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MINISTARSTVO RADA I MIROVINSKOGA SUSTAVA

THE EXTENT AND NATURE OF UNDECLARED WORK IN CROATIA

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Strengthening Policy and Capacities to Reduce Undeclared Work (CRO MOONLIGHTING)
Activity 1.1: Conducting analysis of undeclared work in Croatia
with special emphasis on sectors with consistently large number of undeclared work
and preparing analysis report with recommendations for improvement

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Content



Twinning Project HR 12 IB SO 01 - "Strengthening Policy and Capacities to Reduce Undeclared Work (CRO MOONLIGHTING)"

THE EXTENT AND NATURE OF UNDECLARED WORK IN CROATIA

Although there is no official universal definition of 'undeclared work', it is widely accepted across the European Union that this covers '*productive activities that are lawful as regards their nature, but are not declared to the public authorities, taking into account the differences in their regulatory systems between Member States'* (European Commission, 2007: 2). Despite some 45 different adjectives and 10 nouns currently used to denote this activity (e.g., 'informal', 'shadow', 'black' and 'underground' sector/economy/work) (Williams, 2004), we use the term 'undeclared economy' throughout this report. Indeed, the definition used aligns closely with the definition of the 'shadow economy' adopted by Schneider and Enste (2000, 79), which views it as including all legal production and provision of goods and services that are deliberately concealed from public authorities for the following four reasons: (i) to avoid payment of income, value added or other taxes; (ii) to avoid payment of social security contributions; (iii) to avoid having to meet certain legal standards, such as minimum wages, maximum hours, safety standards, etc.; and (iv) to avoid compliance with certain administrative procedures, such as completing statistical questionnaires or other administrative forms. Although such a definition intimates that undeclared work might be a voluntary decision not to comply with legal obligations, to assume this would be to ignore how economic units and individuals may not be able to abide by the law, for instance, due to inappropriate legislation or lack of awareness. This has been taken on board in this report and its action plan. The ILO (2015: 6) Recommendation 204, moreover, provides a broader concept of informal economy of which undeclared work is part, which (a) refers to all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements; and (b) does not cover illicit activities, in particular the provision of services or the production, sale, possession or use of goods forbidden by law, including the illicit production and trafficking of drugs, the illicit manufacturing of and trafficking in firearms, trafficking in persons, and money laundering, as defined in the relevant international treaties. As such, the only difference between declared and undeclared work in this report is that it is not declared to the authorities for tax, social security and labour law purposes when it should be. If other differences exist, it is not undeclared work. For example, if the goods and services provided are illegal, it is part of the wider criminal economy, whilst if there is no monetary payment, it is part of the unpaid sphere (Franic and Williams, 2014; Williams et al., 2013).

This definition is in line with the one adopted in Croatia and used in the official reports on this issue published by the authorities. As the Prohibition and Prevention of Unregistered Activities Act (Official Gazette, 2011) states, 'unregistered activity' is any type of legal work conducted by individuals or firms without complete and valid documentation and required permissions. In terms of the subjects involved in these activities, the act clearly states that, apart from those who carry out undeclared activities, each individual and firm who purchases undeclared products and services, or in any way enables execution of these activities, is denoted as a participant. Activities such as work for one's own needs, family assistance, or help to friends and neighbours, are not considered as undeclared work, providing that the

work is carried out unpaid without financial or material benefit and is not done on a regular basis.

Given that undeclared work by definition is not declared to the authorities, it is therefore difficult to obtain reliable estimates of its magnitude and characteristics. Various methods have been used to estimate its size and characteristics. Evaluating the different measurement methods available, the European Commission (2007: 4) state:

> 'Undeclared work can be measured both directly and indirectly. Indirect methods are based on the comparison of macroeconomic aggregates (such as national accounts, electricity consumption, cash transactions). Indirect (especially monetary) methods often over-estimate the level of undeclared work and say little about its socio-economic characteristics. Direct methods, on the contrary, are based on statistical surveys and have advantages in terms of comparability and detail, but tend to under-report the extent of undeclared work.'

The resultant consensus has been to use indirect methods to measure the size of the undeclared economy and direct survey methods to identify its characteristics in terms of who engages in it, what they do and why, so as to inform policy development (Eurofound, 2013; Schneider and Williams, 2013; Williams and Schneider, 2016). This will be the approach adopted in this report.

1 Magnitude of the undeclared economy

There are various estimates of the size of the undeclared economy in Croatia. Recognising this, it needs to be explicitly stated that the various figures reported here are not firm figures, but a range of estimates derived using various measurement methods commonly used by academics and policy-makers to develop approximations of the relative size of the undeclared economy and how its magnitude varies cross-nationally.

Figure 1 provides an estimate of the size of the Croatian undeclared economy relative to the EU-28 using the Multiple Indicators Multiple Causes (MIMIC) method, developed by Schneider (2013). This reveals that the undeclared economy in Croatia in 2016 was the equivalent of 27.1% of GDP, which puts Croatia as the country with the third largest undeclared economy in the EU28.

Figure 1 Undeclared economy as % of GDP, 2016: by country

Source: derived from Schneider (2016)

Analysing whether the undeclared economy is growing or declining over time in both the EU-28 and Croatia using the MIMIC method, Table 1 reveals that besides a small increase in the size of the undeclared economy between 2008 and 2009, there has been a decline in the size of the undeclared economy in both the EU-28 and Croatia between both 2003 and 2008, as well as between 2009 and 2016. Indeed, according to this MIMIC method, Croatia is not alone in witnessing a small but steady decline in recent years. All member states have witnessed a decline (Schneider, 2016).

Table 1 Size of undeclared economy in EU-27 and Croatia, 2003-2016, % of official GDP

Year	EU-28	Croatia
2003	22.6	32.3
2004	22.3	32.3
2005	21.8	31.5
2006	21.1	31.2
2007	20.3	30.4
2008	19.6	29.6
2009	20.1	30.1
2010	19.9	29.8
2011	19.6	29.5
2012	19.3	29.0
2013	18.8	28.4
2014	18.6	28.0
2015	18.3	27.7
2016	17.9	27.1

Source: Schneider (2016)

The MIMIC method, however, is not the only measurement method. In order to analyse further how the size of the undeclared economy has changed over time in Croatia, Table 2 reports the results of four different estimate methods. These estimates display not only the significant variations in the estimates of its size but that the direction of change differs according to the estimate method used.

Table 2 Recent estimates of the changing size of the undeclared economy in Croatia

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
MIMIC*	-	-	-	32.3	32.3	31.5	31.2	30.4	29.6	30.1	29.8	29.5	29.0
MIMIC**	6.7	6.2	5.3	5.4	5.3	5.0	4.8	4.7	4.6	4.2	-	-	-
Labour force method***	-	-	-	-	4.0	3.7	3.4	3.1	1.7	3.8	4.2	-	-
Non-exhaustiveness of national accounts***	8.5	8.3	8.2	7.4	7.3	7.3	6.7	6.1	5.9	6.4	-	-	-

*Sources: * Schneider (2012), ** Klarić (2011), *** Galić Nagyszombaty (2012)*

According to Schneider (2012), after a steady decrease in the period 2003-2008, the share of the shadow economy in Croatia rose in 2009[1]. However, a slight decrease is noticeable during the subsequent period. Although applying the same method, Klarić (2011) used a quite different definition, examining the share of the non-observed economy, which encompasses informal, illegal and underground production, as well as some other types of GDP under-

[1] In this case, the definition and method used are the same as those in Schneider (2013)

coverage[2]. However, despite analysing a broader range of activities, Klarić found that the share of these activities was significantly lower in comparison with Schneider's estimates. Namely, it ranged between 6.7% in 2000 and 4.2% in 2009. Additionally, although his results also indicate a decreasing trend until 2008, Klarić found a continuation of this trend even in 2009.

