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**Article**

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# Effects of Media Coverage on Budget Transparency in Croatian Local Administrative Units

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## Abstract

This paper evaluates positive and negative media coverage of online local budget transparency (OLBT) and its impact on budget transparency in Croatian local administrative units in 2018. Using multinomial logistic regression, research confirmed a strong impact of media coverage on budget transparency. Positive media coverage of OLBT increases the probability that local administrative units will attain a higher level of transparency, while negative media coverage is accompanied by a higher likelihood of local units' retention in the lower transparency range. The implications of these findings are clearly emphasized through a deeper understanding of the role of the media in public sector economics, precisely in the context of budget transparency. This study contributes to public sector literature by identifying the effects of positive and negative media coverage on budget transparency.

## Introduction

According to the IMF, fiscal transparency is defined as "openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts, and projections", and it is based on several pillars that support the promotion of fiscal transparency, bringing the public its essence closest (IMF, 2007). The literature often equates the terms budget transparency and fiscal transparency. As one of the segments of fiscal transparency, budget transparency or openness is related to public reporting. In that sense, budget transparency is closely linked to notions of executive accountability and principles of clarity in budgeting (Caamaño-Alegre, 2013).

Fiscal transparency and the transmission of budget/fiscal information are relevant in improving economic management and promoting fiscal stability (Heald, 2003; Sedmihradská & Haas, 2012). This also includes reducing the overstatement of benefits and understatement of the cost, i.e., reducing fiscal illusion (Afonso, 2014), reducing the magnitude of political budget cycles (Aaskoven, 2016, Alt & Lassen, 2006), decreasing the corruption and increasing government's credit rating (Chen & Neshkova, 2018; de Simone et al., 2017), increasing the efficiency of public governance and spending (de Simone et

al. 2019; Montes, et al., 2019), and overall enhancing fiscal discipline (Jarmuzek, 2006; Wildowicz-Giegel & Kargol-Wasiluk, 2020).

The theoretical aspects and implications of fiscal/budget transparency are explained through principal agent (agency) theory and legitimacy theory. The principal agent theory<sup>1</sup> is explained through the relationship between the principal (citizens, voting body) and the agent (politicians, political body) (Ferejohn, 1986). According to theory, legitimately elected representatives of the voter's will (agents) or politicians are responsible for delivering the promised program, ensuring a certain amount of public goods and access to information regarding the collection and spending of public money. On the other hand, the principals (voters) or citizens are obliged to pay taxes that enable the execution of the promised program, the agreed policies, and the delivery of expected services. The common equality of collection and spending is the most important political document or budget from which agents' actions are readable. The problem arising from the aforementioned relation can be summed up by the situation in which principal-agent interests diverge, i.e. representing politicians' own interests.<sup>2</sup> Relating to this, the right of each individual to access information falls under secondary political interests, i.e. fiscal information is not publicly available or accessible. In the context of transparency, fiscal and budget transparency enable stronger control over the work of politicians, strengthened trust and stronger economic outcomes.

Legitimacy theory puts political performance in the context of legitimacy, defined as "a generalized perception or assumption that the action of an entity is desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions" (Suchman, 1995, p. 574). According to this theory, the organization (the term is synonymously used for a local unit or government) is influenced by different factors. Like the principal-agent theory, this theory highlights the analogy of behaviour and mutual convictions of legitimate entities and social groups to preserve the legitimacy of power. However, an important distinction is a dependence of legitimacy on the collective and its independence of the individual, which implies that the political authority in power can deviate from the individual's value, maintaining its legitimacy as long as those deviations and disappointments do not provoke a

public outcry. An arising issue is a situation in which a loss of legitimacy appears or a mismatch in the behaviour of a legitimate entity and social groups.<sup>3</sup>

The connecting link between problems arising from the above two theories is presented through information (a) symmetry which manifests in providing a certain amount of information by a political body. Benefits arising from information asymmetry (provision of a smaller amount of information) for political authorities are clearly defined through the realization of certain privileges, such as easier stimulation of economic activity or the realization of their benefits.

Thereby, it is usually stated that the existence of press freedom and free reporting reduces information asymmetry. There is a consensus in the literature that the media can support greater fiscal outcomes and transparency (Ademmer & Dreher, 2016; Shi & Svensson, 2006, Strömberg, 2001; Veiga et al., 2017). In this context, the role of the media as a transmitter of information on all government activities is important. Although the role of the media is not limited to fiscal or budget transparency, this paper will focus exclusively on the connection between the media and budget transparency.

How media coverage affects budget transparency is also not a recent issue. However, although theoretical and empirical research generally agree that their connection is positive and that stronger media coverage leads to a stronger degree of transparency, the research so far has mainly focused on the effect of overall media coverage on fiscal or budget transparency without clearly demarcating the impact of positive or negative media releases on transparency.

This research attempts to supplement the existing gap in empirical research by determining whether there is a difference in media influence on budget transparency, considering their positive and negative content connotations. To our knowledge, no empirical evidence currently addresses this question.

The paper is organized as follows: the second part provides a literature review, the third part explains the data and methodology, the fourth part is both results and discussion, and the final part is the conclusion.

<sup>1</sup> A key element of agency theory is the moral hazard problem (Cowden, et al., 2020).

<sup>2</sup> In that sense, fiscal illusion is a key part of agency theory (Bastida, Albaladejo, 2019, p. 17).

<sup>3</sup> The question of the magnitude of allowed deviations and divergences that do not threaten public outrage can be raised through deeper analysis.

