THE MINIMUM WAGE IMPACT ON LABOUR PRODUCTIVITY: THE CASE OF SELECTED SEE COUNTRIES

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Abstract
Increasing the statutory minimum wage in most SEE economies, in the same time represents an increase in the main source of income, and providing a higher level of welfare for workers. However, in some SEE countries, despite the unsuitable economic indicators, and the slow recovery from the economic crisis, a sharp increase in the minimum wage is observed. The increase in these countries contributes to the growing part of the workers who receive minimum wage, which additionally burdens the economic system. In addition, the increase of the minimum wage should not be a substitute for the improvement of the conditions on the labor market and the labor market institutions, as well as the insignificant increase of the labor productivity that persistently fails to catch up with the increase of the labor productivity in Western Europe countries. In the previous period, on the example of Bulgaria, Romania, Croatia, North Macedonia, Albania and Serbia, there was a significant increase in the level of the statutory minimum wage. These countries, as economies in which in the previous period the highest rate of increase of the minimum wage was observed, will be the subject of research. Hence, a relationship analysis was conducted between the statutory minimum wage and labour productivity, using a panel-regression model. The countries are divided in two groups: non-EU member countries (North Macedonia, Albania and Serbia) and EU member countries (Bulgaria, Romania and Croatia). These groups are formed according to specific economic criteria (level of GDP and labour mobility) and non-economic criteria (EU membership).
The aim of the paper is to discover the correlation and causal relationship between an increase in the statutory minimum wage and labour productivity. The results provide an indicative picture of how governments set the minimum wage, the extent of their increasing, and whether the increase in the minimum wage is to some extent related to the increase in labor productivity.
The results indicate that in the first group of countries (North Macedonia, Albania and Serbia) the relationship between statutory minimum wage and labour productivity is strong and positive. Contrary, this relationship is weak and negative in the countries from the second group (Bulgaria, Croatia and Romania). The correlation analysis results are consistent with the estimates from the panel – regression.
Keywords: minimum wage; labour productivity; comparative analysis; panel-regression;

1. INTRODUCTION

During the last few decades, there was a growing interest among academics and creators of economic policy for the analysis of the design of the statutory minimum wage system. Starting from the idea that a minimum wage is required for ensuring workers at least a minimal well-being, income stability and providing a decent standard of living, though whether this type of policy brings more good than evil, the debate has been ongoing

for nearly a century. The economic foundation implies that a positive relationship between wages and productivity should excist. Thus, productivity growth is expected to reflect the wages growth in some extent, but in the most countries there is a significant gap between productivity growth and minimum wage growth. Having this in mind, the general expectation should be applicable everywhere, but this is observed not to be the case. A significant impact is imposed by both endogenous and exogenous factors, which is the reason why differently structured economies provide opposing results. Wage rigidity, especially downwards, is a common practice in modern economies. Labour unions play an important role in setting the minimum wage, even though developing economies are not observed to have strong and organized unions. Nevertheless, we believe that our contribution to the vast majority of studies is necessery, since most of modern-day researches link the wage with labour productivity or focus on the employment impact of minimum wage, rather than linking productivity and minimum wage. The existing empirical literature on this topic is scarce and quite limited when it comes to developing, post-transition economies, especially South-Eastern European countries. Our main objective is research contribution in this particular area, which we believe will be quite intuitive and simple, yet thorough enough to set the foundations for future researches.

This paper attempts to provide an integrated picture of the relationship between statutory minimum wage and labour productivity level in selected South-Eastern European countries (North Macedonia, Albania, Serbia, Bulgaria, Croatia, and Romania). Our research was triggered by the notion that the relationship between the statutory minimum wage and productivity is not unified and is not necessarily unidirectional, implying that structural differences may exist throughout economies based on a vast set of socio-economic and even psychological factors. We segregated the forementioned countries of interest in two groups based on their economic and political characteristics in order to explore the hypothesized relationship. As decisive criteria for the specific grouping, we use the country's membership in the EU and GDP. By dividing them based upon their EU integration status, our aim is to emphasize the presence of different political, labour market, and broad economic conditions which are proven to make an explicit divergence between countries. Hence, the first group comprises North Macedonia, Albania, and Serbia as non-EU member countries, while the second EU-member group includes Bulgaria, Croatia, and Romania. They are all post-socialist countries, they all went through the transitory process in restructuring into a market economy, and even today, similar economic systems are observed between them. Thus, their analisys should be adequate and applicable.

