*a cops-and-robbers climate towards a*

⁷ Precisely, using a model in logarithms, he finds that an increase in trust of 1% is associated with a decrease of 1.20% in tax evasion; whereas, an increase in power of 1% is associated with a decrease of 0.30% in tax evasion.

service–client relationship” (Muehlbacher and Kirchler, 2010) in which the tax authority respects the taxpayers and applies transparent and fair procedures.

Since that trust seems the outcome of a rational decision, it is a *reason-based trust* (Gangl, Hofmann, Pollai and Kirchler, 2012). However, by assuming that trust in tax authorities also depends on a parameter, T_I , which takes into account the fact that not all firms share the same mentality towards tax paying, we may also consider the *implicit trust*.⁸ In this case, a further trust and power dynamics is possible since a higher (lower) T_I may induce the tax authorities to reduce (raise) audits and penalties:

$$\underbrace{T_{RB}}_{\text{reason-based trust}} = \underbrace{T_I}_{\text{implicit trust}} + \underbrace{a \cdot \rho\varphi - b \cdot (\rho\varphi)^2}_{\text{power}} \quad (9)$$

As regards the key role of the parameters a and b , a country with a higher quality, effectiveness, fairness and transparency of state and its institutions (the country A in *Figure 2*) will have a higher level of $trust_{max}$ since the local tax authorities will benefit of a higher legitimate power (see *Figure 2*). In turn, this will imply a higher (lower) level of tax compliance (tax evasion), namely $y_A^D > y_B^D$. Torgler and Schneider (2009) find strong empirical support that an increase in governance and institutional quality leads to a smaller shadow economy. In fact, differences in tax compliance behaviour have foundations in the institutions of tax administration and citizen assessment of the quality of governance. Also, the observed differences in tax compliance levels persist over alternative levels of enforcement (Cummings *et al.*, 2009).

===== *Figure 2 about here now at the end* =====

3.2 The effects of the dynamics between trust and power

Although both forms of tax compliance (enforced and voluntary) assure tax revenues, the quantitative results may be very different. An experimental study on tax behaviour, in fact, shows that both trust and power increase tax payments, but trust increases and power decreases voluntary compliance, whereas power increases and trust decreases enforced

⁸ Gangl, Hofmann, Pollai and Kirchler (2012), in fact, also distinguish between ‘implicit trust’ and ‘reason-based trust’. Implicit trust is based on shared norms, values and morals; while, the reason-based trust represents the result of a rational decision.

compliance (Wahl, Kastlunger and Kirchler, 2010). Nevertheless, (too much) power can have more adverse effects on trust than vice versa.⁹

From observing only the declared income y^D , however, one can not assess if it is voluntary or enforced compliance. However, since power and trust relate to the different tax climates, we can extract information about the type of tax compliance (voluntary vs. enforced compliance) by observing the prevailing tax climate.¹⁰ In fact, the power of tax authorities relates to an antagonistic climate between tax authorities and taxpayers causing enforced compliance, while trust in tax authorities relates to a cooperative climate between tax authorities and taxpayers resulting in voluntary compliance (Gangl, Hofmann, Pollai and Kirchler (2012). Indeed, we are able to distinguish three different tax climates (see *Figure 3*): 1) an *antagonistic tax climate* in which the coercive power (namely, the power which corrodes trust) leads to a high enforced compliance (since audits and penalties are higher) but a lower overall tax compliance (since $trust < trust_{max}$); 2) a *cooperative tax climate* in which the legitimate power leads to the maximisation of trust and a high tax compliance; and 3) a tax climate characterised by a low power and trust, i.e. a low tax compliance both enforced and voluntary which occurs when the tax authorities are incompetent and/or inefficient.

===== *Figure 3 about here now at the end* =====

Unlike the analysis proposed by Gangl, Hofmann, Pollai and Kirchler (2012), in which there are three pure tax climates, in this model there may be intermediate forms of tax climate according to the degree of power (audits and sanctions) and trust.¹¹ Obviously, this approach also focuses on the aggregate level of tax climate rather than on the individual treatment of taxpayers.