Galić Nagyszombaty (2012) estimates the share of the 'unofficial economy' using two different approaches, namely the labour force method and non-exhaustiveness of the national accounts. Here the unofficial economy connotes both legal and illegal production of goods and services that remain undetected and therefore not included in official GDP estimates. Although she finds a decreasing trend until 2008, her results for the period after the beginning of the crisis are quite different in comparison with those of Schneider and Klarić. In line with Schneider, she also found an increase in 2009, but estimates using the labour force method suggest an increase even in 2010. Nevertheless, one should bear in mind that the labour force method assesses only the share of unregistered labour, while deliberate misreporting is not included.

Despite these relatively inconclusive results about the changes in the size of the undeclared economy after the onset of the crisis, all studies confirm that there was a decreasing trend in the period preceding the crisis. Nonetheless, this decline does not necessarily imply the eradication of undeclared activities. Indeed, in their analysis of the non-exhaustiveness of national accounts, Lovrinčević, Mikulić, and Galić Nagyszombaty (2011) found that there was a constant increase in the absolute value of unofficially produced products and services during the period 2000-2008 (see Figure 2). Having in mind the high rates of GDP growth in the same period[3], the drop in the relative size of undeclared work resulted from the faster growth of the declared economy, not the absolute decrease in undeclared work.

Figure 2 Unofficial economy in Croatia, 2000-2008, in billion HRK

Source: Based on Lovrinčević et al. (2011)

[2] For detailed explanation see OECD (2002)

[3] The real growth rates of the official GPD in the given period ranged between 2.4% and 5.5% (Croatian National Bank, 2010)

Besides such indirect measurement methods, there are also direct survey methods. These tend to provide lower-bound estimates of its size due to the under-reporting of undeclared work by survey participants. The 2013 Eurobarometer survey reveals that 7.2% of surveyed respondents in Croatia reported engagement in undeclared activities during the 12 months prior to the survey. However, this is a lower-bound estimate not only because some might have provided a false answer but also because 2.9% of respondents refused to answer. A 2015 direct survey of 2,000 respondents as part of the GREY project, meanwhile, finds that 6.1% of surveyed respondents had engaged in undeclared work in the 12 months prior to the survey. These direct surveys, therefore, tentatively support the view of some of the indirect measurement methods above that there has been a decline in the size of the undeclared economy.

In sum, whether one examines direct surveys of the size of the undeclared economy (Rubić 2013, Williams, 2014a) or indirect measurement methods using proxy indicators to measure its prevalence (Galić Nagyszombaty, 2012, Klarić 2011, Ott, 2002, Schneider, 2013), the same finding is revealed. Besides Schneider's estimates, the undeclared economy is constantly found to be well under 10% of both total GDP and employment in Croatia, and it can be argued that the resources invested in tackling the undeclared economy are having a positive effect, since there is tentative evidence that it is declining in size over time.

2 Nature of the undeclared economy

2.1 Varieties of undeclared work

The undeclared economy includes both wholly undeclared work and under-declared work. *Undeclared work* refers to work entirely undeclared to the state for taxation, social insurance and/or labour law purposes. This includes unregistered employees without a contract who work for a business, for a household, as family members, private tutors, or as farm workers. They may be Croatian citizens, legal immigrants or immigrants with an irregular status. These workers might be secondary or multiple job holders who have social security coverage in their main job but do not contribute in their second job, or they may be pensioners, students, or others not in additional forms of declared employment. Besides undeclared waged employment, there is also undeclared own-account work conducted on a self-employed basis where all or some of their transactions are not declared. Some of these self-employed in Croatia may be 'bogus self-employed', engaged in disguised employment for one employer under a subordinate employment relationship rather than on a contract of services.

Under-declared work, meanwhile, refers to the illegal employer practice of salary under-reporting, including the practice of declared employers paying declared employees two salaries: (a) an official salary declared for tax, social security and labour law purposes, and (b) an additional undeclared remuneration received 'under the table' or by 'envelope'. Another variant of under-declared work in Croatia is where larger businesses employ a person on say a 4 hour contract but they work for 7-8 hours. Detection of this form of under-declared employment by the authorities is difficult. This is the focus of Activity 1.2. Here, therefore, the focus is upon entirely undeclared work.

One of the major problems when analysing the nature of undeclared work in Croatia is that there are very few sources of data. Indeed, one of the few data sources is inspections. In 2014, the Labour Inspectorate (LI), within the Ministry of Labour and Pension System, took over the responsibility for labour inspections from the State Inspectorate. Since 2012, however, there has been a continuous decline in the number of inspections (see Table 3). It should be noted that the 2016 data only covers the period until the end of September 2016, and are therefore not comparable with the inspection numbers reported for previous years.

Table 3 The coverage of labour inspections in Croatia: in terms of business entities

	2012	2013	2014	2015	2016q3
The number of business entities (31.March)	134 110	147 594	164 021	178 613	137 319
The total number of inspections	15 665	14 143	11 861	9 242	5 880
Inspections/BE ratio	11.68%	9.58%	7.23%	5.17%	4.28%

Source: The Labour Inspectorate, Croatian Bureau of Statistics (Croatia in Figures 2016)

As can be seen in Table 3, the number of business entities registered in Croatia grew between 2012 and 2015, but the number of inspections decreased, resulting in an ever smaller proportion of businesses being inspected, decreasing from 11.68% in 2012 to 5.17% in 2015. Table 4 evaluates the proportion of all employees covered by labour inspections of businesses, based on the Labour Force Survey. This reveals that labour inspections covered

approximately 1.25% of all employees in employment in Croatia in 2015, with the average business entity inspected employing 2.15 employees.

Table 4 The coverage of labour inspections in Croatia: in terms of employees

	2015
Employed persons based on the LFS	1 589 400
The total number of employees in inspected organisational units	19 789
Share of inspected employees on the total number of employees	1.25%
Average number of employees in inspected organisational units of legal businesses	2.15

Source: The Labour Inspectorate, Croatian Bureau of Statistics (Croatia in Figures 2016)

Examining the results of labour inspections, earlier data from the State Inspectorate (2013b) reveals that although violations in employment relations were present in almost all industries, they were most prevalent in the catering, construction and the trade sectors. Unregistered activities are also quite common in professions such as car mechanics, car body painters, hair stylists, massage therapists, tailors, florists, beauticians and various activities associated with the repair of household appliances. Those activities are usually carried out in private apartments and garages which makes it extremely difficult to detect them (State Inspectorate, 2013a). When it comes to different types of undeclared work, the 2012 Annual report of the State Inspectorate reveals that the most common recorded violations were employment without a contract, and employment on a piece work agreement in situations where a standard work contract should be applied. This is followed by non-declaring to pension or health insurance authorities, employing foreign workers illegally or without informing the relevant authorities, and hiring seasonal workers for seasonal jobs in agriculture on an undeclared basis (State Inspectorate, 2013b).

More recent evidence provided by the Labour Inspectorate shows that with the decline of the overall number of inspections, the absolute number of employees identified working without a contract has declined proportionally. However, the ratio of identified cases of violations to the overall number of inspections has remained relatively stable at around 10%. This suggests that a smaller proportion of the instances of the actual cases of working without a contract are being identified over time.

