

# Tax evasion in the countries of Former Yugoslavia\*<sup>1</sup>

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## Abstract

*This article presents estimates of tax evasion in all Former Yugoslavian countries for various years and taxes during the last two decades. The scarcely available fiscal and national accounts data only allow us to provide approximate estimates. Nevertheless, they are a useful contribution to the existing literature in a unique sense since tax evasion is estimated for the very first time for some of the countries. The main aggregate assessment of tax evasion is based on data for shadow economy and tax burden. In addition, this research finding provides more specific measures of evasion for some single taxes that are based on data discrepancies from different sources. Lastly, we derive implications for the controls of tax evasion and the observed tax collections*

**Key words:** tax collection, shadow economy

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## 1. Introduction

Empirical research has extensively confirmed the negative consequences of tax evasion for a wide array of issues including fiscal stability, tax collection and tax fairness (Atkinson et al., 2011). Focused on non-OECD countries, Yakovlev (1999) explained how tax evasion also distorts budget constraints in the legitimate sector and distorts prices, Brueckner (2000) proved that tax evasion can limit the benefits from decentralization, and Eilat and Zinnes (2002) damage the credibility of governments and incentivize firms to exit the official economy. In spite of this policy and political relevance of the problem, literature concerning tax evasion focused on the Former Yugoslavian countries is scarce and mostly reporting casual evidence of estimates for single countries. This article aims at filling this gap in some extent.

Due to acute data shortcoming affecting the analysed countries, our methodological approach is mostly based on the available estimates of the “shadow economy”. The broad concept of shadow economy (also known as hidden, informal, underground, undeclared, grey or black economy) is used when dealing with both legal and illegal activities. A commonly accepted definition describes it as all activities which remain unregistered when they could contribute to the official GDP (Schneider and Enste, 2000). According to a taxonomy established by Lippert and Walker (1997), which was further expanded by additional remarks from Schneider (2000) and Schneider and Williams (2013), the legal and illegal activities are also split between monetary and non-monetary depending on the type of transaction.<sup>4</sup> They consider tax evasion to be all unreported work-related income and barter of legal services and goods. We will only deal with legal activities that fall under the shadow economy, i.e. shadow economy in its narrow sense. More precisely, we will be estimating the amount of tax which remains unpaid and hidden from officials. Tax evasion is mostly observed in deliberately concealed transactions originating from production of goods and services. These are all under-reported and unreported income and work.

The primary objective of this paper is to provide estimates of tax evasion for 6 Former Yugoslavian countries (Bosnia and Herzegovina, Croatia, North Macedonia, Montenegro, Serbia and Slovenia). The time period and sample of our analysis is limited depending on the estimation method. The main estimate concerns all 6 countries for a period between 2001 and 2013. After that, estimates on two single

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<sup>4</sup> In this 2×2 matrix, illegal monetary activities are criminal acts such as trade in stolen goods, drug dealing and manufacturing, prostitution, gambling, smuggling, fraud or human, drug and weapon trafficking, while the illegal non-monetary ones are barter of stolen goods, drugs or theft. When it comes to legal transactions, a further division is made between tax evasion and tax avoidance. Monetary tax evasion is all work related income that is unreported, while monetary tax avoidance is employee discounts and fringe benefits. Non-monetary tax evasion is barter of legal services and goods, while non-monetary tax avoidance is all do-it yourself work and neighbour help.

taxes for Croatia and Slovenia are made between 2000 and 2018, with some missing observations due to data unavailability.

Our main contribution to the existing literature is threefold. First, we provide an estimate of tax evasion for the first time for some countries. Second, we provide historical estimates when it comes all countries. Third, we make the latest estimates for some countries regarding single taxes. The article is organized as follows. Section 2 presents a survey of available literature on tax issues in Former Yugoslavian countries. Section 3 deals with potential tax evasion measures. Section 4 contains the estimates of tax evasion regarding total economy and individual taxes. Section 5 provides some implications of the findings, in light of penalty provisions, tax evasion control and tax collection for each country. Finally, Section 6 concludes.

## 2. Literature review

The literature review intends to provide an overview of 3 groups of papers close to the topic of tax evasion. Firstly, we include the ones that deal with tax systems. In the second paragraph are papers focusing on the issue of tax evasion specifically in former Yugoslavian countries. Lastly, in the third paragraph are the papers focusing on the topic of shadow economy (wider concept than tax evasion) in these countries.

The bulk of papers on tax issues in the Former Yugoslavian countries are descriptive and single-country focused. Furthermore, the main drawback of the existing literature has been a lack of econometric analysis, with some exceptions like Primorac (2014)<sup>5</sup>, Yuldashev and Khakimov (2011)<sup>6</sup> and Šimović et al. (2014).<sup>7</sup> Nevertheless, even without this kind of analysis, many authors have given policy recommendations based on legislation reviews, quantitative measures and their experiences and opinions. A brief overview of such descriptive tax system literature is presented in Table 1.

<sup>5</sup> The proposed fiscal equalisation model indirectly alleviates inequalities in the fiscal capacities of local government units in Croatia, through mitigating the differences in the capacity for collecting revenue from the PIT and surtax. Its effectiveness is even more evident when compared with the existing equalisation system, which is complex, administratively demanding and expensive.

<sup>6</sup> This paper derives the wage elasticities of labour force participation in Serbia, among others. The empirical analysis entailed two steps using the Heckman estimation method. Results show that on average the probability of labour force participation is positively related to the gross wage.

<sup>7</sup> The survey results showed that there is no high and broad consensus of Croatian tax experts regarding the perspectives of tax reforms.