For the purpose of our research, we estimated panel-regression analysis with period random effects for the 2004-2017 interval, which revealed that the relationship between the statutory minimum wage and labour productivity substantially differs between the two groups. A positive and statistically significant link is observed in the first group (North Macedonia, Albania and Serbia), while a weak, but statistically significant negative link is found in the second (Bulgaria, Romania, and Croatia). In the example of the first group of countries, the results indicate that the increase in the statutory minimum wage has a positive impact on labor productivity growth. If we take into account the fact that these countries in the previous period significantly raised the level of the minimum wage, the obtained results from the model indicate that the additional increase in the minimum wage further affects the increase in labor productivity, especially among workers who recieve minimum salary. Within the second group of countries, it is noticed that, in addition to the intensive increase of the minimum wage in the previous period, there is a weakened increase in labor productivity. In other words, it can be concluded that the relationship between the increase of the minimum wage and the increase of productivity is reversed, i.e. the increase of the minimum wage is inversely proportional to the changes in labor productivity.

This paper is structured as follows. After the brief introduction, a review of the empirical literature on the relationship between the statutory minimum wage and labour productivity is provided. In section 3, the paper describes the applied research methodology and data, followed by a descriptive analysis of the dynamics, level and changes of the statutory minimum wage and productivity in the analyzed countries. Afterwards, the results of the panel-analysis are discussed alongside specific macro and micro-policy implications. The last section provides concluding remarks regarding the estimated results.

2. LABOUR MARKET RELATIONSHIP BETWEEN MINIMUM WAGE AND LABOUR PRODUCTIVITY – A LITERATURE REVIEW

There is almost a unified view that labour productivity growth provides a direct and stable basis for real minimum wage growth. In a perfectly competitive labour market, wage rates are naturally determined solely by labour productivity, as noted by Policardo, Punzo, and Carrera (2018). The main idea is that productivity and wages are interlinked, since firms should pay wages based of workers' performance. If not, the management would be struck by lower firm output and higher fixed costs, making the business unsustainable on long-run basis. Akerlof (1982) indicates that a fair wage system should be established on a firm level, linking higher productivity with the expected fair treatment from the firm by the worker, and thus higher wages should generate greater yield. This relationship ultimately depends on a large number of socio-economic factors, such as past wages, work rules and even other workers' wages. Having this idea in mind, we might say that other workers wage plays a significant role in establishing the minimum wage system, since each employee has the urge to compare themselves to others, subjectively view others' productivity, and consequently value their own productivity as greater than evaluated. However, we abstract from further elaboration of non-economic determinants of wages and productivity and focus only on the direct, economic causation between them.

A part of the empirical studies which explore the relationship between the statutory minimum wage and the movement of labour productivity (e.g., David & Cristhopher, 2016) conclude that the introduction of a minimum wage and its consequent increase has a positive impact on labour productivity (Riley & Bondibene 2015). The authors find that the increase in labour price influenced companies to improve the labour productivity. Here we should note that such an increase does not come from dismissing workers and replacing them with capital as a production factor, but are related to the increase in the total factor productivity through implementing different trainings and organizational changes in within the companies (Croucher & Rizov 2012), where the introduction and growth of statutory minimum wage causes a productivity growth in the sectors with low added value.

The proponents of the neo-classical school have a starting view that the minimum wage will reduce labour demand. Still, the empirical studies often indicate quite the contrary, i.e. the fact that the increase in the statutory minimum wage has caused almost no changes in labour demand (Dickens, Riley & Wilkinson 2012). Riley and Bondibene (2017) believe that the potential „negative" effects on firm profitability and management by the statutory minimum wage (SMW) were offset by increasement in production efficiency. Consequently, companies do not experience the urge to promote a capital-labour substitution, but rather might implement on-the-job training programmes for example. This actions do not trigger a decline in labour demand, since there is a persistence of companies which complement the increase costs of production with an increase in production efficiency. As estimated, a 10 per cent increase in trained employees might yield up to 3.2 per cent increased productivity (Konings & Vanormelingen 2015). In this context, it is useful to highlight that during the financial crisis of 2008, and in the post-crisis period, many workers were, however, subject to a nominal reduction of salaries (Gregg et. al. 2014). In this case the SMW prevented an additional decrease in wages under the statutory minimum, retaining the purchasing power of consumers.