Table 5 Revealed cases of employees with no working contracts

	2012	2013	2014	2015	2016q3
No working contract certificate	1 592	1 342	1 462	991	613
The ratio of employees without a working contract on the number of inspections	10.16%	9.49%	12.33%	10.72%	10.43%

Source: The Labour Inspectorate

Examining other forms of labour law violation, Table 6 reveals the number of identified cases where employees have been found to be not registered at the Croatian Pension Insurance Institute (CPII) and/or who have delayed registration at CPII. There has also been a slight increase in the ratio of identified cases relative to the number of inspections. Indeed, the

number of identified cases of working without registration at the Croatian Pension Insurance Institute is only slightly lower than the number of identified cases of employees working without a contract.

Table 6 Revealed cases of employees with violations in the obligatory pension insurance

	2012	2013	2014	2015	2016q3
Not registered at the Croatian Pension Insurance Institute (CPII)	1 325	1 035	744	976	567
Delayed registration at CPII	574	247	277	1 088	492
The ratio of employees not registered at the CPII on the number of inspections	8.46%	7.32%	6.27%	10.56%	9.64%

Source: The Labour Inspectorate

Table 7 reports the other cases of labour law violation identified by the Labour Inspectorate. The first important point to note is that the very few cases of foreign workers working contrary to the regulations have been identified. Such situations were revealed among only 0.04% of employees in business units inspected in 2012, with this share dropping further in later years. The most common violation identified during inspections, however, is the violation of Article 93 paragraph 2 of the Labour Act. This paragraph defines that, in cases when the employer fails to pay remuneration, compensation or severance pay within their due dates, or fails to pay the worker the full amount, he or she is obliged to provide the worker with a payroll account for the amounts he or she was required to pay. Based on this, compensation can be claimed at the Court. Between 2012 and 2015, not only has there been a rapid increase in the number of identified cases of workers to whom the employer has not handed over a payroll slip (from 653 in 2012 to 1,115 in 2015) but also in the number of workers to whom the employer has not handed over the reimbursement slip or severance pay slip (from 3,448 in 2012 to 6,254 in 2015).

Table 7 Other identified violations of the Labour Act

	2012	2013	2014	2015	2016q3
The number of foreigners who worked contrary to regulations	374	183	93	97	107
Share of the total number of supervisions	2.39%	1.29%	0.78%	1.05%	1.82%
The number of workers to whom the employer has not handed over payroll slip	653	871	842	1 115	274
Share of the total number of supervisions	4.17%	6.16%	7.10%	12.06%	4.66%
The number of workers to whom the employer has not handed over reimbursement slip or severance pay slip	3 448	4 599	7 145	6 254	1 759
Share of the total number of supervisions	22.01%	32.52%	60.24%	67.67%	29.91%

Source: The Labour Inspectorate

Although such statistics produced by the Labour Inspectorate of the number of instances of different types of labour law violation identified during inspections are a useful insight into the character of undeclared work, the major problem is that these data are not based on a

representative or random sample of businesses. As such, it is erroneous to extrapolate from the data to the population.

The only known contemporary representative surveys of the character of undeclared work is special Eurobarometer No. 402 conducted in 2013, and a direct study conducted in 2015 as part of the GREY Marie Curie research project on undeclared work in Croatia. Starting with the former, this interviewed 1,000 respondents face-to-face in the national language using a multi-stage random (probability) sampling methodology, which ensured that on the issues of gender, age, region and locality size, the sample was proportionate to, and representative of, the Croatian population.[4] The GREY Marie Curie project, meanwhile, used the same sampling method but examined 2000 respondents in late 2015. Here, we report the results.

Analysing the types of undeclared work undertaken by participants in the 12 months prior to the survey in 2013 (2015 in parentheses):

- 30% (33%) of all undeclared work was waged employment, of which:
  - 9% (10%) was wholly undeclared waged employment, and
  - 21% (23%) was under-declared employment.
- 12% (18%) was undeclared self-employment, and
- 58% (49%) undeclared own-account work conducted for close social relations, such as kin, friends, acquaintances and neighbours.

As such, one-third of all undeclared work is waged employment (with just under one quarter of all undeclared work involving the payment of envelope wages to formal employees), and the remaining two-thirds is undeclared self-employment (with one half of all undeclared work conducted on a self-employed basis for close social relations, and the remaining one-fifth involving undeclared self-employment for those other than close social relations).

Between 2013 and 2015, moreover, albeit based on a small sample, there appears to have been a decline in the proportion of undeclared work conducted on a self-employed basis for close social relations (from 58% to 49% of all undeclared work), and an expansion in the share conducted as undeclared self-employment for others (from 12% to 18%) and as waged employment (from 30% to 33%).

To further understand the sectors in which the undeclared economy is concentrated and who participates in such work, firstly, the demand for undeclared goods and services is analysed, and secondly, its supply from a household and business perspective.

2.2 Demand for undeclared goods and services

Overall, 17.4% of respondents in Croatia in 2013 stated they suspected that some of products and services they paid for had been produced in the undeclared economy. There are, however, some significant variations in the likelihood of different groups purchasing undeclared goods and services. As Table 8 reveals, it is noticeable that people with a higher level of education (more than 20 years of age when they finished their education) are by far

[4] To analyse the data, population weights are here applied to correct for over- and under-representation in the sample. For the descriptive statistics, the full sample has been used. For multivariate analysis, and to avoid excluding individuals who did not provide answers to every question, multiple imputations have been employed. Fifty imputations were simulated through a system of chained equations for every missing value.

the most likely to purchase undeclared goods and services. Furthermore, the self-employed, managers and other white collars are more likely to buy undeclared products and services.

Table 8 Purchasers of undeclared goods and services in Croatia, 2015: % respondents

	Yes	No	Refusal (SPONTANEOUS)	Do not know
Total	23.9	71.6	0.9	3.7
Gender				
Male	24.7	70.7	0.7	3.9
Female	23.3	72.2	0.9	3.6
Age				
15 – 24	20.3	73.4	1.2	5.0
25 – 34	28.3	67.3	1.0	3.5
35 – 54	27.1	68.0	0.9	4.0
55 +	20.7	75.6	0.6	3.1
Occupational status				
Employed	28.5	67.4	0.6	3.5
Unemployed	23.8	71.3	0.6	4.3
Self-employed	33.3	58.4	3.3	5.0
Retired	18.6	77.9	0.6	2.9
Student	17.9	75.9	0.9	5.4
Other	23.9	67.3	3.1	6.1

Source: Authors' calculations based on the GREY Survey on Households (2015)

According to the 2013 Eurobarometer survey, there are significant regional differences in the propensity to purchase undeclared goods and services (see Table 9). For instance, people from Dalmatia, and Zagreb and the surrounding area, are far more likely to purchase undeclared goods and services. However, it should be mentioned that although Dalmatia scored low in the case of undeclared labour supply (5.7%), about one fifth of respondents (more than in any other region) stated they purchased goods and products on the undeclared market. The purchase of undeclared goods and services is also more common among larger urban populations than in rural areas.

Table 9 Spatial variations in the prevalence of undeclared work in Croatia, %

	Engaged in undeclared work		Purchase undeclared goods and services	
	2013 Eurobarometer	2015 GREY	2013 Eurobarometer	2015 GREY
Total	7.2	8.2	17.5	25.0
Region				
Zagreb and surrounding	11.3	6.7	20.6	18.5
North Croatia	1.7	7.6	15.6	21.6
Slavonia	7.4	11.6	16.5	26.2
Lika & Banovina	2.3	5.6	8.0	24.4
Istra, Rijeka and Gorski Kotar	12.7	11.8	16.9	36.8
Dalmatia	5.7	6.8	20.8	28.5
Type of community				
Rural area or village	9.0	9.4	15.1	25.8
Small/middle town	5.4	8.2	18.9	29.0
Large town	6.7	6.6	20.1	18.4

Source: Eurobarometer 402 (2013) and GREY Survey on Households (2015)

What goods and services, therefore, do they purchase on an undeclared basis?