## Literature Review

There is growing literature about media coverage and its connection with fiscal/budget transparency, and literature that investigates only one part of them. However, the literature that studies the impact of positive or negative media coverage on budget transparency is still incomplete, according to the author's very best knowledge. But, certain studies distinguish between the effects of positive and negative media coverage and investigate its impacts in other economic contexts. One of these is the research conducted by Grimmelikhuijsen (2011), where the effect of political messages (very positive, slightly positive, and a message that contains both positive and negative information) about air pollution on government competence was measured and where the negative impact of media content in relation to slightly positive media content is associated with a lower assessment of government competence. Zou et al. (2020), through an investigation of the impact of media coverage of a company's IPO, found that negative media significantly affected the price by effectively reducing the under-price. Erlich et al. (2021) investigate the effects of positive, neutral, and negative media attention on bureaucratic behaviour and conclude that positive or neutral media attention is associated with reduced responsiveness, while the effects of negative media attention differ, attention to government failures led to increased responsiveness while attention to corruption led to reduced responsiveness. Linder Müller et al. (2022) found that negative media announcements contribute to increased spending of public money and that negative media coverage creates pressure to help those with poor results avoid blame.

As our research is narrowly focused on budget transparency, we present and discuss recent research papers investigating these sorts of mutual relations. Our primary focus in this section is the budget transparency of municipalities and the media coverage of them.

The research conducted by Laswad et al. (2005) on the New Zealand sample separates the local units with websites, the local units with online financial reporting, and finally, the non-internet financial reporting local units. The authors used logit analysis to assess the different determinants of these three categories. Variable press visibility is measured by how much news appears in the print press. General conclusions confirm that the press visibility variable impacts local units in such a way that local units with high visibility in the press media are more likely to engage Internet (online) financial reporting. By regression model, Gandía & Archidona (2008) investigate voluntary disclosure of information on Spanish City

Council websites determined by press visibility, defined as the amount of news in the print press in which the local authority appears. Press visibility has a strong and positive impact on the voluntary disclosure of information, so authors have stated that these two concepts are fundamentally linked.

In contrast, García & García-García (2010) found a negative relationship between voluntary financial disclosure and press visibility, measured as the number of Google quotes for each local government. The applied methodology is logit analysis. In the explanation, the authors emphasize the role of the media in highlighting controversial and negative aspects of local units' management; therefore, governments that receive strong media coverage will be reluctant to disclose information that the press can use to attack those with governing responsibility.

Grimmelikhuijsen & Welch (2012) explored what institutional factors determine different dimensions of government transparency and assessed the impact of media attention to local environmental issues on local government transparency. In this research, the authors speculate about the two-sided effects of the media on the pro-active disclosure of government information and state that (i) more active media may lead local governments to reduce transparency to prevent loss of reputation and loss of control and (ii) government may recognize that provision of information to media, which transmits it to the citizens can bring more pressure to the level of information disclosure. The authors defined the dependent variable through three frames of transparency regarding decision-making transparency, policy information transparency, and policy outcome transparency, while the media attention variable is defined as the number of newspaper reports. Using OLS estimation, authors conclude that media attention to a municipality's air pollution problems is associated with policy information transparency. Greater media attention increases the transparency of policy information.

Using the regression model, Gandía et al. (2016) researched the connection between Web 1.0 digital transparency and Web 2.0 tools and social media on a sample of 145 Spanish local entities. As an independent variable, they use press visibility defined in the same way as the amount of news in the database, while for the dependent variable, they use a level of digital transparency measured through a Web 1.0 and Web 2.0 Disclosure Index. The general idea of their research is to investigate the impact of social media on digital information transparency, as well as the intensity of use of social media affects their digital transparency. They confirmed that

press visibility brings the highest and positive impact on digital transparency, while the use of social media is positively related to web information transparency. Also, the intensity of using social media (number of tweets) affects transparency. On a sample of 110 Spanish cities using a panel model, Cuadrado-Ballesteros et al. (2017) tested the hypothesis that "local governments tend to be more transparent when the media exert pressure on them". The media is calculated similarly to Laswad et al. (2005) as the amount of news related to each local government. The dependent variable is the municipal transparency index. They found a positive link between media pressure and the level of transparency, meaning that when media pressure is strong, municipal transparency is high; the media is associated with a higher level of public transparency.

## Data, Method, and Hypotheses

In this section, we investigate the impact of the positive and the negative media coverage of online local budget transparency in Croatia. Online local budget transparency (OLBT) was measured by the number of five key local budget documents<sup>4</sup> published online on the official web pages of cities and municipalities between November 2018 and March 2019. OLBT may vary between 0 and 5 depending on the number of published documents. For example, if local units published all five documents, its transparency is expressed as OLBT 5, however, if local units have not published any documents, its transparency is expressed as OLBT 0.

Media coverage was measured in the period between March 2017 and March 2018, and it was calculated as the total and cumulative number of media reports about the online budget transparency of individual local units published in newspapers, radio, television, and on the Internet. Media publications were searched according to the keywords of transparency and openness in a way that duplications were omitted, i.e., if both keywords were contained in a single news, only one news was written. Concerning differences between positive and negative news, positive news was classified if a positive thought, praise, acknowledgment etc. appeared in the posts,<sup>5</sup> while negative news was classified by looking at if the text contained words like complaints, negative objections,

demotivation words, etc.<sup>6</sup> This research includes all 556 local units (128 cities and 428 municipalities) in Croatia.

Based on the above description as well as the literature review, we tested two main hypotheses:

H1: *Positive media coverage of OLBT increases the probability of a higher range of online local budget transparency.*

H2: *Negative media coverage of OLBT decreases the probability of a higher range of online local budget transparency.*

This study follows methodological aspects proposed in the work of Borry (2012), who employed multinomial logistic regression to examine government transparency's determinants. Our empirical analysis starts with assessing the impact of media on local budget transparency, using multinomial (logistic) regression (MLR). In addition, we employ marginal effects to show how the change of media coverage in one unit may affect the change in probability of outcomes.