Owens and Kagel (2010) analysed the effects of the minimum wage on average wages and the effort put by the affected workers. The effects are clear and unambiguous, an increase in minimum wage leads to a significant increase in wages that are above the minimum threshold. They also found a directly proportional, weaker but statistically significant relationship between the effort of employees caused by an increase in their earnings. The net-result is that an increase in minimum wage generates a Pareto improvement where the workers have higher earnings and the employers have at disposal the same or higher average earning/profit. Here we can also mention the research by Shapiro and Stiglitz (1984), which concludes that the increase of the labour productivity is the result of an increased workers' effort, which in turn results from earning higher wages, i.e. "shrinking model". In a highly competitive labour market where the employment turnover is particularly large, emplyees might experience a certain risk-aversion. If their productivity and efficacy do not match the newly set wages they might easily lose their job on a highly competitive labour market. This might be applicable for developed economies but not developing and especially post-transition economies like the SEE countries, where we believe larger labour fluctuation rigidities are present. Yet, Dickerson (2007) and Bernini and Riley (2016) fail to find a statistically significant and positive link between minimum wage increase and worker's effort. One of the possible offsets could be the productivity lowering in the higher proportion of

the income distribution among workers. Since the wage increasing affects only low-payed workers, if high-wage workers do not get appropriate increasement they might deliberately lower their productivity. However, the results from the comprehensive research by Neumark and Wascher (1995) indicate that companies employ workers with low skill levels instead of workers with higher skills levels and yet there is still a growth of the efficiency of firms in the long-run.

Under the institutional model for minimum wage channel adjustments, employers will seek to improve working intensity, set higher standards or even reorganize the entire firm in response to the new SMW which correlates with higher productivity. As Schmitt (2013) argues, this way the firms won't need to increase prices proportionally to the increased costs. Since only low-wage workers are affected by the new measure, they traditionally spend a larger proportion of their disposable income and thus this might result in a higher demand, retreaving the urge to increase prices as a reaction to SMW increases. The competitive model for minimum wage ajdustment channels is not suitable in developing economies such as those of our particular interest since it pressumes that firms operate at peak-efficiency already. For further elaboration, we suggest the work of Hirsch, Kaufman, and Zelenska (2011). Maia and Sakamoto (2018) study the wage and labour productivity in the cases od Brazil and the US. Their main findings imply that the disparities between labor productivity and earnings in Brazil were mostly affected by institutional factors such as minimum wage increasing, while in the US economic factors were much more determining.

Due to the particularly scarce literature exploring the relationship between minimum wages and labour productivity in particular, we firmly believe that our research may fill in this gap, especially in the case of the SEE region. By providing this added value, we expect to stir up any other potential studies on this topic, especially in the Balkan region.

3. DATA AND RESEARCH METHODOLOGY

Considering the nature of the data and the aim of the research, a panel regression analysis is performed. While the multiple regression analysis limits the researcher to choose between analysing the time component or the cross-country component, the panel analysis merges both the time and cross section components. This way one can solve the problem of insufficient data for a time series analysis (which is often the case for the developing countries from the region) and for a cross-country analysis, providing a quality base for an empirical analysis. Furtheremore, considering the limitations ans disadvantages of the OLS method, this paper uses a Generalized Least Squares Method (GLS), which abstracts the problem of error correlation in different time points (Aljinović & Marasović 2012).

The panel-analysis employs the Panel EGLS (Period random effects) model. In order to analyse the justification of the use of the Random effects model, the Lagrange Multiplier test (LM – test) was performed and it suggested the usage of the random effects model. The results from the Hausman test assume that the random error is not correlated with the independent variable. Such products confirm that the use of the random effect model is efficient. This method also allows for the econometric model to be abstracted from the perfect correlation of the random errors in successive periods which would cause a spurious regression. Besides, it is considered efficient with data where heteroskedasticity is present, such as in this instance.

Our analysis focuses on a set of six countries: the Republic of North Macedonia, Albania, Serbia, Bulgaria, Croatia, and Romania, for the period of 2004-2017. For the purpose of the analysis the countries are segregated in two groups. The first group includes the Republic of North Macedonia, Albania, and Serbia, while the second includes Bulgaria, Croatia, and Romania. The main criteria for such classification are: membership in the EU, gross domestic product (GDP) and labour mobility. Two distinct panel-regressions are estimated, one for each country group. The estimated equations are provided below:

$$y_{it} = \mu + \beta_1 x_{it} + \alpha_i + \varepsilon , \quad i = 1,2,3, \dots, N; t = 1,2,3, \dots, T \tag{1}$$

where, μ is the common constant term of all explored units and presents the separate random effect. This model assumes that α_i are independent and identically distributed variables with a 0 mean and variance σ^2, while β_1 is an independent parameter. The parameter β_1 shows the growth of labour productivity due to a one-unit growth of the statutory minimum wage, i.e. it presents the marginal dependency between the variables.