Figure 3 reveals that almost 30% of respondents who declared that they purchased some products and services without getting a receipt did so for home repairs and renovations[5]. This is followed by purchasing domestic food (for instance agricultural and farm products), with 27% of respondents citing that these were the undeclared goods and services that they had purchased. On the other hand, we can realise that, apart from cleaning homes, people do not pay on an undeclared basis for other home-based activities, such as gardening, babysitting and ironing. As Rubić (2013) argues, this is due to the strong family and neighbour networks: people rather prefer to help each other on an unpaid basis in these small-scale everyday activities rather than to spend money if not necessary. This perhaps reflects that in Croatia, there has not been the incursion of monetary exchange into the realm of mutual aid, as has been witnessed in other European regions (Onoshchenko and Williams, 2013; Vorley and Williams, 2012; Williams, 2004, 2009b, 2014).

[5] In this case, multiple answers were possible and therefore the sum of percentages exceeds 100.

Figure 3 Goods and products purchased in Croatia, % of respondents

Source: Authors' calculations based on the GREY Survey on Households (2015)

Examining from whom they purchase undeclared goods and services, the finding is similar to the above finding regarding to whom undeclared work is supplied. It is largely close social relations from whom they purchase undeclared goods and services, primarily friends, colleagues and acquaintances, neighbours and kin (see Figure 4). These results therefore suggest that much undeclared work takes place within close social networks.

Figure 4 Purchasers of undeclared good and services, % of respondents

Source: Authors' calculations based on the GREY Survey on Households (2015)

2.3 Supply of undeclared work

Examining the 1,000 face-to-face interviews conducted in Croatia as part of the 2013 Eurobarometer survey, 7.3% of citizens surveyed reported undertaking undeclared work in the prior 12 months (falling to 6.1% in the 2015 survey). Of these suppliers of undeclared work, 11% earned 1-100 euros from their undeclared work in the last 12 months, 10% 1010-200 euros, 13% 201-500 euros, 8% 501-1000 euros, 19% over 1000 euros, and 40% either do not remember or know, or refused to answer. This reinforces how participants in direct surveys probably under-report their participation and result in lower-bound estimates of its prevalence. The usefulness of direct surveys, however, is that they enable understanding of

the character of undeclared work, including who engages and what they do, although the results reported here need to be treated tentatively due to the small numbers involved.

Table 10 reports the descriptive statistics on who is more likely to engage in undeclared work. This reveals that men are nearly three times more likely to engage in undeclared work than women, and how younger age groups, especially 25-39 years old, are more likely to do so than older age groups. Examining occupations, moreover, it is the unemployed and self-employed that are more likely to engage in undeclared work, along with manual workers. There is also a tendency for those who finished their education between 16-19 years old to be more likely to engage in undeclared work than those who remained in education after this age.

Table 10 People engaged in undeclared work in Croatia, 2015 % of respondents

	Yes	No	Refusal (SPONTANEOUS)	Do not know
Total	8.1	89.9	1.5	0.6
Gender				
Male	12.0	85.3	2.3	0.4
Female	5.3	12.0	0.9	0.8
Age				
15 - 24	13.3	85.1	0.8	0.8
25 – 34	9.5	87.3	2.5	0.6
35 – 54	10.2	87.7	1.7	0.5
55+	4.2	94.2	1.0	0.6
Occupation				
Employed	7.3	89.8	2.1	0.8
Unemployed	11.7	86.7	1.5	0.3
Self-employed	15.4	82.7	1.7	0.0
Retired	4.0	94.8	0.8	0.5
Students	7.1	92.9	0.0	0.0
Other	14.3	81.6	2.0	2.0

Source: Authors' calculations based on the GREY Survey on Households (2015)

Indeed, and as Figure 5 reveals, if we examine the employment status of those engaged in undeclared work, it is noticeable that manual workers, the unemployed and retired together account for about 70% of all undeclared workers in Croatia. Nearly one third of those engaged in undeclared work are manual workers. Similarly, almost every fourth undeclared worker is unemployed, while about every seventh undeclared worker is retired.

Figure 5 Undeclared workers in Croatia by occupation, in %

Source: Authors' calculations based on the Special Eurobarometer 402

What type of work, therefore, do these undeclared workers conduct? As Figure illustrates, it seems that paid activities in the field of personal and household services comprise only a minor part of undeclared work in Croatia. On the other hand, work in the construction industry, especially home repairs and renovations, is by far the most common type of activity carried out on undeclared basis. For instance, almost one quarter of respondents engaged in undeclared activities stated they were working on repairs or renovations.

Figure 6 Activities carried out on undeclared basis, in % of respondents

Source: Authors' calculations based on the GREY Survey on Households (2015)

Examining the reasons for engaging in undeclared work,

Figure **1** reveals that almost half of respondents describe their undeclared practices as an outcome of a mutual agreement with purchasers due to the financial gain for both parties. In part, this argument can be seen as a direct result of these participants not understanding and appreciating the value of paying taxes to the wider society and the negative effects of working undeclared for the society overall. This is an important finding for policy, since it identifies the need for educational and awareness raising campaigns. However, there are two further sets of rationales. Some 28% of undeclared workers were motivated by the lack of formal employment opportunities and 24% by the lack of any alternative income which suggests that many are pushed into undeclared work as a necessity-driven survival practice. Another 19% recognise undeclared work as a common practice highly widespread in their country. Another set of reasons, however, are associated with more voluntary motives. Some 16% justify their behaviour by their distrust in the state and its efficiency, some 12 % by high taxes and/or social security contributions and some 8% by the bureaucracy or red tape.

Figure 1 Reasons for supplying undeclared work in Croatia, % of respondents

Source: Authors' calculations based on the GREY Survey on Households (2015)

This tentatively suggests that the argument of Fields (1990, 2005) that participation in the undeclared economy is composed of a necessity-driven 'lower tier', exemplified in the 2013 Eurobarometer survey by the greater likelihood of younger people, the unemployed and manual workers doing undeclared work, and a smaller more voluntary-oriented 'upper tier', exemplified by the tendency of 6.7% of managers to work undeclared, has a validity in Croatia.

To evaluate whether these descriptive trends are statistically significant when other variables are taken into account and held constant, Table 11 provides a probability model of participation in undeclared work. The first important finding, which will be returned to later, is that there is no significant association between the perceived level of penalties and the likelihood of participation in undeclared work. Neither is there a significant correlation between the perceived risk of detection and participation in undeclared work. However, there

is a significant correlation between the likelihood of participation in undeclared work and a respondent's views on the acceptability of engaging in undeclared work (i.e., their tax morale). Those with higher levels of tax morality[6] are less likely to get involved in undeclared paid work. This relation remains statistically significant after including individual, socio-economic and regional controlling variables.

Table 11 also reveals that men have a higher likelihood of being involved in undeclared work. This relation remains statistically significant also when controlling for other demographic and socioeconomic characteristics of individuals and region. The same applies for those cohabiting, living in a household with a partner without being married. One's personal acquaintance with someone in undeclared employment also significantly contributes to the likelihood of being involved in undeclared work. This suggests, therefore, that if one believes that others are engaged in undeclared work, you are more likely to do so oneself. Put another way, where there is lower horizontal trust (i.e., a perception that others are engaging in undeclared work), there is a greater likelihood that the respondent will engage in undeclared work. Undeclared work, therefore, is significantly correlated not only with vertical trust (i.e., a lack of belief and trust in the formal institutions) but also with horizontal trust (i.e., a lack of belief and trust that others in the population are acting legitimately).

