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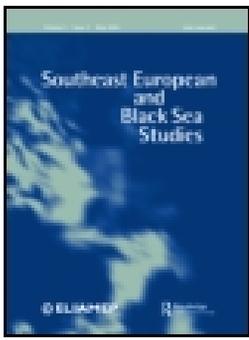
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Evaluating the relationship between marginalization and participation in undeclared work: lessons from Bosnia and Herzegovina

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ABSTRACT

This paper tests competing hypotheses on the relationship between marginalization and participation in undeclared work. The 'marginalization' thesis views undeclared work as conducted primarily by marginalized populations among which young, unemployed and economically fragile people dominate. A competing 'reinforcement' thesis argues that undeclared work is conducted disproportionately by those in declared jobs and thus that the undeclared economy reinforces, rather than reduces, the inequalities produced by the declared economy. To evaluate who engages in undeclared work and to test these competing theses, data is reported from a 2015 survey of 6,021 randomly selected adult respondents in Bosnia and Herzegovina. Reporting the marginal effects of a Probit regression analysis, the finding is that marginalized groups (the unemployed, younger age groups, those with fewer years in formal education, lower-income households, rural populations and those from poorer regions) are all significantly more likely to participate in undeclared work. The implications for theory and policy are discussed, along with the limitations of the study and future research required.

Introduction

This paper is focused on undeclared work, which refers to paid activities not declared to the authorities for tax, social security and/or labour law purposes when they should be declared (European Commission 2014; OECD 2012; Schneider 2013; Williams 2014; Williams and Windebank 1998). For several decades, the dominant view has been that undeclared work exists in the margins, disproportionately conducted by populations living in marginalized areas, such as less affluent regions and peripheral rural areas (ILO 2018), and by marginalized socio-demographic and socio-economic groups, such as women, unemployed people, the less educated and those in financial difficulty (Brill 2011; Slavnic 2010; Taiwo 2013). Nevertheless, this is more often an assumption than an evidence-based finding. A competing 'reinforcement' thesis argues that undeclared work is conducted disproportionately by those in declared jobs and thus that the undeclared economy reinforces, rather than reduces, the inequalities produced by the declared economy. Thus, the aim of this

paper is to evaluate the validity of the 'marginalization' versus its competing 'reinforcement' thesis to advance the evidence-based understanding of who engages in undeclared work. To do this, 2015 survey data is reported of 6,021 randomly selected respondents aged between 16 and 65 years old in Bosnia and Herzegovina.

Therefore, knowledge about undeclared work is advanced in several distinct ways. Theoretically, by evaluating who engages in undeclared work, this paper provides an evidence-based evaluation of the marginalization thesis by examining whether important causal factors of marginalization such as gender, age, education, and employment status, influence participation in undeclared work. Empirically, meanwhile, this paper provides one of the first evaluations of the characteristics of the undeclared labour force in Bosnia and Herzegovina. The size of undeclared economy in this country is estimated to be around 30% of GDP (Pasovic and Efendic 2018), with indications that both (formally) employed and unemployed individuals engage in undeclared economy, as well as that differences in age, gender and regions might drive greater participation in undeclared economy (A. Efendic and Williams 2018; Williams and Efendic 2020). Such a sample provides a fertile ground for investigation of the 'marginalization' versus 'reinforcement' theses, which remains scientifically unexplored. Thus, in terms of policy implications, this paper advances understanding by identifying the populations to be targeted and reviews the various policy approaches that might be adopted by policy makers.

In the next section, therefore, a brief review is undertaken of the competing theorizations of those who participate in undeclared work. This will reveal that although the dominant view is that marginalized populations are more likely to participate in undeclared work, the advent of agency-oriented explanations, which view such endeavours as conducted out of choice rather than necessity, has led to this being questioned. To evaluate the validity of these competing theorizations, the third section introduces a representative survey of randomly selected respondents in Bosnia and Herzegovina used to conduct this research, whilst the fourth section reports the results. Finding that nearly all marginalized groups are significantly more likely to participate in undeclared work is reported in the following section, while the penultimate section contains robustness check of the reported results. The final section concludes by discussing the theoretical and policy implications, along with the limitations of this study and future research required.

Literature review

In recent decades, undeclared work has attracted interest from policymakers and academics because it has been recognized as persistent and extensive, even in developed economies (see Williams 2019; Williams and Schneider 2016). One of the most heated current debates in this literature is over who participates in the undeclared economy. On the one hand, a 'marginalization' thesis views undeclared work as conducted by marginalized populations. On the other hand, a 'reinforcement' thesis asserts that undeclared work is conducted disproportionately by those benefiting most from declared work and that undeclared work therefore reinforces, rather than reduces, the disparities produced by declared work.

