

*Tackling the participation
of Europe's rural population
in the shadow economy*



Colin C. Williams

University of Sheffield (United Kingdom)

Ioana Alexandra Horodnic

Alexandru Ioan Cuza University of Iasi (Romania)

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Tackling the participation of Europe's rural population in the shadow economy

Abstract: To tackle the shadow economy, an emergent literature has called for the conventional rational economic actor approach (which uses deterrents to ensure that the costs of engaging in shadow work outweigh the benefits) to be replaced or complemented by a social actor approach which focuses upon improving tax morale. To evaluate the relevance and validity of doing this in rural areas, we here report face-to-face interviews conducted with 9,677 rural dwellers conducted across the 28 member states of the European Union (EU28) in 2013. Multilevel logistic regression analysis reveals that both approaches significantly reduce the rural shadow economy. When tax morale is high, however, deterrence measures have little impact on reducing the rural shadow economy and it is only when tax morale is low that raising the level of deterrents has greater impacts, with increasing the risks of detection (which is problematic in dispersed rural populations) leading to higher reductions in the rural shadow economy than increasing punishments. The paper thus concludes by calling for greater emphasis in rural areas on improving tax morale to tackle the shadow economy in Europe and beyond.

Keywords: Informal sector; tax morale; tax evasion; rural economies; European Union.

Haciendo frente a la participación de la población rural europea en la economía sumergida

Resumen: Para hacer frente a la economía sumergida, una literatura emergente viene reivindicando que el enfoque convencional del actor económico (que usa elementos disuasorios para asegurar que los costes de involucrarse en trabajo sumergido excedan los beneficios) sea sustituido o complementado por un enfoque del actor social que se centra en mejorar la moral fiscal. Para evaluar la relevancia y validez de hacer esto en las áreas rurales, nuestro artículo se basa en entrevistas presenciales realizadas en 2013 a 9.677 habitantes rurales distribuidos por los 28 Estados miembros de la Unión Europea. El análisis de regresión logística multi-nivel revela que ambos enfoques reducen significativamente la economía sumergida rural. Cuando la moral fiscal es alta, sin embargo, las medidas disuasorias tienen poco impacto a la hora de reducir la economía sumergida rural. Sólo cuando la moral fiscal es baja, elevar el nivel de los elementos disuasorios tiene mayores impactos, con aumentos en el riesgo de detección (lo cual es problemático en poblaciones rurales dispersas) conduciendo a mayores reducciones de la economía sumergida rural que aumentos en los castigos. El artículo concluye así reivindicando un mayor énfasis en las áreas rurales en mejorar la moral fiscal para hacer frente a la economía sumergida en Europa y más allá.

Palabras clave: Sector informal, moral fiscal, evasión fiscal, economías rurales, Unión Europea.

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Introduction

This paper evaluates different policy approaches for tackling the rural shadow economy. Conventionally, the dominant approach has been to view participants as rational economic actors who engage in the shadow economy when the pay-off is greater than the expected cost of being caught and punished (Allingham and Sandmo, 1972). To tackle the shadow economy, therefore, efforts are made to increase the actual or perceived risks of detection and costs. The problem in rural areas is that the risks of detection are small due to the practicalities of policing such areas. As such, what might be applicable in densely populated urban areas is less so in sparsely populated rural areas. Since the turn of the millennium, however, a new approach has emerged that may be better suited to rural areas. This 'social actor' approach views participation as occurring when tax morale, defined as the intrinsic motivation to pay taxes (Alm *et al.*, 2010; Cummings *et al.*, 2009; Kirchler, 2007; Murphy, 2008; Torgler, 2007), is low. It therefore seeks to improve tax morale by aligning the informal institutions (i.e., the norms, values and beliefs of citizens) with the codified laws and regulations of the formal institutions (Alm *et al.*, 2012; Alm and Torgler, 2011; Torgler, 2012). The aim of this paper is to evaluate which of these approaches is better suited to tackling the rural shadow economy. This will reveal that in rural areas, the conventional approach of trying to enforce compliance is less relevant and effective than the

new emergent approach which seeks to align rural citizens' norms, values and beliefs with the codified laws and regulations so as to encourage self-regulation.

To commence, therefore, section 2 reviews these rational economic actor and social actor approaches so as to formulate some hypotheses for evaluation with regard to rural populations. Section 3 then introduces the data and methodology to evaluate these hypotheses, namely a multilevel logistic regression analysis of 9,677 face-to-face interviews conducted in 2013 with rural populations across the 28 member states of the European Union (EU28). The results are reported in section 4. Finding a significant association between participation in the rural shadow economy and the perceived risk of detection on the one hand, and the level of tax morale on the other, as well as complex interaction effects, section 5 then concludes by discussing the need for greater emphasis on improving tax morale when tackling the rural shadow economy in Europe and beyond.

From the beginning, however, the shadow economy must be defined. Reflecting the consensus in the literature, the shadow economy refers to paid work which is legal in all respects other than it is not declared to the authorities for tax, social security or labour law purposes (Aliyev, 2015; Barsoum, 2015; Boels, 2014; European Commission, 2007; Hodosi, 2015; OECD, 2012; Williams, 2014a, 2014b). If it is not legal in all other respects, it is not considered part of the shadow economy. If the goods and/or services exchanged are illegal (e.g., selling stolen cattle) for instance, then this is not part of the shadow economy but the wider criminal economy.

