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EDITORIAL

Issue 2 of Volume 22 Year 2020 of the *Economic Horizons* scientific journal contains three original scientific papers and three review papers, as well as a Letter of Appreciation to the reviewers of the manuscripts submitted to the Editorial Board of the Journal in 2019.

Considering the relevant significance of certain inflation drivers, *Vladimir Mihajlovic* endeavors to estimate the validity of the New Keynesian Phillips Curve in the context of the economy of the Republic of Serbia. The influence of the domestic inflation drivers, such as real marginal costs and the output gap, in the different phases of the economic cycle in the Republic of Serbia is quantified based upon a comprehensive empirical analysis, whereas the effects of inflation expectations are based upon the estimated econometric model of the new-Keynesian Phillips Curve, which is the key contribution made by the paper. This model of the New Keynesian Phillips Curve with the output gap arguments the purposefulness of the expansionary monetary policy, given the fact that the economic activity can be stimulated in that manner without creating significant inflationary pressures.

The key determinants as the drivers of the competitiveness of firms in Nigeria are investigated by the coauthors *Fatai Abiodun Atanda* and *Florence Olubunmi Osemene*, based upon the data obtained from the annual reports and accounts of the nonfinancial firms quoted on the Stock Exchange, on the one hand, and those from the Statistical Bulletin of the Central Bank of Nigeria, on the other. The coauthors conclude that both the firm-specific factors and the environment-specific factors play both beneficial and detrimental roles when speaking about the level of the competitiveness of the nonfinancial firms quoted on the Stock Exchange in Nigeria, which has evident implications for their business policies.

Starting from the attitude that intensive changes in a business environment have significant implications for organizations, by which they also imminently produce significant effects on the human resource management (HRM) architecture, *Biljana Bogicevic Milikic* endeavors to create an integral conceptual framework for designing this function. Based upon the analysis of different approaches to HRM designing and starting from the main theoretical models of organizational design and the identification of similarities and differences amongst them, the authoress indicates the fact that its contemporary architecture is determined by the six basic elements of design, namely: HRM contingent factors, key stakeholders' interests, HRM hard components, HRM soft components, organizational results and feedback.

The conceptual connections between the qualitative characteristics of relevant financial information and the principles of ethical behavior, as informal institutions, are the subject matter of the research study by *Ebiaghan Orits Frank*. The key result of the research reflects in the knowledge of the fact that there is important conceptual connectedness between the fundamental qualitative characteristics of data sources, on the one hand, and ethical conduct norms (objectivity, equity/fairness, accuracy, trust, honesty, responsibility and discipline, to name some), on the other. Pursuant to that, there is a recommendation that the mentioned ethical norms should be included in the curricula of professional accounting disciplines,

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by which the process of student education would be improved and which would enable the education of accountants with a pronounced sense of moral and ethical responsibility, who would prepare more quality financial reports.

Based upon the assessments of the International Monetary Fund of the economic tendencies of China, the Unites States of America (USA) and the European Union (EU27) in the first half of the 2020s, the coauthors *Goran Nikolic* and *Predrag Petrovic* deal with the assessment of the trend of the gross domestic product (GDP) of the mentioned entities in the period from 2025 to 2030. The basic result, which is simultaneoulsy the contribution of the paper, implies the assessment that China will become the biggest global economy in the period 2029-2030. According to the assessments of the economic results of the three largest world economies, there is an opinion that China's more dynamic economic growth will have growing global consequences, encouraging a movement towards multipolarity, or yet bipolarity. It is China's wish to have a more significant role in the creation of inclusive and more equitable global order, all in compliance with its national interests and views of the world.

Pursuant to the significance of the concept of socially responsible business doing, first of all with respect to the protection and preservation of the living environment, the coauthors *Mladen Krstic* and *Ksenija Dencic Mihajlov* do research into the role of the state in stimulating enterprises to incorporate this form of the business activity into their business policies. The support of the state to the End-of-Life Vehicle (ELV) and Waste Electrical and Electronic Equipment (WEEE) recycling (e-product recycling) is investigated on the example of the Republic of Serbia. The research study, conducted in the period from 2007 to 2018, shows significant differences in the approach of the state to these two independent waste flows, which has reflected on the differences in the amount of recycled products. It is concluded that, although car recycling is profitable, investors are not sufficiently motivated to engage themselves in this business due to the absence of an adequate support of the state, whereas in the field of e-product recycling that is supported by the state, investors are additionally motivated to increase the quantities of recycled e-products.

On behalf of the Editorial Board of the Journal and on my own behalf, I thank the authors of the contributions published in this Issue of the Journal, as well as the reviewers, whose critical comments and suggestions given to the authors have significantly contributed to the improvement of the submitted manuscripts.

Issue 2 of Volume 21 Year 2020 contains a Letter of Appreciation to the reviewers of the manuscripts submitted to the Editorial Board of the Journal in the year 2019, of which those positively rated in the double-blind review process were published as original scientific and review papers in the issues 1, 2 and 3 of Volume 21 Year 2019 of the Journal.

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Editor-in-Chief
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THE NEW KEYNESIAN PHILLIPS CURVE AND THE EFFECTS OF DOMESTIC INFLATION DRIVERS IN THE REPUBLIC OF SERBIA

Vladimir Mihajlovic*

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This study investigates the validity of the New Keynesian Phillips curve in the Republic of Serbia. By means of empirical analysis, the impact of domestic inflation drivers, i.e. inflation expectations, real marginal costs and the output gap, is quantified. The results reveal that inflation in Serbia responds more intensively to negative rather than positive supply and demand shocks as it decreases more significantly in economic contraction than in expansion. The estimated model of the New Keynesian Phillips curve with marginal costs gives the unambiguous evidence that the growth of cost-push inflation could be reduced by a productivity-enhancing policy. Expected inflation significantly impacts the actual inflation rate, albeit inflation dynamics are dominated by inertia, i.e. past rates affect the current. The empirical estimate of the New Keynesian Phillips curve model with the output gap that indicates monetary expansion in the Republic of Serbia might, inter alia, stimulate the economic activity without causing significant inflationary pressures to occur.

Keywords: inflation rate, output gap, unit labor costs, nonlinear ARDL model, dynamic multiplier, asymmetry

JEL Classification: B22, C13, C32, E31

INTRODUCTION

The contemporary analysis of inflation dynamics is commonly based on the New Keynesian Phillips curve (NKPC). In its original version, the curve represents the effect of domestic inflation drivers in the closed economy model. Actual inflation is determined by expected future inflation and the factors of the real economic activity, such as real marginal costs and the output gap as a deviation of the actual output from the potential. Despite growing interdependence among national economies, a number of recent research studies (Globan, Arčabić & Sorić, 2015; Hałka & Kotłowski, 2016; Abdih, Lin & Paret, 2018) clearly confirm the fact that inflation dynamics in developed and emerging economies are determined by domestic inflation drivers. A study of the European Central Bank indicates that global inflation drivers had a

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statistically significant impact on inflation in the Eurozone only in period from 2008 to 2009, whereas in the period from 2012 to 2015, domestic factors were dominant. In transition countries, the impact of domestic inflation drivers is specific and was commonly determined by the intensity of the reform processes towards the market economy. The relative significance of particular drivers evolves as transition progresses, so that the dominance of the output gap, the fiscal deficit and political cycles in initial phases are subsequently substituted by the impact of food and oil prices, the exchange rate regime, and the current account in mature phases (Petrović, Mladenović & Nojković, 2011).

Compared with other countries, the Republic of Serbia started transition reforms relatively late. Initially, as in other transition economies, a high inflation rate was the corollary of these reforms. During the 2010s, due to the monetary policy regime based on inflation targeting, monetary stability was enhanced, along with inflation volatility reduction (Narodna banka Srbije, 2018). However, the dynamics of the domestic drivers (the output gap, aggregate demand, the productivity rate, inflation expectations) were characterized by large fluctuations in the mention period. Assumed by the NKPC concept, a strong association between these drivers and the inflation rate raises the issue of the validity of this curve in the context of the Republic of Serbia, as well as the exact impact of these inflation drivers.

Not disputing the effect of external factors (the exchange rate, the import/export share in the GDP, the oil price, etc.), this study tries to extract the impact of the domestic inflation drivers in the Republic of Serbia, because a better understanding of the mechanism and the extent of their influence contributes to the designing of more efficient monetary policy measures intended to maintain monetary stability. In addition to the above, the study investigates the nonlinearity of the NKPC in the economy of the Republic of Serbia. Bearing in mind the fact that this relationship assumes a certain extent of the price and wage rigidity in the short run, there is a possibility of the asymmetric (nonlinear) adjustment of the inflation rate to changes in the economy. For instance, if prices are rigid downwards, economic contraction might reduce the inflation rate to a lesser extent in the short run, compared with inflation growth due to economic expansion. By assumption, prices are flexible in the long run, as frictions in their adjustment diminish and the long-term reaction of inflation to the economic activity would be symmetric.

Accordingly, the empirical analysis of the validity of the NKPC in the economy of the Republic of Serbia and the investigation of the role of the domestic inflation drivers are the subject matter of this paper.

The research study is aimed at revealing whether the explanatory variables (the expected inflation rate, real marginal costs and the output gap) in a relationship have a significant impact on the actual inflation rate. Besides, a long-term asymmetry in the manner in which inflation reacts to changes in these variables is also examined. The presence of such asymmetry has important implications for the monetary policy, since the intensity of its measures should be in accord with how inflation responds to different phases of the business cycle.

The main motivation lies in the fact that quantifying the effects of the domestic drivers gave a more complete picture of inflation dynamics in the Republic of Serbia in the last decade. The research is also motivated by the fact that, according to the best of the author's knowledge, there have been no empirical studies of the NKPC nonlinearity in the Republic of Serbia to date, albeit this relationship has become the basis for the contemporary analysis of the inflation and stabilization policy.

In line with the defined subject matter and aim of the research study, the following research hypotheses are tested:

H1: The expected future inflation rate has a statistically significant impact on the actual inflation rate dynamics in the Republic of Serbia.

H2: Real marginal costs have a positive, statistically significant and symmetric long-term effect on the inflation rate in the Republic of Serbia.

H3: The output gap changes in expansionary and contractionary periods are in a positive, statistically significant and symmetric long-term association with the inflation rate in the Republic of Serbia.

As an econometric approach suitable for testing research hypotheses, the Nonlinear Autoregressive Distributive Lag (NARDL) method developed by Y. Shin, B. Yu and M. Grenwood-Nimmo (2014) is employed. This approach allows for a joint analysis of short- and long-term relationships between dependent and explanatory variables and their asymmetric effects. In addition, it enables the presentation of the cumulative intertemporal effects of inflation drivers, as well as adjustment after the initial shock towards a long-term equilibrium (Shin *et al*, 2014). Furthermore, in the context of the research hypotheses, this approach helps investigate not only the direction and statistical significance of the relationships between real marginal costs, the output gap and the inflation rate in the Republic of Serbia, but also the presence of long-term asymmetry in the reaction of inflation to these drivers in expansionary and contractionary periods.

Apart from the Introduction and the Conclusion, the paper consists of the three sections: in the second section, the NKPC theoretical background is discussed and an overview of the reference empirical research studies is given; in the third section, the econometric approach and the data are presented. The results and a discussion on the empirical results are given in the fourth section.

THE THEORETICAL AND EMPIRICAL BACKGROUNDS OF THE NEW KEYNESIAN PHILLIPS CURVE

The Theoretical Framework

The NKPC represents the outcome of convergence between neoclassical and Keynesian theories. By connecting the rational expectation hypothesis, as the "trademark" of New Classical Macroeconomics, with price and wage rigidity models, New Keynesians have made a step closer to the New Consensus Macroeconomics. Inflation dynamics modelling in the New Consensus is dominantly based on the NKPC (Galí, 2008). The actual inflation rate (π_t) is determined by the present expectations of a future inflation rate ($E_t\pi_{(t+1)}$), which is in line with the rational expectation hypothesis. The impact of changes in the real economy on the actual inflation rate is captured by the second component, which basically refers to real marginal costs dynamics (mc_t). Accordingly, the NKPC can be expressed as follows (Galí, 2008):

$$\pi_t = \beta E_t(\pi_{t+1}) + \lambda mc_t, \tag{1}$$

where β measures the impact of the expected future inflation rate on the actual rate, whereas λ represents the frequency of the price change, thus reflecting the impact of real marginal costs on the inflation rate. Marginal cost changes are determined by the productivity and production capacity utilization rate, as well as input prices, which may all lead to cost-push inflation. Beside the NKPC with marginal costs, there is also a version with the output gap (a deviation of the actual output from the potential). Namely, if the following is assumed:

$$mc = \kappa(y_t - y_t^*), \tag{2}$$

which means that the relationship between marginal costs and the output gap ($y_t - y_t^*$) can be expressed by the parameter κ, then it follows:

$$\pi_t = \beta E_t(\pi_{t+1}) + \lambda\kappa(y_t - y_t^*) \tag{3}$$

where y_t and y_t^* refer to the actual and potential outputs, respectively (Galí, 2008). The positive output gap occurs when aggregate demand exceeds potential supply, thus creating inflationary pressure. In contrast, an insufficient level of aggregate demand results in a negative output gap, which decreases the inflation rate (Orphanides & van Norden, 2005).

An Overview of the Empirical Research

Since this study investigates the original form of the NKPC for a closed economy, the current section is

focused on recent research studies dealing with the role of domestic inflation drivers and asymmetries in their effects on inflation.

Using different alternatives for the output gap, S. Oinonen and M. Pallovita (2014) find that the negative output gap in the euro area existent since 2012 has lowered the inflation rate below the policy target and that the Phillips curve has become steeper. C. Friedrich (2016) applies the factor model to estimate the Phillips curve for 25 advanced economies. He concludes that, apart from the output gap, the inclusion of inflation expectations into this relationship improves the explanation of inflation dynamics. Analyzing the NKPC in the USA, Q. Xu, X. Niu, C. Jiang, and X. Huang (2015) document that an increase in the output gap leads to a higher level of inflation and raises its volatility. M. Jarociński and M. Lenza (2018) assess the euro area output gap as a factor of inflation dynamics. They conclude, inter alia, that an increase in aggregate demand may reduce the output gap after 2011, which wouldn't be coupled with an increase in inflation. M. Jašová, R. Moessner and E. Takáts (2018) analyze the impact of domestic output gaps on inflation in 25 developed and 22 emerging economies. Comparing these effects with the impact of the global output gap, they conclude that both of them were and are important inflation drivers before the Great Recession of 2008 and in the post-crisis period as well, respectively.

Whereas the significance of the output gap as a determinant of the dynamics of the inflation rate is mainly confirmed by numerous empirical studies, the findings related to the validity of the NKPC with marginal costs included are diversified and usually depend on the choice of the analyzed economy. For example, S. Lagoa (2014) finds the evidence that nominal unit labour costs, along with a long-term discrepancy between prices and costs, could explain inflation differentials in the euro area. J. Posh and F. Rumler (2014) estimate a hybrid NKPC with the open-economy measure of marginal costs. Their model provides a good explanation of inflation changes in the United Kingdom, but only in the short run. In contrast, S. Mazumder (2012) shows that real unit labour costs cannot explain the inflation dynamics in the European economies; these costs are also a poor proxy for real marginal costs. Similar findings for the USA can be found in E. V. Peneva and J. B. Rudd (2017). These controversies stimulate a certain additional research study based on a different methodology in order to generate more valid and unambiguous conclusions about the impact of these costs on the inflation rate.

Opposite to the research studies dealing with developed economies, the studies of the NKPC in (former) transition countries do not find enough evidence of the importance of inflation expectations and real marginal costs, but rather frequently emphasize a higher extent of price rigidity. Thus, A. Dabušinskas and D. Kulikov (2007) develop the Phillips curve model for the Baltic economies (Estonia, Latvia, and Lithuania) and conclude that actual inflation is mainly determined by past rates and, to a lesser extent, by expected future inflation, whereas the impact of real marginal costs is not significant. B. Vašíček (2011) comes to a similar conclusion for Visegrád Group, A. Vasilev (2015) for Hungary and F. Furuoka (2016) for the Baltic States. In contrast, M. Bouda (2013) finds the evidence of the key impact of expected inflation, along with monetary policy shocks, on the actual inflation rate in the Czech Republic. M. Basarac, B. Škrabić and P. Sorić (2011) analyze the hybrid Phillips curve in nine transition economies and confirm the fact that actual inflation is associated with expected inflation and the output gap in the long run.

In recent years, many empirical studies have investigated nonlinearity (asymmetry) in the relationship between the variables of the Phillips curve and the inflation rate. For instance, P. G. Egan and A. J. Leddin (2017) investigate inflation dynamics in China and conclude that the inflation-output relationship is nonlinear. Analyzing unemployment fluctuations in the New Keynesian model, A. Lepetit (2018) investigates the role of the labor market asymmetries in designing efficient monetary policy measures. He concludes that this asymmetry is the key determinant of the inflation-unemployment relationship and that the monetary policy should be directed towards both inflation and unemployment.

Employing the NARDL model and the methods of causality, M. E. Bildirici and F. Özaksoy Sonustun (2018) investigate the inflation-unemployment nexus in Japan, Turkey, the USA and France. The empirical estimates indicate a negative and asymmetric long-term relationship between these variables. J. Morley and I. B. Panovska (2019) assess the business cycle asymmetry in ten industrialized economies. They reveal that the output gap responds more intensively during recessions than in expansions, thus indicating that the Phillips curve is mainly convex. A research study conducted by S. Ho and B. N. Iyke (2019) also confirms the nonlinearity of the Phillips curve in 11 Eurozone countries and indicates that the inflation-unemployment nexus is negative when the unemployment rate is lower than 5%.

Having in mind the empirical research studies carried out to date, this study aims to supplement the literature dealing with the role and significance of asymmetric effects in the NKPC in transition economies by focusing on the Republic of Serbia's economy. The empirical results may improve the understanding of the inflation process and may serve monetary authorities in setting more efficient measures aimed at achieving and maintaining monetary stability.

RESEARCH METHODOLOGY AND DATA

The Econometric Model

The main problem in the empirical analysis of the validity of the New Phillips curve (Equation 1), reflects a fact that the data about real marginal costs are not available. Instead, J. Galí and M. Gertler (1999) proposed that unit labor costs should be used, which has become the approach commonly used in empirical research studies (Furuoka, 2016; Peneva & Rudd, 2017; Chin, 2018). These authors employ average labor costs instead of real marginal costs, which is defined as the total labor share in the nominal output:

$$mc_t = \frac{w_t n_t}{p_t y_t}, \tag{4}$$

where w_t denotes the nominal wage, n_t stands for employment, p_t is the price level, and y_t represents the output.

The total labor share in the nominal output can be perceived as the real unit labor cost (φ_t), which justifies its use instead of the real marginal cost. Furthermore, for the purpose of the empirical analysis conducted in this paper, Equation (1) can be extended by introducing an intercept (α_0), which indicates the inflation rate consistent with the zero value of the explanatory variables, as well as by adding a random error (ε_t), in order to generate the following equation:

$$\pi_t = \alpha_0 + \beta_1 \pi_t^e + \nu\varphi_t + \varepsilon_t, \tag{5}$$

where π_t^e denotes expected future inflation, whereas the coefficient ν measures the effect of change in the unit labour costs on the inflation rate.

Likewise, Equation (3) can be reformulated so as to generate an NKPC model for empirical estimation as follows:

$$\pi_t = \alpha_1 + \beta_2 \pi_t^e + \gamma x_t + \varepsilon_t, \tag{6}$$

where x_t denotes the output gap ($x_t \equiv y_t - y_t^*$).

The empirical analysis carried out in this study is based on the Autoregressive Distributive Lag (ARDL) approach. Since the lagged values of the dependent and explanatory variables serve as regressors, the model introduces dynamics into their relationship, thus helping eliminate the problem with the autocorrelation of residuals (Moosa, 1997).

Starting from Equation (5), the Autoregressive Distributed Lag (ARDL) model (m, n) of the NKPC can be expressed as follows:

$$\Delta\pi_t = \alpha_0 + \beta_1\pi_{t-1} + \delta_1\pi_{t-1}^e + v\varphi_{t-1} + \sum_{j=1}^{m} \vartheta_j \Delta\pi_{t-j} + \sum_{j=0}^{n} \tau_j \Delta\varphi_{t-j} + \varepsilon_t \tag{7}$$

where Δ is the first difference operator, β_1, δ_1 and ν are the long-term coefficients, ϑ and τ denote the short-

term coefficients, whereas *m* and *n* are the selected lag length.

It is evident that the expected inflation rate (π^e) serves as a fixed regressor, i.e. its impact is modelled without the distributed lags that cover the short-term relationship. This allows the modelling of the long-term relationship between change in actual inflation in the observed quarter and expected inflation in the same quarter of the next year, since the analyzed data are structured in such a way.

In order to test the second research hypothesis, it is necessary to decompose the dynamics of unit labor costs into positive and negative changes, on the one hand, and reveal their impact on the inflation rate, on the other. Changes in real unit labor costs (φ_t) are decomposed into increasing and decreasing partial sums, i.e. $\varphi_t = \varphi + \varphi_t^+ + \varphi_t^-$, where φ_t^+ and φ_t^- represent the partial sums of positive and negative changes in real unit labour costs, generated as follows (Shin *et al*, 2014):

$$\varphi_t^+ = \sum_{j=0}^{t} \Delta\varphi_j^+ = \sum_{j=0}^{t} max(\Delta\varphi_j, 0)$$
$$\varphi_t^- = \sum_{j=0}^{t} \Delta\varphi_j^- = \sum_{j=0}^{t} min(\Delta\varphi_j, 0) \quad (8)$$

By substituting φ_t in Equation (7) by φ_t^+ and φ_t^-, the NARDL model is obtained in the following form:

$$\Delta\pi_t = \alpha_0 + \beta_1\pi_{t-1} + \delta_1\pi_{t-1}^e + v^+\varphi_{t-1}^+ + v^-\varphi_{t-1}^- + \sum_{j=1}^{m} \vartheta_j\Delta\pi_{t-j} + \sum_{j=0}^{n}(\tau_j^+\Delta\varphi_{t-j}^+ + \tau_j^-\Delta\varphi_{t-j}^-) + \varepsilon_t \quad (9)$$

Likewise, starting from Equation (6), the ARDL (*p*, *q*) model of the NKPC can be expressed as follows:

$$\Delta\pi_t = \alpha_1 + \beta_2\pi_{t-1} + \delta_2\pi_{t-1}^e + \gamma x_{t-1} + \sum_{i=1}^{p} \kappa_i\Delta\pi_{t-i} + \sum_{i=0}^{q} \mu_i\Delta x_{t-i} + \varepsilon_t, \quad (10)$$

where β_2, δ_2 and γ denote the long-term coefficients, κ and μ are the short-term coefficients, and *p* and *q* are the selected lag length.

The changes in the output gap (x_t) are decomposed into increasing (x_t^+) and decreasing (x_t^-) partial sums in the following way:

$$x_t^+ = \sum_{i=0}^{t} \Delta x_i^+ = \sum_{i=0}^{t} max(\Delta x_i, 0)$$
$$x_t^- = \sum_{i=0}^{t} \Delta x_i^- = \sum_{i=0}^{t} min(\Delta x_i, 0) \quad (11)$$

In order to test the third research hypothesis, the NARDL model of the NKPC with the output gap is obtained by replacing x_t with x_t^+ and x_t^- in Equation (10):

$$\Delta\pi_t = \alpha_1 + \beta_2\pi_{t-1} + \delta_2\pi_{t-1}^e + \gamma^+x_{t-1}^+ + \gamma^-x_{t-1}^- + \sum_{i=1}^{p} \kappa_i\Delta\pi_{t-i} + \sum_{i=0}^{q}(\mu_i^+\Delta x_{t-i}^+ + \mu_i^-\Delta x_{t-i}^-) + \varepsilon_t \quad (12)$$

The presence of cointegration between the inflation rate and the explanatory variables is investigated by employing the Bounds test, developed by M. H. Pesaran, Y. Smit and R. J. Shin (2001). The null hypotheses of no cointegration in Equations (9) and (12), i.e. H_0: $\beta_1 = \delta_1 = v^+ = v^- = 0$ and H_0: $\beta_2 = \delta_2 = \gamma^+ = \gamma^- = 0$, respectively, are tested in order to obtain the value of the F-statistic. The presence of the long-term asymmetry is checked by testing the null hypothesis of equality between the long-term coefficients of positive and negative changes in unit labor costs, i.e. H_0: $L_\varphi^+ = L_\varphi^-$ (where $L_\varphi^+ = -v^+ / \beta_1$ and $L_\varphi^- = -v^- / \beta_1$) and the null hypothesis of equality between the long-term coefficients of positive and negative changes in the output gap, H_0: $L_x^+ = L_x^-$ (where $L_x^+ = -\gamma^+ / \beta_2$ and $L_x^- = -\gamma^- / \beta_2$). The rejection of the null hypotheses at a given level of statistical significance indicates that the association between the inflation rate and the considered regressors is asymmetric in the long run. The presence of short-term asymmetry is evaluated by testing the null hypotheses of symmetry in Equations (9) and (12), i.e. H_0: $\sum_{j=0}^{n}\tau_j^+ = \sum_{j=0}^{n}\tau_j^-$ and H_0: $\sum_{i=0}^{q}\mu_i^+ = \sum_{i=0}^{q}\mu_i^-$, respectively. To test the hypotheses, the Wald test is employed as a common approach in a number of empirical studies (Shin *et al*, 2014; Bildirici & Özaksoy, 2018).

In order to have the insight into the cumulative impact of short- and long-term changes in the explanatory variables on the inflation rate, dynamic multipliers are applied (Shin *et al*, 2014). They capture the effects of a 1% increase and decrease in unit labor costs and the output gap on the inflation rate.

The Dataset

Quarterly data about the year-on-year actual and expected inflation rates (12 months ahead, enterprises' expectations), the real indices of unit labor costs in industry, and the real Gross Domestic Product (GDP) are used in this empirical study. The data were collected from the National Bank of Serbia and the Eurostat databases. The analysis covers the time span from the first quarter of 2008 to the fourth quarter of 2019 (48 observations). Bearing in mind the fact that the data on the dynamics of the inflation rate, expected inflation and unit labor costs indices are available on a monthly basis, the average observation approach was applied in order to obtain such quarterly data. The output gap was calculated by decomposing the real GDP time series into the trend and cyclical components by means of the Hodrick-Prescott filter (λ = 1600).

The empirical dynamics of the observed variables in the analyzed time period are presented in Figure 1. A common trend between the expected and actual inflation rates is apparent, as well as their approaching after 2014. It could be the initial signal for the statistical significance of their relationship. The positive association between the output gap and the inflation rate after 2014 is also evident, whereas the exact direction of the unit labor costs-inflation rate nexus is not visually apparent. The preliminary analysis of the relationships between the observed variables by means of the scatter diagrams (Figure 2) indicates a positive association between the inflation rate and all the explanatory variables, except for the unit labor costs, which are negatively correlated with the inflation rate. This analysis does not necessarily prejudice the final results, as the dynamics of the explanatory variables are decomposed into positive and negative changes serving as separate regressors.

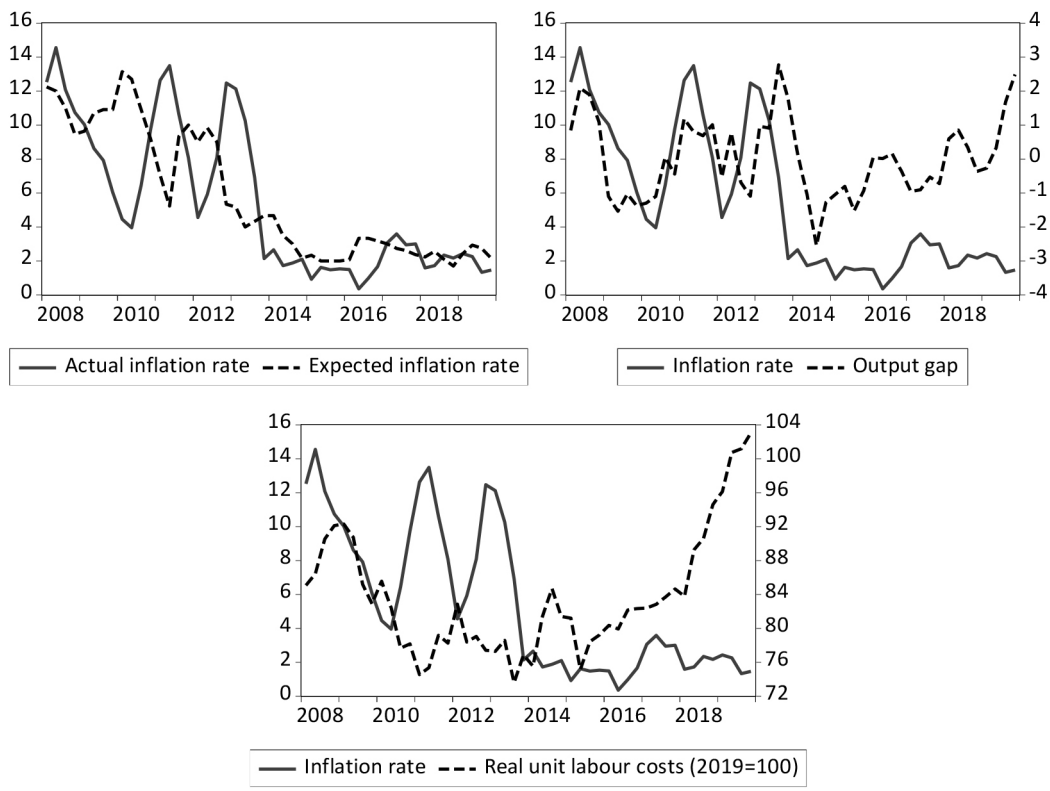

Figure 1 The empirical dynamics of the analyzed variables in the Republic of Serbia

Source: Author, based on the National Bank of Serbia's data

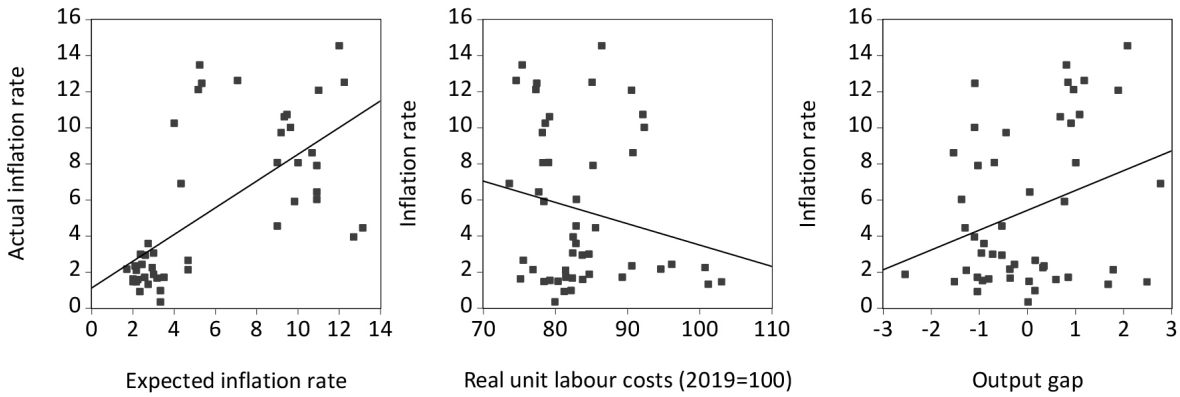

Figure 2 The scatter diagrams of the relationship between the inflation rate and the explanatory variables

Source: Author, based on the National Bank of Serbia's data

RESEARCH RESULTS AND DISCUSSION

A valid implementation of the NARDL model implies that all variables should be stationary at the level and/or first difference, which entails the application of different unit root tests as the first step. The results of the parametric ADF (Augmented Dickey-Fuller) test and the nonparametric PP (Phillips-Perron) test reported in Table 1 confirm that this condition is fulfilled. In order to obtain more robust results, the Zivot-Andrews test (Zivot & Andrews, 1992), which takes into account the presence of structural breaks, is also applied. This test re-confirms the fact that none of the observed time series is I(2). The results of this test also indicate the exact break date (quarter)used as a dummy variable in the further analysis. This variable takes the value 0 before the break date and the value 1 afterwards.