By also considering social or horizontal trust (i.e. trust in others), a further result follows. An experimental study on individual behaviour, in fact, shows that horizontal trust is caused by vertical trust. Precisely, increased vertical trust has positive effects on horizontal trust, decreased vertical trust has smaller negative effects on horizontal trust, but horizontal

⁹ Findings about the influence of trust on power are scarce and often inconsistent if compared with those on the effects of power on trust (Gangl, Hofmann, Pollai and Kirchler, 2012).

¹⁰ Alternatively, one could distinguish between voluntary and enforced compliance from the reaction of taxpayers to different regulation tools (trust-building vs. deterring measures).

¹¹ Beside the antagonistic and service climates, in Gangl, Hofmann, Pollai and Kirchler (2012) the slippery slope framework was extended through a third climate, namely the confidence climate, in which the so-called 'implicit trust' decreases coercive power and leads to a committed cooperation.

trust has no effects on vertical trust (Eek and Rothstein, 2005).¹² According to this result, horizontal trust is higher in the transition from the 'inefficient' tax climate to the cooperative tax climate and it is lower in the transition from the cooperative tax climate to the antagonistic tax climate. However, a higher horizontal trust in the cooperative tax climate does not lead to a further increase in vertical trust.

As a result, in a trustful society where trust is at the maximum and tax authority benefits from a legitimate power (*cooperative tax climate*), a fair and profitable interaction between tax authorities and taxpayers can be achieved (Muehlbacher and Kirchler, 2010). Hence, trust in tax authorities, overall tax compliance and horizontal trust are higher than in a distrustful society where the coercive power produces adverse and undesired effects on tax behaviour.

A situation where too much power corrodes trust is in fact not desirable; instead, a situation where a high trust leads to a reduction of audits and penalties would be an ideal outcome since there would be no need for power and almost all of taxpayers would pay taxes voluntarily. Indeed, trust has a significant positive effect on tax morale (Torgler, 2003). In turn, tax morale, i.e. the 'intrinsic motivation to pay taxes' (Torgler, 2007), has a significant positive effect on tax compliance decisions (see e.g. Cummings *et al.*, 2009; Halla, 2012; Molero and Pujol, 2012). This can explain the importance of trust for a better fiscal performance, thus highlighting the crucial role of tax morale in the slippery slope (trust-power) dynamics.

3.3 Macroeconomic implications of the 'slippery slope' framework

From a macroeconomic point of view, a lower (higher) level of tax compliance (tax evasion) implies a larger shadow economy.¹³ Since the shadow economy negatively contributes to economic growth (La Porta and Shleifer, 2008), the implication about growth follows implicitly.

Instead, the effect of tax compliance on unemployment depends on the sign of the relationships between market tightness ϑ and y^D . From an empirical point of view, the sign of the relation between shadow economy and unemployment (see e.g. Tanzi, 1999), as well as the sign of the relation between growth and unemployment (see e.g. Mortensen, 2005), is

¹² The logic is that when people believe that the authority is 'bad' (immoral, unfair, untrustworthy), other people might just as well be equally 'bad' (Eek and Rothstein, 2005).

¹³ The size of the shadow economy is usually used as a measure of tax evasion, i.e. tax non-compliance behaviour, in empirical analysis (see e.g. Halla, 2010).

a priori ambiguous. Hence, given the conditions under which the relationships between market tightness and tax compliance (equation (6)) can be both positive and negative, this model is able to provide a theoretical explanation for these very intricate relationships.