Table 1: Survey of tax system literature per country found in RePec and Scopus

Country	Paper	Topic	Recommendation
Bosnia and Herzegovina	Antić (2014)	Efficiency of the VAT system in BiH	Simplification and modernization of the administration VAT and narrowing of the scope of exemptions of the public sector, financial and postal services.
Croatia	Bratić (2012)	Efficiency of the CIT tax expenditures in Croatia	Reform of tax expenditures in the CIT. Their complete annulment or replacement with transfers (subsidies) from the state budget.
	Prebble (2014)	Does Croatia need a general anti-avoidance rule?	There would be benefit of introducing a general anti-avoidance rule. The type of rule should be found from examples of similar jurisdictions.
	Bratić and Urban (2006)	Tax expenditures in Croatia	The various exemptions and tax privileges complicate the tax system, increase the costs of tax collection and open up windows for tax evasion. This should necessarily lead to mini-reform of the tax system in the future.
	Tesche (2001)	Tax Harmonization	Looking at bureaucratic problems for cross-border trade and investment is important, with sales taxes or retail sales staying in the country of purchase.
	Gadžo and Klemenčić (2014)	Stopping tax avoidance	Introduction of the general anti-avoidance rule in Croatian tax legislation.
	Cindori (2015)	VAT during the financial crisis	When it comes to further raising the VAT rate, there is a question of reaching the limits of Croatian tax capacity and real possibilities of setting its goals.
Serbia	Raonić et al. (2016)	Solving tax offences and evasion	Training of tax authorities in the field of international treaties on avoidance of double taxation. Setting the frequency of tax controls.
	Aničić et al. (2012)	Tax policy in Serbia	A reform of the tax system by transferring the tax burden from the field of highest tax evasions (earnings) to the field where it is the most difficult to perform tax evasions (VAT).
	Arsić and Krstić (2015)	Formalization of the shadow economy	Close the VAT gap. Adjust the economic policies so that the reduction in the shadow economy is accomplished by shifting business from the informal to the formal sector, without affecting the GDP.
Slovenia	Beynet, and Leibfritz (2009)	Keeping public finances sustainable	Reduce the tax distortions in the labour market while at the same time creating enough revenues for social security. Improve the design of environmental taxes.

Source: Author's elaboration

Concerning papers devoted to the analysis of tax evasion in Former Yugoslavian countries, they either focused exclusively on these countries or include them as parts of wider samples. Ott (2004) concluded that there is an increasing need in Croatia to improve the statistical system and also to reform the tax system; its simplicity and efficacy were particularly in focus. McGee et al. (2009), Bejaković (2009) and Culiberg and Bajde (2014) dealt with issues of tax evasion in Bosnia and Herzegovina, Croatia and Slovenia, respectively, only by assessing the justification of tax evasion from survey results. Madzarevic-Sujster (2002) is the only author from the scant literature who tried to estimate the extent of tax evasion. The analysis was performed for Croatia in 1994-2000 by making separate estimates of the evasion of some direct and indirect taxes. She used the difference between actual and potential GDP to proportionately obtain theoretical values for personal income tax (PIT), corporate income tax (CIT), social security contributions (SSC), excise tax, sales tax and value added tax (VAT). Following that, she calculated the evasion percentages in two scenarios in order to obtain a lower and an upper estimate. More recently, tax evasion in more than one Former Yugoslavian country has been analysed in the context of wider samples. Christie and Holzner (2006), in the part of their paper that deals with tax evasion, analysed PIT, SSC, VAT and excise taxes for selected European countries, including Croatia and Slovenia. Beginning from national accounts aggregates, they constructed estimates of the corresponding tax bases. Then they proceeded to compute estimates of compliance rates for each available year. Reckon (2009) and Barbone et al. (2013) included Slovenia in their EU27 sample while estimating the VAT gap. A report by Murphy (2011) for the Tax Justice Network provided an estimate of tax evasion for 145 countries, albeit without the participation of Montenegro and Serbia. Later, Schneider (2015) estimated tax losses due to shadow economy in EU28 (including Croatia and Slovenia) and some OECD countries by introducing some corrections to the methodology used by Murphy (2011).

On the causes of shadow economy in Former Yugoslavian countries, we find papers on Croatia, Slovenia and North Macedonia. Mikulić and Galić Nagyszombaty (2013) tried to uncover the causes of shadow economy in new European Union (EU) member states and Croatia. Their analysis identified government expenditures, the index of economic freedom, development levels and freedom from corruption as significant factors influencing the shadow economy. Williams and Franić (2015) used Eurobarometer data from Croatia in 2013 to demonstrate that there is no association between participation in undeclared work and the perceived level of penalties and risk of detection. Also, the strong association between engagement in undeclared work and the level of tax morale motivated their recommendation to introduce more preventive rather than punishing measures. In Williams and Franić (2016), the same authors proposed a novel way of explaining shadow economy as a violation of the social

contract that exists between the state and its citizens. Their analysis of data for Croatia confirms that the wider the gap between state morality (codified laws and regulations) and civic morality (values and beliefs of citizens), the greater the likelihood of participation in the informal economy. Lastly, there was a paper by Nenovski (2012), who used a different, qualitative approach, to locate causes, consequences and the scope of grey economy in the Republic of North Macedonia. Bejaković (2015), in his review of literature on shadow economy in Croatia, also identified the persistent problem of lack of official statistical data, which results in significantly overestimated economic activity during periods of growth and underestimated activity during recessions, which usually gives rise to overestimations and biased fiscal projections. Nevertheless, several papers have dealt with the challenges of shadow economy and tax evasion. Barić and Williams (2013) and Williams et al. (2015) provided overviews of policy measures towards undeclared work in Croatia and North Macedonia, respectively. They also compared these with the policy measures used in European Economic Area and concluded in both papers that, unlike the many preventative measures, there are very few curative measures, especially incentives to formalise undeclared work.

### **3. Methodology of analysis**

Table 2 shows an overview of methodologies to estimate tax evasion (Alm 2012). Similarly, Schenider (2000) made a classification of widely-used methods to estimate shadow economy. Unfortunately, due to the current lack of data, the only available methods for calculating tax evasion in Former Yugoslavian countries are indirect measures.<sup>8</sup> More precisely, calculations based on shadow economy estimates and on some estimated gaps.

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<sup>8</sup> Direct measures are unavailable since only institutions authorized by the state perform audits and surveys. To the authors' knowledge, in the cases of all Former Yugoslavian countries, no such efforts have been made. The remaining indirect measures as well as models cannot be estimated due to lack of input data (such as currency transactions, economic activity originating from physical input, etc.). On the other hand, modern measures would be inadequate for estimating tax evasion in whole countries since they would require time-consuming surveys or experiments which would not give robust results due to small sample issues.