Prior to the final estimation of the NARDL model, the direction of the causality between the analyzed variables should be checked. The inflation rate is set as a dependent variable in all versions of the Phillips curve, including the New Keynesian one. Accordingly, the Granger non-causality test is applied in order to evaluate whether changes in the inflation rate can be explained by past changes in unit labor costs and the output gap. Since unit root tests indicate the fact that the time series integrated are of a different order (I(0) and/or I(1)), the Toda-Yamamoto procedure is applied as well (Toda & Yamamoto, 1995). This procedure checks the causality between time series at levels, thus reducing the risk of the wrong identification of their exact integration order (Wolde-Rufael, 2005). In addition, following A. Hatemi-J (2012), the direction of the causality between positive and negative changes in unit labor costs (the output gap) and the inflation rate is investigated.

The causality test results reported in Table 2 confirm the presence of the unidirectional causality which goes from the real unit labor costs and the output gap to the actual inflation rate. The positive and negative changes in these variables also represent an important determinant of the dynamics of the future inflation rate. The actual inflation rate is led by expected inflation as well. Hence, the postulated relationship between the inflation rate and the explanatory variables in the NKPC is appropriate for Serbia's economy.

The final specification of the NARDL model for both variants of the NKPC is reported in Table 3. It is obtained by the successive trimming of insignificant time lags, starting from four lags. The residual diagnostics tests (for normality, autocorrelation, heteroscedasticity, dynamic stability, and the functional form) all indicate the fact that both models are well specified and stable. The results of the cointegration test in the bottom row of Table 3 confirm

Table 1 The results of the unit root tests

Variable	ADF test		PP test		Zivot-Adrews test	
	Constant	Constant & Trend	Constant	Constant & Trend	t-statistic	Break date
π	-1.66	-2.57	-1.88	-2.49	-4.64***	2014Q2
π^e	-1.28	-2.21	-1.56	-2.21	-4.95***	2012Q4
x	-2.88*	-2.84	-2.97**	-3.01	-3.95***	2014Q2
φ	-1.17	-0.99	-1.17	-0.87	-2.69*	2010Q2
$\Delta\pi$	-2.80*	-2.81	-3.99***	-4.02**	-3.59***	2013Q1
$\Delta\pi^e$	-5.95***	-6.08***	-5.76***	-5.73***	-6.81	2013Q3
Δx	-5.66***	-5.47***	-6.69***	-6.74***	-6.12*	2013Q4
$\Delta\varphi$	-6.94***	-7.31***	-6.93***	-7.81***	-4.83**	2015Q2

Note: The results denoted by *, **, and *** are statistically significant at the levels of 10%, 5%, and 1%, respectively.

Source: Author

the presence of the long-term relationship between the dependent and explanatory variables in both models. The impact of expected inflation on the actual inflation rate is statistically significant in both models, too. In the first model, the long-term coefficient of the negative changes in the unit labor costs (L_{φ}^{-}) is statistically significant and larger than the long-term coefficient of the positive changes (L_{φ}^{+}). More precisely, a 1% increase in the unit labor cost leads to the 0.28% growth of the inflation rate, whereas a 1% decrease in these costs leads to a 0.61% fall in the inflation rate. The results of the Wald test (WLR) confirm the presence of a long-term asymmetry in the relationship between the unit labor costs and the inflation rate. Bearing in mind the fact that the dynamics of these costs are determined by the changes in productivity, it appears that the improvement of productivity might reduce cost-push inflation growth as a component of the total inflation in the Republic of Serbia.

In the second model, the impact of both long-term coefficients is statistically significant, and the

Table 2 The results of the Granger non-causality test (the Toda-Yamamoto procedure)

Symmetric approach		Asymmetric approach - positive changes in the explanatory variables		Asymmetric approach - negative changes in the explanatory variables	
H_0	χ^2	H_0	χ^2	H_0	χ^2
$\varphi \nrightarrow \pi$	7.57*	$\varphi^+ \nrightarrow \pi$	8.06*	$\varphi^- \nrightarrow \pi$	5.89*
$\pi \nrightarrow \varphi$	1.20	$\pi \nrightarrow \varphi^+$	1.29	$\pi \nrightarrow \varphi^-$	3.85
$x \nrightarrow \pi$	2.81*	$x^+ \nrightarrow \pi$	6.09	$x^- \nrightarrow \pi$	5.91*
$\pi \nrightarrow x$	1.12	$\pi \nrightarrow x^+$	3.52	$\pi \nrightarrow x^-$	1.96
$\pi^e \nrightarrow \pi$	6.40**	-	-	-	-
$\pi \nrightarrow \pi^e$	2.13	-	-	-	-

Notes: The symbol $\nrightarrow$ means "do not Granger-cause"; the results denoted by *. **. and *** are statistically significant at the levels of 10%. 5%. and 1%. respectively.

Source: Author

Table 3 The NARDL model specification of the NKPC

Model with unit labor costs			Model with the output gap		
Variable	Coefficient	p-value	Variable	Coefficient	p-value
α_0	2.48	0.26	α_1	2.52	0.28
$\pi_{(t-1)}$	-0.39	0.00	$\pi_{(t-1)}$	-0.64	0.00
$\pi^{e}_{(t-1)}$	0.25	0.05	$\pi^{e}_{(t-1)}$	0.37	0.00
$\varphi^{+}_{(t-1)}$	0.11	0.06	$x^{+}_{(t-1)}$	0.69	0.00
$\varphi^{-}_{(t-1)}$	0.23	0.00	$x^{-}_{(t-1)}$	0.81	0.00
$\Delta\pi_{(t-1)}$	0.57	0.00	$\Delta\pi_{(t-1)}$	0.67	0.00
$\Delta\varphi^{+}_{t}$	-0.22	0.08	$\Delta\pi_{(t-2)}$	0.51	0.00
$\Delta\varphi^{-}_{t}$	0.07	0.62	Δx^{+}_{t}	0.46	0.12
$\Delta\varphi^{-}_{(t-2)}$	-0.27	0.02	$\Delta x^{-}_{(t-1)}$	-1.23	0.00
D	4.19	0.00	D	-	-
L^{+}_{φ}	0.28	0.11	L^{+}_{x}	1.09	0.00
L^{-}_{φ}	0.61	0.00	L^{-}_{x}	1.28	0.00
R^2 (adjusted)	0.65		R^2 (adjusted)	0.68	
JB test	0.80	0.67	JB test	1.13	0.57
BG LM test	1.17	0.32	BG LM test	1.44	0.25
BPG test	0.31	0.97	BPG test	1.98	0.08
Cusum test	Stable		Cusum test	Stable	
Cusum Sq. test	Stable		Cusum Sq. test	Stable	
RESET test	0.74	0.39	RESET test	0.22	0.64
W_{LR}	11.56	0.00	W_{LR}	1.29	0.26
W_{SR}	0.01	0.95	W_{SR}	14.48	0.00
F_{PSS}	11.89	0.00	F_{PSS}	20.06	0.00

Notes: D denotes the dummy variable representing the structural break in the time series; JB, BG LM, and BPG are the Jarque-Bera test for normality, the Breusch-Godfrey test for autocorrelation, and the Breusch-Pagan-Godfrey test for the heteroscedasticity of the residuals, respectively; Cusum (Cusum Squared) refers to the cumulative sum of the residuals (squared residuals) test, which is presented graphically in the appendix; W_{LR} and W_{SR} denote the results of the short- and long-term asymmetry Wald tests, respectively; F_{PSS} refers to the F-statistic of the Bounds test (Pesaran *et al*, 2001).

Source: Author

coefficient of the negative changes (L_x^-) is higher than the coefficient of the positive changes (L_x^+): a 1% decrease in the output gap leads to a 1.28% fall in inflation, whereas a 1% increase leads to the 1.09% growth of the inflation rate. However, the result of the Wald test indicates no statistically significant difference between the two coefficients, i.e. the relationship between the output gap and inflation is symmetric in the long run.

If the fact that unit labor costs represent a good approximation for marginal costs is accepted, then it can be concluded that the results pertaining to the long-term relationship in both models of the Phillips curve are mutually consistent, since the negative changes in the output gap (in economic contraction) coincide with a decrease in the marginal cost due to a decrease in the production capacity utilization rate.

Indeed, these procyclical dynamics of marginal costs are proven in numerous empirical studies (Alexová, 2012; Vasilev, 2015; Furuoka, 2016).

Furthermore, the Wald test for a short-run asymmetry (WSR) reveals the fact that the relationship between the output gap and the inflation rate is asymmetric in the short run, which is opposite to the results for the model with the unit labor costs. The short-term asymmetry in the relationship between the output gap and inflation is a corollary of an incomplete inflation adjustment during economic expansion and contraction due to a certain extent of the price rigidity, which is in accord with the NKPC.

An insight into the cumulative impact of explanatory variables in the NKPC, as well as the adjustment from the initial shock towards a long-term equilibrium, can be gained by means of dynamic multipliers (Shin *et al*, 2014). Figure 3a represents the intertemporal effects of the unit labor costs increases and decreases on the inflation rate. The negative changes in these costs (the dashed grey line) lead to the inflation rate reduction, which is more pronounced in the short run (approximately during five quarters after the initial shock) and gradually decreases towards the long-term equilibrium. The positive changes in the unit labor costs (the continuous grey line) initially lead to the inflation rate reduction, and later to a long-term inflation increase. The dashed black line represents the difference between the effects of the positive and negative changes, i.e. the asymmetry. It is presented along with the black dashed lines denoting the 95% confidence interval. If the zero line is inside the confidence interval, then there is no asymmetry. The dynamic multipliers in Figure 3a indicate a long-term asymmetry, but a short-term symmetry, which is in accord with the results of the Wald test from Table 3. The long-term equilibrium establishes approximately 10 quarters after the initial change in the unit labor costs.

In Figure 3b, the short- and long-term impacts of the changes in the output gap on the inflation rate are presented. The short-term asymmetry is apparent and the dominance of the positive changes in the output gap is followed by the dominance of the negative changes. In the first three quarters, the decrease in the output gap leads to the growth of the inflation rate and then to its fall. Thus, the inflation rate strongly responds in the short run, but much more time is needed for a long-term equilibrium to establish.

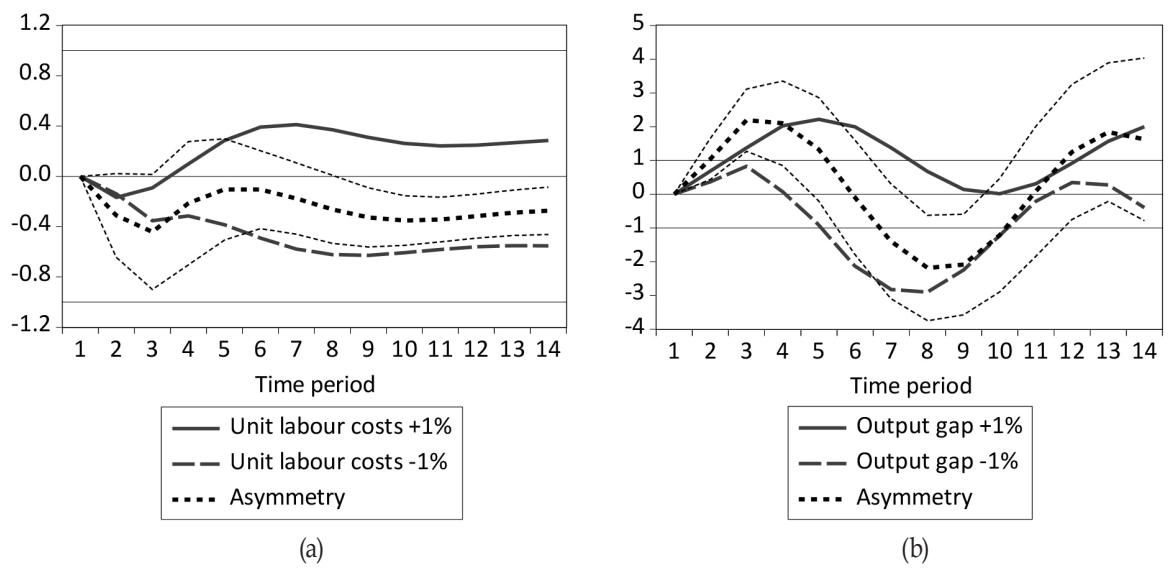

Figure 3 The dynamic impact of the changes in the unit labor costs (a) and the output gap (b) on the inflation rate

Source: Author

The dynamic multipliers confirm the Wald test results pertaining to the presence of a short-term asymmetry.

In the light of the defined research hypotheses, the results of the empirical analysis can be summarized as follows. In both models of the NKPC, the current expectations of the future inflation rate have a statistically significant impact on the actual inflation rate, thus confirming the first research hypothesis. The values of the expected inflation coefficients are relatively low (0.25 in the first, and 0.37 in the second model), thus indicating the fact that the inflation expectations of economic agents in the Republic of Serbia are formed following an adaptive pattern, i.e. they are based on past inflation rates. These results coincide well with the findings for other transition and emerging economies (Dabušinskas & Kulikov, 2007; Vašiček, 2010; Basarac *et al*, 2011; Furuoka, 2016).

The empirical analysis has not provided enough evidence for the second research hypothesis to be accepted. Unit labor costs have a statistically significant and positive long-term impact on the inflation rate in the Republic of Serbia, but only during economic contraction. An increase in these costs during economic expansion has no statistically significant impact on inflation growth. Their long-term effect on the inflation rate in Serbia is asymmetric, which is in contrast with the NKPC.

Changes in the output gap have a statistically significant impact on the inflation rate in the Republic of Serbia, which is also symmetric during expansionary and contractionary periods. This impact is positive, i.e. the inflation rate moves pro-cyclically (it increases in expansion, and decreases in contraction). Thus, the third research hypothesis is confirmed. Given the fact that, in the NKPC model with the output gap, expected future inflation also has a statistically significant impact on the actual inflation rate, it can be concluded that the validity of this variant of the Phillips curve in the context of the Republic of Serbia is confirmed. In other words, this relation of the Phillips curve may serve the Serbian monetary authorities to monitor the impact of changes in the real economy and inflation expectations on the actual inflation rate.

The coefficient of the determination value (R^2) shows that 68% of the variation in inflation rates in Serbia can be explained by changes in both the output gap and expected inflation. This is consistent with the finding in a recent study by the World Bank, which indicates the fact that about the three-quarters of the inflation variation are determined by domestic drivers (Ha, Ayhan Kose, Ohnsorge & Yilmazkuday, 2019). Besides, the difference between the intensity of the long-term impact of the output gap in economic expansion and contraction (the coefficients L_x^+ and L_x^-, respectively) implies that the ongoing accommodative monetary policy conducted by the National Bank of Serbia through lowering the reference interest rate can stimulate the economic activity, without creating significant inflationary pressures. This simultaneously coincides with the findings in an empirical study by P. Petrović, D. Brčerević and M. Gligorić (2017) and their conclusion that the ongoing economic growth of the Republic of Serbia is about two percentage points below a potential annual growth of about 5%, i.e. that the output gap is negative. In that case, the monetary expansion would make the actual output closer to the potential, without causing the occurrence of the significant growth of the inflation rate.

CONCLUSION

This study is aimed at evaluating the validity of the NKPC in the context of the Republic of Serbia and assessing the impact of domestic inflation drivers as well. The results of the estimated NARDL model have indicated the following:

- expected future inflation has a statistically significant impact on the actual inflation rate regardless of the NKPC specification; however, the effect on inflation expectations on the actual inflation rate is less pronounced than the impact of the past inflation;
- real marginal costs, approximated by unit labor costs, exert a statistically significant impact on the inflation rate in the Republic of Serbia, but only during economic contraction. In other words, the

influence of these costs on the inflation rate is asymmetric in the long run, but symmetric in the short run, which is not in accord with the NKPC. However, as suggested by the identified direction of the asymmetry, the improvement of the productivity level in the long run may decrease cost-push inflation growth as a component of the total inflation;

- changes in the output gap during economic expansion and contraction have a positive, statistically significant and symmetric effect on the inflation rate in the Republic of Serbia, which is consistent with the role of the output gap in the NKPC. The empirical results indicate that inflation responds more intensively to negative than positive supply and demand shocks, i.e. it decreases more significantly in economic contraction than in economic expansion.

Based upon the estimated econometric model of the NKPC, the main contribution of this research study reflects in the quantification of the impact of the domestic inflation drivers in the Republic of Serbia (marginal costs and the output gap) in the different phases of the business cycle, as well as the effect of inflation expectations. In the case of positive and negative unit labor costs and output gap shocks, employing dynamic multipliers, the analysis of the inflation rate adjustment mechanism, could improve the understanding of the cumulative short- and long-term impact of economic disorders on the inflation rate. The estimated model of the NKPC with the output gap provides clear argumentation in favor of the expansionary monetary policy which the National Bank of Serbia has been conducting in recent years, since it can stimulate the economic activity without creating significant inflation pressures.

The empirical analysis conducted in the paper, however, is not without limitations. First of all, the value of the output gap (since it is not directly observable) was obtained by means of the Hodrick-Prescott filter. The application of the other decomposing techniques (such as the Kalman filter, the Band-pass filter, etc.) would potentially result in the different values of the output gap, consequently leading to different estimation results. Furthermore, the analysis is based on unit labor costs for industry, not for the whole economy. In addition, these costs are only used as an approximation for real marginal costs, which there are no available data for. Finally, albeit the research study covers a period of twelve years, the sample is still relatively small (48 observations). Undoubtedly, including more observations would enlighten the relationships among the analyzed variables in a more complete manner.

Some future research in the inflation dynamics in the Republic of Serbia might include the so-called Hybrid NKPC, which incorporates the impact of past inflation on the actual inflation rate, along with inflation expectations. In such a way, the impact of inertia in inflation dynamics as an important aspect of an efficient disinflation policy could be quantified. Although, as in the majority of other economies, domestic inflation drivers significantly determine the variation of inflation rates in the Republic of Serbia, a research study based upon the open-economy NKPC (which includes variables such as an import/export share in the GDP, the oil price, etc.) could identify the key external factors of inflation, thus improving the economic policy directed towards the maintenance of monetary stability.

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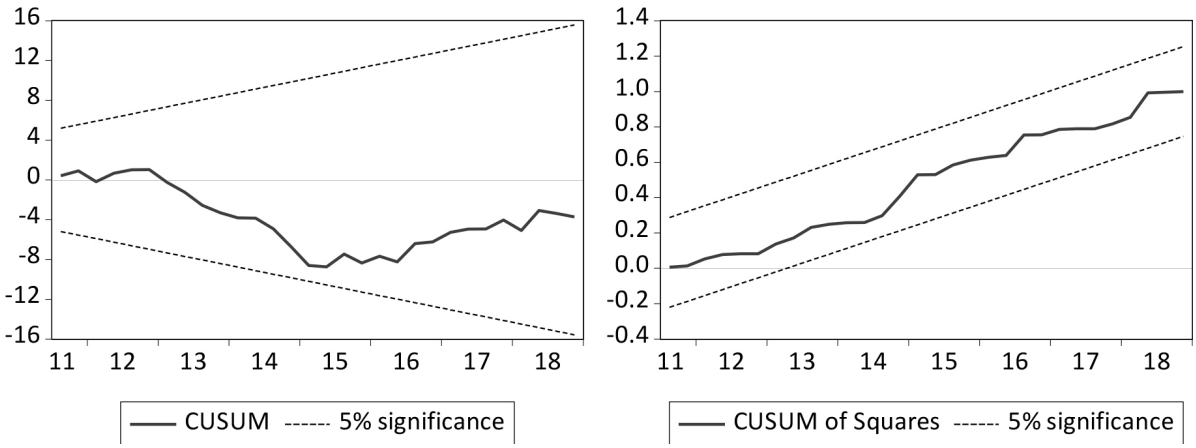
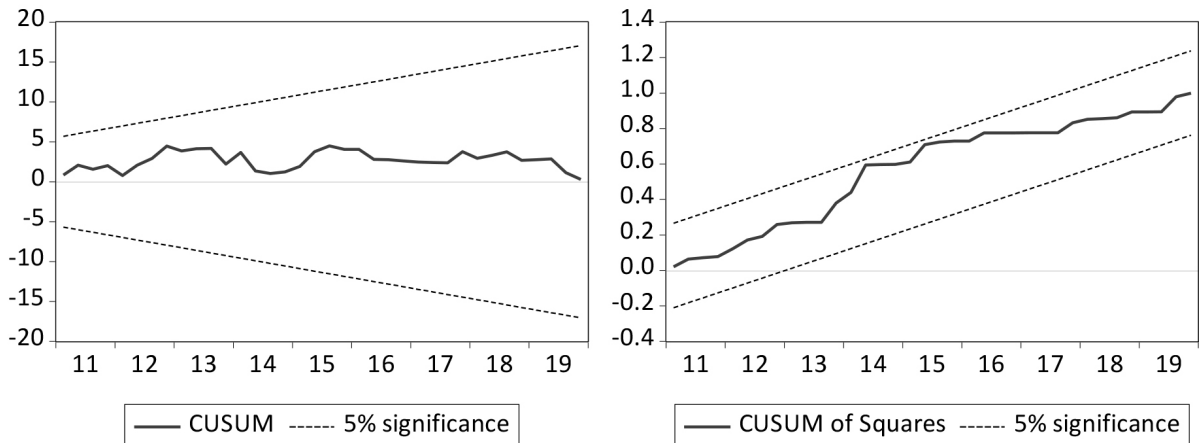
APPENDIX

The graphical presentation of the tests for the dynamic stability of the New Keynesian Phillips curve models



The model with unit labor costs



The model with the output gap

Source: Author

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THE DRIVERS OF THE COMPETITIVENESS OF FIRMS IN THE NON-FINANCIAL SECTOR: EVIDENCE FROM NIGERIA

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This study examines the key determinants of the competitiveness of firms in Nigeria. It draws the firm-level (i.e. firm-specific characteristics) data and macro-data (environmental factors) from the annual reports and accounts of non-financial listed firms and the Statistical Bulletin of the Central Bank of Nigeria, respectively. In addition, it employs descriptive, inferential and econometric tools to analyze the data. The results reveal that the age of a firm, its productive assets, profitability and the capital expenditure ratio of the government enhanced the competitiveness of high-competition firms, on the one hand, while the high cost of finance hindered it, on the other. However, profitability, business risk, the size of a firm and inflation contributed to the competitiveness of low-competition firms, on the one hand, while sales growth and employees' capacity reduced it, on the other. It was concluded that both firm-specific and environmental factors played the beneficial and detrimental roles when the level of the competitiveness achieved by the Nigerian non-financial listed firms is concerned. Thus, the policy implications of these results were discussed.

Keywords: high-competition firm, low-competition firm, value creation, firm-specific factor, environmental factor

JEL Classification: M41, G32

INTRODUCTION

The effect of globalization and the need to meet the increasing varieties of customer needs require that contemporary businesses should achieve a competitive advantage. In addition, the number of the companies that folded up during and after the 2008 economic crisis and the 2015 economic meltdown signaled to the surviving ones the need to increase their level of competitiveness in their industrial sectors, which then led us to the question, 'How can firms be made competitive?' M. Porter (1999) strives to answer this question by positing that being competitive requires businesses to develop an increasing interest in the key strategic management processes and operations,

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which means that businesses should make the competition-related decisions that may lead to the creation of increased economic value. A business creates value when it generates wealth from economic activities, transforming inputs into outputs. Therefore, value is referred to as the difference between an output value and an input value (Booth, 1998), which can be either positive, when a firm is able to cover the actual and opportunity costs of the purchased inputs or components used to generate sales revenue, or negative, when a firm is unable to cover its input costs.

Although Nigerian quoted firms operate within the same economic conditions, some of them create positive economic value (EVA) and some create negative value (Atanda & Asaolu, 2015). In addition, some of them create higher economic value from a given level of economic activities or sales revenue than others, while some destroy it. These make some of them high-competition (HC) and low-competition (LC) firms in value creation. The differences in the levels of competitiveness may appear as a result of their differing capacities, capabilities and resources, which also vary from time to time. This is because the ability of a firm to develop and deploy its capabilities and talents far more effectively than its competitors helps it to achieve world-class competitiveness (Smith, 1995). Firms' capabilities, therefore, revolve around internal factors or firm-specific characteristics, such as the organizational structure, productive assets, growth and risk.

According to M. Porter (1999), competitiveness revolves around a combination of a country's conditions and a firm's strategy to seize opportunities provided by those conditions. This means that the economic conditions of a country may bring about many challenges and opportunities at the firm, industry and country levels and shaken confidence in businesses (Ambastha & Momaya, 2006). It also means that environmental conditions, such as natural resources, infrastructures, government policies (fiscal and monetary) and the level of economic growth, may also have an influence on the competitiveness of a firm. Therefore, in order for a firm to be competitive in value creation, it should succeed in dealing with challenges and limitations posed by the environment, market developments and the economic conditions of a country.

Previous studies established the fact that quoted firms in Nigeria had a potential for value creation (Akalu, 2002; Asogwa, 2009; F. A. Atanda and T. Asaolu, 2015). F. A. Atanda and T. Asaolu (2015) provided the empirical evidence that showed that, in recent times, companies had created an economic value greater than in previous periods, in real terms. However, there is unarguably a lack of ample empirical evidence of the reasons why some of the firms were highly competitive in value creation while others were not, although operating under the same environmental, market and economic conditions. That pointed to the specific business research problem of how the firms could be made highly competitive in creating economic value. This study examines the key factors that have contributed to the level of the competitiveness achieved by non-financial quoted firms in Nigeria. The fact that firm-specific and environmental factors do not have significant effects on the level of the competitiveness achieved by HC firms and LC firms in Nigeria is hypothesized herein.

The main contributions of this paper are articulated in the following: first, non-financial listed firms operate within the same economy, with a high tendency to experience similar shocks from environmental variables, such as inflation, interest rates, government policies and foreign-exchange rates, with similar consequences for their performances. However, the available data show that the firms differ greatly in terms of the level of competitiveness, efficiency in resource utilization (profitability), employees' capacity and risk appetite (business risk), which made them be categorized into high-competition and low-competition firms; second, while acknowledging a few notable studies, namely those by A. Ambastha and K. Momaya (2006), P. Liargovas and K. Skandalis (2008), B. Navaretti, M. Bugamelli, F. Schivadi, C. Altomonte, D. Horgos and D. Maggiani, (2011), M. A. Afridi and M. E. Javaid (2015), E. Akben-Selcuk (2016), A. Onakoya (2018), the issue of unequal meanings, factors (and their impacts), as well as different adopted methodologies, needs further

examination in terms of measurement and modelling. Competitiveness is a concept not well-understood despite its widespread usage (Onyemenam, 2014) and a complete competitiveness analysis must define how it is measured and identify the most important factors that influence it (Lall, 2001). Thus, unlike in the previous studies, where the absolute figures of sales, earnings and market value were used, this present study follows the Assets-Processes-Performance (APP) framework to measure the competitiveness of a firm as a proportion of EVA to sales revenue, relative to other firms. This is due to the superiority of EVA over accounting metrics (Booth, 1998). In addition, the Generalized Method of Moments (GMM) is employed in order to estimate the linear regression model due to the outcome of the Partial Autocorrelation (PAC) test conducted on the time series properties of the dependent variable (the competitiveness of a firm) by using the Box-Jenkins Q-statistic method; third, this study adds to the existing literature on the competitiveness of firms, namely A. Ambastha and K. Momaya (2006), P. Liagovas and K. Skandalis (2008), Navaretti *et al* (2011), M. A. Afridi and M. E. Javaid (2015), E. Akben-Selcuk (2016), by conducting a comprehensive and robust analysis, simultaneously accounting for the firm-specific factors such as the size of a firm, its age (in order to measure the reputation of a firm), employees' capacity, liquidity, leverage, risk, growth, productive assets and profitability, as well as environmental factors, such as inflation, the cost of finance (interest rates) and developments in the labor market. This is consistent with the position of the RBV theory that a firm's internal environment is critical to the strategic actions that will be undertaken so as to achieve a competitive advantage and the argument of L. Porter, E. Lawler and J. Hackman (1975) that only the organizations that are able to deal with the demands of their environment or environmental influences will achieve the best.

The rest of the paper is organized into four sections: Section Two deals with a review of theoretical and empirical studies; Section Three covers the research methods; Section Four provides the results of the data analysis, and Section Five gives the conclusion of the study.