Tackling the rural shadow economy: literature review and hypotheses development

In the developing world, it is widely recognised that the shadow economy is extensive, and that it is more prevalent in rural than urban areas (ILO, 2013; Jütting and Laiglesia, 2009). Over the past few decades, it has been recognised that the shadow economy also persists in developed countries, albeit on a smaller scale. Indeed, Schneider and Williams (2013) estimate that it is equivalent to some 19 per cent of GDP in the developed world. Is it similarly the case, nevertheless, that it is more prevalent in rural than urban areas in developed nations?

However the highly contested concept of 'the rural' is defined, a popular prejudice has been that the shadow economy is more rife in rural than urban areas. On the one hand, this is based on an assumption that there is a process of lagged adaptation in rural areas, which are seen as slower to undergo 'development' and 'modernisation', meaning that the shadow economy is more prevalent (La Porta and Schleifer, 2014). On the other hand, the shadow economy is seen as more prevalent in rural populations due to the stronger social bonds, community spirit and strength of informal institutions that act as a substitute for formal institutions. Despite such assumptions about its greater prevalence in rural than urban areas, the evidence is weak. Most studies of the prevalence of the rural shadow economy in developed nations have been conducted in North America, which reveal that it is less prevalent if anything than in urban areas (e.g., Brown *et al.*, 1998; Jensen *et al.* 1995; Nelson and Smith, 1999, 2009; Slack, 2007; Slack and Jensen, 2009). In Europe, however, the evidence is scant. An English localities survey reveals that the shadow economy is less prevalent in rural than urban areas (Williams, 2004). A more recent analysis of the 2013 Eurobarometer survey on the shadow economy in the European Union, moreover, reveals that 3.8 per cent of rural participants reported working in the shadow economy in the previous 12 months compared with 5.2 per cent of urban dwellers (Williams and Horodnic, 2017). What little evidence is available, therefore, suggests that it is less prevalent in rural than urban areas.

The reason it is perhaps less prevalent in rural areas than popularly assumed is because of the systemic changes in Europe's rural areas, namely: increased mobility; gentrification and rapid population change; a trend towards commuting rather than working in the community; the loss of younger people, not least due to high housing costs; the decline of shared facilities such as shops and schools; increasingly individualistic lifestyles, and the loss of distinctive rural culture, language and dialects, as well as other intangible qualities (e.g., Bradley, 1987; Hedges, 1999; Shucksmith, 2000).

Its character also appears to differ in rural compared with urban areas. As Williams (2004, 2006) reveals in one of the few studies to compare urban and rural differences in its nature, the shadow economy in rural England is more composed of self-employment and less composed of waged employment compared with urban areas. When self-employment in the shadow economy is conducted in rural areas, moreover, it is more likely to be for close social relations (kin, friends, and acquaintances) previously known to the supplier than in urban areas. This is further reinforced in a study at the EU28 level. Reporting a 2013 Eurobarometer survey, Williams and Horodnic (2017) come to the same conclusions about the nature of the shadow economy in rural areas compared with urban areas in Europe.

How, therefore, can the rural shadow economy be tackled? Reviewing the literature, two distinct approaches can be identified. Each is here considered in turn.

Rational economic actor approach

The roots of the rational economic actor approach are in the classical works of both Jeremy Bentham (Bentham, 1788) and Cesare Beccaria (Beccaria, 1797). In their utilitarian theory of crime, citizens are seen as rational actors who evaluate the opportunities and risks and break the law if the expected penalty and probability of being caught is smaller than the benefits to be gained by disobeying the law. This rational actor approach was popularised by Becker (1968) in the late 1960s. During the early 1970s, Allingham and Sandmo (1972) then applied Becker's rational actor approach to tax non-compliance by arguing that the non-compliant are rational economic actors who will evade tax as long as the pay-off is greater than the expected cost of being caught and punished. The intention thus became one of changing the cost/benefit ratio confronting those engaged or thinking about participating in non-compliance. Akin to the study of crime, this was achieved by increasing the actual and/or perceived risks of detection and thus costs. This was subsequently widely adopted (e.g., Grabiner, 2000; Hasseldine and Li, 1999; Job et al., 2007; Richardson and Sawyer, 2001).

Despite its wide acceptance and common usage, the evidence that increasing the risks of detection elicits compliance is less than conclusive (Alm *et al.*, 1992, 1995; Slemrod *et al.*, 2001; Varma and Doob, 1998). Moreover, the problem in rural areas is that the risks of detection are lower due to the practicalities of policing such areas. Enforcing compliance in dispersed rural populations is both expensive and more ineffective unless considerable resources are devoted to doing so. Indeed, a recent study in Greece reveals that the labour inspectorate does not conduct inspections of the agricultural sector, meaning that farm diversification practices in the shadow economy are wholly undetected (ILO, 2017). To evaluate the validity of this rational economic actor approach in relation to rural populations engaged in the shadow economy, therefore, the following hypothesis can be tested:

Rational economic actor hypothesis (H1): the greater the perceived penalties and risk of detection, the lower is the likelihood that rural populations will participate in the shadow economy, *ceteris paribus*.