Since the model uses logarithmic values for both dependent and independent variables, it measures the percentage change in labour productivity due to a 1% growth of the statutory minimum wage level.

Primary data sources are the Eurostat database, the World Bank database (World Development Indicators), and the Institute for economic and social research database WSI, in order to gather the needed informations on inidividual countriy's labour productivity and minimum wage. As noted, we cover the 2004-2017 period and for this purpose annual data is used.

3.1. Descriptive analysis

Figure 1 shows the evolution of labour productivity in the analysed countries during the 2004-2018 period. The values are represented in euros in purchasing power parity. The figure confirms that the previous grouping of the countries is justified from the aspect of labour productivity as well. Labour productivity is the highest in Croatia out of all countries, during the entire period. Romania, beginning in 2012, records a linear growth of productivity and converges to Croatia, while the Bulgarian labour producitivty is significantly lower than in the first two countries. Until 2010, the labour productivity in North Macedonia was higher than in Bulgaria, for instance. However, since 2010 Bulgaria records a mild positive trend in the labour productivity growth, which is not the case for North Macedonia. Within the second group, the Macedonian labour productivity far higher compared to the productivity levels in the other two countries. Beginning in 2011, the value of labour productivity in Serbia records a mild downgrade, while North Macedonia and Albania experience lethargic growth or even stagnation in productivity. As depicted, Albania has the lowest labour productivity out of all economies of interest, during the entire period. For the 2016, 2017, and 2018 interval ,the labour productivity in Albania and Serbia almost overlaps, which further justifies their initial grouping.

The second figure presents the minimum monthly net-wage by country during the 2004-2018 period. Values are adjusted to the purchasing power parity to make them adequately comparable. The available data for North Macedonia indicates that until 2016, the statutory minimum wage (adjusted for the PPP) was set higher than Bulgaria and Albania. The lowest minimum is noted in Albania.
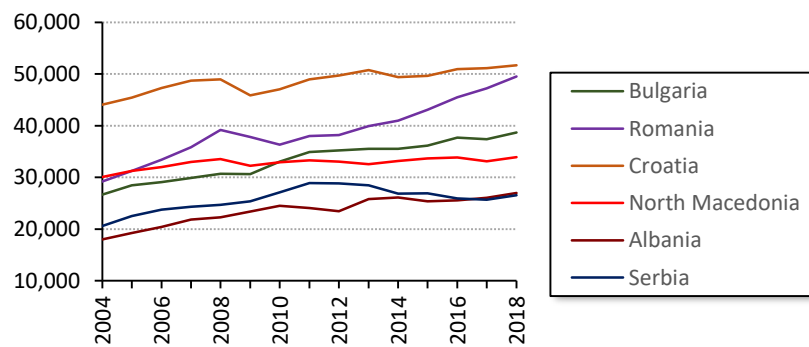

FIGURE 1 - LABOUR PRODUCTIVITY 2004 - 2018 (IN EUR. CONVERTED IN PPP FOR 2011)
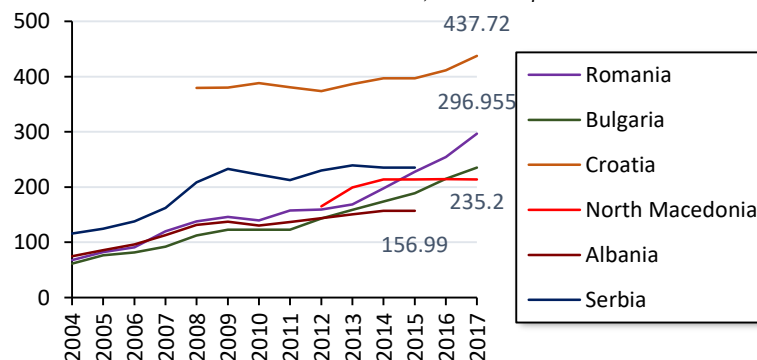*Source: World Bank data; authors' depiction*

FIGURE 2 - MINIMUM MONTHLY NET-WAGE (2004-2017), PPP ADJUSTED (EUR)
Source: Eurostat database; authors' depiction