According to Bayaga (2010, p. 290-291) the main advantages and assumptions for multinomial logistic regression (MLR) are: (i) MLR does not assume a linear relationship between variables, (ii) variables may but do not have to be at intervals, (iii) normality distributed error term is not assumed. MLR allows simultaneous investigations of all categories of dependent variables with respect to one category which serves as a base category (Abdalla, 2012, p. 271-274). When applying the MLR, we can observe a clear link, direction, and impact intensity of the positive as well as the negative media coverage of online local budget transparency, i.e., we can determine the impact of media coverage on each of the six groups of budget transparency of local units (OLBT 0-5). By including determinants of OLBT, this methodological approach also gives us important information about elements that can stabilize or impact OLBT ranges. Summarized, MLR determines the similarities and differences between the transparency of local units concerning the base category of transparency.

We follow previous studies, and as the primary control variables, we include sociodemographic and economic variables (for a comprehensive study of budget/fiscal determinants, see: Stanić, 2018). As a preliminary investigation, correlations between variables were

<sup>4</sup> Five key local budget documents are executive budget proposal, citizens' guide, enacted budget, mid-year and end-year report.

<sup>5</sup> Five key local budget documents are executive budget proposal, citizens' guide, enacted budget, mid-year and end-year report.

<sup>6</sup> Negative media is classified as "four cities – Gospić, Imotski, Valpovo and Vrgorac, and 39 municipalities did not publish a single budget document" <https://www.tportal.hr/biznis/clanak/ijf-porasla-proracunska-transparentnost-lokalnih-jedinica-20170704>.



conducted, which can be found in the tables in the appendix of this paper, along with their characteristics and descriptions.

Population variable has usually been included in previous studies as a control for the difference in transparency by the size of the city. Larger cities are more likely to adopt online budget transparency because of a greater pressure to find ways to provide public services and information to their inhabitants. There is almost a unique statement, the larger the population is, the greater its influence on budget transparency is (de Araujo & Tejedo-Romero, 2016; del Sol, 2013; Caamano-Alegre, et al., 2013; Perez, et al., 2008).

For the case of income per capita, several studies found that income is positively associated with transparency. Income is a factor that influences online transparency, i.e., higher income level indicates a larger tax base, and a more educated and affluent community of citizens. In today's Internet society, more individuals will expect to access data in a convenient electronic format (Borry, 2012, Piotrowski & Van Ryzin, 2007; Styles & Tennyson, 2007). Individuals with higher incomes are more likely to express high levels of demand for transparency and be more likely to be engaged in Internet reporting.

By definition, fiscal capacity is the ability of the government to generate revenue (Martinez-Vazquez & Timofeev, 2008). Alcaide Muñoz et al. (2017) argue that larger cities are more likely to provide information because they can afford it, and that higher fiscal capacity is under greater pressure to justify the spent resources, so agents want to show that they are behaving responsibly. In addition, Ma & Wu (p. 17, 2011) stated that when there are no sufficient budgetary incomes, local governments usually put most expenditure on administrative and payroll expenses and leave other duties less prioritized (e.g., fiscal transparency).

Technological progress is mostly visible in an increasing number of internet users and in the transition of the economy to digitalization. This is an important factor for online budget transparency which is recognized by a growing number of studies. In municipalities where internet access is at a higher level, public financial information availability is likely to be greater, leading to a higher level of budget transparency. In fact, the greater the level of Internet access, the greater the probability of visiting municipal websites (Pérez, et. al., 2008; Gandía & Archidona, 2008).

The average number of employees is a proxy variable for administrative capacity, which assumes that local

government units (LGU) with a larger number of employees have more specialized staff and the ability to disseminate more budget information (Tavares & da Cruz, 2014; Ott et al., 2019a). Additionally, administrative capacity constraints which LGUs face can lead to a limitation in the scope of information distribution about the budget process (Carlitz, 2013).

Political ideology is shown to be one of the determinants of transparency at the local level (Piotrowski & Van Ryzin (2007)). Left-wing parties are assumed to be more willing to provide easier access to financial information, for example, when the left-wing parties are strong in the local council, the local government tends to be more transparent, which is related to the transparency of decision-making and political influence (Grimmelikhuijsen & Welch, 2012). Ultimately, left-wing parties are interested in a larger public sector and expected to provide greater transparency (Guillamón et al., 2011).

## Results and Discussion

In evaluating of media coverage of OLBT, firstly, we estimate the positive and negative impact of the media coverage through the MLR model, and secondly, we assess the marginal effects of positive and negative media coverage of OLBT on local budget transparency.

In Table 1 we present the results of multinomial logistic regression. Variable OLBT as the dependent variable is set under the six categories, with OLBT 5 as the base category. The results are directed towards the strong influence of the determinants of OLBT, and the heterogeneity of that influence, i.e., the variations of different levels of transparency (OLBT 0 - OLBT 4) compared to the base category (OLBT 5) are determined by the selected set of independent variables.

Our findings indicate that higher per capita income significantly increases the probability that local units will be classified into the OLBT 5 range of transparency, and decreases the probability of choosing an OLBT 0 and OLBT 2 local budget transparency level. These findings are in line with the implication that higher income per capita level forces local units to a higher transparency level (e.g., Piotrowski & Van Ryzin, 2007; Alcaide Muñoz et al., 2017). The significance of fiscal capacity is visible in the range of transparency for units that have published 3 and 4 budget documents. Compared with OLBT 5, results suggest a higher probability of selecting an OLBT 3 and OLBT 4 transparency level if units have stronger fiscal

capacity. These results indicate greater importance of the role of local governments' fiscal capacity in maintaining instantaneous levels of budget transparency. Fiscal capacity is a stable and positive factor of more transparent local units (e.g., Styles & Tennyson, 2007; Iszardani & Hardiningsih, 2021). The average number of employees in LGUs has a statistically significant coefficient for local units located in OLBT 0, 3, and 4, indicating that higher employment increases the likelihood of transition to an OLBT 5 transparency. Overall, results suggest that higher employment levels significantly affect the local units, which is particularly emphasized and visible in the case of units in OLBT 4 i.e., in their transit to OLBT 5. This result aligns with the notion that employment is essential to higher transparency (e.g., Ott et al., 2019a).