H1a: the greater are the perceived penalties, the lower is the likelihood that rural populations will participate in the shadow economy.

H1b: the greater are the perceived risks of detection, the lower is the likelihood that rural populations will participate in the shadow economy.

Social actor approach

Since the turn of the millennium, an alternative policy approach has emerged which asserts that individuals are not always rational economic actors since many voluntarily comply even when the benefit/cost ratio suggests that they should not (Alm *et al.*, 2010; Kirchler, 2007; Murphy, 2008; Murphy and Harris, 2007). A 'social actor' model has thus emerged viewing participation in the shadow economy to result from low tax morale, by which is meant a low intrinsic motivation to pay taxes (Alm and Torgler, 2006, 2011; Cummings *et al.*, 2009; McKerchar *et al.*, 2013; Torgler, 2011; Torgler and Schneider, 2007). The goal is therefore to improve tax morale so that they self-regulate (Kirchler, 2007; Torgler, 2007, 2011).

The roots of this approach are in the work of Georg von Schanz (1890) who well over a century ago highlighted the relevance of a tax contract between the state and its citizens. Some six decades later, the German 'Cologne school of tax psychology' measured tax morale (see Schmolders, 1952, 1960, 1962; Strümpel, 1969) and saw it as strongly related to tax non-compliance (Schmolders, 1960). Although the rise of the rational economic actor model from the 1970s resulted in the demise of such a social actor approach, since the turn of the millennium, it has begun to come to the fore again (Alm *et al.*, 2012; Kirchler, 2007; Torgler, 2007, 2011). The goal is to raise tax morale so as to elicit greater voluntary commitment to compliant behaviour (Alm and Torgler, 2011; Torgler, 2012; Williams, 2014a).

Representing this tax morale approach through the conceptual lens of institutional theory (Baumol and Blinder, 2008; North, 1990), which views all societies as possessing both formal institutions, which are codified laws and regulations that define the legal rules of the game, as well as informal institutions, which are the 'socially shared rules, usually unwritten, that are created, communicated and enforced outside of officially sanctioned channels' (Helmke and Levitsky, 2004: 727), tax morale can be seen to measure the gap between the formal institutions (which we here term 'state morale') and informal institutions (here termed 'civic morale'). When this gap is large, tax morale will be low and participation in the shadow economy rife. The com-

mon view is that compared with urban areas, rural areas have traditionally been composed of stronger informal institutions and which are less aligned with the codified laws and regulations of the formal institutions (Williams and Horodnic, 2017). To evaluate the validity of adopting this policy approach towards tackling the rural shadow economy, therefore, the following hypothesis can be evaluated:

Social actor hypothesis (H2): the greater the tax morale, the lower is the likelihood of participation in rural populations in the shadow economy.

Competing or complementary approaches

At present, most governments adopt a rational economic actor approach in both urban and rural areas. Indeed, Williams *et al.* (2013) reveal that just 10 per cent of senior government officials view reducing tax morale as the most effective approach when tackling the shadow economy (most of whom are in Nordic nations). The majority view increasing the costs of the shadow economy (i.e., the level of punishments and risks of detection) as the most effective approach. Given this, some have viewed the social actor approach as an alternative to the rational economic actor approach (Eurofound, 2013; Williams, 2014a), but the vast majority have viewed them as complementary. In what is known as the 'slippery slope' approach, the view is that governments should pursue not only 'enforced' compliance by increasing the penalties and risks of detection and therefore the power of authorities, but also 'voluntary' compliance by improving tax morale and therefore trust in authorities (Kirchler *et al.*, 2008; Kogler *et al.*, 2015; Kastlunger *et al.*, 2013; Muehlbacher *et al.*, 2011; Prinz *et al.*, 2013; Wahl *et al.*, 2010). The assertion has been that when there is neither trust in authorities and authorities have no power, then the shadow economy will be more prevalent. When trust in, and/or the power of, authorities increases however, then the shadow economy is less prevalent. Grounded in this finding, the argument has been that pursuing both is the most effective means of tackling shadow work (Kogler *et al.*, 2015).

There is an emergent recognition however, that applying higher penalties and risks of detection might lead to different outcomes depending on the level of tax morale. In situations where there is already high tax morale for example, increasing the penalties and risks of detection might lead to greater non-compliance due to a breakdown of trust between the state and its citizens (Ayres and Braithwaite, 1992; Chang and Lai, 2004; Murphy and Harris, 2007; Tyler *et al.*, 2007). Until now, however,

little research has been conducted on their interactions and dynamics so as to understand the relationship between deterrents and tax morale. No research, moreover, has been conducted in rural areas regarding which is most effective. And neither has there been any research on their interactions and dynamics when applied in rural areas. To begin to evaluate the relationship between deterrents, tax morale and the rural shadow economy, therefore, the following hypothesis can be tested:

Interaction effects hypothesis (H3): the effect of perceived penalties and risk of detection on the likelihood of rural populations participating in the rural economy is different at varying levels of tax morale, *ceteris paribus*.