Precisely, a reduction in tax evasion, i.e. an increase in tax compliance, increases market tightness and reduces unemployment if $\rho\varphi + \partial c(e)/\partial e \cdot \partial y^D(T)/\partial T > \tau$. As a rule, this good result can be achieved in two ways. First, by a severe law enforcement, i.e. by increasing audits and penalties to a maximum. This policy, however, decreases trust and then the respect of the condition $\rho\varphi_{max} + \partial c(e)/\partial e \cdot \partial y^D(T)/\partial T > \tau$ may not be ensured. More important, an increase in $\rho\varphi$ has a negative direct effect on market tightness and thus on employment. A second and better way to reach that condition is to maximise trust ($T = T_{max}$) by the legitimate power of tax authorities ($\rho\varphi = \rho\varphi_{optimal}$). Also, since in a trustful society the level of tax evasion is lower, policy-makers can reduce the level of taxation ($\tau = \tau_{low}$), thus spurring the creation of new vacancies. Therefore, the right mix of policy tools of deterrence (penalty and monitoring rate) which maximises trust in tax authorities and leads to the legitimate power of tax authorities is such that $\rho\varphi_{optimal} + \partial c(e)/\partial e \cdot \partial y^D(T_{max})/\partial T_{max} > \tau_{low}$ and, therefore, an increase in tax compliance also decreases unemployment.

Note that an increase in y^D , increases unemployment if $\rho\varphi + \partial c(e)/\partial e \cdot \partial y^D(T)/\partial T < \tau$. Intuitively, a high level of taxation damages the creation of new vacancies and then employment. In short, an increase in y^D is not sufficient to lead the economy into a virtuous circle if it is not accompanied by an adequate increase in trust.

Primarily, therefore, tax authorities should increase trust of taxpayers in their work, thus improving the knowledge and evaluation of taxpayers on tax law, simplifying tax law, giving a negative image of tax evasion (because tax evasion is often viewed in some countries as a minor crime and tax evaders as intelligent), establishing a respectful treatment of taxpayers (Hofmann, Hoelzl, and Kirchler, 2008), and improving taxpayers' skills (Alm and Torgler, 2011). Furthermore, it needs to distinguish between taxpayers who would pay taxes and those who pay them under no circumstances. Braithwaite (2003a, 2003b), in fact, argues for 'responsive regulation', i.e. to support honest taxpayers but to prosecute persistent tax evaders with the full rigor of the law. This seems the only winning strategy.

Conclusions

This paper aims to provide a thorough theoretical formalisation of the ‘slippery slope’ framework in order to highlight the effects and the macroeconomic implications of the dynamics between power and trust. In particular, the proposed model is able to split power into coercive and legitimate, thus elucidating the dynamics between power and trust and its influence on tax climate and tax compliance. Also, by introducing trust in tax authorities as a determinant of tax compliance, the decision to under-report income is no longer based on expected profits maximisation and thus the tax compliance problem can not be explained by a pure economic approach. The main results of the model are the following: (i) trust-building actions are better than deterring measures for overall tax compliance, since they establish a cooperative tax climate and lead to a legitimate power; (ii) in a society where trust is maximised and the tax authority benefits from a legitimate power, both employment and economic growth are higher since tax evasion and shadow economy are lower, while the level of taxation can be reduced.

References

- Alesina Alberto, and Eliana La Ferrara (2002). Who trusts others?, *Journal of Public Economics*, 85(2), 207-234.
- Allingham, Michael G., and Agnar Sandmo (1972). Income Tax Evasion: A Theoretical Analysis, *Journal of Public Economics*, 1(3-4), 323-338.
- Alm, James, and Benno Torgler (2011). Do ethics matter? Tax compliance and morality. *Journal of Business Ethics*, 101, 1-17.
- Andreoni, James, Brian Erard, and Jonathan Feinstein (1998). Tax compliance, *Journal of Economic Literature*, 36(2), 818-860.
- Braithwaite, Valerie (2003a) A New Approach to Tax Compliance, in: V. Braithwaite (Ed.) *Taxing Democracy: Understanding Tax Avoidance and Evasion*, 1–11 (Hampshire, UK: Ashgate).
- Braithwaite, Valerie (2003b). Dancing with Tax authorities: Motivational Postures and Noncompliant Actions, in: V. Braithwaite (Ed.) *Taxing Democracy: Understanding Tax Avoidance and Evasion*, 15-39 (Hampshire, UK: Ashgate).
- Cummings, Ronald G., Jorge Martinez-Vazquez, Michael McKee, and Benno Torgler (2009). Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment, *Journal of Economic Behaviour and Organization*, 70(3), 447–457.
- Eek, Daniel, and Bo Rothstein (2005). Exploring a Causal Relationship between Vertical and Horizontal Trust, QOG Working Paper Series, 2005:4.
- Feld, Lars P., and Bruno S. Frey (2002). Trust Breeds Trust: How Taxpayers Are Treated, *Economics of Governance*, 3(2), 87-99.