THEORETICAL AND EMPIRICAL REVIEWS

The theory of the Resource-Based View (RBV) and the Assets-Processes-Performance (APP) framework form the bedrock of this study. The RBV considers a firm as a collection of unique resources and capabilities, which provide the basis for the strategies that are the primary sources of earnings. It posits that a firm with a relatively small amount of resources, but with a high ambition, may leverage their resources so as to achieve a greater output for its smaller inputs and that, with increased effectiveness, the resources that will be available to the firm may be larger (Hamel & Prahalad, 1993). The theory is grounded in the perspective that a firm's internal environment (in terms of its resources and capabilities) is more critical to the determination of strategic actions to undertake in order to achieve a sustainable competitive advantage in its market and industry. However, this is not to say that the external environment is not important. This is because there are some environmental influences that a firm should deal with and only organizations whose internal features match the demands of their environment best will achieve the best (Porter *et al*, 1975).

In fact, changes inside and outside a firm put more responsibilities on its managers regarding the manner in which the problem of instability in environmental variables, such as developments in the financial market, inflation and government policies, will be addressed. Instead of accumulating the resources needed to implement the strategies dictated by external environmental conditions, the theory expects that a firm's unique resources and capabilities will provide the basis for a strategy, and the strategy will allow the firm to best exploit its core competencies relative to opportunities in the environment (Hamel & Prahalad, 1993). In addition, the theory expects a firm to manage its resources and capabilities in its pursuit of above-average returns and implement the strategies that can help achieve goals in an efficient manner. It must be noted that resources themselves confer no value to a firm. It is only when they are put into a productive use that value can be created. Therefore, this means that differences in firms primarily driven by their unique resources and capabilities will contribute to a firm's ability to be highly competitive over time. The

firms that face similar industrial or market conditions are ordinarily expected to exhibit a certain degree of similarity in performance. Due to differences in internal structures, how resources are combined and capacities to utilize resources in the most competitive ways, a great divergence in firms' performances may be detected. This is because not all the resources that a firm has access to are strategically relevant (Barney, 1991). Some resources may actually prevent a firm from conceiving and implementing valuable strategies, whereas an efficient combination of resources may lead to the competencies and strategies that may reduce inefficiency. The major limitation of the RBV is that it does not guide policy makers how to integrate a strategy with competitiveness.

However, the Assets-Processes-Performance (APP) framework, which integrates resources with performance through processes, provides a better tool for the integration of a strategy with the competitiveness of a firm (Shee, 2002). The framework provides managers with the means of the categorization of the sources of competitiveness, their relevance and performance. Under the 'Assets', the sources of the competitiveness of a firm include brands, reputation, human resources and technology. However, the sources include a strategy, innovations, relationship management, manufacturing and marketing under the 'Processes', whereas under the 'Performance', they include customer satisfaction, value creation, a market share and productivity (Ambastha & Momaya, 2006). This means that competitiveness requires a combination of the resources and the process used to transform the resources so as to achieve economic gains. Some firms are more competitive than others, due to their varied internal factors, such as strategies, structures, competencies, resources and capacities, in order to innovate in the areas such as financing, resources allocation and production (Prahalad & Hamel, 1990). At the firm level, therefore, to be competitive means to create higher economic value from product and service designing, production and marketing.

The literature review showed that finance, assets, revenue growth opportunities and several characteristics of a firm influenced the competitiveness of a firm. In fact, the value of a firm changes over time as a result of changes in the size of the company, i.e. when the company changes the quantity of the resources used without changing the efficiency of the resources used (Lieberman & Balasubramanian, 2007). D. Mouldi, H. Abdelaziz and H. Ilehmi (2011) found that the size positively and significantly affected the value of a firm measured by return on assets and return on equity. A significant positive effect of the size of a firm measured by the natural logarithm of the firm's total assets on value creation measured by economic value added (EVA) and Free Cash Flows (FCF) was also found by F. A. Atanda (2014). In addition, while exploring the relationship between the characteristics of a firm and the financial performance of the quoted manufacturing firms operating in the consumer goods sector of the Nigerian economy, C. Egbunike and C. Okerekeoti (2018) found a significant effect of the characteristics of a firm, such as the size, leverage and liquidity, on return on investment.

Growth is an important goal for the largest number of corporations because, according to C. Daily and M. Dollinger (1993), it is only through growth that professional managers can find new opportunities. However, F. A. Atanda (2014) found a weak, positive and insignificant effect of sales growth on EVA and a significant positive effect of sales growth on a free cashflow. Differences in age may also account for the reason why some companies are more competitive in creating value than others. D. Mouldi *et al* (2011) found that age had a positive and significant effect on a firm's performance, because old firms were able to build their reputation in comparison with young ones. Risk can be defined as the probability that actual returns will deviate from expected returns (McConaughy, Matthews & Fialko, 2001). This is often measured by using the standard deviation of returns. In addition, risk can be measured as a ratio of external (i.e. debts) to internal (equity) financing or the extent to which a firm's assets are financed by externally sourced funds. This showed that there were two categories of risk:

- business risk, which cannot be diversified, and
- finance risk, which can be diversified.

The debt capacity was used by J. Jorgensen (1967), where it was found that a higher debt led to a higher capacity to embark on the investments that enhanced value. So, a higher finance risk led to higher investments, which might lead to higher returns, *ceteris paribus*. While the significant positive effect of finance risk on a firm's performance was found by E. Laitinen (2008) and R. Asogwa (2009), the result obtained by F. A. Atanda (2014) regarding the effect of business risk on EVA was insignificant and weak, although positive. In addition, J. Samuel, M. Pulimi, M. L. Paul, A. Maurya, N. Chandrasekaran and A. Mukherjee (2013) examine the impact of long-term debts on the value of the firms listed on the Ghana Stock Exchange (GSE), and concludes that the variable has a statistically significant impact on the value of a firm.

Moreover, P. Liargovas and K. Skandalis (2008) found a significant positive relationship between the number of employees and the competitiveness of a firm measured by the profitability of Greek companies. B. Navaretti *et al* (2011) also found a significant positive relationship between the intensity of the skills of the workforce and the competitiveness of a firm by using a combination of questionnaire survey data and the firm-level financial data on European firms. Asset tangibility shows the structure of the assets employed by a company. The companies engaged in production and services have a different asset structure, which leads to differences in the degree of replication, routine and the task variety (Abernethy & Lillis, 1995), which, therefore, may result in different value creation potentials. Moreover, a stable environment was regarded as important for a firm's performance and the competitiveness of an economy. In fact, there are pieces of evidence that businesses are best conducted in an environment of stability with the minimum level of uncertainty (A. Adenikinju, 2005). The variables used as proxies in many studies included a gross domestic product, inflation, foreign exchange rates, developments in (labor and financial) markets, interest rates, physical infrastructures and government regulations and policies (Odior, 2013; Atanda, Asaolu & Oyerinde, 2015; Egbunike & Okerekeoti, 2018; Onakoya, 2018).

According to X. Z. Zhang and S. S. Mirza (2015), inflation is a very important factor for a country's stable growth and any increase in the inflation rate may bring uncertainty to the economy. E. Odior (2013) employed the cointegrating equation of the Vector Error Correction Model (VECM) so as to examine the impact of the macroeconomic variables such as interest rates on the productivity of manufacturing firms in Nigeria. The author found a negative effect of the cost of borrowing, which was due to the high interest rates on the output growth both in the short run and in the long run. However, using the Johansen cointegration test, A. Onakoya (2018) found no short-term effect of the exchange rates and the gross domestic product on the manufacturing output in Nigeria. In addition, C. Egbunike and C. Okerekeoti (2018) found no significant effect for the interest rate and the exchange rate, but did find a significant effect for the inflation rate and the gross domestic product growth rate on the return on investment of some selected manufacturing firms listed on the Nigerian Stock Exchange. F. A. Atanda *et al* (2015) found a significant negative effect of inflation on the value created by the Nigerian quoted firms during the period from 2001-2012. Using the generalized method of the moments estimation technique, the authors also found significant positive effects of exchange rates, interest rates, the gross domestic product growth and developments in the labor market on value creation. It is, however, unknown whether these variables have significant effects on the level of the competitiveness achieved by firms.

The foregoing shows that the financial performance of both financial and non-financial firms in Nigeria, as well as the factors that determined it, has been done research into, paying little or no attention at all on the competitiveness of the firms. Despite the recorded performance, some of the firms folded up as a result of the economic crises experienced in the past, whereas those that had survived made decisions related to competition, which led to the creation of increased economic value. There is, therefore, the need to extend the knowledge by capturing the firm-specific and environmental factors that contribute

to the competitiveness level achieved by firms. The consideration and a robust analysis of the key factors will lead to the policy issues that can be used to improve the competitiveness of firms amongst the non-financial listed firms in Nigeria.

METHODOLOGY

The panel data collected from the annual reports and accounts of the 68 non-financial listed firms in Nigeria and the time series data collected from the annual Statistical Bulletin of the Central Bank of Nigeria, the 2017 edition, during the period from 1995-2017 were employed in this study. The sample was divided into the two groups of an equal size: the LC and HC firms. A firm characterized by an average competitiveness (i.e. the proportion of EVA to sales revenue relative to other firms) greater than the overall average for the sample was considered as an HC firm; otherwise, it was categorized as an LC firm. Although correlation analysis helps identify the exogenous variables in the model, it does not provide guidance to the process that generated the dependent variable, i.e. the competitiveness of a firm. Therefore, the time series properties of the competitiveness of firms were explored by using the Box-Jenkins Q-statistic method. The autocorrelation and partial autocorrelation functions were plotted to determine whether the variable followed the autoregressive (AR) or moving average (MA) or both (ARMA) processes and the period(s). The lagged dependent variable was added to the right-hand side of the model, due to the autoregression of the variable at the lag order AR(n). The effect of the firm-specific and environmental factors on the competitiveness of firms is modeled by using the following linear equation:

$$FMC_{it} = \alpha + \beta_1 InAGE_{it} + \beta_2 COF_{it} + \beta_3 InFRX_{it} + \beta_4 CAR_{it} + \beta_5 InSZE_{it} + \beta_6 LEV_{1,it} + \beta_7 GRW_{it} + \beta_8 RSK_{it} + \beta_9 LIQ_{it} + \beta_{10} AST_{it} + \beta_{11} InNOE_{it} + \beta_{12} PRT_{it} + \beta_{13} INF_{it} + \beta_{14} LBM_{it} + \beta_j \sum_{j=1}^{n} FMC_{i,t-j} + \mu_{it} \quad (1)$$

where, *FMC* is the competitiveness of a firm *i* at the time *t*, *AGE* is the number of the years of being in operations from the date of incorporation for the firm *i* at the time *t*, *COF* is the cost of financing for the firm *i* at the time *t*, *FRX* is the prevailing foreign exchange rate for the firm *i* at the time *t*, *CAR* is the capital expenditure ratio of the government for the firm *i* at the time *t*, *SZE* is the size of the firm *i* at the time *t*, *LEV* is the leverage for the firm *i* at the time *t*, *GRW* is the growth in sales for the firm *i* at the time *t*, *RSK* is the risk for the firm i at the time *t*, *LIQ* is the liquidity ratio of the firm *i* at the time *t*, *AST* is the productive asset for the firm *i* at the time *t*, *NOE* is the number of the employees in the firm *i* at the time *t*, PRT is profitability (i.e. operating efficiency) for the firm *i* at the time *t*, INF is the inflation rate for the firm *i* at the time *t*, LBM is the developments in the labor market for the firm *i* at the time *t*, In is the natural logarithm sign, α is the constant, β_i is the coefficients to be estimated for the explanatory variables and μ is the stochastic error term. The variables in the model are measured as shown in Table 1.

The variables were selected based on the elements identified in the RBV theory and the Assets-Processes-Performance framework, as well as in the findings of previous studies, such as P. Liargovas and K. Skandalis (2008), E. Laitinen (2008), R. Asogwa (2009), B. Navaretti *et al* (2011), T. Korankye and R. Adarquah (2013), F. A. Atanda (2014), F. A. Atanda *et al* (2015), M. A. Afridi and M. E. Javaid (2015), C. Egbunike and C. Okerekeoti (2018), A. Onakoya (2018). The dependent variable was the competitiveness of a firm, whereas the firm-specific and environmental factors were the explanatory variables. The following procedures were carried out in order to analyze the data: the descriptive techniques were used to examine the features typical of the data, the sampled firms, the LC firms and the HC firms. Subsequently, multiple correlation was used to test for any incidence of the multicollinearity problem in the explanatory variables. This was to ascertain if all the identified variables should be included in the regression model, without resulting in spurious estimates. In addition, the time series properties of the data were examined by performing a partial autocorrelation test by using the Box-Jenkins statistics to test for the endogeneity problem in the

Table 1 The chart of variables and measurement

Variable	*A priori*	Explanation	Measurement
Firm Competitiveness (*FMC*)		This is the ability of a firm to create economic value from sales, relative to other firms.	The ratio of value added (EVA) to sales revenue. EVA is the difference between the output value and the input value.
Firm age (*AGE*)	+	This is the number of the years which a firm has been incorporated for. Older firms may benefit from reputation and long-term relationships.	The natural logarithm of the number of the years a firm has been in operation.
Size (*SZE*)	+	This is the competitive power of a firm. Smaller firms are more volatile and riskier than larger ones.	The natural logarithm of the total assets of a firm.
Leverage (*LEV*)	-	The extent to which a firm uses borrowed money. A highly leveraged firm is at the risk of liquidation.	The debts-to-the total liabilities ratio.
Growth (*GRW*)	+	The movement of a firm from one development phase to another. A high rate signifies investment opportunities.	The rates of change in sales revenue.
Risk (*RSK*)	-/+	This is a risk inherent in a business, which cannot be diversified. It is the variability in returns (EBDIT) of each firm.	The standard deviation of earnings before depreciation, interests and taxes (EBDIT).
Liquidity (*LIQ*)	+	The rate at which short-term indebtedness is settled promptly. High liquidity refers to the ability to quickly convert assets into cash.	The ratio of the current assets to the current liabilities (the current ratio).
Productive Assets (*AST*)	+	This is the extent to which the total assets of a firm are physical, tangible and productive.	The ratio of the fixed assets to the total assets.
The employee capacity (*NOE*)	+	The total number of employees in a firm at a point in time.	The natural logarithm of the number of employees.
Profitability (*PRT*)	+	The efficiency with which a firm uses its assets to generate returns.	The ratio of the EBIDT to sales revenue.
The capital expenditure of the government (*CAR*)	+	The economic infrastructures available in the economy.	The capital expenditure ofte government as a proportion of the GDP.
Inflation (*INF*)	+/-	Changes in price levels.	Prevailing inflation rates.
Developments in the labor market (*LBM*)	+	Change of the labour force conpensation in the economy.	A conpensation paid to labour force as a proportion of the GDP.
The cost of finance (*COF*)	-	The cost of servicing long-term debts contracted by a firm. A high cost may deter investments and reduce the income of a firm.	Prevailing interest rates in the economy.
The foreign exchange policy (*FRX*)	-	This is the stance of the government on a foreign-exchange market. A high rate may increase costs and reduce the income of a firm.	The natural logarithm of the prevailing foreign-exchange rates.

Source: Authors

dependent variable (the competitiveness of a firm) and the unit root tests using the four criteria (Levin-Levin-Chu, Im-Pesaran-Shin, Augumented Dickey-Fuller and Philip-Peron) to determine the estimation technique appropriate for the data and the specified model. Since this study considered a large number of the explanatory variables, the multiple regression technique was found to be appropriate. The empirical results are presented in the tables and the same are discussed in the following section.

EMPIRICAL RESULTS

Descriptive results

Descriptive analysis showed the existence of the positive average value created during the periods, although the scattering of the economic values around the mean (i.e. the standard deviation) for the selected firms was high (Table 2). The HC firms engaged more employees than the LC firms, which means that the number of the employees might have contributed to the value creating potentials of the former comparing to the latter. The results further indicated the fact that the average age of the HC firms was lower compared to the LC firms. Also, there was a lower level of the revenue (sales) growth, the asset base and the productive assets for the HC firms compared to the LC firms. Therefore, there is the need to ascertain whether huge investments in tangible non-current assets necessarily lead to the high competitiveness of the firms, or not. Again, the LC firms were more liquid than the HC firms, which pointed to the fact that the former had more resources tied down in the current assets such as receivables and inventories than the latter. Moreover, there was an elevated level of the business risk of the HC firms compared to the average for the sample and the LC firms. This showed that there was the need for the empirical evidence of whether the firms that were aggressive in risk-taking were more competitive than the risk-averse firms. Also, using debts as a source of financing was higher in the LC firms than in the HC firms, which indicates that a highly-leveraged firm was likely to be a low performer than a low-leveraged firm. This might be due to the fact that a large proportion of the EVA created by the highly-leveraged firms will be used to service debts, which might threaten the sustainability of the firms even in the short run.

The data accounted for in Table 2 further provide information on the need to transform some of the explanatory variables in the regression model specified in this study, namely age, the employee capacity and the size of the firm. This was caused by the different means by which the variables were measured. The age of the firm was measured by the number of years and the employee capacity was measured by the number of employees, while the size of the firm was measured by the value of the company's total assets. These resulted in the high standard deviations obtained for the variables. Therefore, there is the need to reduce them to the same level as is the level of the other variables that were expressed in percentages. Consequently, the three explanatory variables were transformed by using a natural logarithm.

Multicollinearity and the unit root test results

Multicollinearity and the unit root test results are shown in the tables 3 and 4, respectively. The data in Table 3 show the low level of correlations among the explanatory variables pairwise, except for the relationship between CAR and the GDP; the FRX and INF, and the FRX and the LBM that were moderate, but not up to 0.8 benchmarked by Lewis-Beck (1993) for the existence of multicollinearity. However, high correlation levels between the GDP and the FRX ($r = 0.805$, $P < .001$), and between the GDP and the LBM ($r = 0.917$, $P < .001$) were found.

Similar results were obtained when the sample data were divided into the low- and high-competition firms. The correlations between the GDP and the FRX and between the GDP and the LBM for the high- and low-competition firms, respectively, were 0.806

Table 2 The descriptive statistics of the competitiveness of the firms and the firm-specific factors

Statistics	AGE	AST	FMC	GRW	LEV	LIQ	NOE	PRT	RSK	SZE
All Firms										
Mean	39.455	0.387	25.193	0.263	0.183	1.558	968.146	3.957	-1.73E-05	10208.95
Standard dev.	20.534	0.207	18.297	0.455	0.247	5.923	1381.29	24.996	3.118	30550.18
Maximum	133.00	0.999	154.161	3.846	0.990	229.507	9475.00	66.198	58.512	515063.8
Minimum	1.000	0.005	-165.253	-0.838	-0.476	-0.226	3.000	-360.266	-37.092	3.896
No. of obs.	1535	1535	1535	1467	1535	1535	1535	1535	1535	1535
High-competition firms										
Mean	39.013	0.384	33.215	0.255	0.179	1.551	1122.34	8.270	-3.46E-05	10071.87
Standard dev.	22.018	0.209	15.084	0.428	0.235	1.068	1578.27	19.462	1.312	24608.02
Maximum	133.000	0.999	154.16	3.113	0.987	15.247	9475.00	43.964	15.269	235701.20
Minimum	1.000	0.005	-55.058	-0.838	0.000	0.002	3.000	-150.58	-6.312	3.896
No. of obs.	769	769	769	735	769	769	769	769	769	769
Low-competition firms										
Mean	39.899	0.390	17.139	0.2720	0.186	1.565	813.363	-0.372	4.41E-08	10346.56
Standard Dev.	18.932	0.205	17.698	0.481	.258	8.319	1130.25	28.899	4.216	35546.30
Maximum	115.000	0.999	77.725	3.846	0.990	229.507	5862.00	66.198	58.512	515063.8
Minimum	4.000	0.006	-165.253	-0.791	-0.476	-0.226	9.000	-360.266	-37.092	5.563
No. of obs.	766	766	766	732	766	766	766	766	766	766

Source: Authors

and 0.919; and 0.854 and 0.916 at the 1% significance level. Since the issue of multicollinearity is very controversial, the results gave rise to the fact that the exogenous variable (the GDP) that demonstrated a high correlation with the other variables should not be included in the same estimated regression equation models. The linear regression expressed in Equation (1) was, therefore, remodeled accordingly by removing the GDP from the equation.

In addition, the data given in Table 4 show that the capital-expenditure ratio, developments in the labor market, the employee capacity and risk were integrated of order 1, and needed to be included in the regression model at the first difference, whereas the other variables were integrated of zero or stationary at the level, hence being included at the level in the regression models. These results indicate the fact that the Ordinary Least Square (OLS) estimation method could not be used, but a higher-level estimation technique such as Autoregressive Distributed Lag (ARDL) should be used instead.

Pre-estimation diagnostic results

The results obtained from the Box-Jenkins Q-statistic test indicated that there was the endogeneity problem, because the competitiveness of a firm (measured by the proportion of economic value added to the sales revenue of a firm in relation to other firms) followed an autoregressive AR(2) function after two periods and for all firms (Table A1 in the Appendix). The variable also followed an autoregressive AR(1) function after one period for the HC firms and the LC firms, respectively, when the data were disaggregated (Tables A2 and A3 in the Appendix). The partial autocorrelation (PAC) column in the tables shows that the Q-statistic turns to less than 0.1 after the second period for the data of all the firms, and after the first period for the data of the HC firms and the LC firms, respectively. Therefore, a two-period lagged FMC was included among the explanatory variables in the model of the competitiveness of a firm for all the firms, whereas a one-period lagged FMC was included in the model for the high- and

Table 3 The multiple correlation results

Variable	AST	AGE	FMC	GRW	LEV	LIQ	NOE	PRT	RSK	SZE	CAR	COF	FRX	GDP	INF	LBM
AST	1.0000															
AGE	0.1370	1.0000														
	.000															
FMC	0.0088	-0.0597	1.0000													
	.731	.019														
GRW	-0.1173	-0.1537	0.0827	1.0000												
	.000	.000	.002													
LEV	-0.0126	-0.1387	0.0292	0.1057	1.0000											
	.621	.000	.252	.000												
LIQ	-0.0392	-0.0509	0.0305	-0.0016	0.0021	1.0000										
	.125	.046	.233	.951	.935											
NOE	0.0723	0.3070	0.1040	0.0335	-0.0552	-0.0158	1.0000									
	.005	.000	.000	.200	.031	.536										
PRT	-0.2295	-0.0269	0.6199	0.2147	0.0481	0.0509	0.1153	1.0000								
	.000	.293	.000	.000	.060	.046	.000									
RSK	-0.0423	0.0675	0.2037	0.0462	-0.0308	-0.0114	-0.0103	0.2901	1.0000							
	.098	.008	.000	.077	.228	.656	.687	.000								
SZE	0.1485	0.1509	0.0075	-0.0363	-0.0457	-0.0223	0.1817	0.0703	0.1206	1.0000						
	.000	.000	.769	.165	.073	.382	.000	.006	.000							
CAR	-0.1754	-0.1959	-0.0142	0.0602	0.0432	0.0181	0.0776	0.0627	-0.1009	-0.2087	1.0000					
	.000	.000	0.578	.021	.091	.478	.002	.014	.000	.000						
COF	-0.1005	-0.1705	0.0509	0.1164	0.1378	0.0838	0.0808	0.0378	-0.1226	-0.1609	0.0874	1.0000				
	.000	.000	.046	.000	.000	.001	.002	.138	.000	.000	.001					
FRX	0.2384	0.2975	-0.1249	-0.2258	-0.1996	-0.0596	-0.1352	-0.1644	0.1743	0.2642	-0.4957	-0.4951	1.0000			
	.000	.000	.000	.000	.000	.020	.000	.000	.000	.000	.000	.000				
GDP	0.2302	0.3054	-0.0474	-0.1759	-0.1339	-0.0339	-0.1303	-0.0693	0.2186	0.3404	-0.6809	-0.4536	0.8051	1.0000		
	.000	.000	.063	.000	.000	.184	.000	.007	.000	.000	.000	.000	.000			
INF	-0.1872	-0.1767	0.1216	0.2736	0.1157	0.0416	0.0931	0.1520	-0.0889	-0.1430	0.0921	0.3449	-0.6095	-0.4581	1.0000	
	.000	.000	.000	.000	.000	.103	.000	.000	.001	.000	.000	.000	.000	.000		
LBM	0.1831	0.2621	-0.0188	-0.1394	-0.1009	-0.0197	-0.1114	-0.0078	0.2304	0.3354	-0.5375	-0.4308	0.6155	0.9172	-0.3282	1.0000
	.000	.000	.461	.000	.000	.441	.000	.761	.000	.000	.000	.000	.000	.000	.000	

Source: Authors, Included observations: 1,564

low-competition firms, respectively. As a result, the use of the ARDL estimation technique was no longer feasible and the GMM technique was adopted in order to estimate the three models. To obtain the GMM estimates, the moment condition was written as the orthogonality condition between the expression including the parameters to be estimated and the set of the instrumental variables that included the lagged explanatory variables. This corrects endogeneity by transforming instruments so as to make them uncorrelated with the error term and improve efficiency.

REGRESSION RESULTS

The detailed results obtained from the GMM estimation were reported in the three columns of

Table 4 The unit root test results

Variable		LLC		IPS		ADF		PP		Order of Integration
		Stat.	Prob.	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.	
FMC	Level	-6.142	.000	-6.469	.000	256.214	.000	427.771	.000	I(0)
ln(AGE)	Level	-42.02	.000	-365.8	.000	15215.0	.000	14699.0	.000	I(0)
AST	Level	-2.385	.009	-3.294	.001	195.557	.001	214.247	.000	I(0)
CAR	Level-	3.623	.999	2.368	.991	61.872	1.00	72.327	1.00	I(1)
	1st Diff.	-16.94	.000	-11.91	.000	376.246	.000	878.979	.000	
COF	Level	-10.47	.000	-4.771	.000	184.453	.004	733.524	.000	I(0)
ln(FRX)	Level	-27.45	.000	-18.97	.000	601.522	.000	2107.67	.000	I(0)
GRW	Level	-12.52	.000	-11.75	.000	390.981	.000	636.227	.000	I(0)
INF	Level	-6.660	.000	-8.840	.000	291.945	.000	214.040	.000	I(0)
ln(LBM)	Level	0.348	1.00	12.246	1.00	9.544	1.00	4.493	1.00	I(1)
	1st Diff.	-26.57	.000	-28.69	.000	926.75	.000	1510.75	.000	
LEV	Level	-5.618	.000	-4.380	.000	221.347	.000	424.022	.000	I(0)
LIQ	Level	-16.74	.000	-8.508	.000	507.592	.000	482.396	.000	I(0)
ln(NOE)	Level	-0.088	.465	1.863	.969	136.140	.481	107.065	.968	I(1)
	1st Diff.	-11.02	.000	-11.66	.000	404.901	.000	726.052	.000	
PRT	Level	-3.833	.000	-4.842	.000	229.474	.000	322.457	.000	I(0)
ln(RSK)	Level	8.974	1.00	7.104	1.00	128.995	.652	160.346	.076	I(1)
	1st Diff.	-9.371	.000	-14.94	.000	527.955	.000	1513.48	.000	
ln(SZE)	Level	-11.61	.003	-3.336	.001	224.351	.004	283.438	.002	I(0)

Source: Authors

Table 5. The first shows the results for all the firms in the sample, the second reports the results for the HC firms, whereas the third was accounts for the results for the LC firms. A quick glance at the results in the first model reveals the fact that the two-period lagged competitiveness of the firms has a significant positive effect on the current year competitiveness of the firms. It also shows that a total of the seven firm-specific factors and the five environmental factors have a significant effect on the competitiveness of the firms during the periods. While the effect of the capital expenditure ratio of the government, the foreign exchange rates and the inflation rates on the competitiveness of the firms is positive, the effect of the interest rates and developments in the labor market is negative. These results, however, contrast the findings of F. A. Atanda *et al* (2015) with the exception of the foreign-exchange rates. The exclusion of financial companies and the longer periods covered by this study might have accounted for the differences, since the same estimation technique was used.

In addition, the firms' age, productive assets, profitability and business risk have a significant positive effect on the competitiveness of the firms, whereas sales growth, the employee capacity and the size of the firm have a significant negative effect. The significant results for profitability, risk and growth are supportive of the findings of E. Laitinen (2008), but contrast the findings of F. A. Atanda (2014), in addition to the firms' age, size, employee capacity and productive assets. The contrast might be due to the differences in the used estimation techniques. In the

same vein that the differences between the companies and the time periods covered by the previous studies accounted for the differences in the results, categorizing the Nigerian non-financial quoted firms into high- and low-competition firms was expected to bring about different results. The data shown in Table 5 provide the evidence of the varying impact of the factors that influenced the competitiveness of the HC and LC firms in the non-financial sector of the Nigerian economy.