H3a: the effect of perceived penalties on the likelihood of rural populations participating in the rural economy participation is different at varying levels of tax morale, *ceteris paribus*.

H3b: the effect of perceived risk of detection on the likelihood of rural populations participating in the rural economy is different at varying levels of tax morale, *ceteris paribus*.

Methodology

Data

To analyse these hypotheses with regard to rural populations, data is reported from special Eurobarometer survey no. 402 conducted in 2013, which involved 9,677 face-to-face interviews undertaken with 'rural' respondents. These interviews were undertaken in the national language with rural adults aged 15 years and older. In each country, a multi-stage random (probability) sampling methodology was employed, with interviews varying from 500 in smaller countries to 1,500 in larger nations, to ensure that on the issues of gender, age, region and locality size, each country as well as each level of sample was representative in proportion to its population size. This sampling method thus resulted in a representative proportion of respondents from 'rural' areas in the sampling frame for each country, although the definition Eurostat uses of 'rural' varies from one member state to another (e.g., 'countryside' in Sweden, 'rural area' in Romania, 'village' in Hungary, and a commu-

nity with less than 2,011 inhabitants in Croatia). Besides respondents being defined in the survey sampling frame as 'rural', a question was also asked of all respondents regarding whether they viewed themselves as living in a 'rural area or village', a 'small/middle town' or 'large town'. Cross-tabulating the two sets of respondents, 97 per cent of respondents defined by the survey sampling frame as 'rural' respondents also self-classified themselves as living in a 'rural area or village'. We therefore deleted the 3 per cent of discrepancies. Our resultant sample of 9,677 'rural' respondents is thus composed not only of respondents classified by the sampling frame as 'rural' but also the respondents who self-classify themselves as living in a 'rural area or village'.

For the univariate analysis, a sample weighting scheme was used to obtain meaningful descriptive results, as recommended in the wider literature (Sharon and Liu, 1994; Solon *et al.*, 2013; Winship and Radbill, 1994) and the Eurobarometer methodology. For the multivariate analysis however, debate exists over whether to use a weighting scheme (Pfefferman, 1993; Sharon and Liu, 1994; Solon *et al.*, 2013; Winship and Radbill, 1994). Reflecting the majoritarian view, the decision was not to do so. It should also be noted that to facilitate analysis, we only included those respondents with no missing values in their responses, meaning that the total rural sample analysed in the multivariate analysis is 6,807 respondents.

Given that this is a sensitive topic, the interview schedule adopted a gradual approach towards the more sensitive questions. Firstly, the participants were asked attitudinal questions regarding the acceptability of various forms of shadow work (which enable their tax morale to be assessed) and their perceptions of the penalties and risks of detection. This was then followed by questions on whether they had purchased goods and services from the shadow economy and finally, whether they had participated in the shadow economy themselves.

Variables

To evaluate whether increasing the penalties and risks of detection, and higher tax morale, reduces the likelihood of rural populations engaging in the shadow economy in the EU28, the dependent variable used is a dummy variable with recorded value 1 for rural citizens who answered 'yes' to the question: 'Apart from a regular employment, have you yourself carried out any undeclared paid activities in the last 12 months?'

To evaluate the association between participation in the shadow economy and the policy approaches, three explanatory variables are used. Firstly, to evaluate whether the perceived risk of detection influences the participation of rural populations in the shadow economy, a dummy variable was used describing the perceived risk of being detected, with value 0 for a very small or fairly small risk and value 1 for a fairly high or very high risk. Secondly, to evaluate how penalties are associated with participation, a dummy variable was employed, describing the expected sanctions, with value 0 for those asserting that the normal tax or social security contributions would be due and value 1 for those stating that the normal tax or social security contributions due, plus there would be a fine or imprisonment. It should be noted at the outset that the use of such dummy variables does not of course allow a finer-grained understanding of for instance different levels of fines or a medium from a high risk of detection.

Third and finally, to evaluate the association between the participation of rural populations in the shadow economy and tax morale, a continuous variable was used by constructing an index of self-reported attitudes towards the acceptability of engaging in shadow work based on a 10-point Likert scale. Rather than use a single question to assess tax morale, this survey thus uses a range of questions by asking the following:

Now I would like to know how you would rate various actions or behaviours. For each of them, please tell me to what extent you find it acceptable or not. Please use the following scale: "1" means that you find it absolutely unacceptable and "10" means that you find it absolutely acceptable: (1) someone receives welfare payments without entitlement; (2) an individual is hired by a household for work and s/he does not declare the payment received to the tax or social security authorities even though it should be declared; (3) A firm is hired by a household for work and it does not declare the payment received to the tax or social security authorities; (4) a firm is hired by another firm for work and it does not declare its activities to the tax or social security authorities; (5) a firm hires an individual and all or a part of the wages paid to him/her are not officially declared and (6) someone evades taxes by not declaring or only partially declaring their income.

Collating the responses of these rural respondents to these six questions, and giving equal weighting to each response, an aggregate 'tax morale index' is constructed for each individual. It should be recognised, however, that there is no possibility on this Likert scale for a neutral response. The Cronbach's Alpha coefficient of

the scale is 0.87 which shows a good internal consistency of the scale (Kline, 2000). The index is represented here in the 10-point Likert scale original format. The lower the index value, the higher is the tax morale.