Take, for example, the unemployed. The marginalization thesis asserts that the unemployed are disproportionately engaged in undeclared work due to their exclusion

from the declared labour market (Ahmad 2008; Castree et al. 2004; Katungi et al. 2006; Rubić 2013; Sasunkevich 2014; Surdej and Ślęzak 2009). Undeclared work is seen to provide the unemployed with a hidden means of livelihood and in doing so, to offset the disparities produced by the declared economy. This belief that undeclared work is disproportionately conducted by the unemployed, however, is more an *a priori* assumption rather than an evidence-based finding. Indeed, the evidence supporting this assertion derives from small-scale studies of particular populations in Belfast (Leonard 1994), Brussels (Kesteloot and Meert 1999) and Romania (Stănculescu 2005).

Over the past few decades, a reinforcement thesis has emerged arguing the inverse, namely that undeclared work is disproportionately undertaken by those in declared jobs and thus that the undeclared economy reinforces, rather than reduces, the inequalities produced by the declared economy (Kaitedlidou et al. 2011; MacDonald 1994; Moldovan and Van de Walle 2013; Pfau-Effinger and Sakač Magdalenić 2009). Again, the evidence supporting this thesis has been small-scale studies based on small samples. These are largely studies of individual western European countries (Foudi et al. 1982; Pahl 1984; Pfau-Effinger and Sakač Magdalenić 2009; Van Geuns et al. 1987; Williams 2001, 2004; Williams and Windebank 2001) and north European nations (Krumplyte and Samulevicius 2010; Persson and Malmer 2006). Pedersen (2003), for example, identifies that the unemployed constitute only a small proportion of the undeclared workforce: 20.7% in Germany, 9.9% in Denmark and 9.2% in the UK.

When examining who participates in undeclared work, this debate between the marginalization and reinforcement theses has extended well beyond the employment status of participants. Similar debates have occurred around spatial variables. The marginalization thesis has asserted that participation in undeclared work is greater in less affluent global regions (ILO 2012; Williams 2013), poorer countries (Schneider 2013; Schneider and Williams 2013; Williams 2015), less wealthy regions (Kesteltoot and Meert 1999; Williams and Windebank 2001) and more prevalent in peripheral rural areas than urban areas (Button 1984; Williams 2010, 2011). A similar view exists when examining socio-demographic and socio-economic characteristics. Women are asserted to be more likely to participate in undeclared work than men (ILO 2013; Leonard 1994, 1998; Stănculescu 2005), as are the less educated (Brill 2011; Slavnic 2010; Taiwo 2013), and those with greater financial difficulties (Barbour and Llanes 2013; Katungi et al. 2006; Williams 2004).

This marginalization thesis that participation in undeclared work is concentrated in marginalized populations emerges out of, and is a central tenet of, two dominant theorizations of undeclared work. In modernization theory, undeclared work is a leftover from a previous mode of production and prevails in marginal enclaves not yet subjected to modernization and economic development (La Porta and Shleifer 2008, 2014). In political economy theory, undeclared work is a direct by-product of a deregulated open world economy (Castells and Portes 1989; Davis 2006; Meagher 2010; Slavnic 2010; Taiwo 2013). The decline in social protection and economic intervention accompanying de-regulation are viewed as resulting in those excluded from the declared economy and social protection being pushed into undeclared work as a means of survival (ILO 2014; Meagher 2010; Taiwo 2013). Undeclared work in political economy theory is therefore viewed as 'necessity-driven' endeavour conducted by marginalized populations excluded from the declared labour market and

social protection systems (Castells and Portes 1989; Gallin 2001; Williams and Round 2010).

However, this dominant marginalization thesis has been contested. Based on the view that necessity is not the only factor driving populations into undeclared work, it has been argued that it is not always marginalized populations who engage in undeclared work. Indeed, several studies reveal that undeclared work is more prevalent in affluent regions and localities (Evans et al. 2006; van Geuns et al. 1987; Williams 2004; Williams and Windebank 2001), those in declared jobs (MacDonald 1994; Pahl 1984; Renooy 1990; Williams 2001), among men (Lemieux et al. 1994; McInnis-Dittrich 1995) and those without financial difficulties (Williams 2004; Williams et al. 2013).

This reinforcement thesis arises out of two agency-oriented theorizations. On the one hand, a rational economic actor perspective has depicted undeclared workers as participating in undeclared work when the benefits outweigh the costs. From this perspective, burdensome regulations, high taxes and corruption among public sector officials increase the costs of declared work and lead people to voluntarily exit the declared economy and operate in the undeclared economy (De Soto 1989, 2001; Nwabuzor 2005). On the other hand, and based on institutional theory (North 1990), another agency-oriented theory adopts a 'social actor' approach. Undeclared work is viewed as illegal but socially legitimate activity that exists when the formal institutions are not in symmetry with the norms, values and beliefs that constitute the informal institutions (De Castro et al. 2014; Kistruck et al. 2015; Siqueira *et al.* 2016; Thai and Turkina 2014; Webb et al. 2009, 2013, 2014). When symmetry exists between formal and informal institutions, undeclared work only occurs unintentionally, such as due to a lack of understanding of the laws and regulations. However, when institutional asymmetry exists, the result is undeclared work. Indeed, the higher the asymmetry, the greater the level of undeclared work (Williams and Shahid 2016).