The data for the HC firms (Column 5) and the LC firms (Column 6) reveal the fact that the one-year

Table 5 The GMM regression results

	Variable	*A priori* Sign	Model 1 (All Firms)	Model 2 (HC Firms)	Model 3 (LC Firms)
Lagged dependent variable	FMC(-1)	+	0.1798 ** [13.507]	0.3554 ** [5.809]	0.0624 * [2.357]
	FMC(-2)	+	0.0581 ** [5.234]	-	-
Firm-specific factors	*ln*(AGE)	+	0.2028 ** [8.137]	14.0510 * [1.763]	-5.2960 [-1.034]
	AST	+	.10.3315 ** [7.890]	15.7021 * [2.369]	6.7253 [0.808]
	GRW	+	-1.6882 ** [-3.427]	-2.5068 [-1.490]	-3.8750 * [-2.188]
	LEV	-	-0.0356 [-0.028]	-4.0598 [-1.479]	0.1583 [0.057]
	LIQ	+	0.1792 [0.842]	0.9541 [1.255]	-2.0617 [-1.278]
	ln(NOE)	+	-3.8425 ** [-5.600]	-3.6212 [-1.113]	-4.7482 ** [-5.465]
	PRT	+	0.3689 ** [36.220]	0.2593 ** [3.333]	0.4827 ** [8.510]
	RSK	+	0.5226 ** [8.163]	1.9333 [1.013]	0.4812 ** [2.877]
	ln(SZE)	+	-2.1864 ** [-6.841]	-2.5926 [-1.1059]	2.1920 * [2.299]
Macroeconomic factors	CAR	+	1.8836 * [2.171]	12.0364 * [2.491]	-1.0873 [-0.260]
	COF	-	-0.0750 * [-2.112]	-0.2180 * [-2.499]	0.1521 [1.665]
	ln(FRX)	-	1.8922 ** [6.335]	2.4291 [0.831]	-0.4864 [-0.858]
	INF	-/+	0.0772 ** [9.309]	0.0661 [1.098]	0.1004 ** [8.633]
	ln(LBM)	+	-2.7112 ** [-2.943]	-8.8972 [-0.807]	0.4803 [0.243]
J-statistic			42.3659	15.4596	14.5102
P-value (J-stat.)			0.8274	0.6930	0.7532
Instrument Rank			56	27	27
No. of observation			1,194	599	595
Cross-section			68	34	34

Note: The figures in [ ] are t-statistics. * and ** are the 5% and 1% significance levels, respectively

Source: Authors

lagged competitiveness of the firms positively and significantly contributes to the current year competitiveness of the firms. These show that there is a habit formation in the competitiveness of the firms during the period. However, a stronger habit was detected for the HC firms than for the LC firms, and some factors must have been responsible for that. The firm-specific factors such as the firm's age, productive assets and profitability, as well as the capital expenditure ratio of the government had a significant positive effect on the level of the competitiveness of the HC firms, whereas the prevailing interest rates had a significant negative effect. The results imply the fact that the older firms were more competitive in value creation than the younger firms, whereas in the case of the LC firms, the younger firms were more competitive than the older firms, although the result was not significant. A unit increase in age led to an increase of about 14 percent growth in the competitiveness of the firms, whereas an increase of one percent in profitability caused the competitiveness of the firms to significantly increase by 0.26 percent. Also, the more productive the assets of the HC firms, the greater the competitiveness of the firms. A 1% increase in the productive assets led to an increase of about 15 percent in the level of the competitiveness of the HC firms, which was an indication of the level of the productivity of the firms' assets. This result fails to provide support to the findings of M. A. Afridi and M. E. Javaid (2015), who established a significant negative effect of productive assets on the competitiveness of the firms operating in the textile industry in Pakistan. However, an increase of one unit in interest rates led to a significant 0.22 percent reduction of in the competitiveness of the firms.

A significant positive effect of the firm's profitability and risk and the size of the firm on the level of the competitiveness of the LC firms was found. These results confirm the findings of E. Laitinen (2008) and R. Asogwa (2009). So, the higher the risk, the higher the level of the competitiveness of the LC firms, *ceteris paribus*. The HC firms that had a lesser business risk performed better in creating economic value compared to the LC firms. This shows that the LC firms were more aggressive in risk-taking than the HC firms, and that the business activities engaged in by the LC firms were characterized by a higher level of variability in returns than that of the HC firms. While the size of the firm contributed significantly and positively to the level of the competitiveness achieved by the LC firms, its effect on that of the HC firms was insignificant, but positive. This means that the asset base was not an important factor for the HC firms in their achieving a high level of competitiveness as it was for the LC firms.

Despite the expected positive impact of the employee capacity and sales growth, there were the negative effects of these factors on the competitiveness of the firms significant at less than 1 and 5 percent, respectively, for the LC firms. While the impact of the employee capacity was significant at less than 1 percent for the LC firms, the impact was, however, not significant for the HC firms, even at a 10 percent level. The negative effect of the employee capacity was an indication of the fact that the increased labor force was not justified, or that the relevant professionals that could have brought about an increased level of competitiveness had not been engaged. It might also be indicative of the fact that the LC firms engaged themselves in more labor-intensive economic activities than the HC firms during the period.

Again, the negative effect of sales growth, which contrasted the *a priori* expectation, was an indication of the degree of the aggressiveness of the LC firms in growing sales revenue with a negative impact on their competitiveness. Most firms must have engaged themselves in the economic activities that had destroyed, rather than created, positive economic value, or that the level of the economic activities which the firms had engaged themselves in had not led to high economic value, which had made them be low-competition firms. The higher mean value of sales growth for the LC firms than the HC firms had really accounted for a higher magnitude and a significant impact of sales growth on the level of the competitiveness achieved by the LC firms in comparison with that of the HC firms. Increased sales growth was expected to lead to a high level of competitiveness. However, sales growth was found to have a significant negative effect on the competitiveness of the firms, which was indicative of

the fact that the LC firms were likely experiencing the problem of overtrading, i.e. using too many assets to trade. A cursory look into the composition of the total assets of the firms reveals a high level of the current assets such as inventories and accounts receivables. As sales growth was increasing, the level of competitiveness was decreasing at a very significantly high rate.

At the macro level, the level of the competitiveness achieved by the LC firms and the HC firms was determined as significant, not only by the capital expenditure ratio of the government and the prevailing interest rates, but also by inflation. Of course, the magnitudes and directions of the impact of these factors varied. Inflation can have a dual effect on the performance of a firm because it can cause a disincentive to investments as a result of high operation costs and can lead to increased performance, since inflation is often referred to as changes in the price level. However, the results show that the factor has a positive impact on the competitiveness of the HC firms and the LC firms, but with a greater significant effect on that of the LC firms. Surprisingly, the interest rates have a significant negative impact on the competitiveness of the HC firms, but a significant positive effect on that of the LC firms. A 1% increase in the interest rates led to a significant reduction of about 0.22 percent in the competitiveness of the HC firms, but an increase of about 0.15 percent in the competitiveness of the LC firms. This shows that the interest rates played dual roles in competitiveness and that the LC firms had better ways to absorb the high cost of financing than the HC firms, so that they achieved a higher level of competitiveness.

The other environmental factor that distinguished the HC firms from the LC firms was the capital expenditure ratio of the government. A significant and highly positive impact of the factor on the competitiveness of the HC firms was found. However, the factor played a detrimental role when speaking about the competitiveness of the LC firms; it was not significant, though. This might be the consequence of the types of businesses or the economic activities engaged in by the firms, which were not significantly affected by government policies. Although the exchange rates and developments in the labor market had a significant effect for all the firms, the results indicated an insignificant effect of the factors on the level of the competitiveness of the HC firms and the LC firms separately.

CONCLUSION

In this study, panel data were used to investigate the influence of firm-specific and environmental factors on the competitiveness of non-financial quoted firms in Nigeria. The competitiveness of the firms, which was computed as a proportion of economic value added to sales revenue, was expressed as the function of its lagged value, a total of nine firm-specific factors and five environmental factors. Descriptive, inferential and econometric tools were used to analyze the study data. The descriptive results showed the diverse features of the HC firms and the LC firms with regard to their levels of competitiveness and firm-specific characteristics.

The results obtained from the econometric analysis indicated the fact that the differences in the basic characteristics of the firms explained the differences in the competitiveness of the firms. The most important factors that can be used to explain the high level of competitiveness included the firms' age, productive assets, profitability, the capital expenditure ratio of the government and the cost of financing (interest rates). While the firms' age, assets tangibility and profitability, and the capital expenditure ratio of the government positively contributed to the achievement of a high level of competitiveness, the cost of financing impedes their potentials. In contrast, while profitability, business risk, the size of the firm and the inflation rates positively contribute to the level of the competitiveness achieved by the LC firms, sales growth and the employee capacity reduce their potentials. The results led to the rejection of the null hypothesis that there is no significant influence of firm-specific and environmental factors on the level of the competitiveness achieved by the HC and the LC non-financial listed firms in Nigeria. Therefore, a conclusion is drawn that firm-specific

and environmental factors have both beneficial and detrimental effects on the abilities of the firms to be competitive.

The results portend many policy implications for firms and the government in Nigeria. Firstly, managers, regulators and policy makers will better understand the interactions of firms' characteristics and macroeconomic factors regarding the level of the competitiveness achieved by the non-financial listed firms in Nigeria. The interactions indicated that the managers of LC firms need to be more aggressive in searching for the opportunities that are high in value addition and profitability, since a high discrepancy was found between the average competitiveness and the profitability levels of the firms compared to their HC counterparts.

Secondly, the results showed that the HC firms had failed to leverage on the resources at their disposal (the assets and the employees) in order to achieve high competitiveness, which did not support the position of the resources-based view theory that the internal environment (resources, strategies, structures, etc.) of firms assist them to achieve high competitiveness. However, the significant results of the capacities of the HC firms (expressed in terms of the reputation built over a number of the years of their incorporation, efficiency in the use of the resource-profitability and asset structures) regarding the competitiveness of the firms and the results for the LC firms regarding profitability and business risk indicated support for the resource-based view theory. Again, the results regarding the sales growth potentials of the LC firms were not supportive of the position of the theory that a firm's capabilities in transforming its resources help it achieve economic gains. The significant negative effect of sales growth for the LC firms and its negative, but insignificant, effect for the HC firms practically showed that all the firms engaged in some economic activities had not enhanced their competitiveness levels during the period. Again, the low level of profitability for both the HC firms and the LC firms was an indication of the need for efficient resource utilization and cost reduction or control, or both. The HC firms need to be more aggressive in sales either through sales promotion or direct marketing, given the fact that they have potentials for creating higher value from economic activities than the LC firms do.

Thirdly, the descriptive results showed that the LC firms had a marginal higher mean asset tangibility with a smaller standard deviation than the HC firms. However, the factor did not significantly affect the competitiveness of the LC firms, which was an indication of the low level of the fixed tangible assets that may lead to a high level of competitiveness. The investment policies of the selected firms should therefore be looked into. The results of the significant positive influence of the size of the firm on the competitiveness of the LC firms also supported the need for more investment opportunities. Also, the significant negative impact of sales growth on the competitiveness of the firms pointed to the fact that the LC firms should examine their trade and credit policies so as to control slow-moving or outdated stocks and overstocking, and prevent the eventual cash flow problem and liquidation. Moreover, the negative effect of the employee capacity on the competitiveness of the LC firms called for a review of the policies on the type, number and quality of the employees engaged by the firms. An emphasis should be placed on the key professionals that can significantly contribute to the value creating potentials of the firms. The value appropriation and retention, as well as remuneration, policies of the firms should also be looked into.

Fourthly, a part of the environmental influences that a firm should address in the Nigerian economic system is the rising and unstable pricing system (inflation), foreign-exchange fluctuations, social and economic infrastructures, which are always inadequate, a high cost of financing as a result of sky-rocketing interest rates, and developments in the labor market that have led to an increased workers' remuneration since 2001. Although the overall results show that the capital expenditure of the government intended to address inadequate infrastructures, foreign-exchange rates and inflation rates has positively contributed to the competitiveness of the firms, the results for the HC firms indicate the fact that the firms failed to deal with the fluctuations in foreign-exchange rates, the cost of financing, inflation rates and developments in

the labor market during the period covered by this study. Therefore, all the firms need to examine their strategies and resources deployed for dealing with instability in the economic environment. The fact that the capital expenditure of the government had a significant positive impact on the competitiveness achieved by the HC firms was indicative of the fact that physical infrastructures were still a *'sin-qua-non'* for the performance of the private sector. The government should, therefore, continue with its efforts in increasing expenditures on social and economic infrastructures (education, power and roads), as has been reflected in annual budgets in recent times, and their successful implementation, so that an improvement can be made in economic activities and a higher level of the competitiveness of firms in Nigeria. It is also important that the economic policies issued by the government and relating to the financial sector should encourage investments in the critical industrial sectors. The interest rate should be pegged at a single-digit rate, since it was found to be detrimental to the high competitiveness of firms.

There are some limitations inherent in this study, one part of which imply that, out of the various elements pointed to by resource-based view theory and the assets-processes-performance framework (resources, strategies (operations and marketing), technology, innovations, capabilities, structures, relationships management, brands and competencies), only resources and capabilities were included in the model of the competitiveness of firms. For example, as a part of a firm's strategies, the employee mix, rather than the number of employees, may be included. The employee mix points to the quality of the staff rather than their quantity, and a mix of more experienced and professional staff rather than a mix of unskilled or semi-skilled employees will provide the firm with more capabilities than if the firm were smaller. According to resource-based theory, a firm with a relatively small amount of resources, but with a high ambition to achieve competitiveness may in fact leverage on the resources to have greater outputs from smaller inputs and will be able to increase its resources if using the resources effectively and efficiently. This also shows that the size of resources does not matter. This study did not consider the industry, the firms' ambitions, the technology level, brands and relationships management in the model, either. However, researchers' major consideration will be how to measure variables such as brands, innovation, the technology level and the ambition of a firm. Again, a firm's openness to trade, which can be measured by the ratio of the trade credits used by the firm during a period of time over the trade credits given to its own customers was not included. A firm's use of more trade credits than it gives is an internal source of financing at a low cost or at no cost at all, which may consequently increase the firm's capacity to be more competitive. Besides, other measures, apart from EVA, such as market shares, productivity and customer satisfaction, can be used to measure the competitiveness of a firm. In addition, there are many other macroeconomic variables, such as the gross domestic product, money supply and developments in the capital markets that are not included in this study due to the multicollinearity problem. Further studies should endeavor to include these variables in their models.

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APPENDIX

Table A1 The Box-Jenkins statistics for endogeneity (Correlogram) for all the firms (at the level)

Sample: 1996 2017						
Included observations: 1534						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
|**** |	|* |	1	0.494	0.199	809.09	0.000
|*** |	|* |	2	0.443	0.136	1068.9	0.000
|*** |	| |	3	0.369	0.030	1249.3	0.000
|** |	| |	4	0.318	0.024	1383.2	0.000
|** |	| |	5	0.303	0.059	1504.8	0.000
|** |	| |	6	0.250	-0.013	1587.6	0.000
|** |	| |	7	0.214	-0.002	1648.5	0.000
|* |	| |	8	0.200	0.021	1701.9	0.000

Source: Authors

Table A2 The Box-Jenkins statistics for endogeneity (Correlogram) for the high-competition firms (at the level)

Sample: 1996 2017						
Included observations: 769						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.|*** |	.|* |	1	0.431	0.106	527.08	0.000
.|** |	.|. |	2	0.345	0.008	606.44	0.000
.|** |	.|. |	3	0.266	-0.026	653.75	0.000
.|** |	.|. |	4	0.245	0.045	693.91	0.000
.|* |	.|. |	5	0.184	-0.025	716.54	0.000
.|* |	.|. |	6	0.166	0.025	735.06	0.000
.|* |	.|. |	7	0.150	0.020	750.24	0.000
.|* |	.|. |	8	0.134	0.012	762.24	0.000

Source: Authors

Table A3 The Box-Jenkins statistics for endogeneity (Correlogram) for the low-competition firms (at the level)

Sample: 1996 2017						
Included observations: 765						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.|** |	.|** |	1	0.344	0.344	78.473	0.000
.|* |	.|. |	2	0.174	0.063	98.594	0.000
.|* |	.|. |	3	0.123	0.051	108.58	0.000
.|. |	.|. |	4	0.034	-0.035	109.34	0.000
.|. |	.|. |	5	0.017	0.002	109.54	0.000
.|. |	.|. |	6	-0.020	-0.033	109.81	0.000
.|. |	.|. |	7	-0.014	0.003	109.94	0.000
.|. |	.|. |	8	-0.038	-0.033	110.89	0.000

Source: Authors

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A CONCEPTUAL FRAMEWORK FOR DESIGNING THE ARCHITECTURE OF HUMAN RESOURCE MANAGEMENT

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Intensive changes in the business environment with significant implications for organizations reflected in increasing their size, thinning structures, the application of new models in the intra- and inter-organizational designs, the growing importance of knowledge management and the application of multi-strategies have produced significant effects on the human resource management (HRM) architecture. As there are a number of different approaches to the HRM architecture in the relevant literature, this paper is aimed at creating an integral conceptual framework for designing this function. For this purpose, the paper analyzes different approaches to HRM design from the standpoint of the main theoretical models of organizational design in order to identify both similarities and distinctions between them, and build up an integral conceptual framework for designing the HRM architecture. These will form the ground for the application of a comprehensive approach in creating, analyzing and understanding the HRM architecture. The research findings suggest that the HRM modern architecture includes six design elements, namely: HRM contingent factors, key stakeholders' interests, the HRM hard components, the HRM soft components, organizational results, and feedback.

Keywords: human resource management, organizational design, human resource management architecture

JEL Classification: M1, M5

INTRODUCTION

The period of intense changes in the business environment primarily driven by the intensification of the globalization process, an economic downturn, demographic changes, education and labor market changes, technology and ICT development, as well as an increase in the awareness of corporate social responsibility, has led to significant organizational changes. An increasing size, thinning structures, the implementation of new models in intra- and inter-organizational design, the introduction of knowledge as the key organizational resource, the implementation of multiplication strategies and the like have also caused significant effects on human resource management (hereinafter referred to as HRM), which reflect in changes in the purpose, role, work scope, HRM organizational process, stronger

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strategic management, work division between line managers and employees in the activities of HRM, the emergence of new HRM practices and the increasing importance of the quantitative impact-oriented monitoring of HRM on organizational performance.

The aforementioned changes create a need for systematization in the HRM design approach. The choice of a specific architecture directly affects the size of the contribution of HRM to the overall organizational performance: the greater the degree of alignment between the HRM architecture, on the one hand, and the organization's strategic capabilities and business processes, on the other, the greater the positive impact of HRM on overall organizational performance (Purcell, 1999; Becker & Huselid, 2006, 899). However, when speaking about the relevant literature, there are numerous HRM approaches, perspectives, paradigms and models that have emerged over the years, creating a confusion in contemporary HRM design. It can certainly be attributed to intense changes in the role, scope and manner of business doing in the HRM field.

The initial hypothesis of the paper implies that:

H: In the relevant literature, there is no integral conceptual framework for designing the HRM architecture in modern organizations.

Thus, the paper is aimed at identifying the elements based upon which different approaches to the HRM architecture design can be grouped or differentiated, and proposing an integral conceptual framework for the HRM architecture design and its elements.

The subject matter of this research study are different approaches and perspectives in designing the HRM function, which will be analyzed starting from the main theoretical models of organizational design in order to tie the knowledge from organizational design theory with modern approaches to HRM design.

The key research questions to answer herein are:

- What are the key models of the HRM architecture in the relevant literature?
- Are there any similarities between them, and which similarities are in question?
- What are the differences between them and how can they be explained?
- What are the essential elements of the HRM architecture that can help to better understand the HRM function in the current setting?

Given the nature of the research study, the paper is of a theoretical nature and is based upon the cabinet research of the relevant literature in the fields of organizational theory, organizational design and human resource management. This research is exploratory and aims to provide a better understanding of the researched phenomenon by primarily using the methods of analysis, comparison, classification, deduction and synthesis for drawing conclusions.

In addition to the introduction, the paper consists of three parts and the conclusion. Within the theoretical framework, emergence, different definitions and theoretical perspectives in HRM research are analyzed. In the second part of the paper, an analysis of different approaches to the design of both organizations and HRM is carried out. In the third section of the paper, the research findings and the discrepancies identified between the existing models are discussed, and an integral framework for HRM design in contemporary organizations is proposed. Finally, in the last part of the paper, the key conclusions and the implications of the paper are drawn, and the main limitations and directions of future research in this area are pointed out.

THE THEORETICAL FRAMEWORK

The HRM concept, definition and emergence

Human resource management can be defined in different ways (Bogićević Milikić, 2017):

- as a scientific discipline studying the different aspects of employment in an organization;
- as an important business function in an organization, which includes a range of diverse processes, i.e. jobs and tasks;

- as a part of an organization's management system encompassing all the management decisions, strategies, policies and activities that directly affect the employees of the organization: their behavior, results, attitudes, values and motivation; and
- as a profession.

As a scientific discipline, HRM is an area of organization science dealing with the study of all the aspects of organizational employment, whose origin dates back to 1935 (Bogićević Milikić, 2017). As a scientific discipline, HRM is characterized by a highly fragmented study field. Depending on its research focus, the name of the discipline changed during the 20th century. In the beginning, it was called Personnel Management, whereas in the late 1970s and the early 1980s, the discipline was given a new name, i.e. HRM, under a strong influence of primarily the American literature. The change in the name also marked a qualitatively new phase in the development of the discipline - its focus shifted from controlling labor costs to understanding employees and their capabilities as an important resource within organizations, on the one hand, and to giving strategic importance and role to managing those resources (Tyson & York, 1996, 40). Until the 1980s, researchers were primarily focused on individual HRM activities, so that new research perspectives emerged in the late 1980s and 1990s, namely the strategic, political, economic utility and international perspectives (Bogićević Milikić, 2017). In recent years, talent management has increasingly been discussed, with many organizations being focused on the identification, attraction, development and retaining of talents. The focus is on a reduction in the role of HRM administrative activities and the enhancement of the strategic role and quality of the services provided to "clients" in the organization.

As a profession, HRM developed at the beginning of the 20th century (1915-1920), when many well-known universities in the USA (first Dartmouth College, then Harvard and Columbia), offered specialist education programs for these jobs, upon the initiative of the War Industrial Council. The industrial revolution, which led to the development of technology, the opening of large factories and the development of specialization, had a decisive impact on the development of the profession and significant effects on employment growth (Bogićević Milikić, 2017). In contemporary conditions, HRM jobs are performed by professional HR managers and experts in various humanities, namely by psychologists, sociologists, anthropologists, social workers, lawyers and economists, all of whom are supposed to have diverse abilities in different areas, such as HRM, psychology (industrial psychology, social psychology), sociology, andragogy, finance, marketing, organizational behavior, ICT, industrial relations and law. The required competencies are strongly related to the roles of HRM (a strategic partner, an administrative expert, an employee advocate and a change agent), and they include the ability to analyze the current and future organizational business goals and the role of the HR sector in the process of achieving them, the ability to analyze fluctuation, productivity and/or potential consumer issues in order to propose adequate solutions pertaining to the HRM field (the strategic partner role); the overcoming of employee resistance to the latest HRM policies and practices, technologies and/or job descriptions (the role of the change agent); the guidance and counseling service for employees and the presentation of employees' views to the management of the organization (the role of the employee advocate); the creation, introduction and continuous improvement of HRM systems, as well as an insight into the ways technology can make HRM systems more efficient and less expensive (the role of the administrative expert). The following jobs are basically done in the human resource sector: an operational HRM executive, an HR specialist, an HRM business partner (an HRM consultant), an HR manager and an HR director.

As a business function, HRM encompasses a variety of the activities, policies, practices and systems that affect the behavior, attitudes and performance of the employees of an organization, namely organization design and development, job analysis and design, HR planning, employee recruiting, selection, training, learning and development, managing employee performances, remuneration, leadership

development, knowledge management, talent management, employee relationships, collective bargaining, employee health and safety and so forth.

As a part of the management system, HRM includes all the management decisions, strategies, policies and activities that directly affect the employees of the organization: their behavior, results, attitudes, values and motivation. The key functions of HRM are all management levels - strategic, middle and operational management - and they perform significant tasks in the HRM field (Bogićević Milikić, 2017).

An overview of the different perspectives of HRM

When the relevant literature is concerned, it contains different HRM approaches and perspectives. The basic classification implies the difference between personnel management, as a traditional approach to administering various aspects of employment in organizations, on the one hand, and HRM, which is more strategically oriented and sees people as the key resource of organizations, on the other. According to the differences in the theoretical approach to managing people and practices, J. Beardwell and I. Clark (2007) distinguished between the five different perspectives of personnel management and HRM (Table 1).

In addition to the two foregoing typologies, yet another popular typology includes the other approaches to human resource management (Farnham, 2015), namely:

- personnel management,
- new (distinctive) HRM, and
- HRM.

Heir most important characteristics are presented in Table 2.

Contextual HRM is the most recent, but perhaps the broadest approach to HRM, given the fact that it implies a broader context, in which HRM operates and is based upon the postulates of contingent theory, which seeks to explain complex relationships within

Table 1 The different perspectives on people management

	PERSONNEL MANAGEMENT	HRM
The planning perspective	Reactive and marginal within the corporate planning system.	Strategically oriented, the key role of HRM in the corporate planning system.
The people management perspective	Employees are considered to be variable costs and subject to organizational control.	People are the social capital able to develop and be dedicated to work.
The employment relations perspective	It is only natural that there is the dominance of individual interests in the work environment, as well as a conflict of interests between different stakeholders.	Supports stakeholders' common interest and strives to eliminate conflicts.
The system/structure perspective	People control, information from top.	Promotes employee information and participation and open communication with management in order to increase the level of trust and commitment.
The role perspective	Personnel management is specialized, professional and led by personnel experts.	Mostly integrated within line management.

Source: Beardwell & Clark, 2007

and between organizational subsystems and between the organization as a whole and its environment, on the one hand, and their impact on organizational performance, on the other. It historically originated and dominated especially during the 1960s and the 1970s, and is an important step forward from the then universalist theories, and can be classified into the so-called moderate approaches between the two extreme perceptions of organizations: the universalist perception - according to which there is only one best solution for all situations, and the situational perception - according to which each situation should individually be viewed and analyzed (Zeithaml, Varadarajan & Zeithaml, 1988). However, when speaking about practice, contingent theory is often misunderstood and incorrectly equated with the situational approach (Luthans & Stewart, 1977).

When speaking about HRM, the application of contingent theory would imply the following: HRM is an open system made up of the subsystems that interact with each other and with the environment as well. The interactive nature of the HRM elements provides the two basic characteristics (Zeithaml *et al*, 1988, 38-39):

- the adaptability of the system elements (the system elements adapt to each other in order to preserve the system characteristics), and
- the achievement of the same final (desirable) results is possible, starting from different initial assumptions and using different means.

The main assumption is that there is not only one best HRM structure, one leadership style or one way to make decisions, similar to the situational approach. Concrete solutions depend upon various factors and

Table 2 The three paradigms of people management in organizations

The personnel management paradigm	The HRM paradigm	The contextual HRM
Driven by the need of the management to fairly treat people inside the organization.	Driven by the need of the management to ensure competitive advantage in the market at the organizational level.	Guided by the following factors: the role of the state, legislation, trade unions, the forms of ownership affecting HRM, at the national level.
Operates in a stable environment.	Operates in a competitive and dynamic environment.	Operates in regulated market conditions.
A traditional approach to people management with the administrative role.	A distinctive approach to people management, a strategic focus.	Uses a comparative approach in order to understand the factors that influence making decisions on the organization's employees.
A short-term orientation with an *ad hoc* perspective.	S long-term orientation, a strategic perspective.	A contingent perspective.
Includes a pluralistic framework for approaching people organization and management.	Includes a unique framework for approaching people organization and management.	Includes a pluralistic framework for approaching people organization and management.
Includes collective negotiations with unions, if any.	Includes a more individualized people management approach than collective negotiations do.	A contingent approach to people management.
Personnel management is led by personnel experts (policy making, implementation, monitoring).	Provides HRM services based on collaboration between HRM experts and line managers.	Provides HRM services in accordance with the national environment.

Source: Farnham, 2015, 6-7.

limitations, and their interconnection (contingency) included in the internal and external environment. Contingent theory aims to:

- identify the important contingent variables that differentiate between different contexts,
- group similar contexts based upon such contingent variables, and
- identify the most effective organizational response for each recognized context.

It means that not every situation is analyzed individually, similar to the situational approach, but recurring contexts are rather sought in order to find the most effective structural model, leadership style and/or decision-making model (Janićijević, Bogićević Milikić, Petković and Aleksić Mirić, 2020). Similar to contingent theory, the relationship between the following three groups of variables is crucial in the contextual HRM model, namely:

- the contingent situational factor of HRM - the situational factors usually external to the organization and HRM, which cannot be influenced by management:
- general environment factors - the factors that exert an indirect influence on the organization, creating a context for the effect of specific factors: legislation, national culture, the educational system, the political system, the economic system, demography, ecology and so on;
- the factors included in a specific environment - the factors that exert a direct and strong influence on HRM: customers, suppliers, competitors, technology, socio-political factors and so on;
- HRM responses - the organizational and managerial activities undertaken due to the existing or anticipated characteristics of the contingent factors: changes in the structure, the management style or the decision-making style, and
- organizational performance - it depends on the compliance of the contingent factors and the HRM response to them within a given context: efficiency, a profit, productivity, employee satisfaction, return on capital employed, the employee turnover rate and so on.

The success of HRM depends on its ability to adapt to the environmental factors it is influenced by. In order to be efficient and achieve the highest performance level, HRM needs to be in accordance with the contingencies in its environment, thus maintaining the equilibrium needed for proper operation. That is the reason why contingent theory is often regarded as an example of equilibrium theories (Donaldson, 2001).

Organizational performance is the main dependent variable in the HRM model (Luthans & Stewart, 1977; Donaldson, 2001); situational factors are the main independent variables (Luthans & Stewart, 1977), whereas changes in HRM as a response to the influence of the independent variables act as the mediator variable, since they initiate changes in the dependent variable. In a nutshell, changes in the independent variable lead to changes in the mediator variable, which then continues to a change in the dependent variable.

RESEARCH FINDINGS: THE CHARACTERISTICS OF THE HRM DESIGN MODELS

In order to test the initial hypothesis reading that, in the relevant literature, there is no integrated conceptual framework for designing the HRM architecture in modern organizations and answer the research questions, the main approaches and models of both organizational design and HRM design are analyzed based upon the review of the relevant literature in the field of organizational theory, organizational design and human resource management. Different methods of scientific reasoning, namely analysis, comparison, classification, deduction and synthesis, are used for this purpose.

The models of organizational design

In order to create an integral conceptual framework for HRM architecture design, it is necessary to start from the main theoretical models of organizational design, which can indicate the prevailing approaches

to design, the main design elements in modern organizations, i.e. the elements that are and can be design elements, those that are not and the manner in which they are interrelated. Models are important for understanding a phenomenon, precisely because they focus attention on the most important elements, thus providing a deeper understanding of the phenomenon. The importance of organizational design for individual organizations manifests through its role in shaping the organization that will enable the effective achievement of organizational strategies/goals.

Organizational design is the process of the systematic and purposeful shaping and aligning of the elements of an organization - the structure, the formal communication system, the division of labor, the control, coordination and accountability systems (Hamel & Prahalad, 1994) - in order to successfully achieve organizational goals (Mohrman, 2007) through an adequate and timely adaptation to changes in both the external and the internal environments. Organizational design can also be understood as a result of the organizational design process (Stanford, 2018). Organizational design is often mistaken for the organizational structure - it is only one of the elements of organizational design (Galbraith, Downey & Kates, 2002; Stanford, 2018). The most important role of the knowledge of organizational design is the ability to create an adequate organization, and its detailed analysis and improvement as well.

Over the years, numerous definitions have emerged in the literature pertaining to the definition of organizational design, among which the following are widely popular both in theory and in consulting practice:

- Leavitt's Diamond Model,
- Contingent Design Models,
- Galbraith's Star Model, (4), Congruence Model,
- McKinsey 7-S Model, and
- Burke-Litwin Causal Model.