- Gangl, Katharina, Eva Hofmann, Maria Pollai, and Erich Kirchler (2012). The Dynamics of Power and Trust in the “Slippery Slope Framework” and its Impact on the Tax Climate, mimeo.
- Halla, Martin (2012). Tax Morale and Compliance Behavior: First Evidence on a Causal Link, forthcoming in *The B.E. Journals of Economic Analysis and Policy*.
- Hammar, Henrik, Sverker C. Jagers, and Katarina Nordblom (2009). Perceived tax evasion and the importance of trust, *Journal of Socio-Economics*, 38(2), 238-245.
- Hofmann, Eva, Erik Hoelzl, Erich Kirchler (2008). Preconditions of Voluntary Tax Compliance: Knowledge and Evaluation of Taxation, Norms, Fairness, and Motivation to Cooperate. *Journal of Psychology*, 216(4), 209-217.
- Kirchler, Erich (2007). *The Economic Psychology of Tax Behaviour* (Cambridge, UK: Cambridge University Press).
- Kirchler, Erich, Erik Hoelzl, and Ingrid Wahl (2008a). Enforced versus voluntary tax compliance: the ‘slippery slope’ framework, *Journal of Economic Psychology*, 29(2), 210–225.
- Kirchler, Erich, Stephan Muehlbacher, Barbara Kastlunger, and Ingrid Wahl (2008b). Why Pay Taxes? A Review of Tax Compliance Decisions, in: Jorge Martinez-Vazquez, Benno Torgler, and James Alm (Ed.) *Developing Alternative Frameworks for Explaining Tax Compliance* (Abingdon, Oxon: Routledge).
- La Porta, Rafael, and Andrei Shleifer, (2008), “The Unofficial Economy and Economic Development,” *Brookings Papers on Economic Activity*, 39(2), 275-363.
- Lisi, Gaetano (2012a). Testing the slippery slope framework, *Economics Bulletin*, 32(2), 1369-1377.
- Lisi, Gaetano (2012b). Unemployment, Tax Evasion and the Slippery Slope Framework, forthcoming in *International Review of Economics*.
- Molero, Juan Carlos, and Francesc Pujol (2012). Walking Inside the Potential Tax Evader’s Mind: Tax Morale Does Matter, *Journal of Business Ethics*, 105 (2), 151-162.
- Mortensen, Dale T. (2005). Alfred Marshall Lecture: Growth, Unemployment and the Labor Market Policy, *Journal of the European Economic Association*, 3(2-3), 236-258, 04/05.
- Muehlbacher, Stephan, Erich Kirchler, and Herbert Schwarzenberger (2011). Empirical evidence for the “slippery slope” framework, *European Journal of Law and Economics*, 32(1), 89-97.
- Muehlbacher, Stephan, and Erich Kirchler (2010). Tax Compliance by Trust and Power of Authorities, *International Economic Journal*, 24(4), 607-610.
- Nooteboom, Bart (2002). *Trust: forms, foundations, functions, failures and figures*. Cheltenham: Edward Elgar.
- Park, Chan-Gyun, and Jin Kwon Hyun (2003). Examining the determinants of tax compliance by experimental data: a case of Korea, *Journal of Policy Modeling*, 25(8), 673-684.
- Petrongolo, Barbara, and Christopher A. Pissarides (2001). Looking into the Black Box: A Survey of the Matching Function, *Journal of Economic Literature*, 39(2), 390-431.
- Pissarides, Christopher A. (2000). *Equilibrium Unemployment Theory*, 2nd Edition, The MIT Press.
- Prinz, Aloys, Stephan Muehlbacher, and Erich Kirchler (2012). The slippery slope framework: an attempt to formalization, mimeo.
- Rothstein, Bo (2000). Trust, Social Dilemmas and Collective Memories, *Journal of Theoretical Politics*, 12(4), 477-501.
- Sandmo, Agnar (2005). The Theory of Tax Evasion: A Retrospective View, *National Tax Journal*, 58(4), 643–663.