Given these two apparently mutually exclusive viewpoints on who engages in undeclared work, especially in the Western Balkans, the aim of this paper is to provide an evidence-based evaluation of the marginalization thesis by testing the following hypotheses:

Employment marginalization hypothesis

H1: The non-employed are more likely to participate in undeclared work than the employed.

Individual socio-demographic marginalization hypotheses

H2a: Women are more likely to participate in undeclared work than men.

H2b: Younger age groups are more likely to participate in undeclared work than older age groups.

H2c: Those with fewer years in formal education are more likely to participate in undeclared work than those spending longer in formal education.

Household socio-economic marginalization hypotheses

H3a: Those in lower-income households are more likely to participate in undeclared work than those in higher income households

H3b: Households with children are more likely to participate in informal work than households with no children.

Spatial marginalization hypothesis

H4: Those living in rural areas are more likely to participate in undeclared work than those living in urban areas. H4b: Those living in less affluent regions are more likely to participate in undeclared work than those living in more affluent regions.

H4c: Undeclared work will be lower when there is greater trust in government.

Until now, there has been scarce scientific evidence on participation in undeclared work in Bosnia and Herzegovina. On the one hand, reliance on informal institutions (A. Efendic et al. 2011) and the use of informal networking are viewed as widespread practices in this region (Ledeneva and Efendic 2021). All these informal practices underpin participation in undeclared work (Gordy and Efendic, 2019), which is indeed identified to be high and associated with substantial direct and indirect costs for the participants (A. Efendic and Ledeneva 2020). The size of the undeclared economy is estimated at 30% of GDP (Pasovic and Efendic 2018), while over 20% of the labour force is found to participate in the undeclared economy (Williams and Efendic 2020). On the other hand, what is the systematic pattern in undeclared economy participation remains unexplored. To fill this gap, our research provides empirical evidence based on a large survey, explained in the following section.

Data, variables and method

Data

Bosnia and Herzegovina is a country with around 3.5 million people (2013 census), a postwar society (Bosnian war 1992–1995), a transition economy and a Western Balkans state that aspires to become part of the European Union (EU potential candidate). Institutionally, it is composed of two entities, Federation BiH (FBiH), Republika Srspka (RSBiH), and one district, the District Brcko of BiH (DBBiH), including a cantonal level in FBiH (10 cantons) and municipal level in both entities. Such a diversified structure and institutional complexity is associated with often inefficient formal institutions, low trust in governments at different levels as well as a substitutive reliance on informal institutions and practices (A. Efendic et al. 2011).

The economic performance of BiH in recent pre-Covid-19 pandemic years has been characterized by modest economic growth which moved around 3% annually (CBBiH 2019), a high but decreasing unemployment rate which was around 16% in 2019 (SEEJGD 2020). Moreover, there has been a rather significant decline (over 10%) of the

working-age population over the last decade, caused to a large extent by a high negative net migration balance estimated to be around 13% of the population (Leitner 2021). There are quite significant external-sector imbalances (trade deficit over 20% of gross domestic product), which have fortunately been partly compensated for by a substantial amount of remittances of around 10% of GDP (CBBiH 2019). While indicators that capture the effects of the Covid-19 pandemic are still not fully available, there is enough indication to conclude that the performance at the labour market level is getting worse, economic outcomes of the business sector have diminished, while economic growth of the country was negative in 2020. What was happening in the undeclared economy during the pandemic time is certainly a topic for some future research.

The main characteristics of the labour market in BiH are a very low activity rate, which is about half of the EU average (around 40%), and high unemployment rates, especially for young people. According to the SEEJGD (2020), the labour force participation rate (aged 15+) was only 44% of the working-age population in 2015 (the year when the survey for this research was implemented). Similarly, the employment rate is also very low (32% in 2015), with unemployment being 28% in 2015. These data correspond very well to the survey data which we use later to investigate determinants of undeclared work participation.

To evaluate the relationship between different categories of population and participation in undeclared work, data are reported from 6,021 interviews conducted in 2015 by a professional market research agency with respondents aged between 16 and 65 years old in Bosnia and Herzegovina.[1] The interviews were conducted using computer-assisted telephone interviewing (CATI). The survey sample involved selection at 40 participants from each municipality so that the total number from all municipalities would be 6,000. The participants in each municipality were randomly selected using the closest birthday rule. On first contact, the interviewers asked about the number of persons living in the apartment or house in the specified age range. The interviewers then conducted the interview with the household member whose birthday was closest to the date they are interviewing. If that person was not at home, a call back was arranged. Five call backs occurred before omitting that telephone number. This ensured a random selection of respondents stratified by municipality. The final dataset comprised on average 44 interviews per municipality, with a minimum of 40 and a maximum of 46. Such data provide a high-quality representative sample of BiH population that can be used to assess the general performance of the declared and undeclared labour market in this country. Moreover, the dataset contains population weight indicators which are used to investigate if the results differ between the weighted and non-weighted data.