The overview of the basic elements and factors of organizational design in the mentioned models is accounted for in Table 3.

HRM design models

The first HRM models emerged during the 1980s, essentially being the design models aimed at providing an analytical framework for HRM research - strategies, policies, processes, practices, situational factors, stakeholders, performance and so forth (Bratton & Gold, 2012) - and legitimizing HRM and distinguishing it from the other approaches (Guest, 1997, 273).

As for the relevant literature, the following HRM models are cited as the most popular:

- the early model,
- the Harvard model,
- the Guest model,
- the Warwick model,
- the Storey model and
- the 5-P model.

Their elements are presented in Table 4.

A little while later, in the late 1990s and at the beginning of the 21st century, the term "HRM architecture" began to be used in the relevant literature instead of "models" in order to explain all the components of HRM in organizations and the relationship between them. However, different definitions in the literature initiated considerable confusion in understanding the term.

According to B. E. Becker and B. Gerhart (1996), the HRM architecture consists of the three main components: HRM philosophy, HRM policies and HRM practices.

D. P. Lepak and A. Snell (1999, 32) describe the architecture as a framework linking different employment models, employee-employer relationships and different configurations (systems) of HRM. Based upon the contributions of transaction cost theory, resource dependency theory and human capital theory, they believe that, depending upon the value of human capital and the particularity of

Table 3 Different approaches to organizational design

APPROACH	The elements and factors of organizational design	Authors
Leavitt's Diamond Model	• Tasks, • Technology, • The structure, • People. Changes at any point of the diamond lead to changes in some or all of the other design elements, whereas failure to manage the elements and their relationships can lead to a wide variety of problems in the organization.	H. J. Leavitt (1964)
Contingent Design Models	• The elements of the structure: specialization, the number of hierarchical levels and a span of control, authority delegation, formalization and departmentalization. • The contingent contextual factors (the factors of the general environment: legislation, national culture, the education system, the political system, the economy, demographics, ecology and so on; the factors of the specific environment: buyers, suppliers, competitors, technology, socio-political factors; the factors of the internal environment: technology, a strategy, organizational culture, maturity and the size) cause organizational reactions to changes in the structure which, in the compliance with the contingent factors, influence organizational performance (efficiency, a profit, productivity, employee satisfaction, return on capital employed, the employee turnover rate, etc.).	T. E. Burns i G. M. Stalker, (1961); A. D. Jr. Chandler (1962); J. Woodward (1965); P. Lawrence i J. Lorsch (1967); J. Thompson (1967); C. Perrow (1967); P. M. Blau (1970;1972); R. P. Rumelt (1974); C. W. Hofer (1975); L. E. Greiner (1972); J. Child (1973); H. Mintzberg (1979); M. Porter (1980)
Galbraith's Star Model	• The strategy • The structure (specialization, the number of hierarchical levels and a span of control, authority delegation, and departmentalization). • Processes (work processes, resource allocation) • Human resources (recruitment, selection, training and development) • The rewarding system • There is interconnectedness and an influence between each of the design elements.	J. R. Galbraith (1973; 1977)
Congruence Model	• inputs (environmental factors, resources, organizational history, and strategies) • transformational processes (the task, individuals, formal organization, informal organization) • outputs (products, organizational functioning, individual behavior, group behavior, relationships between groups in the organization, individual performance). • In order for an organization to be successful, there must be congruence between all the design elements.	D. A. Nadler i M. L. Tushman (1980)
McKinsey 7-S Model	• Systems, • Strategy, • Structure, • Style, • Shared values, • Staff, • Skills.	R. Pascale i A. Athos (1981) T. J. Peters i R. H. Jr. Waterman (1982)
Burke-Litwin Causal Model	• Transformational variables: the external environment, a mission and a strategy, leadership, organizational culture, individual and organizational performance. • Transaction variables: the structure, management practices, systems (policies and procedures), organizational unit climate, job requirements, motivation, individual needs and values. There is feedback in the model: transformational variables (among which the strongest influence is the influence made by the external environment) exert an influence on transaction variables, which in turn affects transformational variables.	W. Burke i G. Litwin (1992)

Source: Author, based on the review of the literature

human capital for a particular organization, there are four different configurations, i.e. HRM systems, for different types of employees:

- creating human capital alliances (low value, a high specificity),
- human capital contracting (low value, a low specificity),
- human capital development (high value, a high specificity), and
- the external employment of human capital (high value, a low specificity).

The HRM architecture of an organization comprises different HRM systems within the organization; each employee is involved in some of the four different systems, depending upon their individual values and specificities for the organization. The role of the HRM configuration is to strike the right balance - equity between its employees and their organization in

Table 4 Different theoretical HRM design models

HRM MODEL	THE ELEMENTS OF THE MODEL	AUTHORS
Early model	• Selection, performance evaluation, development, rewarding.	C. J. Fombrum, M. M. Tichy i M. A. Devanna, (1984)
Harvard model	• Situational factors, stakeholders' interests, HRM policies, HRM performance, long-term consequences and feedback.	M. Beer, B. Spector, P. Lawrence, D. Quinn Mills i R. Walton (1984)
Guest model	• HR strategy, HR policies, HRM performances, desired behaviors, performance and financial outcomes.	D. Guest (1987, 1997)
Warwick -model	• The external context: socio-economic, technical, political, legislative, competitive. • The internal context: culture, the structure, leadership, technology, business results. • The content of the business strategy: goals, market, the strategy, tactics. • The HRM context: the role, the definition, the organization, HRM results. • The HRM content: workflows, work systems, rewarding systems, employee relationships.	C. Hendry i A. Pettigrew (1990)
Storey model	• Beliefs and assumptions, strategic aspects, the role of line managers, the key HRM areas.	J. Storey (1992)
5-P model	• HR Philosophy - the statement of how an organization views its human resources and their role in its overall business success, and how they should be treated and managed as well. • HR Policies - a guide to the creation of HR practices and programs. • HR Programs - uniting the coordinated efforts of HRM to implement the organizational changes that result from the strategic needs of the organization. • HR Practices - the activities undertaken so as to implement HR policies and programs: employment, learning and development, earnings and performance management, employee relationships and administration. • HR Processes - the formal procedures and methods used to implement HR plans and policies in practice.	R. S. Schuler (1992)

Sources: Bratton & Gold, 2012; Armstrong & Taylor, 2017; Marchington, Wilkinson, Donnelly & Kynighou, 2016.

terms of how much they contribute, on the one hand, and what they receive in return, on the other.

S. Kepes and J. E. Delery (2006; 2007) point out the fact that the HRM architecture consists of two basic components - organizational climate and the HRM system (philosophy, policies and HRM practices). According to the authors, organizational climate reflects all the HRM formal and informal practices that serve as the glue that holds the entire organization together. HRM philosophy refers to the general principles that define the value and treatment of employees in a specific HRM system. HRM policies are a guide and a benchmark for various HRM activities - what the organization wants to achieve, not how it will achieve it. Practices are the activities and techniques used in the implementation of HRM policies. HRM practice implementation processes are the processes detailing how practices are to be implemented.

One group of authors (Becker, Huselid & Ulrich, 2001; Becker & Huselid, 2006; Hird, Sparrow & Marsh, 2010) believe that, in addition to the HRM system, process, function structure and competencies, the HRM architecture also has to include the behavior of all the employees of the organization that results in a specific performance - it encompasses all that is included in HRM, not only the structure of the HRM function.

According to M. Armstrong and S. Taylor (2017, 31), the HRM architecture is the HRM system that integrates HRM philosophies, takes into account the external and the internal environments and consists of the three basic components:

- HRM strategies - which define the directions of activities in different HRM fields,
- HRM policies - which define the purpose of HRM and provide a guidance to the creation and implementation of different HRM activities, and
- HRM practices - which consist of the HRM activities focused on the governance and development of employees and labor relations management.

DISCUSSION: THE CREATION OF AN INTEGRAL CONCEPTUAL FRAMEWORK FOR THE HRM ARCHITECTURE DESIGN

The characteristics of the key organizational design models

Analyzing the organizational design models presented in Table 3, several conclusions can be drawn about the dominant approaches in organizational design:

- some design models are true "theoretical" models, whereas others are a result of consulting experience and practice (McKinsey's 7-S model, Galbraith's star model);
- a small number of design models do not take into account the factors of the external environment as the integral elements of the design, so they represent the so-called closed models of the organization (e.g. Leavitt's model, the "star" model, and McKinsey's 7-S model), which makes it difficult to apply them in the modern conditions of the dominance of the organizational open models;
- the number of design elements differs for every model, ranging from 4 (e.g. Leavitt's model) to 12 (e.g. the Burke-Litwin causal model), which increases the complexity of the application and understanding of the model, so most models have the optimal number of elements, ranging from 5 to 7;
- some design models could be classified as rational organizational models (e.g. contingent design models), whereas others can be classified into social organizational models, which dominate in contemporary conditions (they include the organizational human, i.e. social, dimension);
- only rare models, and quite unjustifiably, include the existence of feedback (e.g. the Burke-Litwin causal model).

The foregoing gives rise to the following key design features of modern organizations:

- The forward-looking model of organizational design should be based on the assumption of the organization as an open system, which has been present since the 1950s and which includes the contingent factors of both the external and the internal environments that crucially influence the design of organizational design.
- The model of organizational design should include the minimum required number of the elements sufficient for its understanding, which means 5 to 7 elements according to the conducted analysis.
- In addition to the rational dimension (once organizational goals are defined, organizational design is created in a clear and logical manner), the organizational design model necessarily has its social dimension as well (individuals in the organization do not always behave in accordance with defined rules and policies, but first modify them in accordance with their needs, and only then adapt to them).
- The model of organizational design should also include the feedback that explains the interrelationship between the elements in the model (the interplay of the variables in the model) and ensures the sustainability of the model over time. In order to provide feedback, organizational performance needs to be an element of the model.

The organizational design model should be aligned with the important trends that characterize the business and work environments and should include the following: an increased use of teams and the intensification of the cross-functional work that creates the need for an additional communication and information flow, an increased use of dispersed, global working groups, continuous reorganization and restructuring, costs and a more efficient use of the work space, increasing employee satisfaction while attracting new talents (Stanford, 2018, 24-25). Modern models of organizational design focus on the development of horizontal structures, employee independence, a more intensive information exchange, the multi-strategy and organizational culture that encourages a faster adaptation to changes in the environment (Daft, Murphy & Willmott, 2017, 41)

The characteristics of the main HRM design models

The analysis of the different approaches to defining the HRM architecture has led to the following conclusions:

- In some definitions, the architecture and the system overlap (Armstrong & Taylor, 2017), whereas in some other definitions, the architecture contains multiple different HRM systems (Lepak & Snell, 1999; Kepes & Delery, 2006; 2007).
- As many as eight different elements are listed as the components of the HRM architecture in different models, namely:
  - organizational climate (Kepes & Delery, 2006; 2007),
  - the HRM strategy (Armstrong & Taylor, 2017),
  - HRM philosophy (Becker & Gerhart, 2006; Kepes & Delery, 2006; 2007; Armstrong & Taylor, 2017),
  - HRM policies (Armstrong & Taylor, 2017),
  - HRM practices (Becker & Gerhart, 1996; Armstrong & Taylor, 2017),
  - HRM processes (Becker *et al*, 2001; Becker & Huselid, 2006; Hird *et al*, 2010),
  - employee behavior in the organization (Becker *et al*, 2001; Becker & Huselid, 2006; Hird *et al*, 2010), and
  - employment models (Lepak & Snell, 1999).
- Some of the aforementioned elements of the HRM architecture cannot stand for the design elements, and they are organizational climate and employee behavior in the organization. These two components are not the elements of the HRM function design, but rather represent the result and consequence of the HRM design features and its implementation within a particular organization - they are an integral part of organizational performance.

- Some HRM design models include contingent factors (external and/or internal), while some include stakeholders' interests, whereas others do not.
- In some models, the impact of HRM on performance is important, unlike in the other models.

Based upon the abovesaid, it can be concluded that the initial hypothesis of the paper implying that, in the relevant literature, there is no integral conceptual framework for designing the architecture of HRM is confirmed.

The components of the integral framework for HRM design

An analysis of the basic organizational design models has revealed the dominance of open contextual social (natural) models, which take into account both the factors of the internal environment and the factors included in the external environment, where people and their relationships, values, behavior and performance are an important element of the largest number of the models. The majority of the models include a total of 5-7 elements. When HRM design is concerned, the analysis of the various models indicated a lack of a consensus on both the HRM design elements and on their definition and understanding.

Considering the previous analysis, it is believed that the HRM design model should be contextual, i.e. adaptable to the contingencies included in the external and the internal environments that strongly affect the characteristics of HRM, so the magnitude of the positive impact of HRM on an organization's performance will depend upon the organization's ability to adapt its HRM design to the characteristics of these contingencies. It is necessary to include feedback in the model. Accordingly, the integral conceptual framework for HRM design, i.e. its key elements, is suggested below (Figure 1).

The contingent factors of HRM. The contingent factors create a context for the functioning of HRM, thus exerting a direct influence. Therefore, they have to be the element of the design taken into consideration when creating, analyzing and changing it. The most important contingent factors of HRM that have a direct impact on the design of the HRM architecture include the two main groups of factors: the external and the internal.

The external contingent factors relate to the external context of an organization, and include (Farnham, 2015, 17) the following:

- the economic context (the macroeconomic policy, the market and prices, the market structure, the size of organizations, public expenditure, the size of wages, employment and unemployment, labor and capital markets, the inflation rate, the GDP growth rate, etc.),
- the socio-cultural context (the demographic characteristics of the total and the working age population: the gender, age and the level of education, cultural values and attitudes, belongingness to religious communities, the ethnic structure, etc.),
- the technological context (information-communication technologies, technological changes, research and development, etc.),
- the political context (political parties, the government, the opposition, the public and state administration, local authorities, international organizations, the EU),
- the legal and legislative context (the law on labor, the law on obligations, the consumer protection law, the law on health and safety, the law on trade, regulatory bodies, courts, etc.), and
- the ethical context (work ethics, business ethics, corporate social responsibility, human rights).

The internal contingent factors include the three basic groups of factors:

- organizational characteristics (the strategy, the size, the organizational structure, organizational culture, and technology),

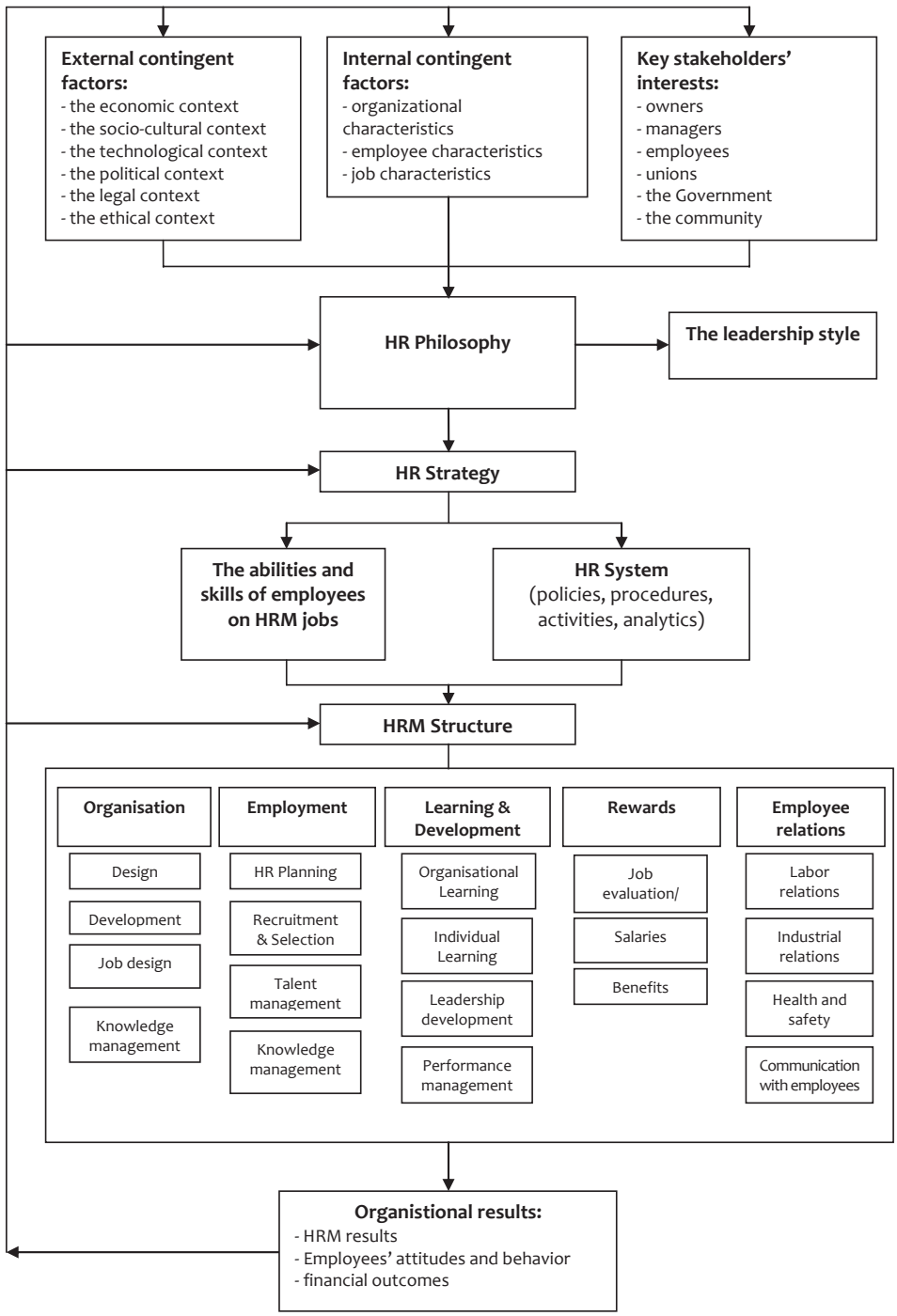

Figure 1 The HRM architecture

Source: Author

- employee characteristics (personal characteristics, interests, motivation, attitudes, abilities), and
- the characteristics of the jobs that are done in organizations (the nature of jobs, requirements, occupational autonomy, etc.).

The contingent factors of HRM shape HRM philosophy, and the HRM strategy through it, determining the company's attitudes towards the employees, how the company (management) understands the needs of the employees, their value for the company, desirable approaches to work, which then determines how the company will treat its employees, i.e. how it will manage its human resources.

Key stakeholders' interests. Stakeholders include the entities, individuals and groups that have an interest, both direct and indirect, in the functioning of the organization and its achievement of its goals (Janićijević, Bogićević Milikić, Petković and Aleksić Mirić, 2020). In order to achieve their goals, interested groups exert a significant influence on the shaping of the HRM architecture. Among them, the most important stakeholders are:

- owners (an increase in the company value in the long run, return on invested capital),
- managers (an increase in a profit, an increase in the share price),
- (an increase in the salary, the balance of private life and work, personal development),
- the government (an increase in employment, an increase in the average wage, compliance with labor and labor regulations),
- the social community (corporate social responsibility), and
- trade unions (an increase in the labor price, the improvement of working conditions, the strengthening of employment security, employee protection, etc.).

The hard components of HRM. The hard components of HRM are visible and tangible, easier to create and modify, and they represent the basic foundations of the HRM architecture. They include the following elements (Bogicevic Milikic, 2017):

- the HRM strategy - it defines the objectives of HRM and the directions of activities in the different areas of HRM;
- the HRM system (policies, procedures, analytics and activities);
- the HRM structure, including the organizational roles of employees within the HRM function - their number and the required profile of expertise depending upon the chosen structural model: centralized, decentralized, a brokerage model or a matrix model with centralized administrative services.

In our model of architecture, the term "structure" assumes all the important areas of HRM (processes/activities/sub-activities) that have to be taken into account regardless of the chosen model for their structuring. Within each identified main functional area of HRM (Organization, Employment, Learning & Development, Rewards, Employee Relationships), appropriate activities are grouped according to their functional similarity. Regardless of the fact that they are graphically separated in Figure 1, all the included HRM areas/activities/processes are interrelated and affect each other, and cannot be observed in isolation. The graphic separation of the five proposed HRM areas only aims to indicate the areas of the HRM professionals' functional expertise.

The soft components of HRM. This group of elements is, by its very nature, quite "intangible", since it refers to people - their values, abilities and behavior; so, it changes much more difficultly and much more slowly compared to the hard elements of the HRM architecture. The soft components of HRM include the following:

- HRM philosophy - the common values that determine access to HR within an organization, the value and treatment of employees in a specific HRM system,
- the capabilities and skills of HRM employees: strategic HRM, business skills, problem solving,

analysis and critical thinking, research skills, statistical skills, selection interviewing skills, learning and development, negotiation skills, change fostering and leading, leadership skills, persuasion and an influence, conflict management and political skills (Armstrong & Taylor, 2017), and

- the leadership style in the organization, since all line executives are HRM function holders.

Organizational results. Since the introduction of the strategic approach to HRM, the achievement of planned and desired organizational results is both the goal and purpose of having an organization and an effective HRM. There are three sets of results relevant to the evaluation of HRM effectiveness, and they include the following:

- HRM results (HRM metrics - a set of the quantitative indicators that depict the quality and effectiveness of HRM and its contribution to the achievement of the organization's goals,
- employees' attitudes and behavior - their motivation, commitment, satisfaction and work engagement, and
- financial results - average productivity, revenue, a profit and so on.

Feedback. There is feedback in the model: the contingent factors (external and internal) and the key stakeholders' interests exert an influence on both the hard and soft components of HRM, which then affects organizational results, and in turn all the other elements of the HRM design. The feedback in the proposed model indicates the nature of the variables included in the model. The independent variables in the proposed HRM design model are contingent factors (external and internal) and the interests of the key stakeholders. The intervening (interpretive) variables in the model are the soft and hard components of HRM, while the organizational results are the main dependent variable.

CONCLUSION

Based upon the analysis of the different models of organizational design and HRM design, an integral conceptual framework for designing the HRM architecture is proposed in this paper. The analysis of the various general organizational design models has confirmed the existence of a number of the design models based upon completely different assumptions (open vs. closed organizational models) and including a different number of elements (ranging from 4 to as many as 12). Similar results were also found in the analysis of different HRM design models. By comparing the different HRM design models, their similarities, as well as numerous differences between them, are pointed out, thus confirming our initial hypothesis that, in the relevant literature, there is no integral conceptual framework for designing the HRM architecture. This provided the rationale for building such a framework. Starting from the assumption that organizations are open models, and therefore HRM is an open model as well, and the integration of different approaches, simultaneously taking into account the optimal number of the elements of the model, a conceptual framework for designing the HRM architecture which has six basic components is proposed, those components including:

- HRM contingent factors,
- key stakeholders' interests,
- the hard components of HRM,
- the soft components of HRM,
- organizational results, and
- feedback.

It is believed that the proposed framework will provide a good basis for the legitimization of HRM, a useful analytical framework for exploring the individual elements of the HRM architecture and the starting point for the creation of and changing the HRM architecture in practice. It is also believed that the proposed framework can contribute to the development of a more systematic and comprehensive approach to the study and understanding of HRM in

modern organizations, both in theory and in practice. For theory, an important contribution and implication of this paper reflect in the fact that management should approach the designing of the HRM architecture starting from all the contextual factors, first defining the philosophy and strategy of HRM, then defining the policies, procedures, activities and analytics needed to evaluate the quality and efficiency of HRM based upon the existing and a desired mix of the skills and knowledge of the HRM professionals. The choice of a specific model for the HRM structure will, to a large extent, depend upon the size and structure of the company, as well as the other contextual factors (such as work technology, the ICT development level, a leadership style, a strategy, etc.). It is also necessary for the management to clearly define the goals they want to achieve at the organizational/group/individual level(s) and monitor their achievement. HRM design must include feedback, i.e. adjusting the architecture in accordance with both the degree of the accomplishment of desired results and changes in the external and the internal contexts. One of the possible implications of the paper is the application of change in the proposed design approach to the other support business functions that fall within the so-called central part of Porter's value chain, such as the financial function, the ICT function, research and development, and so forth.

The paper has several limitations that should be mentioned, which future research may eliminate. First, a limitation reflects in the theoretical nature of the research study. Therefore, in future research, it is necessary to check whether the proposed framework is applicable in practice through empirical investigation on a larger sample, which would include different types of organizations (small, medium-sized and large, economic and noneconomic), different legal forms of organizations (profit and non-profit, private, state-owned and those in mixed ownership, national and global, etc.), which would create the necessary preconditions for making more generalized and more definite conclusions. Second, the proposed framework did not take into consideration the nature of the impact of the soft and hard components of HRM, i.e. it did not take into consideration which soft/hard components of HRM may have a moderating and which may have a mediating impact, or both, in different situations and in which particular situations, which is also an important research direction in this area. Third, based upon the review of the relevant literature, the proposed framework contains certain elements within each of the six components of the HRM architecture. It would be desirable to check each of the components, as well as their content, through empirical research in order to determine whether some components/elements should be added or excluded, which those components/elements are, and why they should be added or excluded. Finally, the proposed HRM architecture framework was created at one point in time; given the intensification of the changes in the context, organizations, the characteristics of the working age population, education, legislation, globalization, the work environment and the jobs themselves, it needs to be constantly reviewed and innovated so as to meet the needs of modern organizations.

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AN ASSESSMENT OF THE CONCEPTUAL LINKAGES BETWEEN THE QUALITATIVE CHARACTERISTICS OF USEFUL FINANCIAL INFORMATION AND ETHICAL BEHAVIOR WITHIN INFORMAL INSTITUTIONS

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This research is aimed at assessing the conceptual linkages between the qualitative characteristics of useful financial information defined by the International Accounting Standards Board (IASB) and ethical behavior within informal institutions. Derrida's deconstruction theory was employed to carry out a diagnostic content analysis of the chapter two of the IASB's 2018 financial reporting conceptual framework. The findings arising from the study reveal salient conceptual linkages between the fundamental (primary) and enhancing (secondary) qualitative characteristics and biblical ethical constructs, such as objectivity, equity/fairness, accuracy, neutrality, humility, trust, honesty, responsibility, open accountability, public trust, discipline and diligence. Consequently, the study recommends the inclusion and teaching of these ethical constructs in the curricula of tertiary and professional accountancy programs so as to churn out intellectually sound and morally balanced accounting professionals, who will prepare and present decision-useful financial statements with a high sense of moral and ethical responsibility.

Keywords: accounting information, The Bible, ethical behavior, IASB2018 Conceptual Framework, qualitative characteristics

JEL Classification: M400, M410

INTRODUCTION

Published financial statements remain the most credible source of information on the financial health of a business entity, the accounting information inherent therein being used by various stakeholders in making investment decisions. In financial statements, data about the financial position, performance and changes in the financial position principally communicated through a statement of the financial position, a statement of changes in equity, a statement of comprehensive income and a cash flow statement (Ebiaghan, 2018, 35) are presented. However, in the course of preparing and presenting corporate reports, accounting regulatory bodies offer accountants a latitude to apply discretionary judgments in adopting

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a suitable accounting basis, which efficiently reflects the firm's accounting policy, reporting obligations, operations and disclosure requirements. It has been observed oftentimes that, in a bid to select a method from competing diverse approaches in preparing and presenting financial transactions and events, managers exploit this opportunity so as to engage in creative accounting or earnings management, which involves a willful misrepresentation and manipulation of accounting information intended to create a false reality, thereby deceiving the users of financial statements (Yahaya, 2014). This unethical behavior majorly stems from moral bankruptcy and a dearth of virtue. It is imperative to note that honest character traits are lacking in today's corporate world, as corruption, greed and malfeasance in the workplace have become commonplace. The immoral and unethical abuse of office have become rampant among business executives, who exploit their position for filthy lucre sake in a bid to gratify their selfish desires, thereby occasioning several corporate scandals, like Enron, WorldCom, Lehman Brothers and so on (Ezeani, Ogbonna, Ezemoyih & Okonye, 2012, 5).

In order to preserve financial information integrity, the IASB issued the latest financial reporting conceptual framework in 2018, asserting the fact that financial statements are mainly aimed at providing decision-useful information to creditors, potential and present investors, as well as other stakeholders, when making credit, investment and allied resource allocation decisions, helping them assess the timing and amounts of the enterprise's prospective cash inflows and outflows. Furthermore, the chapter two of the framework specifies two principal threshold qualitative characteristics that these pieces of information must have in order to enhance decision-making, namely:

- fundamental (primary) characteristics, which include relevance and representational faithfulness, in addition to
- enhancing (secondary) characteristics, which comprise verifiability, timeliness, understandability and comparability.

THE RATIONALE FOR THE STUDY

Consequently, upon an exhaustive review of the extant literature on notable accounting scandals, like Enron, Tyco, WorldCom, HealthSouth and Xerox in the U.S, and the liquidation of the African International Bank (AIB), Cadbury and African Petroleum (AP) in Nigeria, a common observation is that financial statement preparers quite often flagrantly circumvent regulatory provisions and willfully manipulate accounting numbers, thus making nonsense of these qualitative characteristics of useful financial information. These unethical practices adversely affect the reliability and truthfulness of the financial information used to make investment decisions with dire implications for profitability and corporate sustainability (Odia & Ogiedu, 2013, 45; Yahaya, 2014).

Particularly, these unethical practices have been thriving due to moral depravation and an utter disregard for ethical character traits in today's corporate world. Therefore, this research is aimed at assessing the chapter two of the IASB's 2018 qualitative characteristics of useful financial information and attempting to establish their conceptual linkage with ethical behavior within informal institutions, coupled with how their application to daily living may help accounting professionals (financial statement preparers) eschew fraudulent practices. The methodology for this research is based on Derrida's deconstruction theory.

Following this Introduction and Rationale for the study, the following sections of the paper are structured as follows: In Section 2, the extant literature and conceptual clarifications on the IASB's Conceptual Framework and biblical virtues are discussed. In Section 3, Derrida's deconstruction theory is extensively discussed as the research methodology adopted in order to establish conceptual linkages between the qualitative characteristics of useful financial information and biblical virtues. In Section 4, the research findings are exhaustively discussed and a model depicting the conceptual linkage is presented. In Section 5, the conclusion is given.