Figure 3 provides information on the statutory minimum wage in euro per hour on January 1, 2019. It should be noted that North Macedonia, Serbia, and Albania do not exceed the lower limit of 2 euros per hour worked. However, this group includes Bulgaria, a member country of the EU which has the lowest minimum wage in the Union. Wage dispersion between them is low, mainly due to the fact that Bulgaria can be considered one of the least satisfactory economic structures in the EU, with especially high unemployment during the studied interval, which leads to cheap workforce applied. One of the factors determining the relatively low wages is the high proportion of informal economy, preventing the system from properly functioning and adequately developing. On the other hand, Romania and Croatia belong in the group of countries with a minimum wage between 2 and 4 euros per hour worked, based on different data expressions.
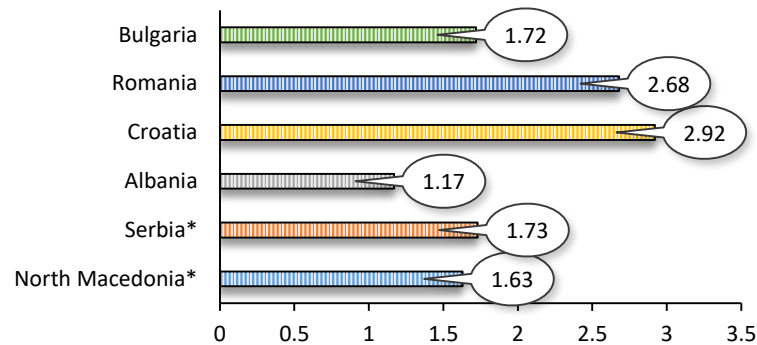

FIGURE 3 - STATUTORY MINIMUM WAGE ON 1 JANUARY 2019, IN EUR PER HOUR
*Estimated value, as the minimum wage is specified as a net monthly wage.
Source: WSI database; authors' depiction

Considering the limitations of presenting the minimum wages in their nominal values, figure 4 presents the minimum wage adjusted according to the purchasing power parity. Changes in the exchange rate and the costs of living which vary in the different economic region can create a biased picture of the purchasing power of the different values of minimum wage. Thus, a necessary conversion is applied. The previous classification of the countries is once again confirmed. A clear distinction persists between the two analysed groups of countries. Croatia has the highest value that reaches 4.13 EUR, followed by Romania with 3.91 EUR, and Bulgaria with 3.42 EUR. The countries with the lowest statutory minimum wage are Albania with 3.27 EUR per hour worked and North Macedonia with 3.28 EUR per hour worked.
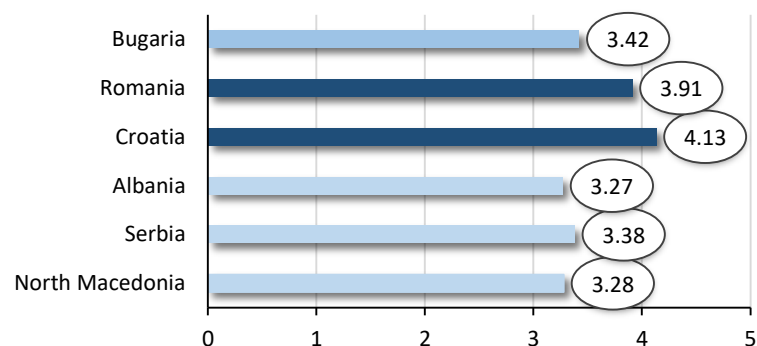

FIGURE 4 - STATUTORY MINIMUM WAGE ON JANUARY 1, 2019 (PPP IN EURO)
Source: WSI database; authors' depiction

The last figure depicts the nominal and real change of minimum wage on 1 January 2019 compared ot 2018 (the available data for North Macedonia show the change relative to 1.7.2018). It can be noted that, with the exception of North Macedonia, the statutory minimum wage in the other countries records a positive change of real minimum wage. The low growth in the Macedonian case is attributed to the deliberate policy of stagnating minimum wage imployed by the government, and thus its growth is mostly attributed to regular wage indexation for the price changes. With this, the main idea was to escape potentially great price pressures, or even