Variables

The dependent variable on participation in undeclared work derives from the question: '*Do you have some informal job(s) or activities which bring you some income?*'. Those answering 'yes' are defined as undeclared workers, which corresponds very well to the definition of undeclared work presented in the introductory section. The dependent variable for the regression analysis, *undeclwork*, therefore

relates to those who participate in undeclared work, including those who report only undeclared work but also those who have additionally a declared job but report some undeclared income and activities (i.e., their share is 7% in the full sample). Since we are testing the competing 'marginalization' versus 'reinforcement' hypotheses, such a sample nicely fits the research focus.

The control variables used, meanwhile, are related to those characteristics that previous studies reveal are associated with participation in undeclared work (Williams and Horodnic 2017a). These include:

- *Individual socio-demographic determinants* – typical indicators linked to respondents, such as age, gender, the level of education;
- *Household socio-economic determinants* – include indicators linked to household size and income;
- *Spatial determinants* – whether respondents live in a rural or urban/suburban areas, if they live in more or less affluent regions, and the level of trust in institutions for the administrative structure in Bosnia and Herzegovina, and for the municipalities at the lowest administrative level.

The variables used in the analysis are reported in Table 1 along with a short explanation.

Table 1. Descriptive statistics of the variables used for empirical modelling.

Variable	Explanation of variables	No. of obs.	Mean	Std. Dev.	Don't know
Dependent variable					
undeclwork	Undeclared job or income: 1 = yes; 0 = no	5,992	0.335	0.472	0.5%
Individual characteristics					
male	Gender: 1 = male; 0 = female	6,021	0.452	0.498	0.0%
age	Age of respondents: from 16 to 65	6,021	47.158	14.892	0.0%
noeducat	Education: 1 = no education; 0 = other	6,021	0.055	0.229	0.0%
primary_ed	Education: 1 = primary education; 0 = other	6,021	0.233	0.422	0.0%
second_ed	Education: 1 = secondary; 0 = other	6,021	0.543	0.498	0.0%
high_ed	Education: 1 = higher education; 0 = other	6,021	0.165	0.371	0.0%
dontknow_ed	Education: 1 = don't know; 0 = other	6,021	0.005	0.068	0.0%
Socio-economic characteristics					
nochild	Number of children: from 0 to 11	5,989	1.679	1.311	0.5%
low_income	Household income: 1 = 0 to 150 Euro; 0 = other	6,021	0.180	0.384	0.0%
med_income	Household income: 1 = 151–350 Euro; 0 = other	6,021	0.306	0.461	0.0%
high_income	Household income: 1 = 351- … Euro; 0 = other	6,021	0.362	0.481	0.0%
inc_dknw	Household income: 1 = don't know; 0 = other	6,021	0.237	0.425	0.0%
Spatial characteristics					
rural	Survey area: 1 = rural; 0 = urban, suburban	6,021	0.484	0.500	0.0%
fbih	Region: 1 = Federation BiH entity; 0 = other	6,021	0.573	0.495	0.0%
rsbih	Region: 1 = Republika Srpska entity; 0 = other	6,021	0.420	0.494	0.0%
dbbih	Region: 1 = Brcko District of BiH; 0 = other	6,021	0.008	0.087	0.0%
stategov	Confidence in State government; 1 min to 5 max	5,335	1.665	1.075	11.4%
entgov	Confidence in Entity government; 1 min to 5 max	5,305	1.677	1.090	11.9%
locgov	Confidence in Local government; 1 min to 5 max	5,316	1.739	1.147	11.7%
mnpc	Municipality code: from 1 to 143	6,021	73.259	41.409	0.0%
Other controls used in robustness checking					
wealth	Wealth proxy: (having savings, house, insurance, car, computer); range 0 nothing to 1 all of it.	5,700	0.462	0.242	5.3%
unemployed	Respondents is looking for a job; 0- no, 1-yes	6,001	0.207	0.405	0.3%
femploy	Respondents reporting formal job; 0- no, 1-yes	6,004	0.272	0.445	0.3%

Analytical method

The purpose of our empirical investigation is to evaluate the socio-demographic, socio-economic and spatial characteristics of those engaged in undeclared work to test the above-stated hypotheses. To do so, a probability empirical model (Probit) has been used as it fits the data (it is a binary response to the main question of interest – if respondents participate in undeclared work or not). This empirical strategy gives us the possibility of testing whether individual, socio-economic and spatial characteristics affect the probability of participation in undeclared work. Cluster robust standard errors are estimated with municipalities as clusters. Such an estimation strategy adopts a conservative approach to inference (A. Efendic and Pugh 2018). Our fully specified model can be written in the form of the following equation:

$$P(UNDECLWORK = 1 \ if \ LABFORCE = 1) = \Lambda(\beta_0 +$$
$$\hat{\beta}_1 \cdot MALE + \hat{\beta}_2 \cdot AGE + \hat{\beta}_3 \cdot NOEDUCAT + \hat{\beta}_4 PRIMARY\_ED + \hat{\beta}_5 \cdot SECOND\_ED$$
$$+ \hat{\beta}_6 \cdot NOCHILD + \hat{\beta}_7 \cdot LOW\_INCOME + \hat{\beta}_8 \cdot MED\_INCOME + \hat{\beta}_9 RURAL + \hat{\beta}_{10} \cdot FBIH$$
$$+ \hat{\beta}_{11} \cdot RSBIH + \hat{\beta}_{12} \cdot STATEGOV + \hat{\beta}_{13} \cdot ENTGOV + \hat{\beta}_{14} \cdot LOCGOV) + \hat{\varepsilon}$$

$$(1)$$

The variables are explained in Table 1, including some additional controls used as part of our robustness checking. P refers to Probit estimation, Λ signifies a function of independent variables, $\hat{\beta}_{0-14}$ are coefficients to be estimated and $\hat{\varepsilon}$ is the model error term. The variable *labforce* is used to estimate the model only for the subsample of labour force participants, i.e., those who are employed or looking for a job (around 45%), as the remaining working-age population is out of the labour force (around 55% of the sample). Such a distribution of the sample quite nicely captures the activity rate of working-age population which was 44.1% in 2015 (SEEJGD 2020). We do not report the Probit-estimated coefficients as they do not provide a directly useful quantification of the estimated relationships (these are available on request). We obtain the most interesting information for interpretation by looking at the marginal effects, which are estimated and reported in Table 3.

Findings

To evaluate H1 regarding whether the unemployed are more likely to engage in undeclared work than those employed, we start with descriptive statistics. The finding (reported in Table 1) is that 33% of the representative sample of respondents surveyed engaged in undeclared work. Some 7% of all respondents engage in undeclared work in addition to their regular declared job and 26% of all respondents receive their income only from undeclared work. Given that only 27% of all respondents have a declared job, undeclared work is far from an activity existing only in the margins of the labour market in Bosnia and Herzegovina. More respondents (33%) engage in undeclared work and activity than in declared work (27%), and of all in declared work, close to 30% also engage in undeclared work. As such, over one-quarter of all workers receive their income solely from undeclared work and over one-third of all workers receive income from undeclared work in addition to their declared work. For over three-quarters of undeclared workers,

therefore, their income from undeclared work is their only source of income from employment. This data supports hypothesis *H1* that the non-employed are more likely to participate in undeclared work than those employed. However, a more detailed investigation of this hypothesis will be done in the empirical model that we elaborate later as part of our robustness analysis.

Table 2. Distribution of undeclared workers.

%	BiH	AGE Young (16–35)	Old (35+)	GENDER Male	Female	URBAN/RURAL Urban	Suburb	Rural	REGION FBiH	RS	BD
NO	74	72	74	71	76	80	76	69	75	72	74
YES	26	28	26	29	24	20	24	31	25	28	26

Source: Authors. Note, these data do not include individuals having formal jobs and undeclared income simultaneously (around 7% of the sample). Descriptive statistics of variable *undeclwork* in Table 1, includes additionally those with formal jobs and who report some undeclared income as well.

Table 3. Probability of engaging in undeclared work: marginal effects (cluster robust standard errors with municipalities as cluster, population weighted results).

VARIABLES	(1) M1 – individual factors	(2) ME2 – individual and household factors	(3) M3 – all factors BASE MODEL	(4) M4 – BASE MODEL with municipal fixed effects	(5) M5 – BASE MODEL with only undeclared work
male	0.166***	0.175***	0.177***	0.177***	0.0526**
	(0.0245)	(0.0253)	(0.0274)	(0.0274)	(0.0248)
age	−0.00212*	−0.00340***	−0.00276*	−0.00276*	−0.00442***
	(0.00108)	(0.00123)	(0.00141)	(0.00141)	(0.00125)
noeducation	0.381***	0.289*	0.291*	0.291*	0.166
	(0.141)	(0.153)	(0.164)	(0.164)	(0.107)
primary_ed	0.119***	0.0642	0.00529	0.00529	0.0861**
	(0.0425)	(0.0433)	(0.0483)	(0.0483)	(0.0436)
second_ed	0.0613*	0.0350	0.0225	0.0225	0.0962***
	(0.0334)	(0.0330)	(0.0366)	(0.0366)	(0.0284)
nochild		0.0230**	0.0189	0.0189	0.00606
		(0.0116)	(0.0135)	(0.0135)	(0.0115)
low_income		0.135***	0.122***	0.122***	0.232***
		(0.0350)	(0.0334)	(0.0334)	(0.0301)
med_income		0.0147	0.0127	0.0127	0.0982***
		(0.0255)	(0.0277)	(0.0277)	(0.0269)
rural			0.0872***	0.0872***	0.0522**
			(0.0266)	(0.0266)	(0.0237)
fbih			0.145***	0.145***	0.0181
			(0.0205)	(0.0205)	(0.0145)
rsbih			0.192***	0.192***	0.0430***
			(0.0224)	(0.0224)	(0.0123)
stategov			0.0382	0.0382	0.0273
			(0.0328)	(0.0328)	(0.0238)
entgov			−0.0320	−0.0320	0.0180
			(0.0360)	(0.0360)	(0.0249)
locgov			−0.0134	−0.0134	−0.0521***
			(0.0218)	(0.0218)	(0.0166)
Observations	2,703	2,689	2,514	2,514	2,512

dy/dx is for discrete change of dummy variable from 0 to 1.
Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
The omitted categories in the model:
- for education is the higher education (*higher_ed*);
- for household income the highest level of income (*high_income*)
Note, the estimated coefficients for 'do not know' responses for education and income variables are not reported for reasons of space, but they are used in the model.
Source: Authors' calculations using STATA 14 (STATA 14, StataCorp, Texas, USA).