- Schaltegger, Christoph A., and Benno Torgler (2005). Trust and Fiscal Performance: A Panel Analysis with Swiss Data, CREMA Working Papers Series, number 2005-05.
- Schuetze, Herbert J., and Donald Bruce (2004). Tax policy and entrepreneurship, *Swedish Economic Policy Review*, 11(2), 233-265.
- Slemrod, Joel, Marsha Blumenthal, and Charles Christian (2001). Taxpayer response to an increased probability of audit: Evidence from a controlled experiment in Minnesota, *Journal of Public Economics*, 79(3), 455-483.
- Slemrod, Joel (2007). Cheating Ourselves: The Economics of Tax Evasion, *Journal of Economic Perspectives*, 21(1), 25-48.
- Tanzi, Vito, (1999). Uses and Abuses of Estimates of the Underground Economy, *Economic Journal*, 109(46), 338-347.
- Torgler, Benno (2003). Tax morale, Rule-governed Behaviour and Trust. *Constitutional Political Economy*, 14(2), 119-140.
- Torgler, Benno (2007), *Tax Compliance and Tax Morale: A Theoretical and Empirical Analysis*, Edward Elgar, Cheltenham, UK.
- Torgler, Benno, and Friedrich, Schneider (2009). The impact of tax morale and institutional quality on the shadow economy, *Journal of Economic Psychology*, 30(2), 228-245.
- Wahl, Ingrid, Barbara Kastlunger, and Erich Kirchler (2010), "Trust in Authorities and Power to Enforce Tax Compliance: An Empirical Analysis of the "Slippery Slope Framework", *Law and Policy*, 32(4), 388-406.
- Webley, Paul, Henry Robben, Henk Elffers, and Dick Hessing (1991). *Tax Evasion: An Experimental Approach*. Cambridge: Cambridge University Press.
- Wenzel, Michael (2005). Motivation or rationalisation? Causal relations between ethics, norms and tax compliance, *Journal of Economic Psychology*, 26(4), 491-508.
- Zingales, Luigi (2012). Non si cresce perché si ruba (*there is no growth because of immorality*), *L'Espresso*, 14 giugno.