LITERATURE REVIEW

The significance and benefits of the global accounting standards harmonization

The idea for the harmonization of global accounting standards arose from a quest for the synchronization of accounting practice throughout the European Union. However, the economic gains of convergence promptly encouraged the notion worldwide. Notably, the first set of the issued standards (originally referred to as the International Accounting Standards (IAS)) were released circa 1973 and 2001 by the International Accounting Standards Committee (IASC). On 1st April 2001, the newly constituted Board of IASB replaced the IASC, thus assuming responsibility for setting the International Accounting Standards. At its inaugural convention, the new-fangled Board implemented the existing IAS and Standing Interpretations Committee standards (SICs). The IASB sustained the continuous development of the standards referring to the new standards as the International Financial Reporting Standards (IFRS). These sets of standards are fashioned as a mutual universal language for commercial transactions to aid in the understandability and comparability of company accounts across transnational boundaries. They are a fallout of rising international trade and shareholding principally important for multinational companies. Convergence to the globally recognized accounting standards (IFRS) enables comparability between companies operating in different countries. Therefore, the global accounting standards are aimed at removing restrictions to capital flows and expanding investment in markets. Equally, IFRS convergence promotes industrial growth, as complying with their provisions engenders investors' confidence and reduces the cost of raising foreign capital. The IFRS released by the IASB are currently being accepted and recognized as the foremost accounting information reporting standards globally. Presently, over a hundred nations are authorizing or mandating the IFRS implementation within their territories. It has become the most common and the most widely accepted financial reporting model throughout the world, given the fact that the countries of the Eurozone, New Zealand, Russia and Australia have instituted the legal frameworks that currently authorize the IFRS implementation within their respective jurisdictions. Equally, the Securities Exchange Commission (SEC) of the United States of America (USA) has endorsed the IFRS implementation without reconciling the United States Generally Accepted Accounting Principles (USGAAP) in the corporate reports prepared by foreign private enterprises, thereby availing foreign private enterprises discretionary privilege to choose between the IFRS and the USGAAP. The SEC suggested that USA enterprises should commence reporting under the IFRS from 2014, whereas a full conversion took place in 2016, contingent upon an entity's size, which action virtually encouraged the entire globe to one distinct, uniform accounting policy, i.e. the IFRS (Samir, 2003, 25; Srkant, 2005, 18; Olanrewaju, 2012, 13). Studies on the importance of transnational accounting practices have increased over years in response to the satisfaction of investors' demands, and expedite international business practices where there is a need to consider the fact that international accounting convergence is of a significant interest for investors, capital market regulators, governments and diverse stakeholders who utilize the accounting information of public enterprises, thus accentuating the strategic role of accounting as a fiscal tool for several economic agents. The advantages of such global accounting convergence rests on its ability to lessen adverse effects emanating from different accounting practices in diverse countries (Hati & Rakshit, 2002, 34; Bala & Ibrahim, 2017, 75). Hence, the introduction of the IFRS for listed companies in many countries could globally be regarded as a radical regulatory innovation to the history and practice of the accountancy profession.

In their paper espousing the significance of the first-rate accounting standards, H. Daske and H. Gunther (2006, 464) emphasized the fact that the accounting standards harmonization was germane to the delivering of the reliable information rooted in honest financial reporting. He enumerates the three major

criteria the international standards have to have in order to be accepted, namely:

- The standards have to incorporate the core sets of the accounting declarations that constitute a generally accepted and comprehensive accounting basis.
- The standards should be of a high quality and have to guarantee transparency and comparability by providing full disclosure. Shareholders should be capable of implicitly analyzing performance across financial years and companies.
- The standards have to be meticulously interpreted and globally enforced by regulators and auditors by their insisting on the painstaking application and interpretation of those standards. If not so, the transparency and comparability objective of the mutual standards will be defeated.

The IASB conceptual framework

The IASB Conceptual Framework for Financial Reporting can be described as the main document that stipulates the concepts and objectives which guide the presentation and preparation of financial reports. The framework is a comprehensive structure of the concepts that emanate from an objective, while the objective recognizes the financial reporting rationale. The concepts offer a direction towards the recognition of the limits of financial reporting, a choice of transactions and economic activities to be recognized and measured (or disclosed), in addition to the formats for their summarization and reporting (FASB, 2006, 2-5; 2010, 3)

The core purpose of the Framework includes (IASB, 2018):

- assistance in reviewing the existing standards and the formulation of future IFRS by spelling out the fundamental concepts;
- fostering the synchronization of accounting standards and regulation by decreasing the number of allowable marginal accounting treatments;
- assistance for the preparers of published financial statements applying the IFRS, especially with regards to the handling of the business events for which an accounting standard is yet to be formulated.

Its precursor, the Framework for the Preparation and Presentation of Financial Statements, was issued in 1989. While, on the one hand, the IASB issued an improved version in 2010, which was referred to as the Conceptual Framework for Financial Reporting, this version was notably quite incomplete given the fact that a few chapters and concepts were omitted, the latest and the most comprehensive Framework issued in 2018, on the other, includes a total of eight chapters itemized below:

- Chapter One: The Objective of General-Purpose Financial Reporting
- Chapter Two: The Qualitative Characteristics of Useful Financial Information
- Chapter Three: Financial Statements and the Reporting Entity
- Chapter Four: The Elements of Financial Statements
- Chapter Five: Recognition and Derecognition
- Chapter Six: Measurement
- Chapter Seven: Presentation and Disclosure
- Chapter Eight: The Concepts of Capital and Capital Maintenance

Bearing in mind the fact that this research is principally focused on assessing the conceptual linkages between the Qualitative characteristics of useful financial information and ethical conduct in informal institutions, chapter two of the conceptual framework constitutes the major basis of analysis hence an exhaustive discussion of its attributes is necessary to enrich our understanding of the background of the study.

The qualitative characteristics of useful financial information

Qualitative characteristics refer to the attributes necessary for accounting information to serve as the key supporting function in the usefulness of decisions. These are the characteristics and qualities which the preparers of financial statements have to imbibe with a view of making accounting information worthwhile for users. According to the FASB (2010, 15), reported accounting information aimed at facilitating investment decisions should have certain features or normative standards, the informational attributes of decision-useful financial statements recognized by the FASB in its Concept No. 2 Qualitative Characteristics of Accounting Information, and slightly modified and accepted in the IASB Framework. Chapter Two, entitled the Qualitative Characteristics of Useful Financial Information, is presented in Figure 1.

The chapter two of the IASB Conceptual Framework identifies the two kinds of the qualitative characteristics required for financial information to be decision-useful:

- fundamental (primary), and
- enhancing (secondary).

The fundamental (primary) qualitative characteristics of financial information include the following:

- relevance, which refers to the ability of financial information to significantly influence users' economic decisions. Financial information is deemed to be relevant when it has a confirmatory value, a predictive value, or both these values. Materiality is akin to relevance.
- faithful representation, which implies that information is deemed to be faithfully represented when being error-free, complete and neutral.
- The enhancing (secondary) qualitative characteristics of financial information include the following:
- comparability, which implies the fact that information should be similar between different entities or different time periods;

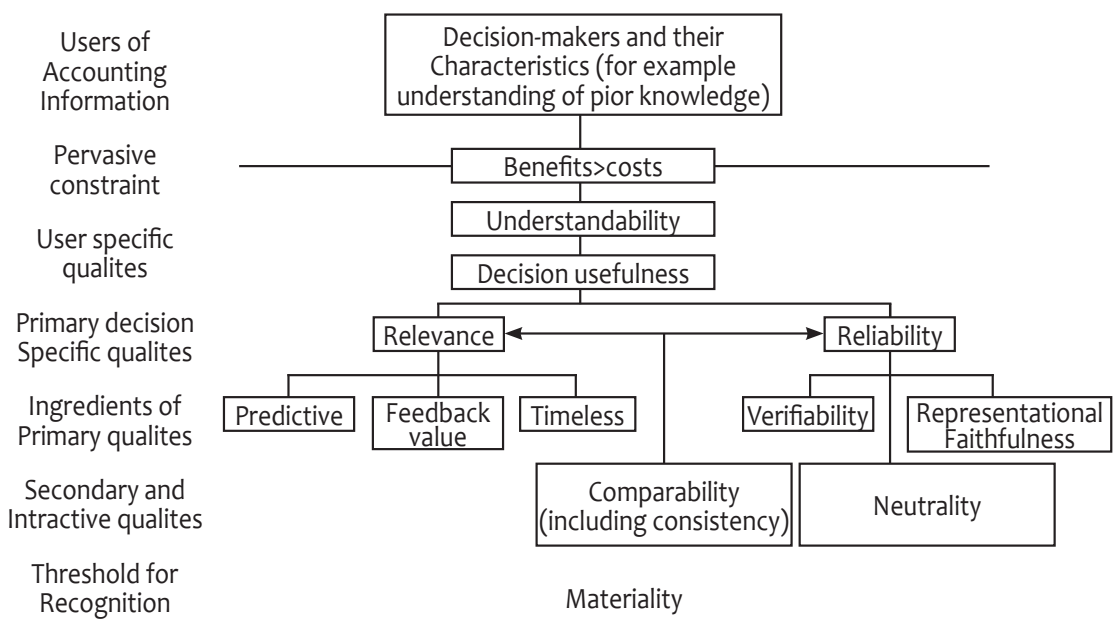

Figure 1 A Hierarchy of Accounting Qualities

Source: FASB, 2008, 15

- verifiability, which implies that knowledgeable and independent witnesses should be capable of authenticating such information;
- timeliness, which connotes the availability of information as and when required in order to influence the user's economic decisions, and
- understandability, which implies that information should concisely and clearly be categorized and presented.

Differences between FASB 2006 and IASB 2018 Conceptual Framework with respect to the qualitative characteristics of accounting information

Based upon the discussion in the preceding section, it can be observed that, although the FASB 2006, SFAC No. 2 (as depicted in Figure 1) and the chapter two of the IASB 2018 Conceptual Framework are primarily focused on the qualitative characteristics of accounting information, there are obvious differences in their respective contents with respect to the elements of financial statements and the primary or fundamental qualities, while the contents of the IASB 2018 Conceptual Framework consist of relevance and faithful representation, and those of the FASB 2006 consist of relevance and reliability. Observed from the point of view of the requirements of the fundamental qualities, differences are equally present. In IASB 2018, relevance consists of the predictive value and the confirmatory value, and in FASB 2006, it consists of the predictive value, the feedback value and timeliness. Additionally, IASB 2018 faithful representation consists of completeness, neutrality and the absence of an error. In FASB 2006, however, it is named reliability and consists of verifiability, representational faithfulness and neutrality. Perceived from the point of view of the enhancing qualities, it is also different. In IASB, it consists of comparability, verifiability, timeliness and understandability. Remarkably, the IASB 2018 Financial Reporting Conceptual Framework represents a comprehensive and updated document aimed at enhancing the qualitative characteristics of financial statements, bearing in mind the fact that the same incorporates an innovation regarding the interpretation of the notion of fair reporting and presentation, which connotes the essence of decision-useful financial statements.

The differences between the FASB 2006 and IASB 2018 conceptual frameworks is are described in Table 1.

The nexus between biblical virtues and ethical behavior constructs

Virtue is defined by Webster's dictionary as "conformity to the standard of right: morality. Moral excellence; beneficial quality, strength and courage, and a capacity to act: potency". Viewing this definition from a biblical standpoint, R. J. Krejcir (1991,

Table 1 The differences between FASB 2006 and IASB 2018 in the qualitative characteristics of accounting information

Description	FASB qualitative characteristics of accounting information		IASB qualitative characteristics of useful financial information	
Primary/fundamental quality	Relevance	Reliability	Relevance	Faithful representation
Ingredients of fundamental qualities	- Predictive value - Feedback value - Timeliness	- Verifiability - Representational faithfulness - Neutrality	- Predictive value - Feedback value	- Completeness - Neutrality - Error-free
Enhancing qualities	Comparability, consistency		Comparability, verifiability, timeliness, understandability	

Source: Kieso, Weygandt & Warfield, 2007; Kieso, Weygandt & Warfield, 2011

2001) defines *virtue* as the tendency to be blameless, prompted by a deliberate will to act right from the point of the word of God, in addition to personal responsibility. It involves compassion, honesty, integrity and endearment, which epitomizes the essence of the biblical character (modesty, strength, right standards, purity and courage, all complete in excellence). He notes that *virtue* is acquired through faith in and obedience to Christ, which occur in true repentance. Furthermore, by espousing the inimitable positive effects of constant meditation on biblical virtues, Apostle Paul summarily concludes in the Philippians Chapter 4 Verse 8: "*Finally, brethren, whatever things are true, whatever things are noble, whatever things are just, whatever things are pure, whatever things are lovely, whatever things are of good report, if there is any virtue and if there is anything praiseworthy - meditate on these things.*" (The Holy Bible, KJV). Ostensibly, the biblical definition of *virtue* infers the attitudes that are just (fair), noble, pure (holy living), true (the truth), lovely (as Christ is), and the character of good report (noble acts towards God and Man). However, as already mentioned herein, these ethical character traits are scarce in today's corporate world as corruption, greed and malfeasance in the workplace have become rampant, immoral and the unethical abuse of office has become commonplace amongst business executives in an effort to mitigate their untoward impact on businesses. The government on its part has enacted several legislations, such as the 2002 Sarbanes-Oxley Act, which was a direct reaction to the Enron accounting scandal in the United States of America, so as to assist in shielding shareholders from fraudulent financial reporting by companies.

The theoretical framework

This study is anchored in the agency theory of accounting research, which underscores the stewardship reporting responsibility of managers (agents) to the shareholders (owners) of the enterprise via corporate reports geared towards proffering value-driven, reliable and relevant accounting information suitable for financial analysis and investment decisions. This theory presupposes that principals (shareholders) are those who own the company, whereas agents (managers) are those controlling it. However, this separation of the company ownership from company control will create agency problems, whereas a conflict of interest might arise in firms in situations when managers' (agents') personal interests override their obligations to comply with the principal-agent contract stipulating the maximization of shareholders' wealth (Sheikh, Khan, Iqbal & Ahmed, 2012, 243). However, while financiers (principals) need managers' specialized skills to create returns on invested capital, management ultimately depends on principals for the financial structuring of the business they supervise, thus needing an approval from them. Creating complexities in the agency relationship in that manner, among which, foremost, is the fact that the management is more informed about corporate numbers than the principals (information asymmetry), this insider information might be fraudulently exploited, which invariably manifests in unethical and criminal conduct, which occasioned several accounting scandals involving financial statement manipulation (earnings management/ creative accounting) by the trustworthy executives of corporate entities, as was the case in the Enron, WorldCom and Lehman Brothers corporate scandals.

RESEARCH METHODOLOGY

In this research, Derrida's deconstruction theory was employed, adapted from M. Al-Fayyadl (2005) and B. Stocker (2006), so as to conduct a diagnostic content analysis of the chapter two of the IASB 2018 Financial Reporting Conceptual Framework, aimed at ascertaining the conceptual linkages between the qualitative characteristics of useful financial information and the ethical behavior constructs inherent in the Bible. According to B. Stocker (2006), deconstruction equally subsists within the "difference", but from varied perspectives, and the core of such "difference" unto differences. However, they have essentially similar content (hidden truths behind an obvious reality). However, restating Derrida's deconstruction theory, M. Al-Fayyadl (2005) espoused that deconstruction entails inducement not to gloss over the sole truth that we accept as

true, but there are multiple realities that suit various perspectives of the thought process, the principal notion of deconstruction theory being related to repetition and otherness happening simultaneously, which implies that the truth can be perceived from another point of view or from a different perspective.

RESEARCH FINDINGS AND DISCUSSIONS

Deconstructing the Biblical Origins of Contemporary Agency Theory

Financial reporting is the primary offshoot of stewardship accounting, whose origins go back to ancient times, when landlords (present-day principals, business owners or shareholders) listened to the report or accounts of serfs/servants (present-day agents, managers, and/or directors) on how they had managed the affairs of the business in order to ascertain whether they had made a profit or a loss. That report was usually presented at the close of a voyage or trading period, usually on an annual basis (the present-day Annual General Meeting - AGM). In the Bible Book of Luke 19, verses 12-22, and Matthew 25, verses 14-39, Jesus gives a parable of noble man (the landlord), who journeyed to a far country, bequeathing his goods (money) to his ten servants in order for them to trade. Upon his return, he required them to give him an account of the goods having been entrusted to them. Those who made a profit were rewarded, whereas those who made a loss were sanctioned or punished. The parable describes the ancient practices, the way how it was then, and is arguably what has metamorphosed into modern-day agency theory in accounting research, in which the owners of the entity (shareholders) entrust the control and management of their company to managers and directors, who accordingly act as agents on their behalf (Eisenhardt, 1989; Donaldson & Davis, 1991).

Biblical ethical constructs deconstructed from the qualitative characteristics of useful financial information

As already said, the analysis of this research centers on the chapter two of the IASB 2018 Conceptual Framework on the qualitative characteristics of useful financial information.

By utilizing Derrida's deconstruction theory, the analysis of the fundamental (primary) qualitative characteristics of financial information, viz. relevance and faithful representation, as the attributes that enable accounting information suitable for decision-making was conducted. Relevance presupposes that accounting information should have the ability to significantly influence users' economic decisions. Financial information is considered as relevant when it has confirmatory and predictive values. (Kieso *et al*, 2011, 44; Ekasari, 2012a, 310)

Faithful representation implies that a piece of information is deemed to be error-free, complete and neutral, accurate, fair and objective.

Juxtaposing these attributes with biblical injunctions and admonitions from the LORD GOD, Jesus, the prophets and the apostles, there is a clear conceptual similarity. Some examples will suffice. Firstly, in his first epistle to the Corinthians Chapter 4 Verse 2, Paul the Apostle states that "*moreover it is required in stewards that a man be found faithful*". Equally, in Isaiah, Chapter 8 Verse 2, the prophet records how he took faithful witnesses including Uriah and Zachariah, who were both priests, to take a record of the events to come.

Furthermore, in Chapter 25, Verse 15, Deuteronomy harps on the need for standard weights and measures, by quoting as follows: "*but thou shalt have a just weight, a perfect and just measure shalt thou have: that thy days may be lengthened in the land which the LORD thy GOD giveth thee", which was corroborated by the Proverbs Chapter 16 Verse 11, "a just weight and balance are the LORD's all the weights of the bag are his work*". The Holy Bible (the king James's version of it). The scriptures above allow us to conveniently deduce the time-honored ethical constructs of objectivity and fairness, the accuracy of facts, and neutrality.

Secondly, the deconstruction of the biblical virtues from the enhancing (secondary) qualitative

characteristics of financial information is discussed below:

Comparability: Comparability implies that information should be similar between different entities or different time periods, which enables the matching of accounting information pertaining to one entity with similar information in another entity. From the biblical perspective, this accounting concept teaches us humility, which ultimately spurs motivation. By comparing our business enterprise with other enterprises in the same industry, a better understanding of our current performance ratings, whether favorable or adverse (variance analysis) is obtained, thereby making necessary adjustments. This process demands humility (Ekasari, 2012b) In Peter Chapter 5 Verse 5, the Bible admonishes the younger to submit to their elders and be covered with humility because GOD resists the proud and gives more grace to the humble.

Verifiability: Verifiability is implicative of the fact that knowledgeable and independent witnesses should be capable of authenticating a piece of information, which ensues when independent observers apply the same techniques and obtain comparable results (Kieso *et al*, 2011). Verifiability ensures data accuracy and entrenches trust, honesty and responsibility, deconstructing this attribute from the biblical standpoint. In the first Thessalonians Chapter 2 Verse 10, Paul the Apostle says *"ye are witnesses and God also, how holily and justly and unblameably we behaved ourselves among you that believe"*, this being further buttressed by Samuel the Prophet at the twilight of his tenure as a judge in ancient Israel, who so declared in Samuel Chapter 12 Verse 3: "*Behold here I am: witness against me before the LORD, and before his anointed: whose ox have I taken? Or whose ass have I taken? Or whom have I defrauded? Whom have I oppressed? Or of whose hand have I received any bribe to blind my eyes therewith? And I will restore it to you*." From this scriptural declaration, it is possible to deduce open accountability and public trust.

Timeliness: Timeliness connotes the availability of information as and when required in order to influence users' economic decisions. It implies that information are made accessible to decision-makers at the right time so as to exert a significant influence on the decision-making process. Timeliness expects us to document accounting transactions as they occur. Discipline and diligence, exemplified in the Proverbs Chapter 22 Verse 29: "*Seest thou a man diligent in his business? He shall stand before kings; he shall not stand before mean men*," are the biblical conceptual equivalence of this virtue.

Understandability: Understandability indicates the fact that accounting information should concisely and clearly be categorized and presented so as to help users make economic decisions. Financial information should be presented in trust and honesty, and responsibly. Biblically, it is possible to deconstruct the virtue of equality from this concept, because if two entities demonstrate an equal understanding, that implies that they share the same information.

In Figure 2, a conceptual model summarizing the linkages between the IASB qualitative characteristics of useful financial information and the ethical behavior constructs inherent in the Bible are presented.

CONCLUSION

This research study is aimed at assessing the conceptual linkages between the IASB qualitative characteristics of useful financial information and ethical behavior within informal institutions by applying Derrida's deconstruction theory in order to conduct a diagnostic content analysis of the chapter two of the Framework. The obtained findings are indicative of a significant positive relationship between the qualitative characteristics of useful financial statements, as advocated in the IASB 2018 Financial Reporting Framework, on the one hand, and ethical behavior within informal institutions, on the other. The study observed the striking conceptual linkages between the fundamental and enhancing qualitative attributes and the biblical ethical behavior constructs, such as objectivity, equity/fairness, accuracy, neutrality, humility, trust,

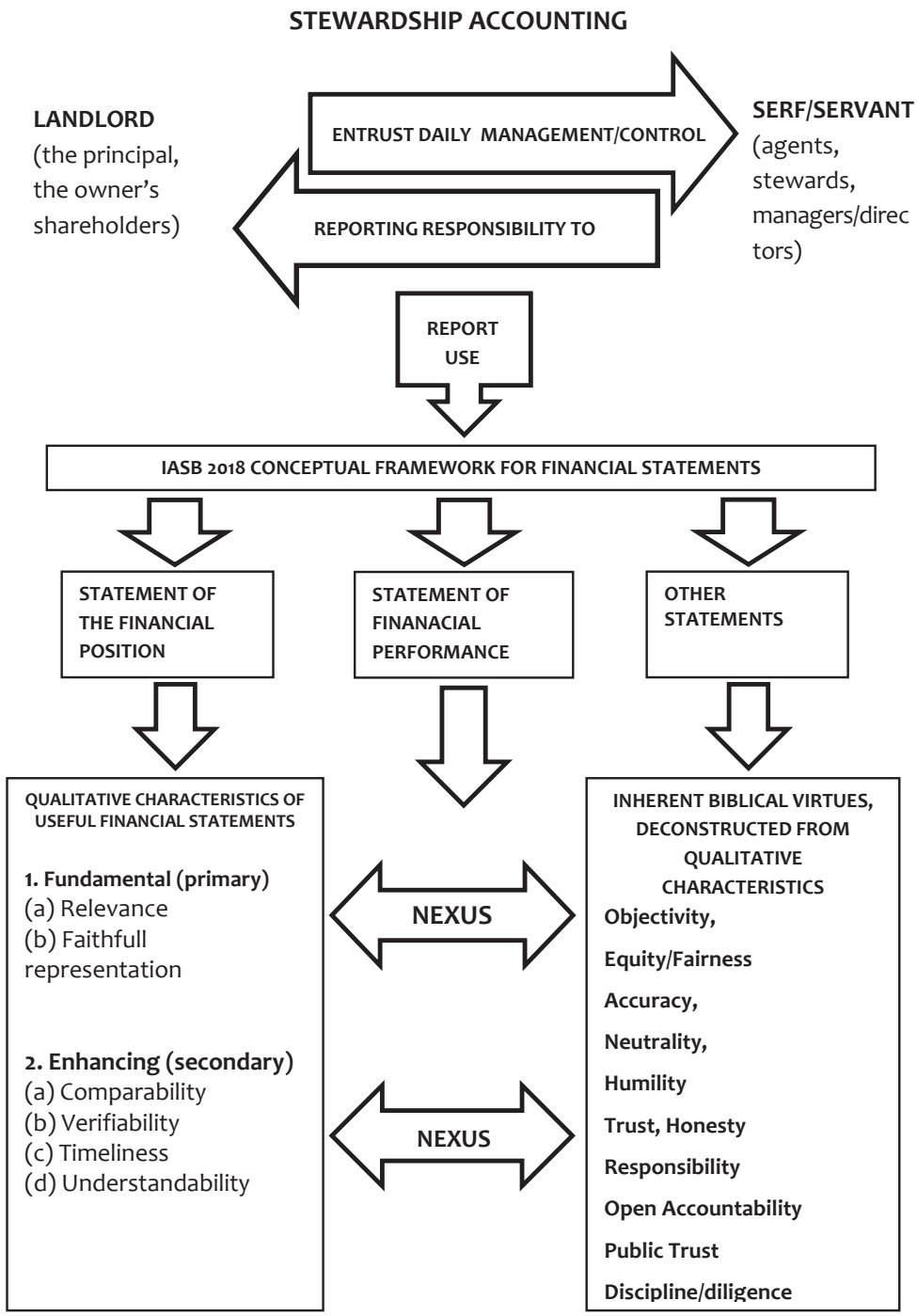

Figure 2 The conceptual model depicting the linkages between the IASB qualitative characteristics of useful financial information and ethical behavior constructs

Source: Author

honesty, responsibility, open accountability, public trust, discipline and diligence. These results were corroborated by T. R. Schatzi (2005, 481) and K. Ekasari (2012b), who noted that the enforcement of compliance on regulatory provisions and accounting standards appeals to practitioners' will, which they can flout under the guise of applying discretionary judgements; biblical injunctions, however, appeal to practitioners' inner consciousness (the spirit/soul dimension). Hence, biblical ethical behavior forms an inimitable fragment of spiritual doctrines and norms, whose adherents are expected to conform with the beliefs, desires and emotions that ultimately culminate in desirable actions. Bearing in mind the emerging spiritual accounting philosophy, it can be concluded that there is a need for them to appeal to the moral/ethical consciousness of the preparers of accounting information for the purpose of preserving qualitative attributes. Thus, the following is recommended:

- The accounting curriculum at both tertiary and professional levels should be re-evaluated and enriched with these biblical ethical constructs in order to inculcate them into students prior to their entering the accounting profession, which will go a long way towards instilling forthrightness and propriety in the treatment of transactions and the preparation of decision-useful financial statements.
- Beyond their inclusion in the curriculum, these biblical ethical constructs should be integrated into accounting pedagogy (the teaching-learning process), given the fact that doing so will effectively persuade students' cognitive domain to positively influence the affective domain, thereby producing intellectually sound and morally balanced accounting professionals, who will carry out duties assigned to them with a high sense of moral/ethical responsibility.

Furthermore, future research studies could be conducted so as to deconstruct the biblical/spiritual virtues from the other chapters of the IASB 2018 Financial Reporting Conceptual Framework, which will further expand the knowledge frontiers of accountancy pedagogy, promote moral/ethical consciousness amongst accounting practitioners, simultaneously significantly contributing to the deepening of the emerging spiritual accounting philosophy.

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THE EXPECTED TENDENCIES OF THE GDP OF THE THREE LEADING GLOBAL ECONOMIES IN 2020: IS A REBALANCE OF (GEO)ECONOMIC POWER ARRIVING?

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The International Monetary Fund (IMF) forecasts a gradual slowdown in the, otherwise strong, growth of the Chinese economy in the first half of the 2020s, and the anemic growth of the Western economies: the US and, especially, the EU27. Given the practical (and symbolic) importance of reaching 'the number one economy' status, the primary objective of the paper is to estimate the GDP (and the GDP PPP) of the observed economies over the next decade. The main contribution and finding of this paper is the estimation of future GDP trends for the US, China and the EU27 in the period 2025-30, based on the previous trends and the IMF 2020-24 projections. China's economy will become globally leading in 2029-2030. The basic research hypothesis is proven, given the fact that a change in the global economic position implies significant geopolitical consequences. Namely, while the US will almost certainly remain the leading global power in the 2020s, with the EU still continuing to focus on itself, China's economic growth will have rising global consequences, fueling the move towards the dispersion of authority. This conclusion is in line with the claims of the majority of the relevant authors who emphasize the increasingly limited possibility of the US unilateral actions.

Keywords: GDP, economic growth, China, the US, EU27, global order

JEL Classification: F2, F50, O47

INTRODUCTION

In academic circles, the question has increasingly been arising as to when China's 'famous' overtaking of the US might occur when the overall GDP measured by market rates, which is still considered as the most important indicator of the overall size of the economy, is concerned. According to the IMF projections (2019), China's economic growth will slightly slow down in the period 2020-24, and in the last years of that period, its growth will be 5.5%. At the same time, the economic growth of the EU27 and the US will be substantially lower (1.5% and 1.6%, respectively, in 2024, after slowing down over the observed period). Consequently, these tendencies will lead to the further

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narrowing of the differences between the GDPs of the observed economies.

The subject of the research study is the three largest economies in the world: the US, the EU27 and China (whose sizes were expressed through the GDP or the GDP PPP), i.e. the effects of changing the relative weights of these economies on the future global geopolitical constellation. This has very important implications, since the status of the world's largest economy has, as a rule and with some time lag, led to the leading role of that same country globally. Specifically, there are the indicative examples of the strong economic rise of Great Britain during the 15th and 16th centuries, and of the US since the mid-19th century, followed by the global domination (military, diplomatic, cultural, and economic) of the two countries.

The main objective of the paper is to estimate the GDP (and the GDP PPP - Purchasing Power Parity) for the world's three leading economies by 2030. This will be done based upon the available data on the current GDP trends, the IMF projections, and the authors' calculations for the GDP of these three leading economies, with the aim of possibly determining the year when China's economy might become the world's largest. So, the goal of the paper is to show the great - i.e. transformative - significance of the current and the expected (extremely unequal) economic growth of the world's largest economies by analyzing and assessing the dynamics of their GDPs and relying on the theoretical assumptions related to the geopolitical rise and possible global domination by the countries with the largest GDP in the world.

Pursuant to the defined subject matter and the set goal of the research study, the following hypothesis will be tested in the paper:

H: Measured by market exchange rates, China's economy will surpass the economy of the US at the end of 2020s and become the largest global economy.