Table 2: Potential tax evasion measures according to Alm (2012)

Traditional	
Direct	Audits of individual returns - Taxpayer Compliance Measurement Program (TCMP) and Taxpayer Compliance Measurement Program (TCMP) in the USA
	Survey evidence
	Tax amnesty data
Indirect	Estimate evasion via some “gap” that can be estimated (income reported on tax returns and income in the national income accounts; income and expenditures in the national income accounts; official and actual labour forces; expected VAT revenues and VAT actually collected; etc.)
	Transactions financed by currency
	Shadow economy
	Currency demand approach (Any “excess” in currency demand, or the amount unexplained by the explanatory variables, is then attributed to the shadow economy and, by extension, the amount of tax evasion.)
	Gap between the official output and the predicted “true” economic activity from the physical input estimates the amount of tax evasion
Model	DYMIMIC – when shadow economy effects may show up simultaneously in multiple markets (a model links the unobserved variables to observed indicators; and then a structural equation model specifies causal relationships among the unobserved variables)
Modern	
measures of reported income from individual tax returns as a proxy for evasion (on the assumption that one’s total income must be divided between reported income and unreported)	
field experiments	
consumption-based or tax deduction-based measures as an indicator of tax evasion	
survey-based approaches in which particular occupations are examined	
luminosity as measured from outer space to measure “true” economic activity, which can be compared to official income accounts to measure evasion	
original sources, such as information on cigarette tax evasion using discarded cigarette packs to measure the degree to which smokers in a single jurisdiction evaded the jurisdiction’s cigarette taxes	

Source: Author’s elaboration based on Alm (2012)

Murphy (2011) estimated the sum of evaded tax using shadow economy data. He multiplies the size of estimated shadow economy of a country in GDP% by the percentage of overall tax burden in order to obtain the value of evaded tax. This methodology was followed in Schneider (2015), who also calculated the tax losses that result from shadow economy activities. However, he took into account several other factors in his procedure. Firstly, he subtracted 33% of the shadow GDP accounting for legally bought material (already taxed) and double counting issues. Having in mind that shadow economy activities are mostly paid in cash, legal activities paid in cash are subtracted from the total figure in order to obtain shadow economy activities. As for double counting, these are a consequence of statistical offices adding some shadow economy activities to the official GDP. Secondly, he subtracted 10% from the remaining amount to account for illegal foreign transactions. Finally, he multiplied the remaining amount of value-added of a country, which consisted mostly of black labour, by taxes and social security contribution burden. This provided different results for obtained tax losses than the previous research, which the author justified with the fact that the results of the previous research were unrealistically high.

In the rest of our paper, besides using the shadow economy approach, we also focus on methods of estimating tax evasion via certain gaps, which is an approach based on discrepancies in national accounts data. Woon Nam, Parsche and Schaden (2001) estimated the value-added tax evasion as the difference between the hypothetical and the collected VAT revenues in a given fiscal year. When calculating the hypothetical VAT revenues they had to deal with several issues such as the fact that some activities that generate the VAT base fall under special tax regimes. A weight of the activities that fall under the normal VAT rate is then used as the total position. Additionally, certain regions within a country might have different taxation rules than the rest of the country; regional statistics are required in order to resolve this issue. There is also a time discrepancy between the origin of the tax liability and the collection of the corresponding tax. In this case, 10% of the value for the VAT base of the preceding year was allocated to the current year. Afterwards, they obtained the VAT evasion as one minus the “tax collection performance ratio”, which is a ratio of calculated and hypothetical VAT revenues.

Gebauer, Woon Nam and Parsche (2003) calculated VAT evasion for selected EU states. They broke down household final consumption into 32 types of goods and services and computed estimates of the average VAT rate for each of them. This gave them a relatively precise estimate of the applicable rate for household final consumption. In the process, they made several adjustments such as corrections for time lags between the creation of the tax liability and the actual payment, and corrections for suspensions of tax liabilities and other types of tax waiving.

A study that calculated the VAT gap in EU28 by Poniatowski et al., Bonch-Osmolovskiy and Belkindas (2016) is the most recent and most comprehensive



attempt so far to calculate tax evasion, to our knowledge. This study was preceded by Barbone et al. (2013) and Reckon (2009), both applying the same “top-down” approach. Nevertheless, the 2013 and 2016 studies used higher estimates from direct communications and used a different data source. They all used two components measured in order to calculate the VAT gap: the theoretical VAT Total Tax Liability (VTTL) and the amount of VAT actually collected. These were then combined to estimate the VAT gap as a formula of  $1 - \text{VAT}/\text{VTTL}$ . The VTTL is composed of adjusted household consumption liability and unrecoverable VAT on intermediate consumption, on inputs to gross fixed capital formation, and on government consumption.

Estimating tax evasion based on gaps is mostly done for VAT and via the top-down approach, according to Fiscalis Tax Gap Project Group (2016). However, in some EU countries there have also been estimates for PIT, CIT and SSC, which employed the bottom-up approach using micro data.<sup>9</sup>

#### 4. Empirical data and analysis

In order to estimate tax evasion in a transparent manner we must rely exclusively on publicly available data. Even when appropriate data is available, our estimates still depend on that data’s availability, accuracy, frequency of publishing and regular revision. The lack of country-specific statistical data limited using some methodologies when calculating tax evasion. In the pursuit of a homogeneous source of data for analysing tax evasion, we checked for the presence of Former Yugoslavian countries in international databases and indices.<sup>10</sup> Our global estimate of tax evasion is based on shadow economy data. Bearing in mind the available data, we also have explored the option of relying upon an alternative indirect method, i.e. estimating gaps for the most exhaustive taxes. In particular, we estimated tax evasion on the CIT and the VAT. Due to unavailable data, it was impossible to make estimates for other taxes using this methodology.

<sup>9</sup> When looking at the type of data used in the process of estimating tax evasion, there are two kind of approaches depending on the origin of the data: a micro- and a macroeconomic approach. The former, microeconomic, compares the income declared by the taxpayer at a micro level with data obtained through sample surveys or observed after the auditing activity of the national tax authorities. On the other hand, the latter, macroeconomic, is also known as the top-down approach since it is based on comparison of fiscal data from Ministries of Finance with aggregate data from national accounts. Since there is no micro data for Former Yugoslavian countries that could help us with the micro approach, in this paper we pursue the second solution.