Figures

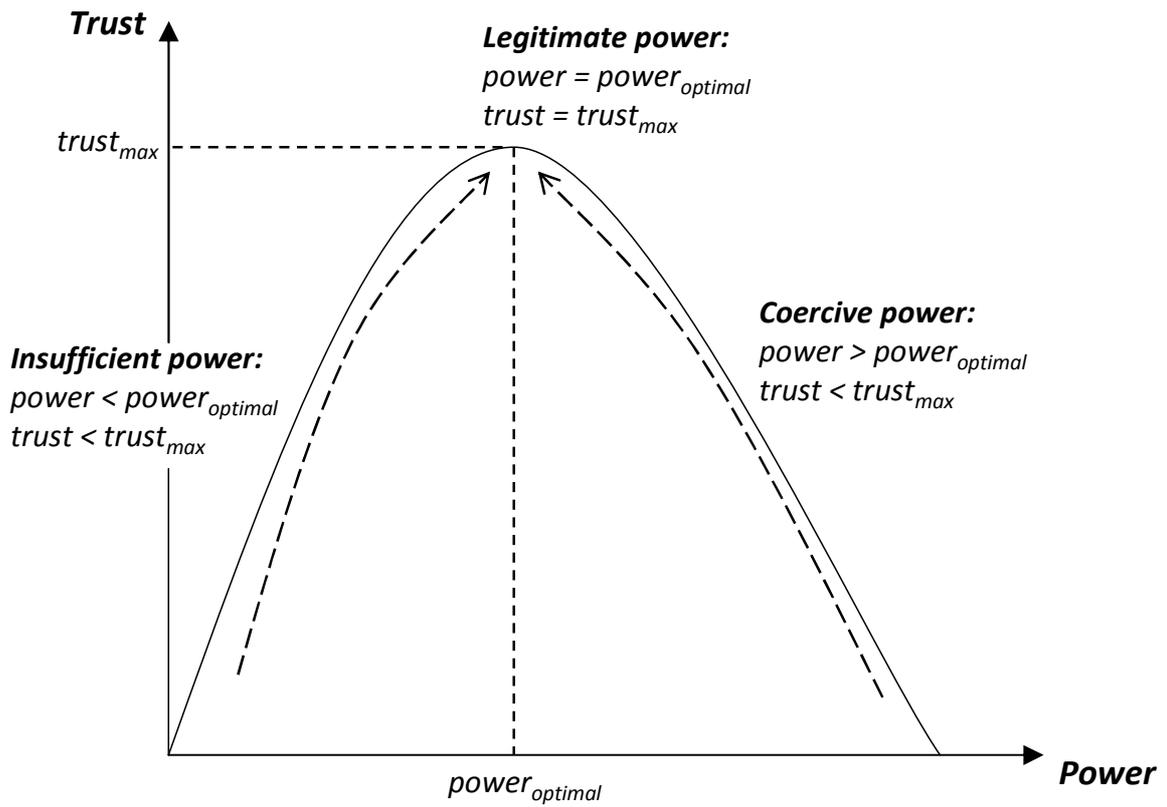


Figure 1. The dynamics between power and trust

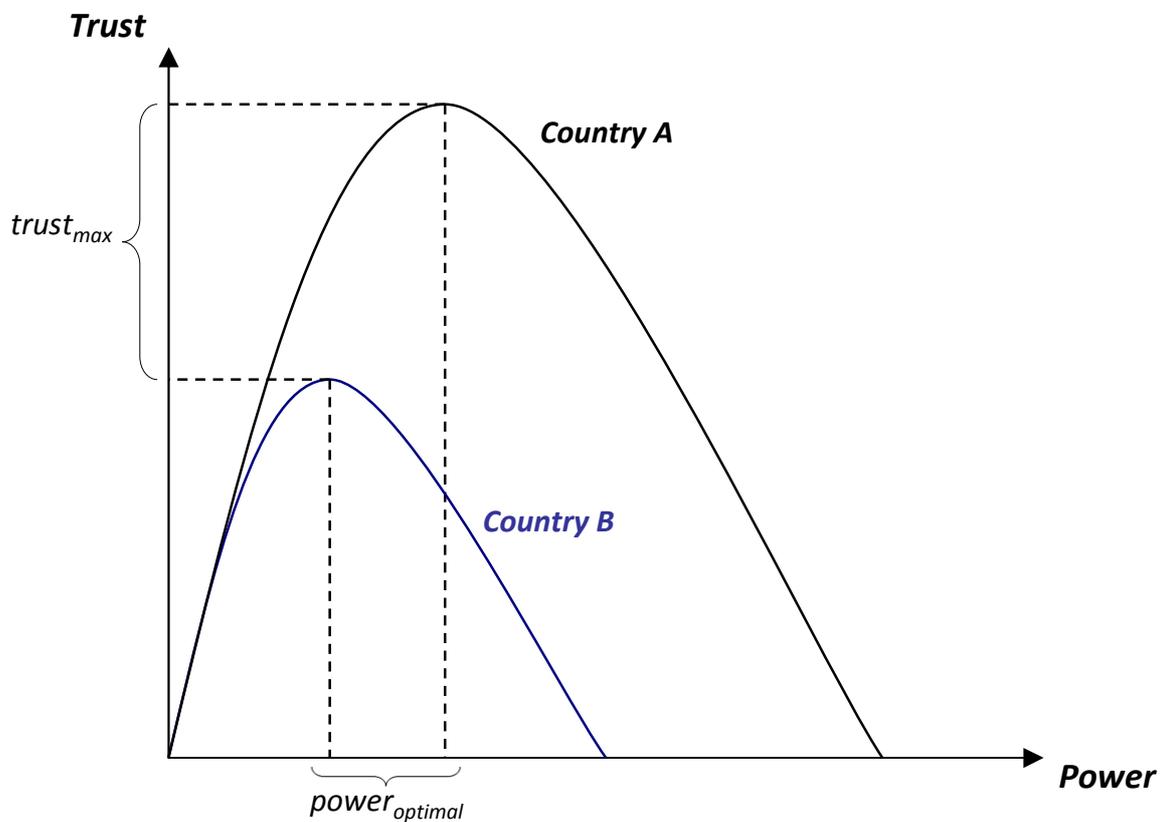