Drawing upon previous studies evaluating participation in the shadow economy in terms of the important socio-demographic and socio-economic variables influencing participation (Williams and Horodnic, 2015a, 2015b; Williams and Padmore, 2013a, 2013b), the control variables selected are:

- *Gender*: a dummy variable with value 0 for women and 1 for men.
- *Age*: a continuous variable indicating the exact age of the respondent.
- *Occupation*: a categorical variable grouping respondents by their occupation with value 1 for self-employed, value 2 for employed, and value 3 for not working.
- *Difficulties paying bills*: a categorical variable for the respondent difficulties in paying bills with value 1 for having difficulties most of the time, value 2 for occasionally, and value 3 for almost never/never.
- *People 15+ years in own household*: a categorical variable for people 15+ years in respondent's household (including the respondent) with value 1 for one person, value 2 for two persons, value 3 for three persons or more.
- *Children*: a dummy variable for the presence of children up to 14 years old in the household with value 0 for individuals with no children and value 1 for those having children.
- *Region*: a categorical variable for the region where the respondent lives with value 1 for East-Central Europe, value 2 for Western Europe, value 3 for Southern Europe, and value 4 for Nordic Nations.

In the following analysis, only those rural respondents were kept for which data on each and every control variable was available, which totalled 6,807 of the 9,677 rural respondents. Examining the reliability of the data, especially given the sensitive topic involved, the finding is that in 93% of the interviews, the interviewers reported good or excellent cooperation from the participant, and average cooperation in 6% of cases. Cooperation was found to be poor in only 1% of cases.

Analytical methods

To evaluate the relationship between the participation of rural populations in the shadow economy and the perceived penalties and risk of detection, and the level

of tax morale, a multi-level logistic regression analysis is conducted. The analysis was undertaken in two stages. The first stage was to estimate a baseline random intercept model with no explanatory variables, in order to identify whether a multi-level approach was appropriate. Having decided this was the case, the second stage involved developing a model with first-level (i.e., individual-level) variables and second-level variables (i.e., country-level) to understand their association with the likelihood of rural populations participating in the shadow economy and thus to test the three hypotheses. Below, we report the results.

Findings

Table 1 shows that 4 per cent of Europe's rural population report participating in the shadow economy during the past 12 months. Even if participation in the shadow economy is sensitive, resulting in this being a lower-bound estimate, 1 in 25 rural citizens reported doing so in the past year. The level of participation of the rural population in the shadow economy, nevertheless, varies by EU regions. To see this, member states are here grouped into four EU regions: Western Europe (Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands, and the UK); East-Central Europe (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia); Southern Europe (Cyprus, Greece, Spain, Italy, Malta and Portugal), and the Nordic countries (Denmark, Finland; Sweden).

Nordic nations have the highest participation rates among the rural population (7 per cent) whilst in East-Central Europe it is 4 per cent, 4 per cent in Southern Europe and 3 per cent in Western Europe. This should be cautiously interpreted however. Just because rural populations have higher participation rates in Nordic nations does not mean that the shadow economy is larger in rural areas in this region. Much participation in the rural shadow economy in Nordic nations is one-off and small-scale paid favours for close social relations such as kin, friends and acquaintances, as is also the case in Western Europe. Meanwhile, in East-Central Europe and Southern Europe, participation in the rural shadow economy more often involves waged employment and/or shadow self-employment undertaken on a more permanent and continuous basis (Eurofound, 2013; Williams and Horodnic, 2015c).

Table 1.

Supply of shadow work of EU citizens living in rural areas: expected sanctions, detection risk, and tax morale by EU region (N = 6,807)

	EU 28	Western Europe	Southern Europe	East-Central Europe	Nordic nations
Engaged in shadow work (%)	4	3	4	4	7
Expected sanctions (%)					
Tax or social security contributions due	34	41	30	46	22
Tax or social security contributions + fine or prison	66	69	70	54	78
Detection risk (%)					
Very small/ Fairly small	72	70	73	67	95
Fairly high/ Very high	28	30	27	33	5
Tax morality (mean)	3.7	4.1	2.6	4.2	2.8
Not engaged in shadow work (%)	96	97	96	96	93
Expected sanctions (%)					
Tax or social security contributions due	26	21	27	42	19
Tax or social security contributions + fine or prison	74	79	73	58	81
Detection risk (%)					
Very small/ Fairly small	60	60	60	56	69
Fairly high/ Very high	40	40	40	44	31
Tax morality (mean)	2.2	2.1	2.1	2.7	1.9

Turning to the relationship between the participation of rural populations in the shadow economy and the various policy approaches, Table 1 reveals that rural dwellers participating in the shadow economy perceive the expected sanctions and risk of detection as lower than those not engaging in such work; 34 per cent of those working in the rural shadow economy consider that only the normal tax or social security contributions will be due if caught compared with just 26 per cent of those not engaged in such shadow work. Similarly, 72 per cent of those rural populations engaged in the shadow economy perceive the risk of being detected as very small or fairly small, compared with 60 per cent of those not engaged. Those engaging in the rural shadow economy, moreover, have a lower level of tax morale (3.7) than those

rural populations not participating in the shadow economy (2.2). This pattern is the same across all EU regions. As such, rural populations participating in the shadow economy across all EU regions believe the sanctions are lower, there is a smaller risk of detection and possess a lower tax morale than those not participating in the shadow economy.