The Internet significantly impacts OLBT 0, 1, and 4 with reinforcing influences as we move towards higher OLBTs. It is considerably less likely that local units in OLBT 0 will be in that range of transparency if the number of internet users increases, and the same applies to local units in OLBT 1. The same conclusion is valid for OLBT 4, but the coefficients are more expressed (31% and 27%), which means that an increase in the number of internet users in the higher range of OLBT brings a 31% (27%) of the probability of switching to OLBT 5. In general, the results show that the percentage of internet users pressure local units to be more transparent (for similar conclusions, see Gandía & Archidona, 2008; de Araujo & Tejedro-Romero, 2016). The population variable is significant for OLBT 0, 3, and 4 local units. While these coefficients represent a different probability, there are visible traces of transition effects to a higher range of budget transparency for local units in OLBT 0 and OLBT 3 and visible traces of local units' retention in OLBT 4 under a higher population range. Results suggest that units with a larger number of inhabitants in OLBT 3 are more likely (0,38 RRR) to move to a higher range of budget transparency, while units in OLBT 4 under the same number of inhabitants are less likely (2,83 RRR) to move to a total transparency range, i.e., OLBT 5. The slightest significance is visible in the variable that covers the political impact on budget transparency and applies only to OLBT 0 and OLBT 1 units. The significant coefficients indicate that only when left-wing political parties are in power (compared to right-wing parties), local units have a higher probability of transit to a higher transparent unit category. These findings align with numerous studies that found the same evidence of the greater influence of left-wing political parties on increasing budget transparency (del Sol, 2013; Gandía, et al., 2016; Guillamoñ, et al., 2011).

Given the positive and negative media coverage results of OLBT, we can observe that most OLBTs are significantly

determined by media coverage, and its effect is shown as a stronger and more significant determinant for OLBTs retention or transitions. As was expected, positive news positively impacts local units in a way that higher media coverage increases the probability of greater transparency. In contrast, negative news negatively impacts that negative media coverage withdraws local units in minimized transparency.

It is less likely that local units that relate to positive media coverage will retain their current position, i.e., those units tend to transition to a higher range of budget transparency. Units with three documents published (OLBT 3) are less likely to keep their position under positive media coverage (RRR 0,78), i.e., those units tend to transition to a more transparent range if positive news is published. Also, a higher intensity of the impact of positive media coverage is found for OLBT 4. Units within the OLBT 4 range are less likely (0,85 RRR) to select OLBT 4 than OLBT 5. Overall, results suggest a high impact of positive media coverage of OLBT. Variable positive media coverage with significant coefficients provides us evidence for the acceptance of our first hypothesis, which is that positive media brings a higher probability for selecting an OLBT 5 range or a higher range of online local budget transparency.

As for negative coverage of OLBT, there are significant results, mainly connected with a low budget transparency range. Results suggest that negative media coverage increases the likelihood of selecting the current category of transparency and decreases the likelihood for a change in the transparency range. For units settled in OLBT 0 and OLBT 1 ranges, negative coverage is more likely to affect it negatively, i.e., negative media coverage will push them to maintain their position of transparency. It is more likely that a local unit will keep its position within OLBT 0 if negative news occurs (RRR 1,49). The same situation was confirmed for OLBT 1 local units, where it is more likely that units in OLBT 1 will keep their position if negative news about their transparency is published (RRR 1,1). In line with that evidence, we can accept our second hypothesis and conclude that negative media coverage of OLBT decreases the probability of a higher range of online local budget transparency.

Results of marginal effects (Table 2) with more detailed insights suggest similar implications of media coverage.

For local units within OLBT 0 and OLBT 1, an increase in media coverage with positive news by one unit leads to a decrease in the probability that these units will remain in that transparency range by 28% and 52%. Results