Examining these 26% of the respondents who receive their income solely from undeclared work, Table 2 provides some descriptive statistics on their characteristics. This reveals that younger people are slightly more likely to engage in undeclared work than older people, and men are more likely than women to engage in undeclared work. It is also the case that those living in rural areas are markedly more likely to engage in undeclared work than those living in urban areas, and that those living in the less economically developed regions (RSBiH) of the country are more likely to engage in undeclared work than those in the more affluent regions (FBiH and DBBiH). These descriptive findings, therefore, appear to support the marginalization thesis, which we explore further through our probability models.

To evaluate whether the marginalization thesis remains valid when other variables are held constant and controlled for Table 3 presents the marginal effects that result from a Probit regression analysis. Model 1 reports the marginal effects of individual characteristics only, while Model 2 reports that this model is extended with household socio-economic determinants. Model 3 is our baseline model that we interpret below, and it includes additional spatial determinants. Model 4 reports our baseline model is extended with municipal-fixed effects, while Model 5 reports the unweighted results, as all previous models are reported with population weights and cluster robust standard errors. It is important to note the stability of the key results across these different models.

Here, the results on the relationship between participation in undeclared work and relevant individual, household socio-economic and spatial variables (Table 3, Model 3) suggest that participation in undeclared work is significantly associated with gender. Men (*male*) are significantly more likely (17%) to engage in undeclared work compared with women. This refutes hypothesis *H2a. Women are not more likely to engage in undeclared work compared with men.* This is perhaps a result of the weakness of the declared labour market in Bosnia and Herzegovina in which women generally participate to a lower extent. Moreover, such a finding has been confirmed by in-depth regional research conducted as part of the INFORM project.[2] It has been reported that, traditionally, women in the undeclared economy rely on 'gender defined jobs' to support the family budget, including examples such as caring for elderly people and children, renting spare rooms, cleaning, and similar, but overall, there are more male participants in the undeclared economy (N. Efendic et al. 2018). Participation in undeclared work is also significantly associated with age (*age*). Younger groups are more likely to engage in undeclared work. Indeed, an increase in age by 1 year (between the ages of 16 and 65) reduces the probability of engaging in undeclared work by 0.3%. This confirms hypothesis *H2b. Younger age groups are more likely to participate in undeclared work than older age groups.*

Turning to the years in formal education, it is again the case that there is a significant association with participation in undeclared work. An additional level of education systematically decreases participation in undeclared work. For example, there is 29% higher probability of participation in undeclared work by individuals who did not complete their primary education compared with those with university degrees, and with a fully consistent pattern – lower education is associated with higher participation in undeclared work. This confirms hypothesis *H2c. Those with fewer years of formal education are more likely to participate in undeclared work than those spending longer in formal education.* However, there is no relationship

between whether children are present in the household and participation in undeclared work (refuting hypothesis *H2d*).

Examining trust in government, which the now dominant institutional theory has used to explain participation in undeclared work, the finding of this study is that there is a significant correlation. Undeclared work is less likely when there is greater trust in government (confirming hypothesis *H2e*). However, given the very specific and unique structure of government in Bosnia and Herzegovina, where local governments have considerable autonomy and power relative to national and regional level authorities, this is relevant only at the local government level, which suggests the importance of local governments when tackling undeclared work in Bosnia and Herzegovina.

Analysing the socio-economic characteristics of the households within which workers live, a strong significant association exists between household income and participation in undeclared work. As household income increases, participation in undeclared work is less likely. For example, there is 26% higher probability of participation in undeclared work by individuals coming from households who have no regular income. This confirms hypothesis *H3a*. *Those in lower-income households are more likely to participate in undeclared work than those in higher income household.*

However, there is no relationship between the size of households measured through the number of children present in the household and participation in undeclared work (we do not have enough evidence to confirm *H3b*).