To evaluate whether these are significant associations when other control variables are taken into account and held constant, as well as the interaction effects, the first stage was to estimate a baseline random intercept model with no explanatory variables to identify whether a multi-level approach was appropriate. This showed that 19 per cent of the variance in supplying work in the shadow economy was accounted for at the country level (Wald = 7.08, df=1, $p < 0.01$), indicating significant variation between countries in the prevalence of the rural shadow economy. Having determined that the multilevel mixed-effects logistic regressions should be used, the second stage involved developing a model including both, individual-level explanatory variables and their interactions, and country-level explanatory variables, to test the three hypotheses.

Table 2 reports the results of a multilevel mixed-effects logistic regression analysis of the participation of rural populations in the shadow economy in the EU28. This displays that men are significantly more likely than women to participate in the shadow economy in rural Europe, and so too are younger people, those living in smaller households, and facing difficulties in paying the household bills. Compared with the self-employed however, the employed and unemployed are less likely to participate. This clearly reveals the population groups that need to be targeted in rural Europe in terms of the population groups most likely to participate.

Analysing the policy approaches, the first finding is that there is not a statistically significant association between the likelihood of rural populations engaging in the shadow economy and the perceived level of penalties when other variables are introduced and held constant (refuting H1a). However, those rural populations considering the risk of being caught as fairly high or very high are less likely to engage in the shadow economy than those who consider the risk of being caught as fairly small and very small (confirming H1b). These results, therefore, validate the rational economic actor approach adopted by many governments but only in relation to the fact that increasing the risk of detection appears to reduce the likelihood of rural populations participating in the shadow economy.

Table 2.
Multilevel mixed-effects logistic regression of propensity to participate in shadow work of EU citizens living in rural areas

	Model 1			Model 2		
	b	se(b)	Exp(b)	b	se(b)	Exp(b)
Fixed part						
Expected sanctions (CG: Tax or social security contributions due)						
Tax or social security contributions + fine or prison	-0.181	0.133	0.835	-0.733	***	0.274 0.481
Detection risk (CG: Very small/ Fairly small)						
Fairly high/ Very high	-0.711	***	0.141 0.491	-0.544	*	0.285 0.580
Tax morality	0.464	***	0.0340 1.590	0.382	***	0.0592 1.465
Gender (CG: Women)						
Men	0.908	***	0.133 2.479	0.908	***	0.133 2.479
Age (exact age)	-0.0244	***	0.00420 0.976	-0.0243	***	0.00421 0.976
Occupation (CG: Self-employed)						
Employed	-0.707	***	0.204 0.493	-0.687	***	0.205 0.503
Not working	-0.598	***	0.202 0.550	-0.593	***	0.203 0.553
Difficulties paying bills (CG: Most of the time)						
From time to time	-0.520	***	0.180 0.594	-0.512	***	0.180 0.599
Almost never/ never	-1.100	***	0.183 0.333	-1.094	***	0.183 0.335
People 15+ years in own household (CG: One)						
Two	-0.402	**	0.173 0.669	-0.422	**	0.173 0.656
Three and more	-0.254		0.183 0.776	-0.269		0.183 0.764
Children (CG: No children)						
Having children	-0.0164		0.144 0.984	-0.00808		0.144 0.992
Region (CG: East-Central Europe)						
Western Europe	-0.0558		0.383 0.946	-0.0707		0.384 0.932
Southern Europe	-1.342	***	0.491 0.261	-1.353	***	0.492 0.258
Nordic Nations	0.764		0.544 2.148	0.759		0.545 2.136
Interaction terms						
Expected sanctions: Tax or social security contributions + fine or prison x Tax morality						
				0.149	**	0.0657 1.161
Detection risk: Fairly high/ Very high x Tax morality						
				-0.0471		0.0665 0.954
Constant	-1.983	***	0.458 0.138	-1.663	***	0.498 0.190

Observations	6,807	6,807
Random part		
Country-level variance	0.5501***	0.5530***
(Standard error)	0.2119	0.2135
Number of groups (countries)	28	28
Variance at country level (%)	14.33	14.39

Notes: Significant at *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All coefficients are compared to the benchmark category, shown in brackets.