**Table 1***Multinomial logistic regression estimation*

|                   | OLBT 0            | OLBT 1            | OLBT 2           | OLBT 3            | OLBT 4            |
|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|
|                   | RRR (95% CI)      | RRR (95% CI)      | RRR (95% CI)     | RRR (95% CI)      | RRR (95% CI)      |
| Po_media coverage | 0.00 (0)          | 0.00 (0)          | 0.79 (0.5-1.1)   | 0.78 (0.6-1.0)*   | 0.85 (0.7-0.9)*** |
| Ne_media coverage | 1.49 (1.0-2.1)**  | 1.14 (0.9-1.3)*   | 0.93 (0.7-1.1)   | 0.96 (0.8-1.0)    | 0.83 (0.6-1.0)    |
| Population        | Ref               | Ref               | Ref              | Ref               | Ref               |
| 1500-2499         | 0.58 (0.1-2.4)    | 1.38 (0.3-4.8)    | 1.23 (0.4-3.4)   | 0.96 (0.45-2.0)   | 1.78 (0.8-3.7)    |
| 2500-3499         | 0.02 (0.0-0.2)*** | 0.56 (0.0-3.3)    | 0.61 (0.1-2.5)   | 0.98 (0.4-2.2)    | 1.63 (0.7-3.7)    |
| 3500-4999         | 0.00 (0)          | 0.25 (0.0-2.4)    | 2.06 (0.6-6.7)   | 0.91 (0.3-2.2)    | 1.79 (0.7-4.3)    |
| 5000+             | 0.00 (0)          | 0.56 (0.0-4.3)    | 0.34 (0.0-1.6)   | 0.38 (0.1-0.9)*** | 2.83 (1.2-6.4)**  |
| Income pc         | Ref               | Ref               | Ref              | Ref               | Ref               |
| 20000-29999       | 0.49 (0.0-3.9)    | 1.38 (0.2-7.0)    | 0.27 (0.0-0.8)** | 0.96 (0.3-2.9)    | 1.23 (0.6-2.5)    |
| 30000-39999       | 0.03 (0.0-0.7)**  | 0.23 (0.0-1.8)    | 0.34 (0.1-1.5)*  | 0.77 (0.2-2.6)    | 1.24 (0.3-3.8)    |
| 40000+            | 0.00 (0)          | 0.00 (0)          | 0.00 (0)         | 0.33 (0.0-3.7)    | 1.59 (0.2-5.1)    |
| Internet users    | Ref               | Ref               | Ref              | Ref               | Ref               |
| 20-39.9           | 0.04 (0.0-0.4)*** | 0.14 (0.0-0.5)*** | 0.32 (0.0-1.6)   | 1.08 (0.3-3.7)    | 0.31 (0.0-0.9)**  |
| 40-59.9           | 0.05 (0.0-1.4)*   | 0.10 (0.0-0.5)**  | 0.40 (0.0-2.2)   | 0.97 (0.2-3.4)    | 0.27 (0.0-0.9)**  |
| 60-79.9           | 0.42 (0.0-5.3)    | 0.08 (0.0-1.2)*   | 0.57 (0.0-4.2)   | 0.83 (0.1-3.7)    | 0.35 (0.0-1.3)    |
| 80-99.9           | 0.35 (0.0-5.3)    | 0.00 (0)          | 0.00 (0)         | 0.88 (0.1-6.2)    | 0.26 (0.0-1.5)    |
| 100+              | 0.00 (0)          | 0.00 (0)          | 0.00 (0)         | 1.86 (0.0-3.8)    | 0.37 (0.0-8.6)    |
| Ave_empl          | Ref               | Ref               | Ref              | Ref               | Ref               |
| 6-10              | 0.27 (0.0-1.4)    | 1.01 (0.2-3.7)    | 1.30 (0.4-3.7)   | 0.35 (0.1-0.8)**  | 0.53 (0.2-1.0)*   |
| 11-15             | 0.1 (0.0-0.9)**   | 1.19 (0.2-4.9)    | 1.09 (0.3-3.7)   | 1.02 (0.4-2.3)    | 0.30 (0.1-0.7)*** |
| 16-20             | 0.00 (0)          | 0.16 (0.0-1.1)**  | 0.77 (0.1-3.7)   | 0.39 (0.1-1.2)    | 0.29 (0.1-0.7)*** |
| 21-50             | 0.00 (0)          | 0.71 (0.1-4.0)    | 0.79 (0.2-3.0)   | 1.31 (0.5-3.0)    | 0.46 (0.2-1.0)*   |
| 50+               | 0.00 (0)          | 0.10 (0.0-2.9)    | 0.67 (0.1-4.0)   | 0.39 (0.1-1.4)    | 0.16 (0.0-0.4)*** |
| Fisc_capacity     | Ref               | Ref               | Ref              | Ref               | Ref               |
| 2500-2999         | 0.73 (0.0-5.7)    | 1.10 (0.3-3.7)    | 0.90 (0.3-2.4)   | 2.26 (1.0-4.8)**  | 1.28 (0.6-2.5)    |
| 3000-4999         | 0.12 (0.0-2.4)    | 1.32 (0.3-4.6)    | 1.38 (0.5-3.3)   | 3.23 (1.5-6.8)*** | 2.78 (1.4-5.3)*** |
| 5000+             | 0.81 (0.0-8.8)    | 0.78 (0.1-4.3)    | 0.52 (0.1-2.5)   | 2.04 (0.6-6.0)    | 1.59 (0.6-3.8)    |
| Ideology          | Ref               | Ref               | Ref              | Ref               | Ref               |
| 1                 | 0.03 (0.0-0.4)*** | 0.30 (0.0-1.2)*   | 0.74 (0.2-1.8)   | 1.04 (0.5-1.9)    | 0.83 (0.4-1.4)    |
| 2                 | 0.00 (0)          | 0.26 (0.0-1.8)    | 0.88 (0.2-2.7)   | 0.97 (0.4-2.3)    | 0.63 (0.2-1.3)    |
| 3                 | 0.15 (0.0-1.5)    | 0.63 (0.1-2.6)    | 1.38 (0.5-3.7)   | 1.46 (0.7-3.0)    | 1.38 (0.7-2.5)    |
| _cons             | 37.04 (1.5-90.4)  | 1.97 (0.1-20.4)   | 1.54 (0.2-9.6)   | 0.39 (0.0-2.2)    | 1.30 (0.2-6.3)    |
| Log likelihood    | -665.2590         |                   |                  |                   |                   |
| Wald chi2         | 15024.99          |                   |                  |                   |                   |
| Prob >chi2        | 0.0000            |                   |                  |                   |                   |
| Pseude R2         | 0.1581            |                   |                  |                   |                   |
| N                 | 556               |                   |                  |                   |                   |

Notes: \*\*\* critical value at 1%, \*\* critical value at 5%, \* critical value at 10%. Robust estimation is used. OLBT 5 is the base category  
Source: Author's calculation



**Table 2***Average marginal effects estimates*

|                                 | OLBT0                 | OLBT1                 | OLBT2               | OLBT3               | OLBT4                | OLBT5               |
|---------------------------------|-----------------------|-----------------------|---------------------|---------------------|----------------------|---------------------|
| Positive media coverage of OLBT | -.28***<br>(-.43-.14) | -.52***<br>(-.72-.33) | .07***<br>(.04-.11) | .15***<br>(.09-.22) | .17***<br>(.11-.24)  | .40***<br>(.29-.51) |
| Negative media coverage of OLBT | .006**<br>(.00-.01)   | .009**<br>(.00-.01)   | -.001<br>(-.01-.00) | -.001<br>(-.01-.01) | -.028*<br>(-.05-.00) | .01<br>(-.00-.03)   |

Notes: Number of observations is 556, robust standard errors, in parentheses is 95% confidential interval, \*\*\*critical value at 1%, \*\* 5%, \* 10%.  
Source: Author's calculation

also implicate an increasing value of probabilities for all OLBTs transparency ranges, starting with OLBT 2. Under the influence of increasing positive media, the higher the level of transparency is, the higher the probability of that transparency. The strongest and the most significant effect of positive news is related to the units that have published three, four, and five budget documents, implying that local units are connected with 7%, 17%, and 40% of change of probability to be in OLBT 3, OLBT 4 and OLBT 5 if positive media coverage is present.