Table 11 Coefficients estimated by logit models on the probability of being involved in undeclared employment, dependent variable based on the question: Did you yourself carry out any undeclared paid activities in the last 12 months?

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Risk of being caught	0.209	0.24	0.402	0.402	0.382
Severity of the penalty	-0.023	-0.054	0.512	0.464	0.388
Interaction: risk#penalty	-0.081	-0.089	-0.243	-0.236	-0.221
Tax morale index	-0.053***	-0.045***	-0.048***	-0.046***	-0.032**
Individual demographic characteristics					
Male	-	0.793***	0.848***	0.889***	0.949***
Age group (Age 55+ omitted)					
age <35	-	0.629*	0.393	0.402	0.343
age 35-54	-	0.799**	0.638*	0.668*	0.688*
Marital status (Married omitted)					
Cohabitating	-	1.216***	1.100**	1.060**	1.086**
Single	-	0.537	0.543	0.646*	0.689*
Divorced	-	0.163	0.092	0.187	0.182
Widowed	-	0.376	0.676	0.696	0.755
Has kids	-	0.219	0.148	0.162	-0.09
Number of kids in the HH	-	0.074	0.072	0.081	0.064

[6] Individuals with higher tax morality consider not-reporting of economic activities of firms and individuals as less acceptable.



Table continues on the next page

Table continued from the previous page	Model 1	Model 2	Model 3	Model 4	Model 5
Socio-economic characteristics					
Personal acquaintance with someone involved in undeclared work	-	-	1.952***	1.980***	1.463***
Economic status (Retired omitted)					
Employed	-	-	-0.795	-0.94	-0.936
Self-employed	-	-	-0.667	-0.88	-1.423
Unemployed	-	-	1.007*	1.030*	0.827
Student	-	-	0.023	0.104	-0.408
Other	-	-	0.983	0.978	0.749
Controlling for sector	-	-	Yes	Yes	Yes
Income and financial situation indicators	-	-	Yes	Yes	Yes
Urban/rural characteristics					
Rural region	-	-	-	0.414	0.593
Small town	-	-	-	0.149	0.048
Region (Slavonia omitted)					
Zagreb i okolica	-	-	-	0.585	0.868
Sjeverna Hrvatska	-	-	-	0.734	1.169*
Lika i Banovina	-	-	-	0.891*	1.296**
Istra, Primorje i Gorski Kotar	-	-	-	0.756	0.739
Dalmacija	-	-	-	0.093	0.296
Buying of goods and services undeclared (non-buying undeclared omitted)					
Buying informal services	-	-	-	-	-0.623
Buying informal goods	-	-	-	-	0.739*
Babysitting	-	-	-	-	1.871*
HH services	-	-	-	-	-1.328*
Repairs	-	-	-	-	1.466***
Hair and beauty	-	-	-	-	1.379***
Tutoring	-	-	-	-	0.806*
Car repairs	-	-	-	-	0.818*
Food	-	-	-	-	0.159
Other	-	-	-	-	0.152
Constant	-0.601	-2.215*	-3.457*	-4.449**	-5.518**
Model characteristics					
Number of observations	1712	1712	1712	1712	1645
Pseudo R2	0.038	0.096	0.214	0.227	0.305

*Note: legend: * p<0.05; ** p<0.01; *** p<0.001*
Source: The GREY survey (2015)

Although less strong, but still statistically significant, those who are unemployed are more likely to be involved in undeclared work. Slavonia appears to be the region with the lowest level of undeclared work. *Lika i Banovina* and partially also *Sjeverna Hrvatska* have a higher incidence of undeclared work. Buying goods produced undeclared in general increases the chance of being involved in supplying undeclared work.

In sum, the risk of being caught and the severity of the penalty are not significantly associated with the likelihood of supplying undeclared work. The same applies when considering the interactions between risks of detection and the level of penalties. Intensifying deterrence measures does not change the supply of undeclared work. However, participation in undeclared work is significantly associated with attitudes towards its acceptability (i.e., tax morale), and also significantly associated with view on how widely others engage in such work. As such, policy measures focused on raising awareness about the negative impacts of undeclared work and benefits of declared work are important for reducing participation in the undeclared economy. So too is it important not to suggest that the rest of the population are widely engaged in such work. To put out such a message will encourage people to operate on an undeclared basis themselves.

2.4 Participation in undeclared work: firm-level analysis

The Eurobarometer Survey highlights undeclared work only from the perspective of undeclared workers and purchasers, and therefore does not give any information about these activities at the enterprise-level, such as business-to-business transactions. The World Bank Business Environment and Enterprise Performance Survey (BEEPS), however, provide some insights on this issue. This harmonised survey across 135 countries scrutinises perceptions of firm representatives about a number of topics regarding the business environment, such as infrastructure, taxes, regulations, access to finance, competition, corruption and informality. 12 summarises the findings about undeclared practices among enterprises in Croatia from the waves of the survey for the period 2007-2013.

Table 12 Extent of undeclared work among enterprises

	Croatia 2007	Croatia 2009	Croatia 2013
% of firms formally registered when they started operations in the country	98.1	99.6	96.3
% of firms competing against unregistered or informal firms	31.7	47.7	48.2
% of firms identifying practices of competitors in the informal sector as a major constraint	25	18.1	18.8

Source: World Bank, Business environment and enterprise performance survey (BEEPS) (2007, 2009, 2013)

This reveals that 96.3% of currently formal firms in Croatia registered prior to starting operations. This proportion remains high during the whole period. However, even if most of

the formal firms surveyed were registered before starting operations, there is nevertheless evidence that the surveyed firms recognise the existence of informal competitors, such as unregistered enterprises or registered enterprises conducting a portion of their trade off-the-books on an undeclared basis. Some one-third of enterprises in 2009, rising to just under a half of all enterprises in 2013, state that they are competing against unregistered enterprises or registered firms conducting a portion of their trade on an undeclared basis, and one-quarter of businesses in 2009 and 1 in 4 in 2013, identify the practices of these informal competitors as a major constraint in the running of their business.

In order to gain further insight into the sector, business and spatial variations in undeclared practices among enterprises in Croatia, the findings of the World Bank BEEPS data can be analysed in more detail. Analysis by sector reveals that firms in the construction sector are the most likely to recognise competition from unregistered or informal firms (

13). Just under three-quarters of construction firms state that they are competing against informal or unregistered firms and just over one-third state that such informal or unregistered enterprises are a major constraint on their own business operations. Moreover, just under half of all manufacturing and service enterprises witness competition from informal competitors, although only around 1 in 7 assert that they represent a major constraint on their operations.

Table 13 Prevalence of undeclared work in Croatia among enterprises: by sector, location, firm size, exporting status and ownership

	% of firms competing against unregistered or informal firms	% of firms identifying practices of competitors in informal sector as a major constraint
All	48.2	18.8
By sector:		
Manufacturing	42.0	14.5
Construction	73.7	34.0
Services	41.2	15.0
By location:		
Northwest	47.2	19.8
Central and Eastern (Pannonian)	57.3	21.3
Adriatic	44.4	15.9
By firm size:		
Small (5-19)	50.2	20.3
Medium (20-99)	45.7	16.6
Large (100+)	20.4	0
By exporting status:		
Direct exports 10%+ of sales	31.1	16.4
Non-exporter	52.7	19.4

Source: World Bank BEEPS (2013)

When it comes to spatial variations, it is noticeable that firms from the Central and Pannonian region are most likely to recognise the presence of informal competitors in their sector. Interestingly, firms from the Adriatic region to a lower extent recognise the presence of unregistered or informal competitors in their sector.