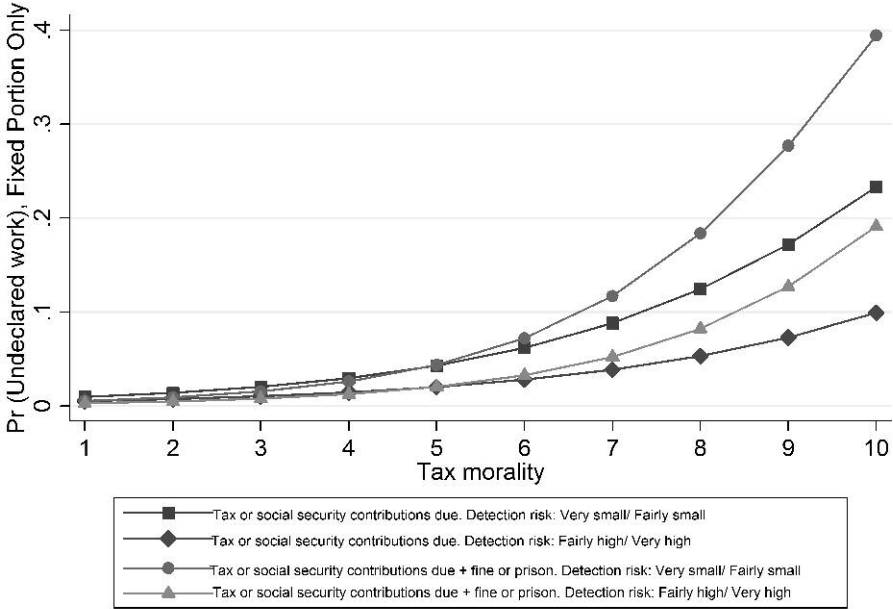
Turning to the social actor approach, the finding again is that there is a significant association between the likelihood of rural populations participating in the shadow economy and the level of tax morale. The higher is the tax morality of rural populations, the lower is their propensity to participate in the shadow economy (confirming H2). This multilevel mixed-effect logistic regression analysis thus displays a strong association between the likelihood of rural populations participating in the shadow economy and not only the perceived risk of detection but also the level of tax morale.

Is it the case therefore, that greater decreases in the level of participation of rural populations in the shadow economy would be achieved if a government combines the conventional rational economic actor approach of increasing the level of punishments and/or risk of detection, with the social actor approach of improving tax morale? Model 2 in table 2 introduces the interaction terms between tax morale and the level of punishment and risk of detection respectively, in order to investigate whether these two deterrence measures have different impacts on engaging in the rural shadow economy at different levels of tax morale. This reveals that the effect of the perceived penalties on the likelihood of rural populations participating in the shadow economy varies at different levels of tax morale (confirming H3a). However, the interaction term between the risk of detection and tax morale is not significant overall (refuting H3b).

To further analyse these interactions between the perceived level of punishment, the perceived risk of being detected and tax morality, Figure 1 presents the predicted probabilities of a 'representative' European rural citizen participating in the shadow economy by their level of tax morale and what they perceive as the likely penalties and risk of detection. Here, the 'representative' European rural citizen is derived by taking the mean and modal values of the other independent variables. As such, the representative rural citizen in the EU28 is a 48 year-old not working woman, living in a two-person

household, located in Western Europe, with no children, who never or almost never has financial difficulties in paying the household bills. This, to reiterate, is the 'representative' European rural citizen in this survey data. Whether this is close to the actual representative European rural citizen is of course a matter of debate. The important point here, however, is that this representative citizen is here used purely to provide a graphic portrayal of the interactions between deterrence measures and tax morality, and how these influence the likelihood of their participation in the shadow economy. As Figure 1 displays, as trust in authorities (i.e., tax morale) worsens, the predicted odds of this representative EU rural citizen participating in the shadow economy is smaller when the power of authorities is strongest (i.e., the risk of being detected is fairly high or very high and s/he expects that the punishment for such a behaviour will be to pay the tax or social contribution due plus they will receive a fine or imprisonment). This reveals the importance of increasing the level of deterrence to prevent participation in the rural shadow economy in contexts where tax morale is low.

Figure 1.
Predicted probability of participation in the shadow economy of a "representative" rural citizen in the EU:
by expected sanctions, detection risk, and tax morality



Discussion and Conclusions

This paper has evaluated the effectiveness of the conventional rational economic actor approach which seeks to increase the penalties and risks of detection, and the social actor approach which seeks to improve tax morale, in tackling the rural shadow economy in the EU. The finding is that the engagement of rural populations in the shadow economy decreases as the perceived risks of detection increase, as well as when tax morale improves. Therefore, both the conventional rational economic actor and social actor approach are effective in reducing the participation of rural populations in the shadow economy. These are thus not alternative competing approaches but can be combined when tackling the shadow economy, as the 'slippery slope' approach has argued (Kirchler *et al.*, 2008). Importantly for public authorities, nevertheless, this depends on the tax morale context. As shown in the case of the 'representative' EU rural citizen, when trust in authorities and thus tax morale is relatively high, increasing the power of authorities has only a minor impact on the probability of this average rural citizen participating in the shadow economy, and only in relation to changes in the perceived risk of detection. It is only when trust in authorities worsens and tax morale is low (moving above a score of 5) that the power of authorities (i.e., the perceived level of punishment and risk of detection) has a more significant impact on the predicted odds of the representative rural citizen engaging in the shadow economy. In such low trust rural environments, the greater the power of authorities, the lower is the probability of participation in the shadow economy, with higher risks of detection reducing the predicted odds of participation in shadow work to a greater extent than higher perceived punishments. The problem, of course, is that increasing the risks of detection in dispersed rural populations is expensive and largely ineffective due to the difficulties of policing such areas.

If the rural shadow economy is to be reduced, therefore, it is primarily tax morale that needs to be addressed. In rural populations where there is trust in authorities, increasing the perceived level of penalties and risk of detection has no impact on the probability of participating in the shadow economy. Deterrents are only influential when tax morale is low. The currently widely used rational actor approach therefore needs to be at a very minimum complemented by a social actor approach.