Figure 2. The 'slippery slope' of trust and power between countries

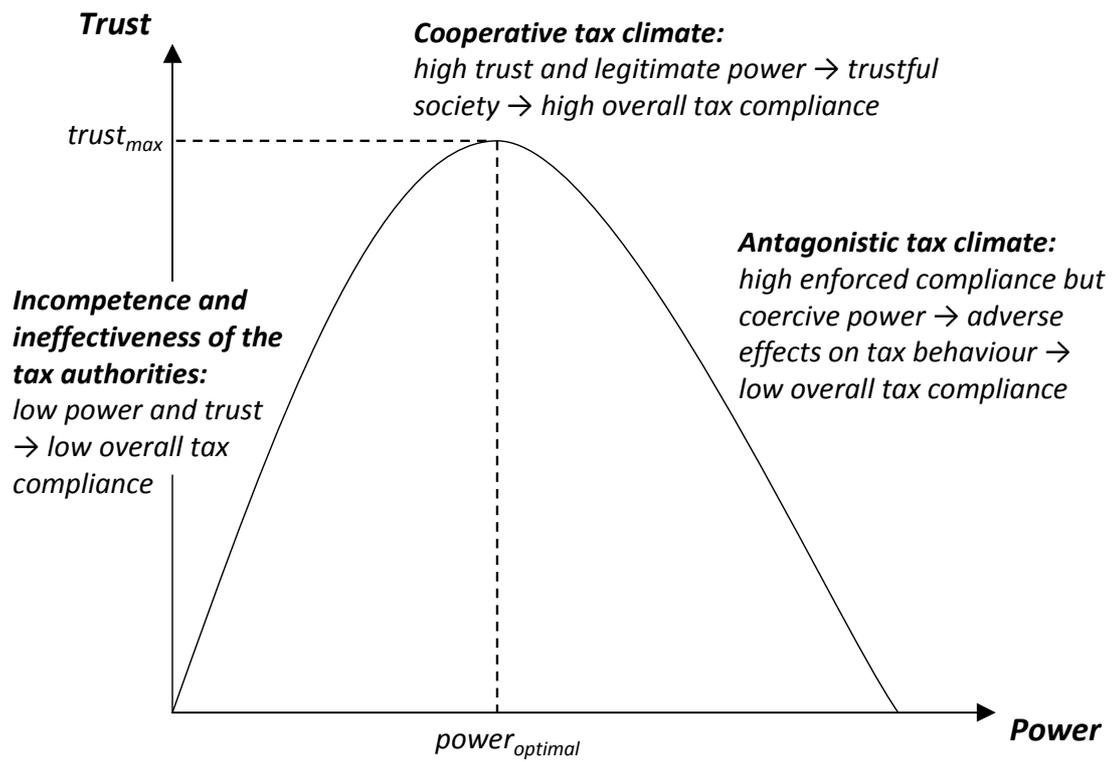


Figure 3. Tax compliance and tax climates