Media coverage in the case of negative news shows less significant impact. For local units with transparency levels 0 and 1 (OLBT 0 and OLBT 1), marginal effects show a significant but low percent of impact, while for the local units in OLBT 4 transparency range results show a somewhat stronger impact, both implications of the impact of negative media coverage on the transparency level have a disparate impact, depending on transparency level. In general, all obtained and significant coefficients align with the expectations. Marginal effects for negative media coverage are significant for OLBT 0 and OLBT 1, meaning that an increase in negative media coverage of OLBT 0 (OLBT 1) by one unit is significantly associated with an increase in the change in probability of a local unit falling into OLBT 0 (OLBT 1) by 0.6 (0.9%). On the contrary, negative media pressure and marginal effects have significant and negative impact on OLBT 4, meaning that an increase in the number of negative coverages decreases the change in probability that the local unit will be part of OLBT 4 by 2.81%.

Although average marginal effects results show similar implications as our central MLR results, it needs to be emphasized that the stronger impact of positive media coverage of OLBT is, compared to the current negative media coverage. Our general conclusion goes to the more important role of positive media coverage.

## Conclusion

Fiscal and budget transparency represents an important economic segment explored by numerous studies. Greater transparency is associated with smaller fiscal illusion, lower corruption, reduced borrowing costs, positive fiscal performance, reduced excessive budget spending and public debt, etc. The literature also provides numerous insights into the determinants of transparency. However, an important segment of transparency is also represented by the media. The public, often insufficiently familiar with the details and basic fiscal guidelines, principles, models of work, or obligations of political authorities, receives important insights and information about undertaken, planned, or legally regulated obligations of political authorities through the media. The role of the media is mainly positively associated with budget transparency and is perceived positively when the media reports on budgets and overall fiscal policy.

Based on previous research, the view of media coverage's positive and significant influence on budget transparency has crystallized. However, previous research has dealt with the evaluation of total media coverage without clearly demarcating and providing evidence on the separate effect of positive or negative media announcements on transparency. Thus, there was still a gap in whether all media announcements and reports bring a similar effect. Is it only important to report on the budget and local units' transparency to achieve higher budget transparency, or does the effect depend on the positive and negative media coverage? In this regard, the question is whether every media news can be treated in an identical manner or through its overall sphere of influence. Does the media directly contribute to being more or less responsible for political behaviour through active positive and negative reporting? Does the media contribute to

more successful budget transparency through positive or negative reports?

This research attempts to answer the above questions. It evaluates positive and negative media coverage of online local budget transparency and its impact on budget transparency in Croatian local units in 2018. In the research, multinomial logistic regression was used, which enabled more detailed insights and unbiased results in the context of the media's influence on certain transparency ranges. According to the research literature and questions, two research hypotheses were formed: H1: Positive media coverage of OLBT increases the probability of a higher range of online local budget transparency, and H2: Negative media coverage of OLBT decreases the probability of a higher range of online local budget transparency. The results confirmed the strong impact of positive and negative media coverage on budget transparency. Positive media significantly contributes to the possibilities for local units to become more transparent, while negative media contributes in the opposite way or in a way that local units affected by the negative media coverage tend to maintain lower levels of transparency, thus confirming both hypotheses. Likewise, through further processing and the use of marginal effects, it was determined that a more stable influence of the positive media compared to the negative media. To our knowledge, no empirical evidence currently supports these results. The implications of the findings in this research are clearly emphasized through a deeper understanding of the role of the media in public

sector economics, precisely in a frame of budget transparency. In that context, the implications can be twofold. First, policymakers should support the development of the media since media coverage plays a significant role in governance and budget transparency, and second, indirect implications can be seen through all other benefits brought by fiscal transparency, e.g., reduction of fiscal illusion, positive fiscal performance, reduction of public debt, etc.

The limitations of this research can be seen in the unavailability of media coverage data in a certain segment of budget transparency. Furthermore, the positive media reports are mostly related to the local units with higher levels of transparency, while the negative media reports are mostly related to the local units at lower levels of transparency. It would be advisable to conduct research over a longer period of time, since there is a trend of changing budget transparency levels over the years, so it can be reasonably assumed that different local units did not receive identical media coverage through positive and negative media at different time intervals. In other words, a broader distribution of media coverage of OLBT throughout the years is assumed. Furthermore, to place this research into a broader context of understanding the role of the media in budget transparency, evaluating the overall media coverage of local units is not irrelevant, either. Finally, for future research, exploring which types of media (TV, newspapers, radio, Internet) contribute the most or are the most related to budget transparency would be justified.

## Appendix

**Table 3**

*OLBT by the characteristics of the sample and correlation with control variables*