unemployment growth since the economy experienced relatively low economic growth in the post-crisis period. Similar nominal and real growth rates are observed in all other economies of interest, signaling that they might follow a similar policy of wage and economic growth.
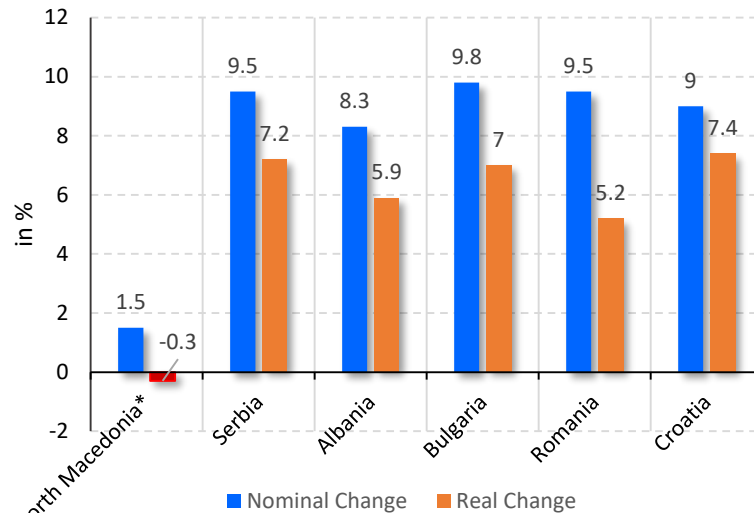

FIGURE 5 - NOMINAL AND REAL CHANGE IN MINIMUM WAGE (1.1.2019/1.1.2018)
* The change for North Macedonia refers to 01.07.2018
Source: WSI database; authors' depiction

3.2. Model results

To provide an indicative idea of the level of correlation between the two variables of interest, a correlation analysis is thus applied using the Pearson coefficient of correlation. As known, the correlation coefficient can take values from -1 to +1, signalling negative or positive correlation respectively, depending on its sign. Especially unwanted scenario is a negative correlation coefficient, signaling that for every unit of increasing in minimum wage, labour productivity degrades. Having this in mind, the marginal cost of increasing the minimum wage is greater than the marginal benefit, represented through labor productivity and its ability to generate greater production for lower costs. The following table presents the correlation coefficients between the minimum wage and labour productivity for both groups of countries.

Table 1 - Correlation matrix based on the Pearson correlation coefficient

Minimum Wage	Productivity	
	Coefficient	
Group 1 (North Macedonia, Albania, Serbia)	0.752217	-
Group 2 (Bulgaria, Croatia, Romania)	-	-0.343023

Source: Authors' calculations

Within the first country group (N. Macedonia, Albania and Serbia), the correlation coefficient is 0.75, which indicates a high level of positive relationship between statutory minimum wage and the level of labour productivity. Contrary to the first group, in the second group (Bulgaria, Croatia and Romania) the estimated Pearson correlation coefficient is -0.34, signaling a weak, but negative correlation between the variables of interest. This points out that probably, minimum wage setting in the second group is completely arbitrary and consequently, does not correlate with the productivity growth.

In the following table, we summarize the results from the econometric panel-analysis of the first group of countries (North Macedonia, Albania, and Serbia). According to the necessary diagnostic tests, the model is well specified. Furthermore, the coefficient of determination R^2 is 0.68, which indicates that approximately 68% of the changes in labour productivity can be explained by the estimated model, where the minimum wage is the explanatory variable. The adjusted R^2 is 0.66, which is in line with the prevous statement. The coefficient of the independent variable (statutory minimum wage) is estimated to be 0,406262. Since both the dependent

and independent variables are presented in log values, meaning that we have log-log regression imposed, the relationship is consequently expressed as elasticities. Transformations and estimates like these can be explained as if the statutory minimum wage in the first group grows by 1%, this would lead to an increase in labour productivity of 0,406262%, *ceteris paribus*. As shown, a mild positive relationship is observed in the first group, which confirms the prior theoretical expectation.

TABLE 2 - PANEL-ANALYSIS OF PRODUCTIVITY AND STATUTORY MINIMUM WAGE – FIRST COUNTRY GROUP (NORTH MACEDONIA, ALBANIA AND SERBIA)

Panel EGLS (Period Random Effects)

Dependent variable - ln(Productivity)			
Independent variable	Coefficient estimates	*t-statistic*	*Prob.*
ln(Minimum Wage)	0.406262***	7.101181	0.00000
C	7.067782***	16.34508	0.00000
R^2		0.677368	
F - statistic		54.5872	
Prob (F-statistic)		0.00000	