What policy measures are therefore required to improve tax morale? To answer this, we here conceptualise low tax morale through the lens of institutional theory as

a measure of the lack of alignment of the laws, codes and regulations of formal institutions and the norms, beliefs and values of informal institutions (Helmke and Levitsky, 2004; Webb *et al.*, 2009). As such, two sets of policy initiatives can be used to reduce the gap between the formal institutions ('state morale') and informal institutions ('civic morale'), and thus improve tax morale and in doing so, reduce participation in the shadow economy.

On the one hand, measures can be adopted to alter the norms, values and beliefs regarding the acceptability of shadow work. Firstly, campaigns can be designed to raise awareness about the benefits of legitimate work and the costs of participating in the shadow economy, and secondly, initiatives can be used to educate citizens about the benefits of taxation in terms of the public goods and services received for the taxes they pay. Such policy initiatives might range from introducing into the civics curriculum in education the issue of taxation, through letters to taxpayers about how their taxes are being spent, to signs stating 'your taxes paid for this' on rural roads, rural hospitals, doctors surgeries, and schools.

On the other hand, however, a reform of formal institutions is also required, especially in member states where formal institutional deficiencies produce a lack of trust in government. Firstly, this requires policy initiatives to change the macro-level conditions that lead to lower tax morale, such as by increasing the level of expenditure on active labour market policies to support vulnerable groups and the level of expenditure on social protection (Autio and Fu, 2015; Dau and Cuervo-Cazurra, 2014; Thai and Turkina, 2014). Until now, much of this expenditure has been in urban areas. More attention to tackling rural social exclusion through active labour market policies would reduce the abundant supply of rural labour available to the shadow economy. Secondly, it involves changing how formal institutions operate. As previous studies show, voluntary compliance improves when citizens believe that the government will treat them in a respectful, impartial and responsible manner (Gangl *et al.*, 2013; Murphy, 2005); that they pay their fair share compared with others (Kirchgässner, 2010, 2011; Molero and Pujol, 2012), and that they receive the goods and services they deserve given the taxes that they pay (McGee, 2005). Ensuring that rural populations perceive themselves as receiving their fair share compared with others and being treated equitably and impartially is therefore a necessary prerequisite for reducing the rural shadow economy. These findings, nevertheless, are based on just one dataset and are thus tentative.

The limitation of this research is that there is scant evidence on the nature of the rural shadow economy. No evidence-base exists on how rural dwellers differ from urban dwellers in terms of the sectors and occupations in which the shadow economy

operates, nor on how the labour market structure might affect participation in the shadow economy. Although there is anecdotal evidence that waged work in the shadow economy is prevalent in seasonal agriculture in the form of day labour, and that there is much self-employment in the shadow economy resulting from farm diversification strategies (e.g., the provision of tourist accommodation), this at the moment remains merely anecdotal. Neither is there evidence on whether rural dwellers in one European country might have more in common with city dwellers in another country than rural dwellers in other countries. Rigorous empirical evidence has not been collected either at a country or a European level on the rural shadow economy. As the European farmers union has recently explicitly recognized, future research is thus badly required on this issue (Geopa-Copa, 2016), ranging from small-scale qualitative to larger quantitative studies at the local, national and international scales. Until such time as this is known, it will be difficult to know what socio-demographic groups, sectors or occupations to target in rural areas with these policy measures.

In sum, if this paper stimulates the collection of new evidence on the rural shadow economy and further evaluations of the policy approaches for tackling the shadow economy in other rural contexts beyond Europe, then it will have fulfilled one of its intentions. If this then results in governments tailoring the range of policy approaches and measures used to reflect the rural context, rather than simply applying the deterrence approach used in urban environments, then it will have fulfilled its wider objective.

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Appendix

Table A1.
Variables used in the analysis:
definitions and descriptive statistics

Variables	Definition	Supply of work in shadow economy (N = 6,807)	
		Mode or mean	Min / Max
Supply of shadow work (dependent variable)	Dummy variable of work in shadow economy conducted in the last 12 months	Not engaged in shadow work (96%)	0 / 1
Expected sanctions	Dummy for the penalties associated with participation in shadow activities	Tax or social security contributions+ fine or prison (73%)	0 / 1
Detection risk	Dummy for the perceived risk of detection	Very small/ Fairly small (60%)	0 / 1
Tax morality	Constructed index of self-reported tolerance towards tax non-compliance	2.3	1 / 10
Gender	Dummy for the gender of the respondent	Female (50%)	0 / 1
Age	Respondent exact age	48 years	15 / 95
Occupation	Respondent occupation in categories	Not working (48%)	1 / 3
Difficulties paying bills	Respondent difficulties in paying bills in categories	Almost never/ never (64%)	1 / 3
People 15+ years in own household	People 15+ years in respondent's household (including the respondent) in categories	Two (50%)	1 / 3
Children	Dummy for the presence of children (up to 14 years old) in the household	No children (71%)	0 / 1
Region	Region where the respondent lives in categories	Western Europe (53%)	1 / 4