<sup>10</sup> The presence of Former Yugoslavian countries in international databases can be described as none other than heterogeneous. Varying from one country to another, there is data for longer and shorter periods of time. However, a common denominator for all is that in the last 10 years there is notable convergence and that they all participate in relevant surveys and indexes. Further information can be seen in Table A.1.

#### **4.1. Total tax evasion: estimate using shadow economy data**

The shadow economy data are taken from Mai and Schneider (2016).<sup>11</sup> According to their definition, the shadow economy includes all of the economic activities that are deliberately hidden from official authorities for various reasons. Ranging from monetary and regulatory to institutional ones, they respectively include avoiding paying taxes, avoiding governmental bureaucracy and practicing corruption. They estimate a MIMIC model where shadow economy is the latent variable that is determined by a set of significant causal variables: tax burden, regulatory burden, unemployment rate, self-employment rate and economic freedom index. This model results in a MIMIC index of the trend of the size of the shadow economy. In their final step Mai and Schneider (2016) calibrate this index in order to calculate the size of the shadow economy as percentage of GDP using 1999 as the base year.

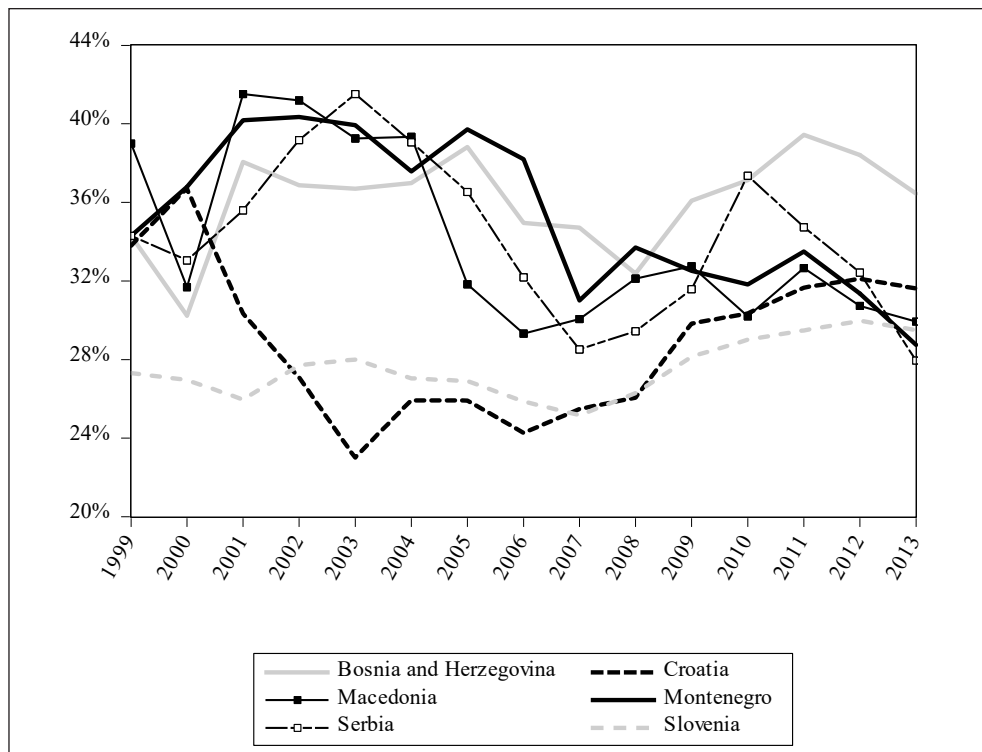
Figure 1 shows that the countries with the smallest shadow economy are Croatia and Slovenia. Coincidentally, these are the countries that have advanced the most in European integration. The remaining four countries have much higher results. Specifically, their averages hover around 35% of GDP. Nevertheless, from 2010 to 2013 when the time series end, there is a decreasing trend of the shadow economy in all countries except Croatia and Slovenia.

The second component in calculating tax evasion is tax burden. It is a parameter based on observed tax collection (tax revenues including social security contributions) as a percentage of GDP. Data for calculating tax burden was obtained from the Government Finance Statistics data portal of the IMF (Bosnia and Herzegovina, Croatia and Slovenia), corresponding Ministries of Finance (North Macedonia, Montenegro and Serbia), as well as World Development Indicators (GDP value). Nevertheless, the compatibility of all three data sources in this sense is not questionable. The fiscal data is collected under GFSM 2014 and GFSM 1986, both GFS frameworks by the IMF, which guarantees homogeneity of this kind of data compiled under different manuals. On the other hand, the GDP values in current local currency units from WDI are the same values as in other databases.

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<sup>11</sup> More recent papers by Medina and Schneider (2018, 2019) include updated estimates of shadow economy adding new observations for 2014, 2015, 2016 and 2017. However, in these versions, they dropped North Macedonia, Montenegro and Serbia due to short time-series. When re-estimating evasion for the remaining countries using these figures we notice generally lower values of tax evasion, but similar dynamics through time. This refers especially to Bosnia and Herzegovina and Slovenia, while Croatia exhibits a different path only in the first half of the estimated time period, and later returns to its usual course.

Figure 1: Shadow economy in Former Yugoslavian countries, %GDP



Source: Author's elaboration based on Mai and Schneider (2016)

Table 3 reports our estimates, based on all available data<sup>12</sup> on shadow economy and tax burden. The estimates were obtained according to the methodology proposed by Schneider (2015) and is explained in Section 3. However, tax evasion is, in short, the product of the corrected shadow economy estimates multiplied by tax burden. The results show how much tax could have been collected if the size of the shadow economy was zero. Therefore, the previously presented data on shadow economy is embedded in our estimate of tax evasion. It is important to stress that here we also make the assumption that all shadow economy activities are produced and grasped within the official GDP<sup>13</sup>. Since we have no knowledge of the actual percentage share of shadow economy, we make the assumption that it is 100%. This provides upper limit values to our estimate.

<sup>12</sup> Available in Tables A.2 and A.3.

<sup>13</sup> All contemporary methodologies for collecting national accounts data, such as SNA 2008 or ESA 2010, are directed towards expanding their scopes in order to include most illegal and hidden economic activities in the GDP. Even then, calculating the exact share of shadow economy presents a cumbersome task.