Turning to firm size, it is more small businesses that recognise the presence of unregistered or informal competitors and also are more likely to see them as a major constraint. Larger firms, in contrast, are less affected by unregistered or informal competitors, as are those who are export-oriented less likely to be affected than non-exporter enterprises, doubtless as a result of the markets that are being served.

However, it should be stressed that these results illustrate only the general opinion of surveyed managers of formal enterprises about undeclared practices. It is not an examination of actual practices. Therefore, it is difficult to give any relevant conclusion on this issue without a survey of undeclared practices among enterprises.

Such a survey was carried out under the GREY Marie Curie research project. Here, a representative sample of 521 businesses in Croatia was surveyed, including micro-employers and the self-employed[7], to detect the extent and nature of undeclared work practices. As Table 14 reveals, and based on an employers´ assessment of the occurrence of various informal practices in their competitors, we observe that undeclared employment (i.e., hiring a worker without a contract or hiring an employee under "hidden clauses") is perceived by businesses to be a common practice in their competitors. Some 1 in 20 businesses assert that competitor businesses always hire workers without contract or under 'hidden clauses' (e.g., paying envelope wages'), and a further 1 in 5 assert that this occurs in most cases. Only 15% of employers assert that hiring a worker without a contract never occurs among their competitors and only 16% that hiring an employee under contract but under "hidden clauses" (i.e., with part of the wage paid as an envelope wage without a pay slip to avoid the obligatory social contribution payments).

Besides such labour law violations, some 8% of businesses assert that their competitors report lower turnover, thus engaging in some transactions off-the-books, a further quarter of all businesses assert that this occurs in most cases and a further half that it occurs sometimes. There is also a perception that hiding/not paying taxes is widespread, as is the not issuing of receipts, and reporting lower profit, and VAT fraud. The illicit exporting or importing of goods is perceived as the least common among these informal practices. There is thus a widespread perception that undeclared practices are common among competitors. The outcome is a low level of horizontal trust that competitors are operating on a legitimate basis in terms of their business practices.

[7] The World Bank BEEPS sample only included formal firm employers with the minimum of 5 employees.

Table 14 Occurrence of informal activities of businesses in %

	Always	In most cases	Sometimes	Never
Hiring a worker without contract	4	20	61	15
Hiring an employee under "hidden clauses"	5	22	57	16
Reporting lower turnover	8	25	50	17
Hiding/ not paying taxes	6	19	51	23
Not issuing receipts	7	21	54	18
Reporting lower profit	8	22	53	16
Illicit exporting/importing goods	6	12	40	43
VAT fraud	7	15	49	29

Source: The GREY survey (2015)

Assessing the proportion of businesses that view competitors as trading in the informal economy, employing workers without a contract, under-reporting the salaries of their employees and paying envelope wages, Figure 8 provides boxplots that display the distribution of responses. 50% of the observations are covered by the box, and the dots represent the upper 0.5% of the distribution. Table 15, meanwhile, displays the mean and median figures. When assessing the percentage of trade conducted in the undeclared economy, the distribution of answers is wide. Although half of the responses have assessed the share of such trade activities to be below 20%, a relatively high proportion of values above 60% have pushed the mean up to 27.54% of total trade. As such, the average business in Croatia considers that over one quarter of total trade in their sector is conducted in the undeclared economy.

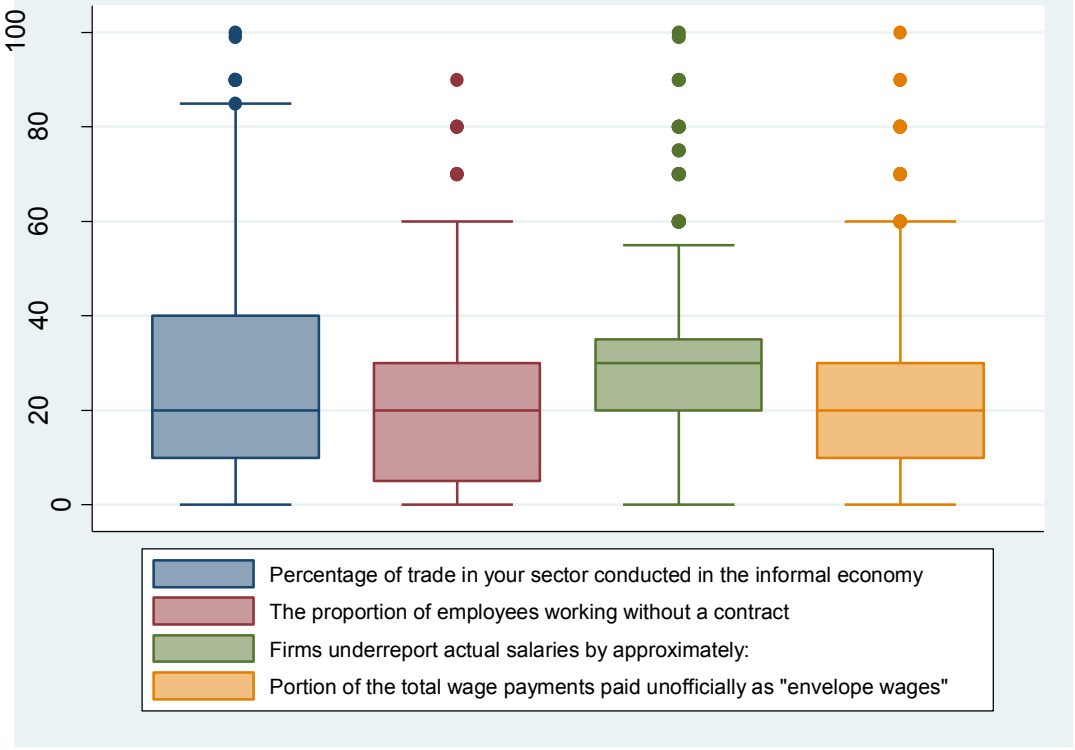
As regards the two identified forms of undeclared employment (employing without a contract and "envelope wages"), these are perceived to be as prevalent as trading in the undeclared economy. "Envelope wages", however, are perceived to be present relatively more often than employing workers without a contract. One half of the answers estimated that this practice of paying envelope wages is adopted in more than 30% of competitor companies in their sector. Wage payments received as envelope wages are perceived to comprise approximately 20% of the total wage payments.

Table 15 Occurrence of undeclared trade and employing activities within sectors in %

	Mean	Median	No. of responses
Percentage of trade in your sector conducted in the informal economy	27.54	20	431
The proportion of employees working without a contract	20.23	20	402
Firms underreport actual salaries by approximately:	27.68	30	400
Portion of the total wage payments paid unofficially as "envelope wages"	24.30	20	368

Source: The GREY survey (2015)

Figure 8 Occurrence of undeclared trade practices in sectors in %



Source: The GREY survey (2015)