The concrete quantitative methodological approach applied in testing the set hypothesis is presented in the third part of the paper. In the paper, a qualitative methodology and a quantitative methodology are applied. The application of the qualitative methodology reflects in referring to the related, mainly foreign studies (which are based on theoretical generalizations and the experiences of the scientists who have dealt with the same or a similar problem) in order to create theoretical support for the application of the quantitative methodology (which serves to test the main hypothesis). The analysis and synthesis, induction and deduction methods, and especially the comparison method, are applied. An emphasis is placed on the quantitative methodology, i.e. on projecting the GDP trends of the three observed economies, all the data being taken from the IMF database (IMF, 2019).

In the second part of the paper, the studies that deal with virtually the same topic, but virtually ignore the analysis of the EU27, which, as a part of the West is considered to be an important element of the overall (geo)economic equation, will be presented. Then, the methodology applied will be explained. In the next three parts of the paper, the basic economic performances and long-term (geo) economic perspectives of the three largest economies in the world, namely the EU27, the US and China, are discussed. This is followed by the Conclusion, in which a possible scenario for the risky balancing of the leading and the growing power (the practical "challenger") is indicated, which historically often led to military confrontations, all this bearing in mind the crucial significance of economic strength for projecting geopolitical power.

LITERATURE REVIEW

With China's strong economic rise over the four decades, an increasing number of papers have emerged, showing that this economy is about to become the largest in the world. According to a forecast by the economists in HSBC Holdings Plc given in a study covering the world's 75 largest economies, China will become the leading global economy by 2030, with a GDP of $26 billion. Moreover, the Chinese economy will also continue to make the

largest contribution to global growth throughout the 2020s (Kennedy, 2018).

The OECD (2018, 8) projects a continued slowdown in the real GDP growth globally, but the growth of developing countries will nevertheless remain significantly faster than that in industrialized countries. Consequently, the OECD's share in world production (i.e. the GDP), which already fell from 72% in 2000 to just below 54% in 2019 (in Purchasing Power Parity), will decline to 43% by 2060. China's share in world production will peak during the 2030s, reaching around 27%, whereas India's share will continue to grow. From the point of view of each individual country, the share of both countries will be significantly above the share of the US.

The study by Price Waterhouse Coopers (PwC, 2019, 19-20) predicts that the Chinese economy will have grown larger than that of the US before 2030, largely due to the narrowing of the productivity gap between the two countries and given the fact that China's population is four times larger. In terms of Purchasing Power Parity, China has been the world's largest economy since 2014 (followed by the US, the EU27, and India). The strong growth of China and India will further reduce the share of the EU27 in the world GDP. It is projected that the share of this economic entity in the global economy (expressed in the PPP) will steadily decline to the modest 9% in 2050.

The projections of the CEBR (2019, 75) indicate that China might become the world's largest economy a little later, i.e. in 2033, overtaking the United States with modern technologies as the engine of growth. This estimate is based on the relatively moderate growth rates, which are expected to average 5.4% in the period 2019-24, 5.2% in the period 2024-29, and 4.3% in the period 2029-34.

On the other hand, C. Huang (2020) emphasizes the fact that the perception that China is the number two global power and on the path to becoming number one is based on the two questionable assumptions - that Chinese strong growth will continue and that the GDP can be equated with the power of the country. This author states that the growth has slowed steadily since the peak of 2007, that there are doubts about the accuracy of the data, and that there are warnings that economic growth might stabilize at the US level, in which case China would never catch up with the US. Specifically, the GDP growth is closely linked to the government-led real estate bubbles, speculation and capital investment, which has resulted in excess capacities, as well as an increase in non-performing loans (NPLs). Even if China's GDP outperforms America's, it does not mean that China will be as economically powerful and wealthy as the US. In fact, the data about the total GDP do not refer to the well-being of individuals - the GDP *per capita* is usually used for this purpose. According to the IMF (2019) data, China's GDP *per capita* in 2019 was with the US $10,246, which is more than six times less than that of America's, primarily due to the higher productivity of US workers.

METHODOLOGY

The applied methodology first takes the IMF (2019) projections of the GDP of the three mentioned economies, whose estimated values are given in current dollars, throughout the year 2024. Then, it starts with the basic assumption (assumption number one) that nominal GDP growth in 2024 will continue over the next five - or six - years until 2029-30 (the fact that Chinese nominal GDP growth in that year will be lower than the average of 2020-24 is especially important). Given the fact that, in addition to real GDP growth, nominal GDP growth incorporates the GDP deflator and possible exchange rate fluctuations, this approach might be methodologically acceptable. However, given the fact that a faster-growing economy generally tends to have greater variations in nominal and real GDPs in absolute terms, an alternative approach (assumption number two) is applied, where China's nominal growth rate is significantly knocked down (by an average of 0.7 %) in the period after 2024, simultaneously leaving the figures for the US and the EU27 unchanged. An even more conservative approach (assumption number three) is then applied, where China's nominal (and actually real) GDP growth after 2024 is phased out by the additional 0.2% every year all the way to 2030 (the

year in which China's real GDP growth is estimated at a relatively modest 4.3%). For the EU27, i.e. the EU without the UK, the GDP data are calculated by simply subtracting the UK's GDP, after which the earlier principle - retaining nominal growth from the last projected year for the EU by the IMF - is then applied, which can be considered as an optimistic assumption for the EU.

Based on the above IMF projections and the authors' additional calculations for the three observed economies, including the calculations of their shares in the world GDP (at current dollars and in Purchasing Power Parity international dollars), the obtained results are practically in line with much of the previously cited literature. Actually, starting from Assumption 1 (the constant nominal growth of China's GDP of 8.1% after 2024), Assumption 2 (the constant nominal growth of China's GDP from 7.4% after 2024) and Assumption 3 (the constant decrease of China's nominal GDP growth by 0.2%, 0.4%, 0.6%, 0.8%, 1% and 1.2% by 2025-2030, respectively, being relatively modest 6.9% in the last observed year), then in 2029 (Assumption 1), or in 2030 (Assumptions 2 and 3), China's GDP would surpass the GDP of the US. When the EU27 is concerned, it would already happen by the year 2022 (Figure 1). The conservative assumptions (namely Assumptions 2 and 3) result in a marginally different result: the shift of the catch-up year to 2030, which indicates the fact that the trend of the strong growth of the Chinese economy and its rise to the pedestal of the world can hardly be stopped.

According to Purchasing Power Parity, China's GDP will roughly equal the cumulative GDP for the two observed western economies (93% higher than that of the US and 113% higher than the EU27's GDP) in 2030, under the basic assumption (Assumption 1). The result is only slightly less impressive considering the other two assumptions (Figure 2).

Additionally, China's GDP data seem slightly better after the modifications in the fourth Chinese economic census. Specifically, in November 2019, China revised its GDP for 2018, based upon the results of the new national census. Consequently, the GDP increased by 2.1% in 2018, as the size of the economy is thought to be undervalued in the service sector, due to the recent rapid transition to the digital and services sectors (Tang, 2019). This revision was not included in our

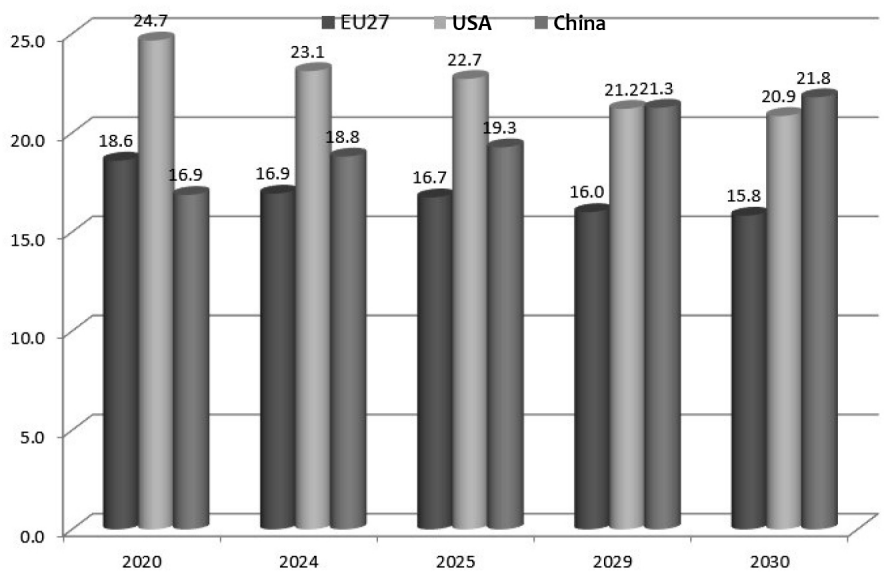

Figure 1 The share of the leading economies in the world GDP

Source: Authors, based on the IMF, 2019

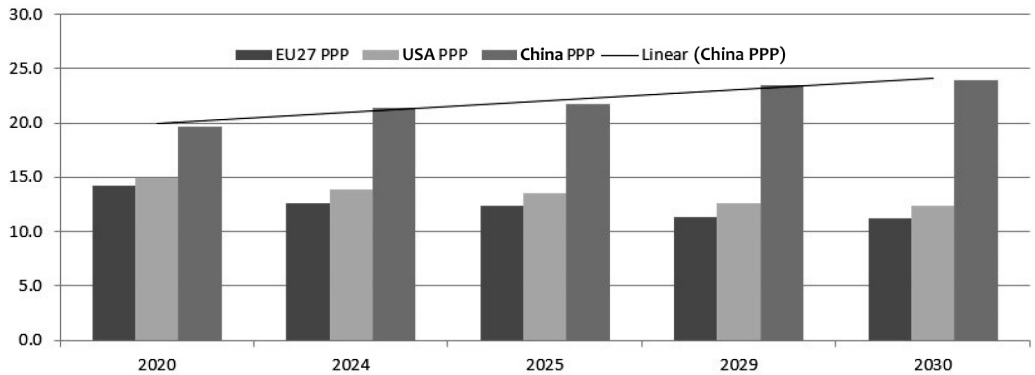

Figure 2 The Share of GDP of the US, China, and the EU27 in the world GDP, expressed in Purchasing Power Parity (PPP)

Source: Authors, based on the IMF, 2019

projections, and this figure could be significantly higher than the expected fall in the GDP due to the Coronavirus. Associated with this, the announced more expansive fiscal and monetary policy should give effects. Namely, after a significant reduction in GDP growth in the first quarter of 2020 (by half or by one-third), the annualized decline in GDP growth will be limited to 0.5-1 percentage points, which would mean a still high growth of 5% to 5.5% in 2020 (June, 2020). In addition, there are minimal changes in the last IMF (January) Report (2020), looking at the estimated GDP growth rates of the US and the Eurozone (a 0.1% decrease in 2020) and China (a 0.2% increase in 2020, and a decline of 0.1% in 2021).

Interestingly, for the first year for which there are comparable data (i.e. for the year 1980), in terms of the PPP, the EU27 economy is as much as one-third larger than the US economy (34.2%, to be more precise), while in the same year, the GDP at market rates is approximately equal (the EU has a GDP lower by a tiny 1.5%). It then moves the divergent movement of the two economies at the current market rates, although the fact that the EU27 population is significantly larger than the population of the US (roughly by one-third), implying significantly higher *per capita* income in the US, should also be emphasized. Despite almost constant slower GDP growth, the PPP GDP of the EU27 remains higher than the US until 2010, being almost 5% lower in 2020. Due to the fluctuations in the dollar exchange rates against the euro (and formerly the mark, the franc, and other EU currencies), the GDP in the exchange rates fluctuates significantly, but in most years America is ahead of the EU27, so the significant weakening of the EU27 started after having reached a high level of 2007 (an 11% higher GDP than in the US). Specifically, this decline may be linked to a significantly better US response to the Great Recession, namely Washington's more expansive fiscal and monetary policy compared to Brussels', and to the strengthening of the dollar as well. Already in 2015, the EU27 accounts for only three-quarters of the GDP of the US, which is also the case for 2020.

Since 1980, the tendencies of the sizes of the two western economies towards China have been an unprecedented path in the history of civilization, owing to the dramatic economic growth of the world's most populous country. Namely, China's economy had a share of only 2.7% (2.3%) in the world GDP (the GDP PPP) that year, and it increased its share to 3.6% and 7.4% twenty years later. Growth continues at a marginally slower pace, even in 2015, when China accounted for 15% (17%) of the world GDP. In 2020, its share is estimated at almost 17% or nearly one-fifth of the global GDP by the PPP. At the same time, the two western economies (the US and the EU27) are recording different trends, with a share in the world GDP at market rates of 25.6% and 28.7% in 1980, 30.3% and 21.5% in 2000, 24.4% and 18.1% in 2015 and 24.7%

and 17.7% in 2020, respectively (and significantly lower and more declining shares when it speaking about the PPP GDP).

In the long run, the estimates they published in the study China 2049 (Dollar, Huang, & Yao, 2020, 7-10), the authors suggest that China's economic growth rate is likely to slow to 2.7-4.2% in 2049, with its GDP *per capita* increasing to about two-thirds of the US. In that case, China would overcome the middle-income trap by successfully achieving a high-income status, while becoming by far the largest global economy.

A RELATIVE EU DECLINE

A conspicuous relative decline of the EU economy began in the late 1990s, and the Great Recession of 2008-09, which lasted much longer in the peripheral EU countries, only revealed the extent of the problem, especially in the EU Member States with a high balance of payments deficits, especially the 'peripheral' EU countries, the so-called PIIGS (Portugal, Italy, Ireland, Greece, and Spain). The relative decline started before 2000, but in the years before 2008, cheap and unreasonable lending concealed the weakness, i.e. the decreasing competitiveness of the European industry.

A decline in the EU's share in the estimated global GDP has been going on for decades and is likely to continue. According to the IMF (2019), the declining dynamics of the European GDP are obvious. Specifically, the EU27's share in the world GDP (calculated at market rates) fell from 21.7% in 2000 to the estimated 18.6% in 2020, and the projected 15.8% a decade later (when China would already account for 21.8% of the global GDP and the US would account for 20.9%). Viewed in terms of the GDP by the PPP, the decline is even more drastic for the EU27: from 21.5% in 2000 to the estimated 14.2% in 2020, and 11.2% in 2030, while China's share in the same year will be 23.9%, and that of the US 12.4%. The reason for the relative decline of the EU is the faster average growth of both the US and, especially so, the Chinese economies in the period 1979-2019. Namely, according to the authors' calculations based on the real GDPs of the three economies, the average real growth rate of the US GDP in those four decades was 2.6%, compared to 1.9% for the EU, while the growth of China's economy was impressive 9.4% (and most other developing countries have had a significantly faster economic growth than the EU in recent decades as expected, given the lower starting position).

The relative decline of the EU is also evident through its share in the global FDI, the global industry, and in the world trade as well. For example, the EU share in the world merchandise exports fell from 18.2% in 2000 to 15.2% eighteen years later. Even so, the EU (with a share of 15.1% in the global merchandise imports) is still the largest foreign trade power (ahead of China and the US, accounting for 16.4% and 10.9% of the world merchandise exports, respectively, and with a share in the world merchandise imports of 13.8% and 16.4%, respectively), with the merchandise exports worth EUR 1956 billion and the merchandise imports of EUR 1980 billion (European Parliament, 2019). Solid growth in commodity trade (by 3.5% in euros) continued in the first eleven months of 2019 (Eurostat, 2019).

Related to the above, investors note that the EU stock market has consistently been weak for two decades, implying a lack of faith in the Union's long-term prospects. D. Moyo (2020), however, believes that there are four key areas where the EU could establish itself as a global player. The first is trade, because even after Brexit, the EU will have a huge market (still the largest in the world) and it is still an extremely desirable trading partner. The second area in which the EU can be a global leader in regulation is Big-Tech, where the EU has in many ways already established itself as a regulatory pioneer. The third area for the vital global role is mediation between the US and China, which are in a trade and technological war, where Brussels could attempt to reconcile even the ideological conflicts of American (neoliberal) capitalism and the Chinese state (capitalist) model. The fourth area is the defense of the so-called Western values, especially individual economic and political freedoms. Related to this is the thinking of J. Fischer (2020), who believes that the EU can no longer afford to lag behind in terms of technology or geopolitical power, especially given its practical responsibility for leading the rest of

the world with respect to climate change, which will require technological and regulatory innovations.

The Germany-led reduction of the foreign policy to an economic gain (trade) implies that the EU does not have a significant level of relations with individual regional economic powers and China. Looking at the world as a market for ideas, the EU is in a unique position to offer a vision of solving the ongoing problems and the ways to govern the world, without a negative image like the US. The preservation of the cultural identity, the existence of sustainable political forums to solve problematic issues and multinational crime suppression are all the issues in which the EU stands today and which Brussels occasionally manages to make the primary issue of world governance (Igrutinović, 2012, 33).

K. Stoychev (2020) emphasizes the fact that the US and China will always be rivals in the fight for global domination, while the EU (and Russia) will not play such a game and would prefer to rely on soft power, aided by persuasive military power, which will inevitably bring them closer together. Namely, no matter how divided they might be, the EU elites will have no choice but to build a separate military capacity. Obviously, there is the initial phase of building military independence, a decade-long process that will be presented as complementary to NATO (and will remain so until the EU has received its sophisticated weapons and systems under development, including cyberspace). This suggests that, from a geopolitical point of view, the EU might prove to be less prepared to support the US foreign policy actions, something already hinted at during the Second Iraqi War. The occasional lack of foreign or military support for America is mostly the result of the public opinion concerns about the lives of soldiers, rather than the willingness to radically change political relations with the United States. For now, the EU is making efforts trying to change the global governance system by systematically co-opting the "revisionist" factors (China, Russia, Iran). The fact that EU countries occasionally sell the high-tech technology that has both civilian and military applications complicates the security role of the US in Asia (Nye, 2014).

US DILEMMAS ABOUT THE RISE OF CHINA

The US is the leader in innovation and technology, has deep financial markets and the world's strongest military, virtually guaranteeing the US global primacy for a foreseeable future. Although China has established itself as a huge economic and political counterweight to the US, largely occupying a critical position in global value chains and, increasingly, as the major source of FDI especially through ambitious transnational infrastructural projects (such as the "Silk Road"), Washington is still able to dominate the global order. However, it is clear that the constant rise of China is a concern for the US, the topic well-known to international relations theorists. The most prominent of them, such as Alfred McCoy, John Mearsheimer or Barry Buzan, believe that China's strong economic upswing will disrupt the current balance of power, i.e. the US dominance, first in East Asia and then globally. John Mearsheimer believes that, if Chinese growth continues (even with a slight slowdown), the US will face a geopolitical competitor much more serious than the Soviet Union used to be. What he sees as the inevitable outcome is a repeat of the policy of "containment", this time towards China, preferably in cooperation with the successor to the USSR: Russia (Mearsheimer, 2016).

A strong slowdown in productivity is a major problem for the US economy, caused by insufficient innovation and, consequently, corporate investment, workers' inadequate qualifications and the long-term unsustainability of the pension and healthcare systems (due to the rapidly aging population), all of which are the structural problems where it is unlikely to achieve more significant improvements in the short term. The problem is that China has been brought closer to USA and reached the countries of Western Europe, even in highly-sophisticated technologies, e.g. artificial intelligence. In addition, the Chinese are no longer copywriters, but rather those who are slowly taking primacy according to the number of patents.

The trade war, whose truce is likely to last until the November 2020 US elections, also marks the end of the US policy that has lasted since Nixon's "inauguration" back in the early 1970s. The belief that modernization

would encourage a more liberal China, which would be pro-American, is gone. In Washington, China's economic strategy is considered to be an integral part of the hidden overall approach of China's ruling elite in their "Grand Strategy". The White House believes that, whether through the control of the economy through the "Silk Road" or through state-owned enterprises, China is willing to use the huge capital it has in trying to gain control of a range of strategic assets, such as the global telecommunications network, via its companies (Huawei). Therefore, the proponents of China's isolation in high technology believe that China must be actively prevented from catching up with America's advanced technology. This is compounded by the increasingly pronounced economic and technological separation of "the US and China (decoupling)" as Washington seeks to "pull" China out of global distribution chains. The new Cold War could begin with the division of the global internet (the "splinternet"), i.e. through the technological separation of the two economies, with dangerous military and negative economic consequences (the isolation of the world's leading industrial producer with the largest consumer market would severely disrupt global supply chains).

The US attempt to trade war and, above all, partly block the export of high-tech products and technologies is probably the last serious US strategic action. In this context, R. Boxwell (2020) considers the trade armistice signed in mid-January 2020 only as instantaneous and also considers that Trump has achieved the best "divorce" he could, consequently discovering that the lifestyle with a new bipolar reality will be one of the biggest challenges in the forthcoming decades. Eventual failure, or partial success, would mean that the technological "catch-up" of the two largest economies is inevitable and that America's ability to dominate the global order will be dramatically narrowed. Otherwise, the success of the US would imply maintaining the existing world order, where Washington has the dominant role and benefit.

Militarily, through its Indo-Pacific strategy developed in full partnership with Japan and other allies, the US administration is taking action to indicate to Beijing that the cost of any attempt by China to dominate the region will increase. Yet, these moves have not significantly altered Chinese actions in the South China Sea and beyond, nor have they reversed, for the US, the unfavorable changes in the regional balance of power (Edel & Brands, 2019). This is why many analysts, such as D. Lane (2019), propose a change in the approach and a move towards acknowledging China's rise, and incorporate the country into the hegemonic core, thus accepting the fact that the global economic pole is going to the east and that ignoring Beijing's interests may be too expensive.

CHALLENGES FOR BEIJING

Since 1978, China has been implementing export-oriented industrialization, liberalizing the private sector, accelerating FDI inflows, and integrating into global trade flows. The real secret lying behind Chinese economic dynamism was "directed improvisation": experimentation at the local level guided by the central government's directives. Investment is undoubtedly the major driver of growth, accounting for as much as 45% of the GDP in 2018, despite a slowdown since the end of 2013 (Yongding, 2018). With such a share of investment in the GDP, and thus the country's ability to forgo the current spending in favor of savings, every other economy would achieve growth rates similar to China's. Given the particularly strong share of energy investments, based on a large sample of the data covering the period 1953-2012, F. Yuxian, Y. Xiaoling and H. Songke (2014, 98) investigate the short- and long-term impact of energy infrastructure investments on China's economic growth. There is a clear long-term equilibrium link between this type of investment and economic growth, with the strongest impact of this type of investment on the GDP growth in the second year, and with this positive impact persisting for full four years. China's economy is recording slow, but favorable structural changes. For example, while the so-called secondary sector of the GDP (predominantly industry, including construction) represented as much as 48% of China's GDP and the tertiary sector only accounted for 42% of the GDP in 2006, as early as in 2018, 41% of the

GDP accounted for the secondary sector and 52% accounted for services. These are partly related to the increased urbanization of the country, as shown by Y. Wangping and L. Xiaolu (2016, 211), indicating that the quality of urbanization in China has improved since 2004, thus reflecting positively on the economic development of the country.

The continuation of the expansionary fiscal and monetary policy is what can be expected in the years to come, coupled with the difficult job of economic policymakers in the wake of US sanctions in the ongoing trade war. Above all, it will reflect in the continued rapid growth of low-cost lending (largely to state-owned companies), which is faster than economic growth, which will remain a strong instrument of the Beijing Government in achieving high GDP growth. Specifically, extensive loans and fiscal stimuli sustain many factories and construction sites. At the same time, Beijing's attempts to internationalize its currency have but modest effects, in large part because of the possibility of implementing interest rate and exchange rate, or monetary, policies, due to the eventual full convertibility of the Yuan, would significantly limit the proactive (Keynesian) economic policy. It is certain that the full convertibility of the Chinese currency would imply additional efforts to maintain stable economic growth and the Yuan exchange rate, as well as low inflation (Jankovic, 2018, 85).

The new version of the old famous "Made in China 2025" plan, which was quietly dropped from official announcements amidst stiff opposition from the US (who thought the outlined ambitious goals were largely reliant on the government subsidies and forced technology transfers at the expense of the US companies), was unveiled at the end of November 2019, singling out a group of the companies that will become the "2025 National Sector Champions". This new document provides the evidence that the trade war and the aggressive US policy have done little to change China's intention to dominate new technologies with government support (Wang & Behsudi, 2019). Specifically, China aims to increase its reliance on the domestic production of the key components, including chips and control systems, to 75% by 2025, thus reflecting Beijing's determination to reduce its dependence on imports. By the way, the "Made in China 2025" plan was China's idea to improve its high-tech industry and reduce its dependence on imports, as Washington's increased restrictions on advanced technologies being exported to China made Beijing frustrated by its reliance on foreign suppliers.

Thus, China should be expected to adhere to its strategic patience policy simultaneously implementing the necessary reforms, giving priority to the maintenance of social and political stability. The reality is that the fundamental civilizational tensions between the US and China could continue in the future, and the possible outcome is, among other things, decoupling in the digital world, which would result in a serious lag behind globalization. This very dangerous scenario for Beijing, where China would be partially isolated from the West, would force Beijing to significantly cooperate with its Asian neighbors.

R. Dalio (2018) thinks it is wrong to view China as a communist country; instead of that, what is happening in China is "state capitalism", in which strategically important companies are supported in order for them to become very competitive, with an economy full of entrepreneurship and markets that have a great freedom. Although different, China is governed similarly to Singapore; more from top to bottom, with the primary goal of being competent in decision-making places. He says that, although China is a competitor and although it will be significantly larger than the US soon, it is not at all certain that the capacities of either country will do excessive harm to the other over a very long timeframe.

CONCLUSION

Based upon the projections of future GDP trends for the US, China, and the EU27 in the period 2025-2030 (based upon the past trends and the IMF projections), our calculations bring us to the year (2029 or 2030) in which China might become the world's largest economy, surpassing the US. This confirms the basic research hypothesis, since changes in the economic size of the major global actors, as a rule, trigger

geopolitical consequences. An additional contribution reflects in addressing an important topic for our academic public, which, despite its many implications for our country, receives virtually no attention at all, for which reason this paper might encourage domestic authors to further elaborate on the topic in future research. Introducing the EU27 - as a major player in the overall geo-economic equation, albeit less important than the US and China - into the analysis gives the paper additional significance.

The limitation of the presented research study certainly implies its focus on only one indicator (or two indicators), which, although being the most important indicator of the overall size of the economies, is insufficient to consider the overall geo-economic position of the major global players. In addition, estimating future GDP trends both by the IMF and the authors is always a difficult task to do, which carries a high risk in terms of precision.

What is clear from all this is the fact that Beijing wants a more significant role in creating the inclusive and equitable global order which is in line with its national interests and worldviews and which can only be brought to reality if that country, with the new status, is seen as legitimate in the eyes of other nations. In this context, China's problems are, among other things, subsidizing monopoly state-owned enterprises and a relatively closed market for services. The additional problem is political legitimacy, i.e. the negatively perceived authoritarianism of the regime in the West. Indeed, China does cooperate with the US on global climate change, the Ebola virus, and North Korea's nuclear program, but this is far from sufficient (Economy, 2017).

The violent transitions of power, in which the rising powers (like China today) overthrow the leading power on the throne (the US), thus creating a new order with a large and violent burst, are not inevitable. In fact, there are a significant number of generally accepted and powerful international institutions (the UN, the EU, the WTO) in the world today that have had relatively great success in amortizing crises and regulating relations between countries (Igrutinović, 2012, 35).

While some authors (Brooks & Wohlforth, 2008) believe that the unipolar world is still viable and that, as such, the same will be dominant in the near future, it seems that there are more convincing theses about the forthcoming multipolarity, i.e. more balanced power centers (Gnessoto & Grevi, 2006). The bipolar world could emerge as a rerun of the Cold War (China instead of the USSR).

What may probably be expected is a continued trend of the dispersion of authority and power globally, which will be accelerated by the emergence of new global players. The United States will almost certainly remain the leading global power for decades thanks to its ability to push its priorities, its military supremacy and the dominant cultural pattern via strong diplomacy and a network of alliances. While the EU will continue to focus on itself, China's growth will have amplified global implications, fueling the move towards multipolarity or bipolarity. The role of the state may realistically be enhanced, especially in the economy. Unlike in the second half of the previous century, the US has a limited capability of taking unilateral actions, while China benefits greatly from its current geopolitical arrangement and globalization (Nye, 2014).

By all accounts, the "big game" will continue to accelerate throughout the 2020s. Economics will largely determine the new geopolitical constitution. An important, but not crucial, moment will be at the end of this decade, when there is an increasing certainty that China will take the place of the leading global economy.

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THE ROLE OF THE GOVERNMENT IN THE PROMOTION OF CORPORATE SOCIAL RESPONSIBILITY

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The role of the Government in the implementation of the Corporate Social Responsibility (CSR) concept into the business policy in the field of recycling in the Republic of Serbia is analyzed in this paper, with a special overview of the End-of-Life Vehicle (ELV) and Waste Electrical and Electronic Equipment (WEEE) recycling. The research has shown that quite different government approaches to these two independent waste streams are the most responsible for the differences in the amount of the recycled products in the analyzed period. The fact that the so-called self-regulatory CSR observed in the recycling of the used cars in the previous period caused a substantial reduction in the volume of official car recycling is pointed out herein. This indicates that, although car recycling is a financially profitable investment, it is not enough to motivate potential investors to carry out this process through official waste streams in compliance with regulations. On the other hand, in the field of e-product recycling, CSR facilitated by the government has further motivated investors, resulting in an increased amount of recycled e-products.

Keywords: corporate social responsibility, the government, incentives, recycling

JEL Classification: M14, Q53

INTRODUCTION

Nowadays, the modern business environment rewards the economic actors who act responsibly not only towards their stakeholders, but also towards society as whole. The implementation of the Corporate Social Responsibility (CSR) agenda into the business policy is more closely related to social and ecological outcomes, whereas a profit is still an important, but not dominant, business result. CSR is often used as a vehicle for wealth creation (Moon, Murphy & Gond, 2017), which engages both the socio-economic and ecological principles with the basic interests of the company's stakeholders. This is also considered as the triple bottom line, i.e. the economic, environmental and social perspectives (Elkington, 1994). In such a business environment, CSR is also used as an instrument for mediation between different stakeholders' mutually opposed interests, all that being directed towards solving the agency problem.