Table 3: Total tax evasion estimate based on shadow economy

– in percent (%)

	Bosnia and Herzegovina	Croatia	North Macedonia	Montenegro	Serbia	Slovenia
2001						5.80
2002		5.86				6.24
2003		4.85				6.34
2004		5.35				6.13
2005	8.33	5.31	5.27		8.42	6.18
2006	8.06	5.00	4.78	8.09	7.48	5.89
2007	8.01	5.27	5.02	7.08	6.66	5.62
2008	7.28	5.44	5.37	7.69	6.80	5.81
2009	7.89	6.17	5.23	6.71	6.97	6.20
2010	8.35	6.16	4.68	6.52	8.16	6.52
2011	9.14	6.25	5.03	6.61	7.32	6.54
2012	8.92	6.56	4.66	6.30	7.05	6.74
2013	8.25	6.46	4.35	6.01	5.94	6.61
average	8.25	5.72	4.93	6.88	7.20	6.20

Source: Authors' elaboration

Results show that tax evasion is highest in Bosnia and Herzegovina, while North Macedonia has the lowest tax evasion percentages. Furthermore, the dynamics is also heterogeneous. Regressing tax evasion on individual time trend yielded a non-significant coefficient for Bosnia and Herzegovina and Serbia, positive coefficients in the case of Croatia and Slovenia, and negative in North Macedonia and Montenegro<sup>14</sup>.

#### 4.2. Evasion on single taxes: Estimates using tax gaps

Besides providing estimates of tax evasion based on shadow economy data, we explore another option while being limited by the scarcity of available data. This is the estimate of tax evasion of some single taxes in Croatia and Slovenia. Unlike the previous estimate, this one is based on a gap between national accounts and fiscal data. Having opted for the top-down approach, we collected data from various sources in order to be able to measure these discrepancies from different sources of data. Fiscal data on different tax revenues was obtained from the Government Finance Statistics data portal of the IMF. The effective tax rates for corporate income tax and value-added tax were collected from two TAXUD reports (Spengel

<sup>14</sup> The results of the tests for trends in time per each country are reported in Table A.4.

et al. 2019; Poniatowski et al., 2016 and Poniatowski et al. 2019). Lastly, we defined tax bases according to Mourre et al. (2014) and collected the appropriate data from national accounts through AMECO (Croatia and Slovenia). When estimating tax evasion via tax gaps, we apply the following simple procedure step by step:

- 1) Collect data on tax bases from national accounts data contained in AMECO (gross operating surplus corresponds to corporate income tax; household final consumption expenditure corresponds to VAT).
- 2) Apply effective tax rates from TAXUD reports to the tax bases in order to obtain potential tax revenue.
- 3) Subtract the actual tax revenues obtained from Eurostat from potential tax revenues.
- 4) After obtaining the amount of evaded tax, translate it from local currency units to GDP percentage value.

Results are shown in Tables 5 and 6.

Table 5: Corporate income tax evasion

– in percent (%)

CIT evasion	Croatia	Slovenia
2000		6.34
2001		6.23
2002	4.23	5.99
2003	4.06	6.13
2004	4.54	5.90
2005	3.66	5.27
2006	3.24	5.39
2007	3.06	4.80
2008	3.23	5.13
2009	3.39	5.27
2010	4.11	4.73
2011	3.90	4.99
2012	4.06	4.69
2013	4.03	4.59
2014	4.28	4.43
2015	4.14	4.38
2016	3.84	4.16
2017	3.12	4.71
2018	3.11	4.50

Source: Authors' elaboration

Corporate income tax refers to the legal obligation of a company to the government of its residence. In countries of Former Yugoslavia, this is present in the form of a payment which is taken from the profit of the company. In cases when a company is doing business without a profit, it is not subject to paying such taxes. In cases when there is profit, both tax avoidance and tax evasion were considered for the purposes of calculating effective tax rates. The results in Table 5 show that in the two analysed countries corporate income tax evasion amounts to a substantial part of GDP. In the observed period, both countries experienced a decrease in corporate tax evasion. Croatia especially showed a plummet in tax evasion during the years of the economic crisis. This might have been due to the bad economic environment causing local companies to experience negative results in their business, which simultaneously resulted in lower evasion. However, with further recovery of the economy, tax evasion levels returned to its previous levels in the aftermath of EU accession in 2013. In the last two years another decrease is occurring. When it comes to Slovenia, it can be seen that this country had a steady decrease of evasion throughout the period of the crisis and beyond. This might have been related to this countries' membership to the EU and access to many stability solutions. Nevertheless, the overall percentages are higher than in Croatia.

Table 6: Value added tax evasion

– in percent (%)

VAT evasion	Croatia	Slovenia
2010		0.85
2011		0.64
2012		0.91
2013		0.50
2014	1.16	0.89
2015	1.41	0.70
2016	1.13	0.59
2017	0.98	0.29
2018	0.67*	>0.01*

Note: Figures for 2018 are marked with an asterisk (\*), because the potential tax revenues are a forecast.

Source: Authors' elaboration

It was the European Union that used its vast resources to initiate a tax group that to help calculate the effective rates of the value-added tax. These figures would later aid in calculating the potential values of VAT, which when compared to the actual

collected ones gave the final result of tax evasion. As we can see for both of the countries in question, the evasion is set around 1% of GDP or below. Furthermore, a declining trend can be noticed for both countries.

## 5. Results and discussion

### 5.1. Discussion of the main estimate results

Table 4 compares our results with previous single country estimates.

Table 4: Studies on tax evasion concerning Former Yugoslavian countries. Figure in percentage of GDP

– in percent (%)

Year	Country	Murphy (2011)	Schneider (2015)	Raczkowski (2015)	Our estimate
2011	Bosnia and Herzegovina	12.64	-	-	9.14
	Croatia	7.48	6.30	6.46	6.25
	North Macedonia	10.64	-	-	5.03
	Montenegro	-	-	-	6.61
	Serbia	-	-	-	7.32
	Slovenia	9.85	5.30	8.16	6.54
2012	Bosnia and Herzegovina		-	-	8.92
	Croatia		6.30	6.46	6.56
	North Macedonia		-	-	4.66
	Montenegro		-	-	6.30
	Serbia		-	-	7.05
	Slovenia		5.30	8.23	6.74
2013	Bosnia and Herzegovina		-	-	8.25
	Croatia		6.30	5.68	6.46
	North Macedonia		-	-	4.35
	Montenegro		-	-	6.01
	Serbia		-	-	5.94
	Slovenia		5.20	7.65	6.61