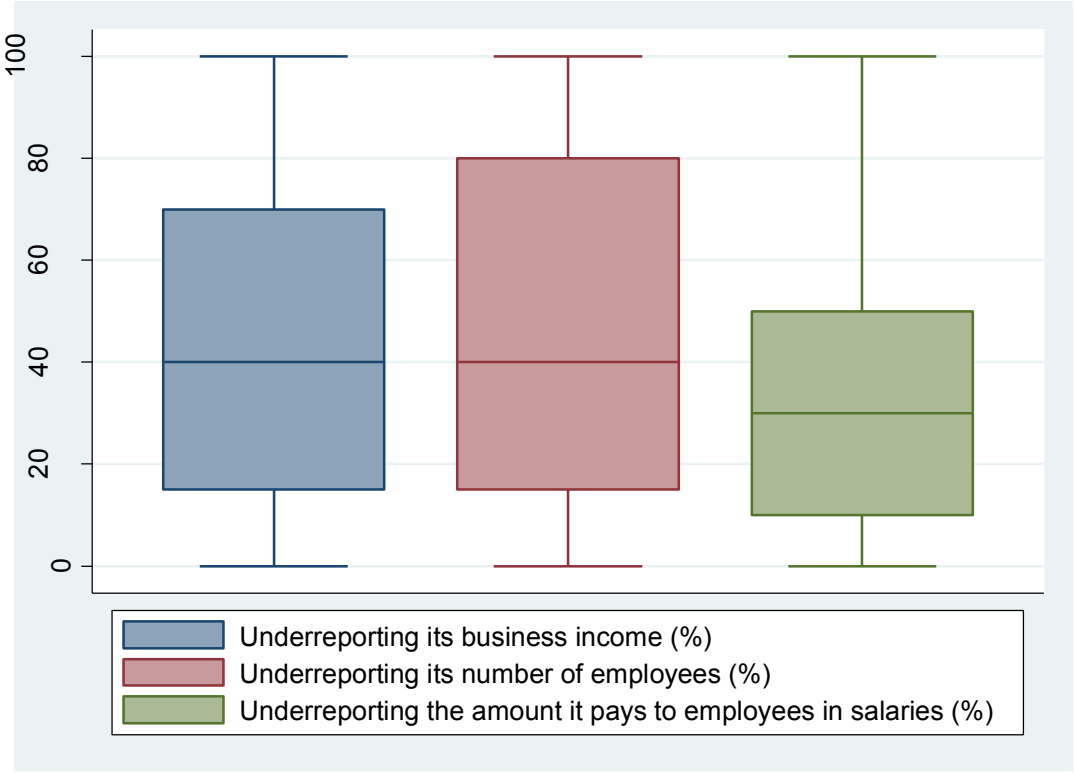
In stark contrast to workers and purchasers, so far as businesses and employers are concerned, the perceived risk of detection and levels of penalties, and the risk versus penalty ratio, is an important factor in the assessment of the occurrence of undeclared work. Firms consider the risk of being caught when deciding whether to engage in undeclared practices. If this risk is too small, the severity of the penalty is not taken into account. If the risk of being caught grows over some threshold, then the severity of the potential penalty enters their calculations. Figure 9 and Table 16 report the results. The median assessment of the probability of being caught is 40% in the case of underreporting income and the number of employees. In the case of underreporting the amount it pays employees in salaries, the median assessment is lower, namely 30%, doubtless because it is recognised that the risk of detection is so much more difficult for labour and tax inspectors. We may assume, therefore, that the perception of a lower risk attached to such an undeclared practice is one reason for the increased occurrence of "envelope wage" payments among their competitors.

Table 16 If a company in your industry were caught for deliberately misreporting, what would be the typical consequence for the company?

	N	%
Nothing serious	12	2.3
A small fine	89	17.08
A serious fine that would affect the competitiveness of the company	237	45.49
A serious fine that would put the company at risk of insolvency	145	27.83
The company would be forced to cease operations	38	7.29
Total	521	100

Source: The GREY survey (2015)

Figure 9 Perception of the probability of being caught underreporting (in %)



Source: The GREY survey (2015)

Asking businesses about the undeclared practices of their competitors can be viewed as an indirect means of assessing their own involvement in undeclared practices of the respondents. Therefore, we consider this as our dependent variable to be able to explore the factors related to two types of undeclared work: employing workers without a contract (see Table 16) and the payment of envelope wages to employees (see Table 17). Identifying a dependent variable allows us to use some of the regression based model to explore the relation between the dependent variable and other factors (independent variables), covered by the GREY survey questionnaire. In our case we use an ordered logit regression based model and report five variants of the model including various sets of explanatory variables.

In seeking to explain the propensity to employ workers without a contract and paying workers envelope wages, we pay particular attention to the deterrence effect, namely the perceived risk of being caught and the perceived severity of the potential penalty. Besides these two factors, we also report the coefficients for the "usual suspects" when analysing the drivers of undeclared work, namely firm characteristics such as the size of the company measured in terms of the number of employees, sectoral variables etc.; respondents´ assessment of the business environment, and respondents´ individual characteristics.

Table 17 explores the factors significantly associated with employing workers without a contract when other factors are introduced and held constant. The finding is that the risk of being caught is significantly negatively associated with the view of whether competitors´ hire workers without a contract. This means that the higher the perceived risk of being caught, the lower is the probability of businesses asserting that competitors hire workers without a contract. This is a pattern observable across most comparable studies. In the case of the 2015 GREY data, we observe this significant relationship, with a stable intensity, across all five models. In contrast, the severity of the penalty is not significantly associated with the probability of stating that competitors hire workers without a contract. The estimated coefficients were not statistically significant in any of the models. The strong intimation, therefore, is that it is more the perceived risk of detection, than the perceived severity of penalties, which will lead businesses not to hire workers without contract. Tax morality of employers also does not appear to be associated with stating that competitors hire workers without a contract.

Turning to which firms are more likely to perceive competitors as hiring workers without a contract, the finding is that smaller firms are significantly more likely to do so. Analysing the sectors in which a business is more likely to view a competitor as hiring workers without a contract, the finding is that there are significant sectoral variations. The accommodation sector appears to be the sector with the highest occurrence of competitors´ hiring without a working contract. There is no statistically significant difference between accommodation and agriculture. In all other sectors, the view that competitors hire workers without a contract is significantly lower than in the accommodation sector. It is also the case that younger firms are significantly more likely to perceive competitors as hiring workers without a contract than older businesses. The significance of these differences disappears however, after we start to control for individual characteristics of the responding person (Model 5). Firms which are VAT payers are significantly more likely to report the occurrence of competitors´ hiring workers without a contract than non VAT payers.

Table 17 **Ordered logit results with the dependent variable:** How often would you say hiring without a contract occurs within your direct competitor companies?

	Model 1	Model 2	Model 3	Model 4	Model 5
Risk of being caught	-0.009**	-0.011**	-0.009*	-0.009*	-0.010**
Severity of the penalty	0.05	0.053	0.079	0.071	0.042
Tax morale	-0.016	-0.019	-0.009	-0.007	-0.018
Firm characteristics					
Number of employees		-0.016**	-0.012	-0.013*	-0.014*

Table continues on the next page



Table continued from the previous page	Model 1	Model 2	Model 3	Model 4	Model 5
Economic sector (Accommodation omitted)					
Agriculture		-0.825	-1.101	-1.271	-1.021
Manufacturing		-1.747***	-2.305***	-2.286***	-1.612**
Construction		-1.213*	-1.916**	-1.937**	-1.091*
Sales and transportation		-1.934***	-2.435***	-2.495***	-1.905***
Private services		-2.150***	-2.551***	-2.537***	-1.989***
Public services		-2.709***	-2.716***	-2.697***	-2.668***
Number of years in business (up to one year omitted)					
1-5 years		1.471*	2.654***	2.681***	1.317*
Over 5 years		1.013	1.774*	1.768*	0.818
VAT payer		-1.125**	-1.095**	-1.159**	-1.021**
Controlling variables for other firm characteristics	No	Yes	Yes	Yes	Yes
Obstacle to doing business					
Legislative system			-0.205	-0.229	
Illegal competition			0.399**	0.392**	
Macroeconomic situation			-0.373**	-0.400**	
Controlling for other variables related to the satisfaction with the business environment	No	No	Yes	Yes	No
Respondents´ individual characteristics					
Responding person was the owner				0.194	0.519*
Controlling for individual characteristics of the respondent	No	No	No	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
Model statistics					
Number of observations	399	399	327	327	399
Pseudo R2	0.008	0.071	0.161	0.175	0.086

*Note: legend: * p<0.05; ** p<0.01; *** p<0.001*
Source: The GREY survey (2015)

Employers were also asked to assess various obstacles to doing business. We have included these variables into our models (model 3 and 4), together with other variables referring to the assessment of the business environment, to explore their relationship with the likelihood of viewing competitors as hiring workers without a contract. Of these variables, only two are significantly correlated with the likelihood of perceiving competitors as hiring workers without a contract. Firms assessing illegal competition to be an obstacle are significantly more likely to view competitors as hiring workers without a contract, while firms assessing the business environment to be an obstacle reported a lower occurrence of competitors hiring workers without a contract.