*** Significance at the 1% level
Source: Authors' calculations.

Table 3 presents the results from the panel-analysis for the second country group (Bulgaria, Croatia, and Romania). The coefficient of determination is 0.67, while the adjusted R^2 is 0.47. It should be noted that the high value of R^2 does not necessarily mean that the changes in the independent variable explain sufficiently the changes in the dependent variable, since the presence of all other unobserved factors is represented by the error term. The coefficient of the explanatory variable is negative (-0.077819) and indicates a negative relationship between labour productivity and statutory minimum wage. It points to the conclusion that at a 99% significance level, a 1% increase of statutory minimum wage contributes to a statistically significant reduction of the labour productivity level of -0.08%, *ceteris paribus*. Even though the change is significantly low and close to zero, its negative sign implies an unconformism in the theoretical presentation of the minimum wage-labour productivity relationship, which is expected to be positive. To conclude the previous, in both groups of countries, the estimated coefficients are highly significant, even at the 1% level.

TABLE 3 - PANEL-ANALYSIS OF PRODUCTIVITY AND STATUTORY MINIMUM WAGE – SECOND COUNTRY GROUP (BULGARIA, CROATIA AND ROMANIA)

Panel EGLS (Period Random Effects)

Dependent variable - ln(Productivity)			
Independent variable	Coefficient estimates	*t-statistic*	*Prob.*
ln(Minimum Wage)	-0.077819***	-3.483159	0.002
C	11.03405***	79.69429	0.00000
R^2		0.672978	
F - statistic		30.31342	
Prob (F-statistic)		0.004737	

*** Significance at the 1% level
Source: Authors' calculations.

4. DISCUSSION AND POLICY IMPLICATIONS

Certain economic schools of thought and proveniences differ in their view on the impact of minimum wage on labour productivity. Taking into account the varying views is important for a theoretical foundation of the research and to confirm the impression that the implications of minimum wage on the labour market are not unified. Even though a certain degree of theoretical bias is present, different design of the minimum wage systems and different level of economic development produce different effects on labour productivity. The structure of the labour force itself can be accountable for any disparties, just as cultural, socio-economic and psychological factors may play a significant role.

Several findings arise from our research of the dynamics of the statutory minimum wage and labour productivity in the analyzed countries. As observed, the first group of countries (i.e. North Macedonia, Serbia, and Albania)

show a significant and positive relationship between the minimum wage increasement and labour productivity. It seems that incorporating a national system of statutory minimum wage indeed creates a significant added value in terms of greater productivity. However, we have to note that the obtained estimates are related to observing the whole group, and not individual cases where results may vary. Since the relationship is positive, general economic growth can in fact be stimulated through series of especially appropriate and well toned minimum wage increasings. By doing this, fiscal governments may stimulate aggregate consumption in the economy through the channel of private consumption. Subsequently, the disposable income is greater for each worker located in the lower part of the income distribution, which is both theoretically and empiricaly proven to be more prone to consumption as a relative share of their earnings.

Especially worried of this policy may be small and medium sized firms operating on the lower boundaries of rentability, as well as weak labour productivity sectors. In this cases, they face and increasment in their fixed costs which directly impacts their profitability. At this point they might be facing a quite diffcult challenge – either they lower their costs and remain operational or gradually terminate their business model. Managing such choices is more of an art than pure scientific knowledge. Firms may probably lower their number of employees by dismissing the least productive ones. One the other hand, a possible reaction might be implementing specific firm-level measures aimed at increasing the employees productivity (e.g. trainings, additional direct and indirect financal stimulus, improvement of workplace satisfaction, etc.). Well-off firms might somewhat face a problem of unproportionality. Employees which are found around the center or the absolute mode of the wage distribution, might find the minimum wage increasing an unfair treatment for them. Since their productivity and wages are higher than those workers impacted by the minimum wage changes, they might feel a certain disproportionality between their productivity and the low-wage workers productivity. In this case, they ought to ask for a raise in their job earnings which undoubtly impacts the firms' profitablity. However, we must note that such wage movements may depend on the level of labor market flexibility, the power of the labour unions, and even sector competitiveness. Even though a positive relationship is estimated, one can observe that the estimated coefficient of labour productivity is <1, indicating that the potential costs arising from the measure are somewhat greather than the benefit itself.