|                   | OLBT |      |    |       |    |       |    |       |     |       |     |       | p*     |
|-------------------|------|------|----|-------|----|-------|----|-------|-----|-------|-----|-------|--------|
|                   | 0    |      | 1  |       | 2  |       | 3  |       | 4   |       | 5   |       |        |
|                   | N    | %    | N  | %     | N  | %     | N  | %     | N   | %     | N   | %     |        |
| Po_media coverage |      |      |    |       |    |       |    |       |     |       |     |       | <0.000 |
| 0                 | 15   | 3.46 | 26 | 5.95  | 35 | 8.01  | 83 | 18.99 | 106 | 24.26 | 172 | 39.36 |        |
| 1                 | 0    | 0    | 0  | 0     | 3  | 2.52  | 7  | 5.88  | 29  | 24.37 | 80  | 67.23 |        |
| ne_media coverage |      |      |    |       |    |       |    |       |     |       |     |       | <0.000 |
| 0                 | 4    | 0.97 | 10 | 2.42  | 28 | 6.79  | 62 | 15.01 | 110 | 26.39 | 199 | 48.18 |        |
| 1                 | 11   | 7.69 | 16 | 11.19 | 10 | 6.99  | 28 | 19.58 | 25  | 17.48 | 53  | 37.06 |        |
| population        |      |      |    |       |    |       |    |       |     |       |     |       | <0.000 |
| 0-1499            | 9    | 7.96 | 8  | 7.08  | 9  | 7.96  | 21 | 18.58 | 21  | 18.58 | 45  | 39.82 |        |
| 1500-2499         | 5    | 3.65 | 11 | 8.03  | 11 | 8.03  | 25 | 18.25 | 32  | 23.36 | 53  | 38.69 |        |
| 2500-3499         | 1    | 1.16 | 3  | 3.49  | 4  | 4.65  | 16 | 18.60 | 19  | 22.09 | 43  | 50.00 |        |
| 3500-4999         | 0    | 0    | 1  | 1.32  | 11 | 14.47 | 15 | 19.74 | 16  | 21.05 | 33  | 43.42 |        |
| 5000+             | 0    | 0    | 3  | 2.08  | 3  | 2.08  | 13 | 9.03  | 47  | 32.64 | 78  | 54.17 |        |

**Table 3***OLBT by the characteristics of the sample and correlation with control variables (cont.)*

|               | OLBT |       |    |       |    |       |    |       |    |       |     |       | p*     |
|---------------|------|-------|----|-------|----|-------|----|-------|----|-------|-----|-------|--------|
|               | 0    |       | 1  |       | 2  |       | 3  |       | 4  |       | 5   |       |        |
|               | N    | %     | N  | %     | N  | %     | N  | %     | N  | %     | N   | %     |        |
| Income pc     |      |       |    |       |    |       |    |       |    |       |     |       | <0.000 |
| 0-19999       | 2    | 5.88  | 2  | 5.88  | 6  | 17.65 | 7  | 20.59 | 6  | 17.65 | 11  | 32.35 |        |
| 20000-29999   | 12   | 4.24  | 21 | 7.42  | 18 | 6.36  | 51 | 18.02 | 64 | 22.61 | 117 | 41.34 |        |
| 30000-39999   | 1    | 0.48  | 3  | 1.44  | 14 | 6.70  | 31 | 14.83 | 57 | 27.27 | 103 | 49.28 |        |
| 40000+        | 0    | 0     | 0  | 0     | 0  | 0     | 1  | 3.33  | 8  | 26.67 | 21  | 70.0  |        |
| Internet      |      |       |    |       |    |       |    |       |    |       |     |       | 0.007  |
| 0-19.99       | 4    | 10.81 | 6  | 16.22 | 4  | 10.81 | 5  | 13.51 | 10 | 27.03 | 8   | 21.62 |        |
| 20-39.99      | 7    | 2.95  | 15 | 6.33  | 16 | 6.75  | 44 | 18.57 | 55 | 23.21 | 100 | 42.19 |        |
| 40-59.99      | 1    | 0.52  | 4  | 2.07  | 14 | 7.25  | 27 | 13.99 | 45 | 23.32 | 102 | 52.85 |        |
| 60-79.99      | 2    | 2.90  | 1  | 1.45  | 4  | 5.80  | 9  | 13.04 | 20 | 28.99 | 33  | 47.83 |        |
| 80-99.99      | 1    | 6.67  | 0  | 0     | 0  | 0     | 3  | 20.0  | 4  | 26.67 | 7   | 46.67 |        |
| 100+          | 0    | 0     | 0  | 0     | 0  | 0     | 2  | 40.0  | 1  | 20.0  | 2   | 40.0  |        |
| ave_empl      |      |       |    |       |    |       |    |       |    |       |     |       | 0.046  |
| 0-5           | 5    | 4.39  | 6  | 5.22  | 8  | 6.96  | 21 | 18.26 | 33 | 28.70 | 42  | 36.52 |        |
| 6-10          | 4    | 2.04  | 8  | 5.44  | 13 | 8.84  | 14 | 9.52  | 36 | 24.49 | 72  | 48.98 |        |
| 11-15         | 1    | 1.20  | 6  | 7.23  | 7  | 8.43  | 19 | 22.89 | 14 | 16.87 | 36  | 43.37 |        |
| 16-20         | 0    | 0     | 1  | 2.13  | 3  | 6.38  | 5  | 10.64 | 10 | 21.28 | 28  | 59.57 |        |
| 21-50         | 5    | 4.24  | 4  | 3.39  | 5  | 4.24  | 27 | 22.88 | 33 | 27.97 | 44  | 37.29 |        |
| 51+           | 0    | 0     | 1  | 2.17  | 2  | 4.35  | 4  | 8.70  | 9  | 19.57 | 30  | 65.22 |        |
| Fisc_capacity |      |       |    |       |    |       |    |       |    |       |     |       | 0.078  |
| 0-2499        | 6    | 3.77  | 9  | 5.66  | 13 | 8.18  | 18 | 11.32 | 31 | 19.50 | 82  | 51.57 |        |
| 2500-2999     | 2    | 1.68  | 6  | 5.04  | 8  | 6.72  | 23 | 19.33 | 25 | 21.01 | 55  | 46.22 |        |
| 3000-4999     | 2    | 1.08  | 9  | 4.84  | 14 | 7.53  | 34 | 18.28 | 58 | 31.18 | 69  | 37.10 |        |
| 5000+         | 5    | 5.43  | 2  | 2.17  | 3  | 3.26  | 15 | 16.30 | 21 | 22.83 | 46  | 50.00 |        |
| Ideology      |      |       |    |       |    |       |    |       |    |       |     |       | 0.296  |
| 0             | 12   | 4.56  | 17 | 6.46  | 18 | 6.84  | 40 | 15.21 | 65 | 24.71 | 111 | 42.21 |        |
| 1             | 1    | 0.70  | 3  | 2.11  | 8  | 5.63  | 21 | 14.79 | 34 | 23.94 | 75  | 52.82 |        |
| 2             | 0    | 0     | 2  | 3.51  | 5  | 8.77  | 10 | 17.54 | 11 | 19.30 | 29  | 50.88 |        |
| 3             | 2    | 2.13  | 4  | 4.26  | 7  | 7.54  | 19 | 20.21 | 25 | 26.60 | 37  | 39.36 |        |