Source: Authors' elaboration

Results from the Murphy (2011) show significantly higher estimates than our own, which is due to having a different definition of shadow economy. As we summarized in Section 3, Schneider (2015) explained how those results were overestimated. Moreover, he provided his calculation of tax evasion and gave technical notes on how to implement his methodology. This led us to adopt the same approach, which we explained earlier in this section. Our estimate of tax evasion for Croatia is in line with his results, while the one for Slovenia is slightly higher in our case. As for other countries, some of them have not been considered previously. This is the general case for Montenegro and Serbia, whose tax evasion is estimated here for the first time ever, to our knowledge. Furthermore, the same is true for Bosnia and Herzegovina and North Macedonia if we disregard the overestimate by the Murphy (2011). Lastly, the estimate by Raczkowski (2015), when compared to our estimates and those made by Schneider (2015), shows results that are slightly higher for Croatia and significantly higher for Slovenia. The reason for this might be the fact that the estimates by Raczkowski (2015) are obtained as a product of the shadow economy level and an average rate of total tax burden. This rate, by definition from the Word Bank Database, refers the amount of taxes and mandatory contributions payable by businesses. It does not account for allowable deductions and exemptions, and excludes taxes such as personal income tax, value-added taxes, sales taxes or goods and services taxes. Bearing this in mind, we can only interpret his results in the context of corporate income tax gap.

## 5.2. Potential role played by existing controls on tax evasion

Besides the punishment policy, which is features negative incentives, there are other ways of dealing with the issue. Since the problem of tax evasion is related mostly to unreported income, there are three different paradigms outlined by Alm (2012) on how tax evasion should be controlled. We begin from these three as a starting point and make some additional remarks applying them to Former Yugoslavian countries:

- *Policy enforcement paradigm* – This refers to the detection and punishment of tax evasion. The authorities are responsible for making improvements in this area by increasing the quantity and quality of audits, increasing penalties, applying them consistently and exposing some cases publicly in order to raise awareness.
- *Service paradigm* – Responsibility is given to the tax administration to make efforts to become more taxpayer friendly, promote tax education, improve all means of communication and make all necessary forms and regulations easily available to the general public.
- *Trust paradigm* – This challenge is again set upon the government, which is supposed to advertise tax compliance as the “right” type of behaviour, avoid decisions that abolish sanctions to tax cheaters and address inequities in order to raise the tax morale of the citizens.



When it comes to these three paradigms, several points mentioned can be seen as key issues in the development of policies for coping with tax evasion in Former Yugoslavian countries.

Out of all six Former Yugoslavian countries, the most complex one in terms of tax administration is Bosnia and Herzegovina. This country consists of two entities, the Federation of Bosnia and Herzegovina and Republika Srpska, as well as the Brčko district, which all have legislative, judicial and executive authority. At the country level, the Indirect Taxation Authority is responsible for the collection of all indirect taxes (VAT, Customs and Excises and others). On the other hand, there are also tax administrations at the entity level whose jurisdiction includes direct taxes (CIT, PIT, property taxes, SSC, etc.). The complexity of the issue makes it very difficult to execute the tasks in the first and second paradigms. Due to the potential for overlapping jurisdictions, taxpayers are inadvertently put in a position of being unaware of possible tax obligations they have or of being able to cleverly go around them. The lack of fiscal coordination and harmonisation within departments of tax authorities is more likely to cause problems and eventually lead to a widening fiscal deficit, according to Antić (2015). Nevertheless, the revision of main fiscal policy measures by Koczan (2015) showed that Bosnia and Herzegovina has moved in a positive direction in 2013 as a result of introducing administrative measures to improve tax collection. More precisely, experts agreed in a survey by Lazović-Pita and Štambuk (2015) that advances should be made towards introducing progressive personal income tax and excise duties on luxury products.

After North Macedonia, the country with lowest average tax evasion in the examined period is Croatia. Since the early 2000s, the government has been introducing VAT exemptions, higher income tax deductions and lower PIT and CIT rates (Koczan, 2015). When this was combined with good enforcement of tax laws with favourable rates, tax evasion was kept under control at around 5% (paradigm 1). However, after 2009, tax evasion is shown to be rising in Croatia. This period coincides with the period of recession and an accompanying increase in public debt which Croatia suffered persistently from 2008 to 2014. The vulnerability of their economy in this period has therefore resulted in an increase in tax evasion. Nevertheless, International Monetary Fund (2015) concluded that Croatia is showing signs of recovery, as indicated by tax revenues. This might be a result of the government's reaction in 2012, which included a 2% VAT increase, a temporary solidarity tax and an introduction of a 12% tax on dividends and profit distribution. Still, there is evidence from authors such as Gadzo and Klemenčić (2014), who argue that Croatia has yet to develop a coherent legislative framework suitable for curbing tax avoidance.

The main fiscal problems for North Macedonia, according to International Monetary Fund. European Dept. (2015a), are mostly concentrated on the expenditure side of the budget. Revenues, in the absence of further tax policy changes, are maintained

at a stable level and sometimes even over-perform. It is also demonstrated by a low level of tax evasion, the lowest among Former Yugoslavian countries. The changes that might have influenced low evasion are tax cuts in the early 2000s as well as introduced improvements in tax administration between 2006 and 2008 (Koczan, 2015). We also mentioned the strict laws on taxes that prescribe high financial penalties for tax offences. Even a minimum penalty can result in paying amounts worth at least 10 minimum wages.

Montenegro was the last of all Former Yugoslavia republics to gain its independence. With a relatively small economy, it is an easy task for its authorities to administer tax control. Since the country is exhibiting a fall in tax evasion years after its independence, we can say that this might be attributed to increasing trust in the new country's institutions and to taxpayers having higher tax morale due to a stronger feeling of national identity. Furthermore, after the secession, there were two tax rate cuts for PIT (2007) and SSC (2008), which further contributed to reducing tax evasion (Koczan, 2015). These actions from paradigms 3 and 1, respectively, demonstrate how a subtle approach to building tax discipline and the development of tax morale contributes to the legal and timely payment of taxes (Božović, 2016).