When analyzing the second group, a significant discrepancy with the theoretical prepositions is noticable. Its explication can be twofold. It can be observed as it practically is, a negative relationship between minimum wage and labour productivity, or any relationship may be discarded, since 1% growth in the minimum wage stimulates negative 8 basis points reaction of productivity. This reaction is especially small and might be even unobservable in real environment. Nevertheless, since the coefficient is estimated as significant, we would like to discuss the potential genesis of such values. As the second group is consisted of EU-member countries and have lower levels of unemployment, getting out of the workforce and subsequently joining seems to be a lot easier. Contrary to the first group of countries, where larger unemployment is persistent throught the years, workers find it difficult to find a new job after leaving the initial one. Thus, there might be lower risk-aversion towards labor force fluctuation in the second group of countries. When an employee is comfortable about finding an alternative workplace in the labour market, he is not worried about potential disparities in his effort and the wage he recieves. Moreover, any potential „unlucky" individuals in the domestic labour markets may easily find a new job in any other EU country memeber, due to the labor market liberalization. This is, however, not the case in the non-EU countries.

Consequently to the initial notation, there might be serios consequences on both macro and micro level. One of the potential solutions to this chronic problem of insufficient labour productivity might be found in the Cobb-Douglas function itself. Since the production function is expressed based on the interaction between capital, labour, and technology factors, one of the major growth factors in the future might be technology investment itself. Substantial investments in digitalization, automation, and manufacturing substitutes might be the solution to the degrading labor productivity. The ideal scenario should imply the wage-productivity parity in all cases and thus the payment for a single unit labor spent should be based exclusively on workers' productivity. However, we are all witnesses of constant voter pressure on central governments reaching a point where raising minimum wages arbitrarily (probably as in the case of the selected EU-member countries) is a necessity in each election program. Nevertheless, it is possible that such coefficient estimates by the set model might be specific to the chosen time interval and thus they might not reveal the true relationship. Hence, such researches might be of specific interest to other academics who might include even more independent variables in the

model. Since our main idea is accepting or rejecting the theoretical hypothesis of a positive productivity-wage relationship, we kept our model as parsimonious as possible.

5. CONCLUSIONS

If the analysis of the relationship between the minimum wage and labor productivity in the empirical literature so far has shown us anything, it is that the relationship between labor productivity and the minimum wage is not unified, and that it varies from country to country. The analysis of this particular relationship in this paper is a result of the above-average increase in the minimum wage in the example of the countries under consideration, and the repercussions it has on the economic system, primarily on labor productivity.

The trend of the minimum wage on the example of the analysed countries (Bulgaria, Romania, Croatia, North Macedonia, Serbia, and Albania) shows an above average level. While the labor productivity in the analysed countries indicates a slight increase, it should be noted that its growth intensity is heterogeneous depending on the economic development Insufficient institutional capacity and weakness of the social partnership structure of the analysed countries show that the increase of the minimum wage is one of the main sources of income for a significant part of the workers. Also, minimum wage changes imposed by fiscal governments might be understood as an attempt to control the process of increase of the wages above the minimum threshold (this becomes especially important when part of the public sector wages are indexed with the minimum wage, for example in Romania). The results obtained from the panel-regression analysis summarize a statistically significant and positive relationship in the case of the first group of economies (North Macedonia, Albania, and Serbia), while an inversely proportional relationship within the second one (Bulgaria, Romania and Croatia). On the particular case of the first grou, minimum wage increasing has a modest but positive impact on the growth of labor productivity. Hence, such estimates of the conducted regression analysis indicate that a 1% increase in the minimum wage on the example of these countries, leads to an increase in labor productivity of 0.46%. Finally, it can be concluded that the relationship between the minimum wage and the increase in labor productivity is still stable and positive. One a contrary side, the second group implies that ad hoc increase of the legal minimum wage by the governments has a negative impact on labor productivity movements. On that side, increase in minimum wage by 10% causes a decrease in labor productivity by an average of 0,7%. Therefore, we must note that the additional increase of the minimum wage in this set of economies, will most likely cause a decrease in the external competitiveness of countries, as well as further deterioration of worker efficiency.

This research paper provides a significant addition in the specific case of SEE, regarding the never-ending discussion on productivity and wages. Most importantly, the results signal non-uniformity in economic systems and labour markets. Policy creators should consider these findings. Forced increase of minimum wage that is not on par with preexisting labour productivity should be ceased. Most importantly, this would benefit both workers and firms since progress can be established through stability. Such topics may stir-up any new potential researches regarding any potential benefits of incorporated training programs, technology investment, and even the potential side effects of continuous minimum wage increase. However, SEE such as those of particular interest in our research still have a long way to go in catching-up with the EU, established through careful management, human capital investment, labour market flexibility, and careful fiscal policies.

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