Turning to the influence of spatial characteristics, the first finding is that those living in rural areas are more likely to participate in undeclared work than those living in urban/suburban areas (suggesting that we cannot reject *H4a*). There is a 9% higher participation in undeclared work by rural respondents (*rural*) compared with those from urban or suburban areas. This reinforces previous studies that highlight the higher participation in undeclared work in rural areas (Williams 2011; Williams and Horodnic 2017b). The second finding is that those living in less affluent regions are more likely to participate in undeclared work than those living in wealthier regions (the evidence supports *H4b*). There is a higher probability of participation in undeclared work in the Republika Srpska entity (*rsbih*) compared to the Federation of BiH (*fbih*) or District Brcko of BiH (*dbbih*), which are economically more developed regions.[3]

Examining trust in government, which the now dominant institutional theory has used to explain participation in undeclared work, the finding of this study is that there is no significant association. Undeclared work is less likely when there is greater trust in the government (hypothesis *H4c*), which in our case is not confirmed (insignificant influence of variables: *stategov, entgov* and *locgov*). However, given the very specific and unique structure of government in Bosnia and Herzegovina briefly discussed earlier, as well as very low trust to all institutions, with not so much variation between different government levels, this result is not surprising.

Robustness check of the main results

As part of robustness checks, more estimations have been conducted which are available in Table 3 or on request. First, a baseline model is run that controls for the effect of municipalities (Table 3, Model 4) in which all 143 municipal dummies are included in the model (*mnpc*). This estimate takes into account the fixed effects coming from

municipalities in the sample, which means that this model is estimated with over 150 variables and with more information. However, there is no difference with the baseline model results suggesting stability of the main finding to this change in specification. The same conclusion is arrived at when non-weighted data (Table 3, Model 5) is used, confirming the stability of the model to this change and a gain in the statistical significance of a variable measuring the size of households (*nochild*).

The next step was to explore further the effect of unemployment status in the model (and H1 hypothesis), which has a statistically significant influence if added to the initial models (Models 1–2) or the baseline model (Model 3). However, the problem of including (un)employment status raises conceptual and statistical problems linked to potential endogeneity. Conceptually, both employment and unemployment status are typically explained by age and education, which are indeed significant variables in a Probit model (Equation 1) that explains either employment or unemployment status of respondents as the dependent variable. Thus, when unemployment status is included into the base model (*unemployed*), these variables lose their significance confirming potential endogeneity, and implying that these influences might work through the employment status. It is the same conclusion if employment status is included (i.e., formal employment, *femploy*) in the model. Intuitively discussed, the effect of unemployment is statistically significant in all these at around 25% (a probability of higher participation in undeclared work by unemployed). While such results are aligned with the H1 hypothesis, the belief is that this variable should not be part of the baseline specification; this is linked to the potential endogeneity of this variable and the limitations to work on this issue more in cross-sectional data. The same conclusion exists for formal employment status that also has a statistically significant effect, suggesting a lower participation of those having formal jobs in undeclared work by 34%, and again supporting marginalization arguments and H1 hypothesis.

Additionally, included has been a variable proxying wealth (*wealth*) of respondents (if respondents report having savings + house + insurance + car + computer) to the baseline model (Model 3), but it does not come with a statistically significant influence. Thus, there is inconclusive evidence. However, this proxy variable does not necessarily capture differences between respondents in absolute wealth, which is probably more important for the model, as having a house in different regions or areas (e.g., urban versus rural) is structurally different in the context of its real value. Moreover, the amount of savings between different respondents who report it is not known. Thus, more data is needed to check the wealth influence on the 'marginalization' or 'reinforcement' hypothesis with more confidence. Consequently, it is omitted from the baseline model although the main findings with this extension do not change; the same variables are statistically significant, with the same estimated signs and almost fully equal effects. The baseline model is robust to this addition.

Under the estimation strategy, labour force participants have been used to exclude those not participating in the labour market. However, when a model is run with the full sample of the data, again, generally consistent results are obtained with the key conclusions and it is here reported as an additional robustness check of the model.

Finally, following Williams and Efendic (2020), a model is run with undeclared participants only, i.e., those who have a formal job and also report some undeclared activities are excluded. This sample does not fit the intention to explore from

a comparative perspective the 'marginalization' versus 'reinforcement' hypothesis,[4] but it still provides a fully consistent story of the main findings (with some differences in the magnitude of estimated effects), including a gain in statistical significance of a variable controlling for the effect of institutional trust. Precisely, trust in local government has a statistically significant effect, suggesting that a higher trust in local institutions is associated with lower participation in undeclared work, supporting our H4c hypothesis: *Undeclared work will be lower when there is greater trust in government.* However, the sample used fits better the research focus of this article.

Conclusions

To evaluate the marginalization thesis which asserts that marginalized populations are more likely to participate in undeclared work, this paper has analysed data from Bosnia and Herzegovina and the marginal effects from a Probit regression analysis. This reveals that in Bosnia and Herzegovina, participation in undeclared work is higher among the unemployed, younger age groups, those with fewer years in formal education, lower-income households, rural populations and those in poorer regions. However, men are found to be significantly more likely to engage in undeclared work than women, while we obtain inconclusive results for the effect of institutional trust.