Serbia's fiscal policy was mostly aimed towards the expenditure, rather than the revenue, side. Furthermore, in the study by Koczan (2015), we see that the enforcement of fiscal rules was also weak. Having moved focus from taxes, the amount of VAT fraud significantly increased (Raonić and Vasić, 2014). In light of turbulent political changes, it comes as no surprise that tax evasion followed a dynamic path. Nevertheless, the consolidation measures in 2012 regarding VAT, CIT, PIT, excise duties and non-tax revenues (Koczan, 2015) led to a significant decrease in tax evasion. These actions belonging to paradigm 1 were reflected in our estimate as a fall in tax evasion from 7.05 in 2012 to 5.94 in 2013. Yet many actions remain to be carried out in the future, especially those from paradigm 3, where tax compliance should be promoted in order to increase the tax morale of taxpayers.

Lastly, Slovenia, the most advanced country of Former Yugoslavia, has the most stable tax evasion rate, hovering at around 6 % of GDP. Being in the Eurozone, Slovenia is obliged to constantly fulfil the Maastricht criteria, which define fiscal stability as one of the key factors. Furthermore, activities on promoting tax compliance are directly instructed from EU institutions. All necessary paradigms for controlling tax evasion are therefore covered. The roots of this behaviour are found in comprehensive tax reforms early in the transition process when accession to the EU was a powerful objective (Martinez-Vazquez and McNab, 2000). The years between 2004 and 2007 are when Slovenia adopted several amendments to the existing tax system. These mostly referred to simplifications in the existing tax system, decrease of statutory rates and introduction of many tax reliefs (Majcen et al., 2007). Bearing this in mind, it comes as no surprise that these years are the only

ones that saw tax evasion rates below 6% GDP. However, after the boom came the crisis and its aftermath, which brought a rise in tax evasion and a destabilization of the whole fiscal system. At the end of 2009, the European Commission launched an excessive deficit procedure for Slovenia embodied in austerity measures (Setnikar Cankar and Petkovšek, 2014).

### 5.3. Implications from comparisons with actual observed tax collection

Khwaja and Iyer (2014) analysed whether countries were fulfilling their potential regarding tax collection. All six Former Yugoslavian republics are included in the list of 61 analysed countries. In their paper, there is a term commonly understood as the “tax gap”, which presented the difference between the legal potential tax revenue and the actually-collected tax revenue. The revenue potential is obtained by using econometric methods. They employ a broad data set and a regression approach to find the tax potential, which they later compare to the actual tax collection.

According to Khwaja and Iyer (2014), this difference suggests that in these countries there is a greater or lesser incentive to evade taxes and a greater or lesser load on tax administration. A negative tax gap would imply that the country is collecting more than what taxpayers can afford given their economic situation, which eventually creates an incentive for tax evasion. Table 7 shows the average results concerning the tax gap for the period 2000–2010, as well as concerning our estimate of tax evasion. In addition, we add OECD and EU15 averages in order to facilitate comparison.

Table 7: Actual observed tax collection for the period 2000-2010

– in percent (%)

	Shadow economy (Schneider et al., 2010)	Tax gap (Khwaja and Iyer, 2014)	Tax evasion (our estimate)
Bosnia and Herzegovina	33.50	-10.65	7.99
Croatia	31.94	0.26	5.49
North Macedonia	37.48	-1.01	5.06
Montenegro	30.54	-10.05	7.22
Serbia	31.43	-11.77	7.42
Slovenia	26.10	-0.61	6.07
OECD	20.00	-0.11	-
EU15*	18.39	-0.56	-

Note: \*missing Luxembourg

Source: Authors' elaboration

While Bosnia and Herzegovina, Montenegro and Serbia all have negative tax-gap values, Croatia, North Macedonia and Slovenia all have a tax gap that hovers around zero. Combining this result with our estimates on tax evasion and Mai and Schneider's (2016) figures on shadow economy, we conclude that legal tax burden (including tax rates but also the remaining elements of taxes) are over the average.

## **6. Conclusions**

The contribution of the article to the literature is threefold. Firstly, to the best of our knowledge, we make the first estimates of tax evasion for some countries. As previously mentioned in Section 2, tax evasion is estimated for some Former Yugoslavian countries within wider samples. However, for Montenegro and Serbia this paper provides, to our knowledge, the very first publicly available tax evasion estimate. Secondly, we produce estimate in time series. In contrast, the available literature makes only single-year estimates. Using our homogeneous data set, we make the earliest tax evasion estimates for 2001 and the latest for 2013. The estimates are shown to be in line with the single-year focusing literature that is comparable in terms of methodology. Thirdly, we provide the most recent estimates of tax evasion for CIT and VAT when it comes to Croatia and Slovenia. These results show a declining trend of tax evasion for both countries when it comes to either of the two tax revenue categories.

Regarding the implications of our results, we consider the tax evasion phenomenon in the context of three paradigms for controlling tax evasion, i.e. policy enforcement, service and trust. Finally, we analyse tax collection in all countries to show that relative to their complete economies, tax collection is performed at a high level.

Although the process of collecting data and exploring various options for estimating tax evasion was a cumbersome task, the final results do present an advance in this field concerning these countries. It is in this aspect we consider the greatest limitation of the paper the unavailability of basic data. Thus preventing ourselves and others (see footnote 10) from using more sophisticated methods. In specific, more detailed data on tax compliance and other measures that could serve in estimating tax evasion are an absolute requirement for developing further research. Certain advances are being made with EU integration, where all countries submit detailed and homogeneous data (Eurostat). Nevertheless, there is much room for improvement, especially for candidate countries.

Further research on reasons behind our results may concern law changes in the past. One potential role in this aspect might lie in differences in legal penalty provisions for tax evaders across countries. A brief attempt is shown in Table A.5, where we provide an overview of fines for serious tax offences committed by a legal

person<sup>15</sup>. After measuring tax evasion in the entire area of Former Yugoslavia, the authors' future research concerning tax evasion aims to determine the reasons for such behaviour among the population. The notion of tax morale and identifying its determinants might be of significant help in this path.

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<sup>15</sup> Under these offences we considered the cases when the taxpayer fails to pay VAT, fails to pay VAT within the specified time limit, fails to request for issue of the identification number for VAT purposes, fails to keep accounts in sufficient detail to enable a proper and timely charge of VAT, etc.