Source: Author's calculation. \* p value, two-way Pearson's chi-squared

**Table 4***Description of the socioeconomics and sociodemographic characteristics of the sample and variables*

| Variable                  | N   | %     | Description   | Expected sign | Source  |
|---------------------------|-----|-------|---|---------------|---|
| <b>OLBT</b>               |     |       |   |               |   |
| 0                         | 15  | 2.70  | Number of published official documents  | /             | Ott et al. (2019b)  |
| 1                         | 26  | 4.68  |   |               |   |
| 2                         | 38  | 6.83  |   |               |   |
| 3                         | 90  | 16.19 |   |               |   |
| 4                         | 135 | 24.28 |   |               |   |
| 5                         | 252 | 45.32 |   |               |   |
| <b>po_ media coverage</b> |     |       |   |               |   |
| 0                         | 437 | 78.60 | 1 - the overall number of positive media news   | +             | Available upon request                                      |
| 1                         | 119 | 21.40 |   |               |   |
| <b>ne_ media coverage</b> |     |       |   |               |   |
| 0                         | 413 | 74.28 | 1 - the overall number of negative media news   | -             | Available upon request                                      |
| 1                         | 143 | 25.72 |   |               |   |
| <b>pop</b>                |     |       |   |               |   |
| 0-1499                    | 113 | 20.32 | Estimated number of inhabitants (in the original value)   | +             | Croatian Bureau of Statistics (2018)                        |
| 1500-2499                 | 137 | 24.64 |   |               |   |
| 2500-3499                 | 86  | 15.47 |   |               |   |
| 3500-4999                 | 76  | 13.67 |   |               |   |
| 5000+                     | 144 | 25.90 |   |               |   |
| <b>inc_pc</b>             |     |       |   |               |   |
| 0-19999                   | 34  | 6.12  | Average annual income per capita  | +             | Ministry of Regional Development and EU Funds (2018)        |
| 20000-29999               | 283 | 50.90 |   |               |   |
| 30000-39999               | 209 | 37.59 |   |               |   |
| 40000+                    | 30  | 5.40  |   |               |   |
| <b>Internet</b>           |     |       |   |               |   |
| 0-19.99                   | 37  | 6.65  | Percentage of households with broadband internet access (data transmission speeds of 2 Mbit/s and more) | +             | Croatian Regulatory Authority for Network Industries (2017) |
| 20-39.99                  | 237 | 42.63 |   |               |   |
| 40-59.99                  | 193 | 34.71 |   |               |   |
| 60-79.99                  | 69  | 12.41 |   |               |   |
| 80-99.99                  | 15  | 2.70  |   |               |   |
| 100+                      | 5   | 0.90  |   |               |   |
| <b>ave_empl</b>           |     |       |   |               |   |
| 0-5                       | 115 | 20.68 | The average number of employees in local units, based on working hours                                  | +             | Ministry of Finance, Republic of Croatia (2018)             |
| 6-10                      | 147 | 26.44 |   |               |   |
| 11-15                     | 83  | 14.93 |   |               |   |
| 16-20                     | 47  | 8.45  |   |               |   |
| 21-50                     | 118 | 21.22 |   |               |   |
| 51+                       | 46  | 8.27  |   |               |   |
| <b>fisc_cap</b>           |     |       |   |               |   |
| 0-2499                    | 159 | 28.60 | Operating revenues minus all grants per capita  | +             | Ministry of Finance, Republic of Croatia (2018)             |
| 2500-2999                 | 119 | 21.40 |   |               |   |
| 3000-4999                 | 186 | 33.45 |   |               |   |
| 5000+                     | 92  | 16.55 |   |               |   |

**Table 4***Description of the socioeconomics and sociodemographic characteristics of the sample and variables (cont.)*

| Variable | N   | %     | Description   | Expected sign | Source   |
|----------|-----|-------|---|---------------|--|
| ideology |     |       |   |               |  |
| 0        | 263 | 47.30 | Category variables denote: 0 power of right wing; 1 left wing; 2 centre; 3 non-partisan parties |               | State Electoral Commission of the Republic of Croatia (2017) |
| 1        | 142 | 25.54 |   |               |  |
| 2        | 57  | 10.25 |   |               |  |
| 3        | 94  | 16.91 |   |               |  |

Source: Author's calculation

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## Učinki medijskega poročanja na preglednost proračuna v hrvaških lokalnih upravnih enotah

### Izvleček

Ta članek raziskuje pozitivno in negativno medijsko poročanje o spletni preglednosti lokalnih proračunov (OLBT) in njegov vpliv na preglednost proračuna v hrvaških lokalnih upravnih enotah v letu 2018. Z uporabo multinomialne logistične regresije je raziskava potrdila močan vpliv medijskega poročanja na proračunsko preglednost. Pozitivno medijsko poročanje vodi k povečanju verjetnosti, da bodo lokalne upravne enote dosegle višjo raven preglednosti, medtem ko negativno medijsko poročanje spremlja večja verjetnost, da bodo lokalne upravne enote ostale v nižjem območju preglednosti. Posledice teh ugotovitev so jasno poudarjene s poglobljenim razumevanjem vloge medijev v ekonomiji javnega sektorja, prav v kontekstu proračunske preglednosti. Ta raziskava prispeva k literaturi o javnem sektorju z opredelitvijo ločenih učinkov pozitivnega in negativnega medijskega poročanja na proračunsko preglednost.

*Ključne besede:* fiskalna preglednost, preglednost proračuna, lokalne upravne enote, medijsko poročanje, Hrvaška