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Bearing in mind the basic forms of CSR - i.e. *implicit* and *explicit* CSR (Matten & Moon, 2008), the paper tries to identify what the key contribution of the Serbian Government to the incorporation of the CSR agenda into the business policy of modern corporations is. In relation to that, a self-regulation system in the form of explicit CSR is analyzed, on the one hand, whereas an incentive-oriented approach is considered as a form of implicit CSR amongst recycling companies, on the other. The relationship between CSR and the government is very important when considering the implementation of the CSR agenda, so the paper tries to identify the most suitable implementation pattern in the recycling industry. Even though recycling activities generate a significant amount of socio-economic benefits, the stimulation of recycling facilities should exert a long-term influence on the implementation of the CSR agenda in all other companies.

The focus of this research study lies on End-of-Life Vehicle (ELV) recycling, on the one hand, and Waste Electrical and Electronic Equipment (WEEE) recycling, on the other, since different CSR approaches are applied. By comparing the amount of the recycled products over time, how different approaches in the field of CSR affect economic actors' activities is observed. The main goal of the research study implies the determination of the basic relationship between the state and CSR, with a special emphasis on the recycling industry, as well as an analysis of the impact of such a relationship on the amount of recycled products and the creation of environmental benefits in the Republic of Serbia. Regarding the importance of government intervention in this particular field, the paper analyzes the consequences of intervention in the WEEE field and almost the absence of the role of the state in another, i.e. ELV field, for the intensity of the recycling process in both fields.

The identification of the CSR concept, as well as the basic types of the relationship with the government within the cabinet research, is conducted through an analysis of the relevant literature in this field. While analyzing this concept and identifying the basic types of the relationships between the state and CSR, numerous authors' approaches are followed (Fox, Ward & Howard, 2002; Matten & Moon, 2008; Gond, Kang & Moon, 2011; Rasche, Morsing & Moon, 2017), and the same are applied to the current situation in the field of recycling in the Republic of Serbia.

According to S. Fernandno and S. Lawrence (2014), the theoretical framework for understanding CSR is based on the three theories, namely: legitimation theory, stakeholder theory, and institutional theory. According to legitimation theory, the functioning of organizations is based on respecting norms and rules, so that there is the so-called "social contract" for governing CSR between society and organizations (Deegan & Samkin, 2009). According to this theory, the strategies that companies may use are usually based on reporting and disclosing information on the incorporation of CSR principles into the business policy. Stakeholder theory especially focuses on a broader community as one of companies' main stakeholders, given the fact that the company wants to know how the daily business of the organization affects a broader socio-economic environment (Branco & Rodrigez, 2008; Carroll & Buchholtz, 2009).

In this paper, the focus of institutional theory is used to better understand the CSR concept, since the state exerts an active influence on the process of the incorporation of the CSR basic principles into the business policy of recycling companies through its institutions. In this manner, through its so-called acceptable economic behavior, the state rewards those economic entities that respect the rules and the CSR basic principles (Carpenter & Feroz, 2001), simultaneously punishing those who do not respect those principles.

The official reports of the Environmental Protection Agency of the Republic of Serbia, in which data about the recycling of all the types of waste are published, were used to analyze the situation in the field of ELV and WEEE recycling. Finally, the collected data were processed and compared in order to illustrate how the different approaches of the Republic of Serbia with resepct to the application of the CSR concept lead to significant differences in these recycling fields in terms of the volume of recycled products.

The paper is based upon a case study of the application of the CSR concept among companies in

the recycling industry in the Republic of Serbia. Due to a significant amount of the socio-economic benefits created in this process, recycling companies are the main implementers of the CSR concept in the Republic of Serbia. In addition to that, the contribution of the Government to the creation of a positive business environment for improving the CSR concept is further closely analyzed, placing a special emphasis on the field of ELV and WEEE recycling. In these fields, the approach applied by the state is significantly different, so the expected results of the application of this concept are different according to that. Cabinet research is applied in the analysis of the current situation in the field of ELV and WEEE recycling and in the determination of the main causes that led to the current state of the matters, too. Strong government support to both ELV and WEEE recycling should, in the long run, contribute to the further development of recycling companies as leaders in the CSR field, and to a substantial reduction in environmental pollution as well. Accordingly, there are three hypotheses that will further be tested that can be identified, namely:

H1: The relationship between the government and socially responsible business is important in the recycling field, since the market in this field is incapable of independently, without the intervention of the state, coordinating the CSR agenda incorporation process between companies in the recycling field.

H2: In the field of ELV recycling, self-regulatory socially responsible business causes a slow devastation of the official flows of car recycling in the Republic of Serbia.

H3: Through the subsidy system in the WEEE recycling field, socially responsible business as facilitated by the government leads to an increase in the amount of recycled e-products.

The paper is structured as follows: after the Introduction, the second section presents the CSR concept and its possible relationship with the government; the concepts of implicit and explicit CSR are identified by emphasizing their basic differences with respect to the political, financial, educational, labor and cultural systems in which the concepts are developed. When modern trends in CSR development are concerned, the basic relationship between CSR and the government is analyzed in a broader context of improving the CSR initiative among corporations in the recycling industry. In the sections to follow, ELV recycling is analyzed from the perspective of the intervention of the government of the Republic of Serbia. The government approach is quite different in the WEEE recycling field, which is the subject matter of examination in the third section. In the final section, the concluding remarks are given, and the final results, the key research contributions, potential limitations, as well as implications for future research are presented.

CORPORATE SOCIAL RESPONSIBILITY - THE CONCEPT AND THE RELATIONSHIP WITH THE GOVERNMENT

Due to rising environmental problems in the world, the absence of responsibility for social problems, and a focus on a profit without taking into consideration other nonfinancial indicators, Corporate Social Responsibility has emerged as a possible solution to the following issues. In those circumstances, many corporations use the CSR concept as an instrument for the implementation of more responsible agendas in their business policies.

Defining CSR is not an easy task to do, taking into account its complexity and a broad field of its implications. It is essentially contested that the concept "is appraisable" (Moon, Crane & Matten, 2005, 433-434). Regarding the broad field of its implications, CSR can be considered as an "umbrella term", too (Matten & Crane, 2005), encompassing several different perspectives and a large number of different actors. Some authors consider the CSR activity to be philanthropy, but the meaning of the concept overlaps with the activity of charitable companies (Rashe *et al*, 2017). Even though CSR emerged as a neo-liberal concept (Moon, 2005), it has matured over time into a more comprehensive concept inclusive of triple bottom line management (Steurer, 2010). In the current business environment, where a profit is still

the dominant indicator of performance, it is very hard to expect from business actors to implement CSR principles on a purely voluntary basis without taking into consideration the profitability of the whole process. The optimal economic ambience should encourage all economic actors to accept the basic CSR principles and engage the business to the society.

The relationship between the government and CSR is essential when the creation of the optimal socio-economic ambience for the implementation of a new CSR agenda is taken into consideration. According to J. P. Gond, N. Kang and J. Moon (2011), there are five basic types of relationships between the government and CSR, when the level of the influence of a corporation, on the one hand, and the level of the influence of a legal framework, on the other, on the creation of that ambience are concerned. These relationship types are as follows:

- CSR as self-government,
- CSR facilitated by the government,
- CSR as a partnership with the government,
- CSR as mandated by the government, and
- CSR as a form of government.

Furthermore, T. Fox, H. Ward and B. Howard (2002), and A. Crane, D. Matten and J. Moon (2008) identify yet another Government - CSR relationship, i.e. CSR as endorsed by the government. CSR principles are usually accepted on a voluntary basis. In those circumstances, there is no need for an additional intervention of the government, since CSR is self-regulated. On the other hand, the CSR activity could be shaped by the government (the so-called CSR facilitated by the government) in an ambience in which the whole process is strictly regulated by the legislative framework. In some business environments, it is impossible to regulate the CSR activity at a voluntary level, and mandatory regulation is required. The government should accept the obligation for that, and use the legislative mechanism to delegate economic actors' responsibility agendas.

Taking into account institutional theory and the basic classification of the CSR concept into implicit and explicit (Matten & Moon, 2008), CSR can be assumed to be self-regulation as a more explicit type of regulation, whereas implicit CSR is more based upon the strong government role in the concept implementation. Firm regulation is often based on incentives or a direct influence on other CSR-related activities (Rashe *et al*, 2017, 6). Explicit CSR is mainly internally oriented, since corporations have a discretionary right to create the optimal business polices that will meet CSR and business targets. The business activity mainly based on respecting the externally defined rules and the legislative framework is the implicitly oriented CSR approach.

The business activity of the economic actors operating in the recycling industry directed towards environmental protection could also be observed as socially responsible. In such an economic ambience, the government should encourage all recycling facilities to expand their activity, since it generates net socioeconomic benefits and leads to a more sustainable future. The three main means by which the government may promote or encourage CSR can be identified. They are exhortation, facilitation and partnership (Fox *et al*, 2002). In the first case, the government can use its imprimatur in order to encourage all economic actors to create a more responsible business environment. Furthermore, by setting a clear business framework, the government can also facilitate CSR (Moon *et al*, 2008, 21). Building a partnership for the implementation of the CSR concept by using organizational, fiscal and authoritative resources is yet another way how the relationship between the government and the CSR concept may exist.

In order to emphasize the important role of the Serbian Government in this particular industry, the current conditions in the ELV field, on the one hand, and in the WEEE sector, on the other, will be observed because they are associated with quite different CSR approaches. CSR as self-government can be regarded as the first type of the relationship, while CSR facilitated by the government can be regarded as the second type of the relationship.

CORPORATE SOCIAL RESPONSIBILITY IN THE FIELD OF END-OF-LIFE VEHICLE RECYCLING

Talking about environmental protection, the development of the recycling industry is one of the key priorities towards reaching a more responsible future in the majority of post-transition countries, as is the case with the Republic of Serbia. Due to the fact that the living standard is at a low level, the citizens of the Republic of Serbia are often forced to buy already used products, and there is a similar situation in the field of used vehicles. With an average car age exceeding 15 years (Agencija za bezbednost saobraćaja, 2018), a large number of vehicles in use in the Republic of Serbia are very close to the recycling phase. Older vehicles pollute the air more intensively, which creates a burden on the environment and citizens' health, especially so in the territories of large cities.

In those circumstances, the government plays a crucial role, since there is no proper market mechanism for the prevention of the negative effects of pollution. When all other polluters in cities are concerned, one of the key contributions to the current condition in the field of air quality is that addressed to traffic, special attention being paid to public and private transportation vehicles. According to the latest reports on the quality of the air, in some winter periods at the beginning of 2020, Serbian big cities were among the ten most polluted cities in the world (World Air Quality Index, WAQI). This situation requires a strong intervention and the stimulation of responsibility, which can be addressed to the CSR concept. The Serbian Government should encourage all economic actors, with a special focus on recycling companies and citizens, to prevent pollution. Thus, the current relationship between the Serbian Government and CSR in the field of ELV recycling could be considered as *CSR as self-government*, since there is almost no clear intervention of the state in this field.

The government program for replacing old vehicles with the new that has been implemented before might serve as a possible way to intervene in order to solve the existing problems. Enacting the special *Decree on the Conditions of Conducting and Manner to Conduct the Subsidized Purchase of the Cars Manufactured in the Republic of Serbia Replacing Old Cars With the New in 2010* (Službeni glasnik RS, 2010a) appeared to be the key solution to this problem in the past. With the aim to increase safety in transportation and prevent potential pollution by replacing old cars with the new, the Serbian Government stimulates all potential car owners to hand over their old vehicles to official car recycling plants in order to be given a 1000-euro discount for buying new models *Decree on the Conditions of Conducting and Manner to Conduct the Subsidized Purchase of the Cars Manufactured in the Republic of Serbia Replacing Old Cars With the New in 2010* (Službeni glasnik RS, no. 3/2010a, Article 3). Financial stimulation increases the number of new registered road vehicles, and simultaneously the number of ELVs. In the period from 2009 to 2011, both the number of the recycled and the number of the sold new vehicles increased, the highest number of ELVs having been reached during 2010. Taking into consideration the fact that there is no base for deregistered vehicles in the Republic of Serbia, unlikely in some EU countries, the statistical data from the past for measuring the number of ELVs have to be used. In order to estimate the number of ELVs during the period from 2007 to 2018, the inventory projection method is used. The total number of ELVs is calculated by applying the Formula 1 (Ratković, Simić i Vidović, 2008) to the official statistics on the number of registered vehicles. The number of used vehicles is calculated by comparing the number of the total registered vehicles and the number of newly-registered cars in two consecutive periods. The ELV number is obtained by applying the following formula (1):

The number of ELVs in the year (*t*) = (The registered vehicles in the year *t-1*) - (The registered vehicles in the year *t*) + (The newly-registered new vehicles in the year *t*) + (The newly-registered imported vehicles in the year *t*) (1)

The results of the inventory projection method are shown in Figure 1.

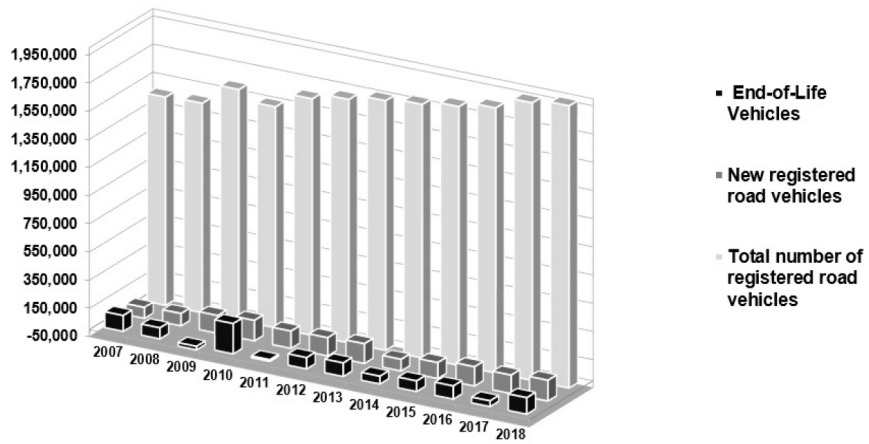

Figure 1 The total number of the registered, new registered road vehicles, and End-of-Life Vehicles in the period 2007-2018

Source: Authors

During the observed period, the total number of the registered vehicles increases, whereas the number of ELVs does not follow that trend. Numerous factors affect the generation of ELVs. According to Figure 1, it can be concluded that the most influential factor relates to the incentives for buying new vehicles. More than 200,000 vehicles were discarded and became ELVs during 2010, when the "Replacement of Old Cars With the New" Program reached its peak. In that broader socioeconomic context, this intervention of the Government can be assumed to be socially responsible, since it led to the benefits for both society and private investors in recycling facilities in the long run. In the period after 2011, the support of the state in the form of incentives for buying new cars was cancelled. Without that intervention, the strength for the further encouragement of both the legal recycling of ELVs and the sale of new vehicles also decreased.

The Environmental Protection Agency of the Republic of Serbia annually publishes reports on waste management, and the current conditions in ELV recycling are presented in Figure 2.

Comparing the number of the legally recycled ELVs with the total volume of the imported cars, it can be concluded that only a small number of all the vehicles are properly treated in legal recycling facilities. The current business environment does not stimulate ELV recycling, even though the *Rulebook on the Adjusted Values of the Stimulation Funds for the Reuse, Recycling and Utilization of Certain Kinds of Waste* (Službeni glasnik RS, 2019) provides some financial support. The absence of the appropriate government support in the form of implicit CSR in the ELV recycling industry will decrease benefits for society as a whole in the long run. Although ELV recycling is profitable business from a financial point of view, further financial stimulation is eligible, since the whole process generates huge socioeconomic benefits for society.

The largest number of the ELVs treated in the Republic of Serbia are beyond legal waste streams, without respecting the rules provided by the special *Rulebook on the Method and Procedure for Waste Vehicle Management* (Službeni glasnik RS, 2010b). In that way, losses are multiple. First, legal recycling facilities lose a potential profit, while society gains no socioeconomic benefits. Second, dismantling scarp vehicles without respecting the rules generates a burden upon the environment. Furthermore, policy makers lose important information about the total number of recycled ELVs, which may bring about an

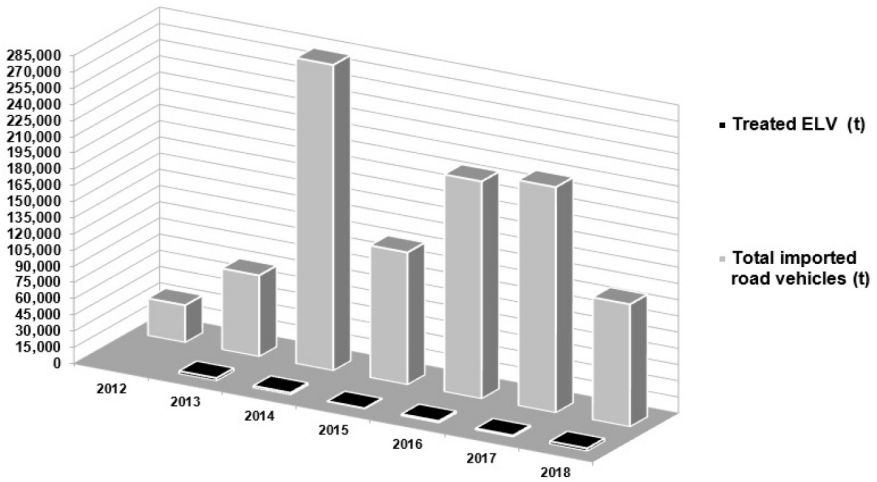

Figure 2 The total number of the imported road vehicles and the recycled road End-of-Life Vehicles in the period 2012-2018

Source: Authors, based on: Đorđević, Radovanović, Redžić and Jovanović, 2018, 34-35

inefficient environmental policy in this field in the long run.

Bearing in mind the high level of the air pollution mainly caused by traffic, the Serbian Government is considering intervention in order to increase legal recycling in official recycling facilities and the replacement of old vehicles with the new that are more environmentally friendly. An incentive-oriented approach is one of the solutions, as it was in the past, the focus now being more on financial stimulation for potential buyers of modern hybrid or electrical cars *Decree on the Conditions for Conducting and the Manner to Conduct the Subsidized Purchase of New Only-Electrically-Driven Vehicles, As Well As the Vehicles That, in Addition to the Internal Combustion Engine, Are Also Driven by an Electrical Engine - i.e. a Hybrid Engine* (Službeni glasnik RS, 2020). The incentives will eventually force all car owners to hand over their vehicles to official recycling facilities, which will enable full benefits from the recycling process.

The relationship between the government and recycling as a CSR activity is very complex. Regarding the fact that there is no particular market for clean air and a healthy environment, the CSR concept as a form of government could not be applied here. The market is unable to individually properly coordinate the activity in the recycling industry and the intervention of the government is necessary. The relationship based upon CSR as facilitated by the government better shapes the business environment in the ELV field, thus providing the full potentials of the recycling process.

CORPORATE SOCIAL RESPONSIBILITY IN FIELD OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT RECYCLING

Waste electrical and electronic equipment is considered to be one of the fastest-growing waste streams in the world, with an average annual increase rate of 3% to 5%, i.e. three times faster than any other waste stream (Schwarzer, Bono, Peduzzi, Giuliani & Kluser, 2005). The annual generation of WEEE is about 50 million metric tons, i.e. approximately 6 kg per person per annum (Baldé, Forti, Kuehr & Stegmann, 2017). The WEEE group is not homogenous, and

consists of a variety of different kinds of e-products. The modern living environment decreases the lifespan of all e-products and creates a large amount of e-waste, which puts an emphasis on the WEEE proper treatment and recycling process. Bearing in mind the fact that, beside the basic raw materials (scarp steel, aluminum, cooper, rubber, plastic, etc.), e-products also consist of some hazardous materials and gasses harmful to the environment and human health, a proper collection and recycling are even more important.

One of the basic characteristics of WEEE recycling is that, from the perspective of the investor, this is not a profitable business, due to a very complex and expensive technology. About 70% of the total revenue of the recycling companies in this field is generated from government incentives, and the continuity of this process depends on the external financial support provided by the government. Apart from financial benefits, WEEE recycling also creates a large number of nonfinancial benefits, for which reason this activity can be considered to be socially responsible. The intervention of the government in this field, in the form of incentives, motivates all recycling facilities to become more socially responsible, which should raise the CSR level amongst all other companies. Unlike the field of ELV recycling, where the government approach towards CSR is in the form of CSR as self-government, in the WEEE field, CSR is mostly facilitated by the government, since the state provides financial support to e-waste recyclers. CSR is facilitated by the government by means of the special *Rulebook on the Adjusted Values of the Stimulation Funds for the Reuse, Recycling and Utilization of Certain Kinds of Waste* (Službeni glasnik RS, 2019)) which provides incentives for all ten groups of e-waste. This government approach has shown an excellent result in practice, since the quantity of recycled WEEE rises year by year, as is presented in Figure 3.

The positive legislative framework and affirmative approach of the Serbian Government in the WEEE field has resulted in directing as much of e-waste as possible towards the regular waste stream. Only in the year 2011, the imported amount of e-products (the black pillars) was above the quantity of the recycled WEEE (the gray pillars). Year by year, the amount of the treated WEEE rose. However, in spite of the positive business ambience during that time, some problems occurred. Although all the recycling facilities were motivated to expand their e-waste recycling, the quantity of the treated WEEE decreased after 2016, which could be explained by the problems related to the payment of the incentives.

Practice has shown that there is a great difference between the granted and the paid amount of incentives to the recyclers, and that the payment dynamics are not as expected, either, which is the reason why the inconsistency of the financial stimulation policy is identified as one of the major risk factors in this field, which forces all companies to find certain alternative ways in order to maintain their liquidity. The current conditions provided by the Serbian Government intended to raise the CSR level amongst recycling companies in the WEEE field can be considered as positive, since they provide the stimulation of this process. It needs to be more adjusted to the specific business environment in this industry in order to decrease the aforementioned potential risk factors.

CONCLUSION

An increase in environmental problems throughout the world is forcing all economic entities to transform their current business patterns towards reaching a more sustainable activity which will prevent pollution. CSR is identified as one of the key instruments used in this transformation process. Due to numerous socioeconomic benefits, the recycling process is considered as one of the crucial activities for the CSR concept promotion.

In some cases, the CSR agenda implementation results in an increase in profitability, and there is no need for further intervention for the purpose of accepting a new business agenda. Intervention is required in other business areas, such as recycling, where the largest number of benefits are expressed as socioeconomic, not financial, since there is no clear

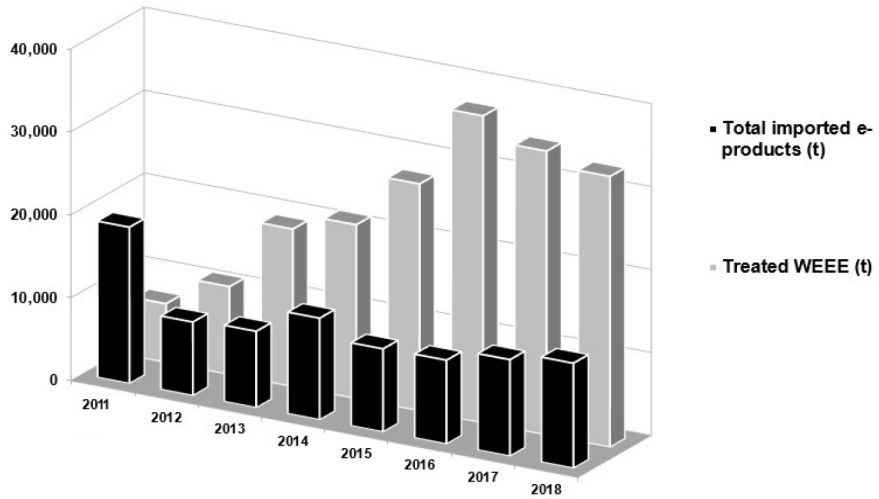

Figure 3 The total amounts of the imported e-products and the recycled WEEE in the period 2011-2018

Source: Authors, based on: Đorđević *et al*, 2018, 34-35

market for clean air and a healthy environment. The relationship between CSR and the government is essential when considering the adoption of the CSR agenda in this particular sector. Profitability enables the internal orientation of the CSR approach towards the company level (explicit CSR), whereas the external orientation in the form of respecting regulations (implicit CSR) is necessary when considering the implementation of CSR in the recycling industry. In this manner, the first hypothesis of the research study is confirmed, since the significant role of the relationship between the government and CSR in the field of recycling used cars and e-products, too, is indicated. The paper also points out the fact that the market self-regulation of this field is not possible, since this situation reduces the recycling activity and creates large-scale pollution, especially in large urban areas. Beside the basic instruments used in the past to encourage CSR between companies in the recycling field, the paper also shows the other ways in which the government may influence the implementation of this concept. The relationship between the state and the CSR concept is important in those fields of recycling that are profitable without additional financial support, since profitability *per se* does not sufficiently motivate potential investors to adopt the CSR concept.

The study has confirmed the fact that the relationship between CSR and the government is important in the recycling industry. The changing role of the government was observed over time, and the CSR level was measured by analyzing the amount of the recycled products. Even though ELV recycling is profitable without the incentives by the state, the research study points out the fact that, in the periods of the stimulation of this process by the government, the amount of the treated used vehicles was rising. The absence of support from the state in this sector almost stopped legal recycling, which may be an important factor responsible for the current air pollution caused by traffic in the Republic of Serbia. The second hypothesis of the research has been proven on this practical example, since the self-regulatory CSR applied in the recycling of this waste in the Republic of Serbia in the previous period caused a significant reduction in official car recycling. Although car recycling is a financially profitable investment, it is insufficient to motivate potential investors to carry out this process through official waste streams in compliance with regulations. This is supported by

the fact that, in the past, significant government support in this area obviously contributed to the intensification of the recycling process, so a similar intervention can be expected in the future.

WEEE recycling predominantly depends on the support of the state, and the continuity of this process is influenced by the government activity. Over time, the relationship between the government and CSR creates a positive business ambience and prevents a potential burden upon the environment. The Serbian Government plays an active role in the implementation of THE CSR principles, which should positively affect and make further improvements in this challenging waste stream. The reports of the Environmental Protection Agency of the Republic of Serbia have confirmed the fact that CSR supported by the government in the field of e-product recycling additionally motivates investors and ultimately increases the amount of recycled WEEE. Thus, the third hypothesis of the research study is confirmed. Although the CSR concept applied in this field has generated significant results, a further improvement and adaptation to the current conditions are necessary. Growing demand for e-products will continue in the future, so it is necessary to create an optimal system for this waste stream management.

As one type of that relationship, CSR facilitated by the government is not only based upon incentives as one of the possible ways to influence an improvement of CSR, but it is also based upon the other kinds of stimulation. In relation to that, the Serbian Government is considering a decrease in the tax obligation for the potential owners of environmentally friendly cars (hybrid or electrical), free parking places in cities, even a license for driving in the "yellow lane", which is only intended for public transportation.

Financial support in the WEEE field offers all recycling facilities a better business ambience, maintaining continuity and raising the level of the recycling process. All recycling companies are highly dependable on the incentives of the state, but the inconsistency of that policy might be a major difficulty. The Serbian Government uses a positive legislative framework as an instrument for improving the CSR activity among the companies operating in this sector, which eventually increases the volume of treated e-products. Possible improvements in the future should reflect in showing a better respect of the granted amount of stimulation, as well as the proposed payment dynamics. Creating optimal socioeconomic and business ambiences towards the stimulation of the CSR agenda amongst all companies should be a priority. The incentive-oriented approach applied in the Republic of Serbia is a good example of the CSR-Government relationship. It is a valuable base, but a future approach needs to be modified and implemented amongst companies in all other sectors.

The key contribution of the paper reflects in emphasizing the important role of the government in the implementation of the CSR concept in the business policies of the companies doing business in the recycling field in the Republic of Serbia, with a special overview of the recycling of used vehicles and e-waste. The significantly different approaches of the government in these two independent waste streams are mostly responsible for the differences in the amount of the recycled products in the observed period. The paper also proposes possible solutions to the existing problems, which would improve the current situation in this field.

The main limitations of the research study relate to the objects of the recycling process and the availability of data about the recycling of these types of products. Hence, the current research study was conducted based upon the data about the recycling of cars and electrical and electronic appliances, which does not take into account the heterogeneity of these groups of products. Although the group of cars is considered to be homogeneous, even though it is possible to identify significant differences between the models that entered the recycling cycle in the past and those that do so today. Modern cars contain an increasing number of electrical components, which makes their disposal more expensive and reduces the profitability of recycling. Changes in vehicle design pose a significant challenge both for manufacturing and ELV recycling, and finally also for the implementation of the CSR concept. All this further emphasizes the role of the government in this area and the need for

external support. The proposed financial stimulation model that generated results in the past needs to be further adapted to the current conditions in order to deliver the expected results in the future.

The group of e-products is significantly more heterogeneous, as it encompasses ten different groups, which requires a different approach to their recycling. Some of them contain large quantities of hazardous substances and require a more expensive treatment and more expensive recycling, so government support is essential here as well. This limitation is partly overcome by the current legislation, which prescribes different amounts of incentives for each group of e-products *Rulebook on the Adjusted Values of the Stimulation Funds for the Reuse, Recycling and Utilization of Certain Kinds of Waste* (Službeni glasnik RS, 2019, Article 3). The fact is, however, that not each class of e-waste behaves in the identical way within the whole heterogeneous group of WEEE.

For the purposes of the analysis conducted in the paper, the data of the Environmental Protection Agency were used, those data simultaneously being the only official source of information in this field. Bearing in mind the fact that WEEE recycling companies are forced to submit accurate reports which make the basis for granting subsidies, the data in this field can be considered as reliable. On the other hand, when used vehicle recycling is considered and due to a lack of records on deregistered vehicles, the current data about the number of ELVs must be relied upon reservedly, since there are no official data in the Republic of Serbia. That is reason why different models are applied to official statistics in order to estimate the number of used vehicles. The fact is that the number of vehicles in practice is far greater than the number obtained by the model, as most of these vehicles are still recycled outside official waste streams, unlike the WEEE recycling that takes place in legal recycling centers.

Future research can be aimed at considering the other types of the incentives of the state, apart those pertaining to subsidies, provided in these recycling fields, given the fact that they are only listed in the paper and their application is expected in the future. This primarily refers to incentives for the purchase of new products, or some other types of fiscal exemptions, in order to further encourage the implementation of the CSR concept. In the initial stages of the development of the recycling industry, financial support is essential for the establishment of the waste management system and the implementation of the CSR concept. In later stages, the government should use other instruments to manage the implementation of this concept. So, future research could be done in this direction.

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