Table 18, meanwhile, evaluates the relationship between the likelihood of perceiving competitors as paying envelope wages to their employees and these same characteristics considered above. The results are similar. Again there is a statistically significant negative relationship between the perceived risk of being caught and envelope wages in all five models. The higher is the assessed risk of being caught, the lower the occurrence of envelope wages. There is no significant relationship, however, with the perceived severity of the penalty. Tax morale, again, is not associated with stating that competitors practice envelope waging. Firm size, however, is also not significant, although there are significant sectoral variations. The likelihood of competitors paying envelope wages is greatest in the accommodation sector, followed by construction and agriculture. Again, younger businesses 1-5 years old are significantly more likely to identify envelope wages as a problem in competitor firms, although whether a firm pays VAT or not is not significantly related to the perceived likelihood of competitors paying envelope wages.

Table 18 Ordered logit results with the dependent variable: How often would you say hiring an employee under a contract with "hidden clauses" occurs within your direct competitor companies?

	Model 1	Model 2	Model 3	Model 4	Model 5
Risk of being caught	-0.009*	-0.010*	-0.008	-0.008	-0.011**
Severity of the penalty	0.123	0.106	0.083	0.111	0.104
Tax morale	-0.01	-0.011	0.008	0.011	-0.007
Firm characteristics					
Number of employees		-0.006	-0.005	-0.009	-0.006
Economic sector (Accommodation omitted)					
Agriculture		-0.83	-1.194	-1.799	-1.228
Manufacturing		-1.316**	-1.758**	-1.964**	-1.298**
Construction		-0.438	-0.981	-1.212	-0.463
Sales and transportation		-1.068*	-1.553**	-1.787**	-1.105*
Private services		-1.356**	-1.789**	-2.037***	-1.346**
Public services		-1.836**	-1.934**	-2.091**	-1.919**
Number of years in business (up to one year omitted)					
1-5 years		1.487*	1.896*	1.755*	1.373*
Over 5 years		1.04	1.187	1.214	1.032
VAT payer		-0.543	-0.586	-0.698	-0.522
Controlling variables for other firm characteristics	No	Yes	Yes	Yes	Yes

Table continues on the next page

Table continued from the previous page	Model 1	Model 2	Model 3	Model 4	Model 5
Obstacle to doing business					
Legislative system			-0.461**	-0.493**	
Illegal competition			0.092	0.067	
Macroeconomic situation			-0.081	-0.149	
Controlling for other variables related to the satisfaction with the business environment	No	No	Yes	Yes	No
Respondents´ individual characteristics					
Responding person was the owner				0.381	0.741**
Controlling for individual characteristics of the respondent	No	No	No	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
Model statistics					
Number of observations	357	357	312	312	357
Pseudo R2	0.01	0.046	0.098	0.12	0.068

*Note: legend: * p<0.05; ** p<0.01; *** p<0.001*
Source: The GREY survey (2015)

Of the variables related to the business environment, only the legislative system being an obstacle to doing business is significantly correlated with the occurrence of competitors´ paying envelope wages. Firms assessing the existing legislative system as an obstacle to doing business are more likely to report a lower occurrence of competitors´ paying envelope wages. If the responding person is the owner of the company, the relation to declaring the occurrence of competitors´ paying envelope wages is the same as to declaring competitors´ hiring without a working contract. This relation disappears, if we control for business environment assessment.

Finally, an alternative dataset on the sectoral variations in the undeclared economy in Croatia is provided by Lovrinčević et al. (2011) who evaluate the non-exhaustiveness of national accounts. They find significant sector variations during the period 2000-2008. For instance, while almost a half of the total unofficial economy in 2000 was located in manufacturing and the trade sector (see **Error! Reference source not found.**19), the proportion in these sectors declined over the period 2000 until 2009. On the other hand, relative importance of the undeclared economy in other sectors such as hotels and restaurants, or real estate, renting and business activities, almost doubled during the given period. The lesson, therefore, is that the undeclared economy is not a static sector. Indeed, one might suppose that the advent of what is various called the 'sharing', 'platform', 'collaborative' or 'gig' economy, may well have significantly increased the proportion of undeclared work which is conducted in sectors such as the accommodation sector in recent years, but which has not yet measured in statistical surveys.

Table 19 Structure of total non-exhaustiveness by activities, in %

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agriculture, hunting and forestry	7.73	6.55	6.74	6.19	5.94	5.02	5.17	5.18	5.07
Fishing	0.03	0.46	0.56	0.54	0.58	0.52	0.47	0.44	0.45
Mining and quarrying	0.15	0.17	0.18	0.23	0.19	0.21	0.18	0.19	0.02
Manufacturing	22.53	19.58	21.45	17.02	15.28	16.27	15.04	14.87	15.23
Electricity, gas and water supply	0.34	0.33	0.43	0.30	0.28	0.27	0.02	0.23	0.25
Construction	9.36	11.42	9.87	12.22	14.91	13.02	12.34	11.45	11.67
Wholesale and retail trade	20.74	23.43	18.88	20.87	18.72	19.70	20.14	19.22	18.52
Hotels and restaurants	7.75	8.90	9.45	10.55	11.12	11.89	11.51	12.61	12.83
Transport, storage and communication	6.10	5.94	5.49	4.88	6.14	6.59	6.53	5.99	5.82
Financial intermediation	1.58	0.08	1.72	1.72	0.58	0.93	0.86	0.82	0.82
Real estate, renting and business activities	7.89	8.93	10.24	11.01	12.27	11.40	12.77	13.36	13.11
Public administration	0.23	0.21	0.02	0.02	0.15	0.13	0.14	0.01	0.12
Education	0.77	0.23	0.61	0.32	0.03	0.28	0.30	0.26	0.27
Health and social work	1.95	1.93	1.77	1.05	0.98	0.96	0.85	0.83	0.84
Other community, social and personal service activities	3.46	0.18	3.03	2.66	2.15	2.33	2.18	2.27	2.19
Illegal activities	9.13	9.33	9.39	10.27	10.43	10.47	11.28	12.16	12.59

Note: the sum of individual column may slightly differ from 100 due to rounding
Source: Calculation based on Lovrinčević et al. (2011)

3. CONCLUSIONS

This overview of the extent and nature of undeclared work has set the context for the analysis of what needs to be done to tackle the undeclared economy in Croatia. Akin to the declared economy and formal labour market, this report has revealed that the undeclared economy is a heterogeneous sphere composed of a wide array of different forms of work conducted as well as multifarious activities in a range of occupations and sectors, even if it is the case that some activities are more common than others, and it is more concentrated in some occupations and sectors more than others. It is also conducted by a diverse range of socio-demographic and socio-economic groups in the population, even if again it is more likely to be undertaken by some socio-demographic and socio-economic groups than others.

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