Theoretically, the implication is that in Bosnia and Herzegovina, the marginalization thesis is valid. Marginalized groups (the unemployed, younger age groups, those with fewer years of formal education, lower-income households, rural populations and poorer regions) are significantly more likely to participate in undeclared work. The only exception are women who are significantly less likely to participate in undeclared work compared with men. This suggests that the 'reinforcement' thesis is not valid in Bosnia and Herzegovina. There is no evidence that undeclared work is conducted disproportionately by those benefiting most from declared work and that undeclared work therefore reinforces, rather than reduces, the disparities produced by declared work. A further important finding, given the emergence of institutional theory as an explanation for participation in undeclared work (Webb et al. 2009, 2013; Williams and Horodnic 2017a, 2017b), is that those who lack trust in the state (in the form of local governments), are significantly more likely to engage in undeclared work. It appears that when there is a lack of vertical trust (i.e., trust of citizens in the state), the greater is the probability of engaging in undeclared work. However, this finding has been identified for the sample of those who participate in undeclared work only, but not when the sample is extended to those who have both formal jobs and report some undeclared activities. Such a result provides the opportunity for further research on the reasons for these differences.

Turning to the policy implications, these results display the specific spaces and populations that need to be targeted when tackling undeclared work. This paper reveals that the current targeting of the unemployed when tackling undeclared work is not a mistake. The unemployed are significantly more likely to participate in undeclared work. Policy initiatives seeking to smooth the transition from unemployment to self-employment are therefore worthwhile. It also reveals that it is appropriate to target marginal populations when tackling undeclared work, including

younger age groups, the less educated, rural populations and the less affluent regions. This analysis, in other words, provides a useful risk assessment of the different populations to enable an evaluation of the validity of the currently targeted populations. It also reveals that improving vertical trust among these populations is necessary if undeclared work is to be tackled.

Vertical trust, which refers to the low trust of citizens in government, seen through the lens of institutional theory, reflects the asymmetry between the laws, codes and regulations of formal institutions and the norms, beliefs and values of informal institutions (Helmke and Levitsky 2004; North 1990). To address low vertical trust, this non-alignment needs to be resolved. On the one hand, governments can seek to alter values, norms and beliefs regarding the acceptability of participating in undeclared work. Raising awareness about the benefits of declared work, for example, by revealing how taxes result in better public goods and services, is one option to elicit an intrinsic motivation to comply. Initiatives might include providing citizens with better information on how taxes are spent and use 'your taxes are paying for this' signs on ambulances, fire engines, in hospitals, and on construction projects built with public funds. This analysis reveals marginalized groups who could be targeted by such campaigns (e.g., rural populations, younger age groups, the less educated), but in particular, those who rely only on income coming from undeclared work.

On the other hand, greater vertical trust requires changes in the formal institutions. Past studies in other countries reveal compliance increases with improved procedural justice, which refers to citizens perceiving state authorities to treat them in a respectful, impartial and responsible manner (Murphy 2005), procedural fairness, which refers to citizens believing they pay their fair share compared with others (Molero and Pujol 2012) and redistributive justice, which refers to citizens believing they receive the public goods and services deserved for the taxes paid (Kirchgässner 2011). This study reveals that applying these principles to the modernization of local government in Bosnia and Herzegovina would be a useful way forward.

There are, nevertheless, limitations to this study. The finding that the marginalization thesis is valid is for only one country. What is now required is to evaluate whether the findings are similar when examining other countries using a similar methodology. This future research might also examine the motives for engaging in undeclared work, including the specific institutions in which there is a lack of trust by those participating in undeclared work only versus those who participate in both declared and undeclared work simultaneously, so that the institutions in need of modernization can be identified.

In summary, this paper has revealed the validity of the marginalization thesis when explaining who engages in undeclared work in Bosnia and Herzegovina. If this paper thus stimulates the pursuit of a similar evidence-based approach in other global regions and nations, especially other transition economies, or postwar societies, then it will have fulfilled one of its intentions. If this paper also encourages a deeper investigation of the policy implications, not least in terms of the populations targeted by the authorities, and greater exploration of how to build vertical trust among these marginalized groups, then it will have fulfilled its wider intention.

Notes

1. In the first place, the survey was conducted to support the project 'Social capital and migration – evidence from post-conflict environment', which aimed to explore how different dimensions of social capital interact with diverse migration categories of individuals. More on this project and the data are available at: https://dass.credi.ba/2020/10/15/social-capital-and-migration-evidence-from-post-conflict-environment/. The project was supported by University of Fribourg, Interfaculty Institute for Central and Eastern Europe, Regional Research Promotion Programme in the Western Balkans – RRPP.
2. INFORM project 'Closing the gap between formal and informal institutions in the Balkans' is a EU Horizon 2020 multidisciplinary research focused on formal and informal institutions in the Balkans. The survey was conducted in all Western Balkan countries in 2017 by a professional research agency. More about the project and related findings is available at: https://www.ucl.ac.uk/ssees/research/funded-research-projects/inform.
3. If we take the relative share of these regions in Gross Domestic Product of BiH taking into account the population size of these regions.
4. We thank an anonymous referee for suggesting the relevant sample for empirical use.

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No potential conflict of interest was reported by the author(s).

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