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## Utaja poreza u zemljama bivše Jugoslavije<sup>1</sup>

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### Sažetak

*U ovome radu daje se prikaz procjene utaje poreza u svim bivšim zemljama Jugoslavije za različite godine i poreze u posljednja dva desetljeća. Jedva dostupni podaci fiskalnih i nacionalnih računa omogućavaju nam samo približne procjene. Unatoč tome, koristan su doprinos postojećoj literaturi u jedinstvenom smislu, jer se utaja poreza procjenjuje po prvi put u nekim od ovih zemalja. Glavna zbirna procjena utaje poreza temelji se na podacima sive ekonomije i poreznog opterećenja. Nadalje, ovim istraživanjem pružene su specifične mjere protiv utaje pojedinih poreza koji se temelje na odstupanjima podataka iz različitih izvora. I na kraju su izvedene implikacije za mjere kontrole utaje poreza i promatranog ubiranja poreza.*

**Ključne riječi:** ubiranje poreza, siva ekonomija

**JEL klasifikacija:** H26

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## Appendices

Table A.1: Former Yugoslavian countries in international databases and indexes

Year	Bosnia and Herzegovina				Croatia				North Macedonia				Montenegro				Serbia				Slovenia																	
	1999							3				3												3														
2000							3																															
2001							3																															
2002		2					2	3				2				2				2														2	3			
2003				3				3																														3
2004				3				3																														3
2005			2	3				2	3				2	3					2													2	3					
2006	1			3		1		3			1		3						1		3			1		3												
2007	1			3		1		3			1		3		1		3		1		3			1		3			1		3							
2008	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2009	1	2		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
2010	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2011	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2012	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2013	1	2		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
2014	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2015	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				
2016	1			3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1		3	4	1				

Notes:

1 = World Bank Doing Business surveys: Paying Taxes

2 = World Bank Enterprise Survey: Corruption; Informality; Regulations and Taxes

3 = Transparency international: Corruption perception index

4 = Heritage foundation: Index of Economic Freedom

Source: Authors' elaboration

Table A.2: Shadow economy in Former Yugoslavian countries, %GDP

– in percent (%)

Year	Bosnia and Herzegovina	Croatia	North Macedonia	Montenegro	Serbia	Slovenia
2001	38.06	30.34	41.52	40.18	35.59	25.96
2002	36.87	27.09	41.19	40.34	39.17	27.70
2003	36.69	23.01	39.25	39.93	41.52	28.00
2004	36.99	25.92	39.33	37.57	39.07	27.03
2005	38.82	25.91	31.84	39.72	36.53	26.90
2006	34.96	24.26	29.32	38.20	32.19	25.86
2007	34.71	25.48	30.06	31.00	28.51	25.16
2008	32.37	26.06	32.12	33.70	29.44	26.28
2009	36.08	29.83	32.75	32.52	31.58	28.14
2010	37.13	30.34	30.21	31.82	37.35	29.01
2011	39.44	31.66	32.66	33.50	34.74	29.48
2012	38.41	32.10	30.73	31.35	32.42	29.97
2013	36.45	31.61	29.93	28.75	27.95	29.49

Source: Author's extract based on Mai and Schneider (2016)

Table A.3: Tax burden in Former Yugoslavian countries, %GDP

– in percent (%)

Year	Bosnia and Herzegovina	Croatia	North Macedonia	Montenegro	Serbia	Slovenia
2001						37.04
2002		35.86				37.38
2003		34.97				37.55
2004		34.24				37.60
2005	35.59	33.98	27.42		38.22	38.08
2006	38.24	34.18	27.04	35.11	38.54	37.75
2007	38.27	34.31	27.68	37.86	38.76	37.05
2008	37.31	34.62	27.74	37.85	38.32	36.63
2009	36.28	34.31	26.50	34.22	36.62	36.56
2010	37.30	33.67	25.71	34.01	36.24	37.25
2011	38.42	32.72	25.56	32.70	34.95	36.81
2012	38.50	33.88	25.15	33.33	36.06	37.30
2013	37.53	33.87	24.11	34.69	35.25	37.19

Source: Author's elaboration based on data offered by the IMF and corresponding Ministries of Finance

Table A.4: Testing the presence of a time trend in individual series

Country	Bosnia and Herzegovina	Croatia	North Macedonia	Montenegro	Serbia	Slovenia
intercept	-1.77	-2.48	1.61	5.29	2.93	-0.97
	(-1.32)	(-3.8)***	(2.23)*	(5.25)***	(1.62)	(-2.18)*
trend	0.0009	0.0013	-0.0008	-0.0026	-0.0014	0.0005
	(1.38)	(3.89)***	(-2.16)*	(-5.19)***	(-1.58)	(2.32)**

Notes: \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5% and 10%, respectively. t-statistics computed using OLS residuals in parenthesis. Estimates are performed using Eviews 9.5.

Table A.5: Fines for serious tax offences of a legal person according to tax laws

Country		Personal Income Tax	Corporate Income Tax	Value Added Tax
BiH	FBIH	1023 to 10226 € (5 to 50 MW)	1534 to 51129 € (7.5 to 247 MW)	50% of the non-calculated or unpaid amount with a minimum of 51 €
	RS	10% of each monthly due tax, up to 150%	10225.84 to 30677.51 € (50-203 MW)	
	BD	10% of each monthly due tax, up to 150%	10% of each monthly due tax, up to 150%	
CRO		677 to 6767 € (1.5 to 15 MW)	271 to 27066 € (0.6 to 62 MW)	271 to 1847 € (0.6 to 4 MW)
MKD		3000 € (13 MW)	3000 € (13 MW)	2000 to 2500 € (9-11 MW)
MNE		2000 to 20000 € (7-70 MW)	550 to 16500 € (2-57 MW)	6000 to 20000 € (21-69 MW)
SRB		819 to 8189 € (3-33 MW)	819 to 4914 € (3-20 MW)	819 to 8189 € (3-33 MW)
SLO		400 to 5000 € (0.5-6 MW)	3200 to 30000 € (4-37 MW)	2000 to 125000 € (2.5-155 MW)

Notes: Local currency units recalculated to euros using middle exchange rate of corresponding Central banks on June 19th 2017. Euros recalculated to approx. minimum wage (MW) values using Eurostat data for 2017S1.

Source: Authors' elaboration