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**FINANCIAL REPORTING QUALITY  
AND LOAN CONTRACT TERMS:  
EMPIRICAL EVIDENCE FROM MONTENEGRO**

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## Abstract

Anecdotal evidence advocates that the higher quality of financial reporting should contribute to more gains to the users of the financial reports, making the allocation of their resources more efficient by curbing asymmetric information in the decision-making process. While there is a large consensus on the premise that the quality of financial reporting is vital in the assessment of the borrowers' riskiness during debt contracting process, empirical evidence provides mixed results related to the credit market sensitivity to the reporting discretion. Quality elements of the reporting are usually assessed against the main accounting principles set by FASB and the IASB, which argue that elements of high-quality financial reporting are relevance, accurate representation, comparability, verifiability, timeliness, and understandability. They can be divided into fundamental qualitative characteristics (relevance and accurate representation) and enhancing qualitative characteristics. When it comes to the assessment of financial reporting quality in Montenegro, the scarce empirical research argues that financial reporting in terms of transparency (disclosure) is lacklustre and lags behind its SEE peers. Using unbalanced panel data of financial statements and credit scores on 600 largest companies in Montenegro, for the period 2011-2018, we test if the quality of financial reporting, proxied by different measures that identify potential earnings management matters in assuring efficient private debt contracting. Using dynamic panel data model, estimated by GMM, results confirm that financial reporting quality matters in assuring more favourable financing terms (lower interest rate and longer debt maturity) by the Montenegrin banks. The credit market in Montenegro penalizes borrowers' informationally lacklustre financial reports with a marginal increase in loan spread (risk premium) to account for future uncertainty and monitoring cost.

**JEL Codes:** M41, G14, F42

**Key Words:** Financial reporting quality; Loan contract; Banks

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## 1. Introductory Notes

Information from annual financial statements is of great importance to external parties, as they often make decisions based on this information and depend on their accuracy. A large number of studies have unambiguously shown that firms often use discretion in the preparation of financial statements to influence financial results or financial data (Paiva, 2018). Also, a large number of financial studies have confirmed that a higher degree of transparency of financial statements reduces information asymmetry and funding costs. A number of accounting scandals around the world have put the quality of financial reporting at the centre of interest.

Today, there is a consensus suggesting that the better the financial statements, the more benefits for investors, bankers and other users of financial statements. As stated in the Conceptual Framework for the Financial Reporting of the International Accounting Standards Board (IASB), there is consensus on the quality of financial statements. These are: relevance, faithful representation, understandability, comparability, verifiability, and timeliness (Herath & Albarqi, 2017).

Data from the annual financial statements is an important source of information for shareholders, potential investors but for banks as well. Shareholders use financial statements to monitor the achievement of their business objectives and the provision of dividends. Potential investors use them to make decisions on the purchase of company shares, assess risks to which a company is exposed, and make decisions about possible joint ventures. A large number of studies have shown that investment efficiency can be enhanced by improving the quality of financial statements (Aulia & Siregar, 2018; Lambert et al., 2007; Biddle et al., 2006).

On the basis of the financial statements banks make decisions about granting loans, their maturity and the amount of interest rate. Obtaining loans is often a prerequisite for survival (for example, liquidity loans) and business development (investment loans). Good financial reporting is of great importance for the banking system as it reduces information asymmetry. The smaller the information asymmetry, the higher the likelihood of granting a loan and the lower the interest rate. Therefore, banks are often reluctant to grant loans to companies that do not submit annual financial statements, that is, “young” companies, due to the absence of a longer series of financial statements, to companies that are estimated to have poor financial statements, unless the financial statements are accompanied by an audit report or if there is a doubt regarding the quality of the audit report.

Also, banks establish their own financial ratios for their long-term clients. They do not only use data from annual financial sources but also data from other available sources. In this way, the procedure for granting loans is shortened, information asymmetry is reduced, and we get a more efficient bank decision-making process. Also, the fact that firms are aware that banks have longer time series of financial ratios is a kind of initiative to provide better quality financial statements.

Therefore, such firms are more likely to have higher quality of financial reporting. Also, several empirical studies have confirmed that establishing long-term relationships between banks and clients increases the availability of credit for businesses (Bharat, et al, 2011).

The theory of proprietary costs theory suggests that due to visibility or reputation, managers are encouraged to published detailed and reliable financial reports in order to reduce information asymmetry and, consequently, to reduce financing costs.

Access to finance is not only important for individual businesses but for the entire economy, as access to finance stimulates economic growth, leads to new employment and increases the competitiveness of an economy. Jafari (2016) showed that firms with higher quality of financial statements and greater use of short-term loans have higher investment efficiency.

When it comes to the assessment of the quality of financial reporting in Montenegro, unfortunately, there no major research has been done. Scarce empirical research indicates that financial reporting in terms of transparency (disclosures), as well as the quality of financial statements is inadequate and lags behind both countries in the region and developed countries. One study of this kind, which compared Slovenia, Croatia, Serbia, Romania, and Montenegro showed that the situation is only worse in Romania (Pivac, Vuko, and Cular, 2017). Therefore, the aim of this paper is to examine whether the quality of financial reporting in Montenegro is a factor influencing bank lending.

To test this hypothesis, we used an unbalanced panel of financial statements and credit scores for 600 selected companies in Montenegro for the period 2011-2018. We tested the hypothesis whether the quality of financial reporting, as represented by the variables (1) accounting for operating results (income equalization) as a practice which could be in the form of good business practice and also in the form of fraudulent reporting, (2) controlling companies that audit their financial statements from one financial year to another (3) Beneish M-score recording the overestimation of income, and (iv) the ratio of net income to cash flow from a business that identifies which company is less likely to generate revenue is essential to ensure efficiency in bank loan contracting. Income equalization involves reducing income fluctuations.

This paper consists of five parts. After introductory notes, the second part of the paper provides an overview of the relevant literature dealing with this issue, followed by analytics of the selected model, variables, estimation and clarification of the results. We conclude the paper with key conclusions and recommendations to improve the quality of financial reporting in Montenegro.

## 2. Literature Review

The most important task of financial reporting is to present financial information to outsiders in an effective, timely and credible manner (Marai & Pavlović, 2013). One of the most important segments of financial information is information about earnings. There is ample evidence that firms have the ability and motivation to manage earnings management in order to increase or decrease them (Marai & Pavlović). Then we talk about earnings management practices that often lead to income equalization. Schipper (1989) defines earnings management as a deliberate intervention in the process of external financial reporting aimed at deriving certain benefits to shareholders and management of a firm.

As mentioned above, this practice can also be the result of using generally accepted accounting standards as well as fraudulent practices. For example, moving from LIFO to the FIFO method, estimating equipment useful life, accelerated depreciation, provisions for doubtful receivables, and the like are all examples of when earnings management (income equalization) complies with generally accepted accounting standards.

In reality, it is very difficult to draw the boundary between these two types of practice, and in the literature it is usually reduced to the manager's motive (Marai, A. & Pavlovic, V., 2013). However, a manager's motives are not easy to determine unless they are explicitly stated by them, which is a very rare case. Perols and Lougee (2011) consider that the boundary between the two practices can be drawn on the basis of whether earnings management is in accordance with generally accepted accounting principles.

In a sample of firms that were accused of accounting fraud, Dechow et al (1996) found that the primary motive for earnings management was to provide external finance at a lower cost. Thus, for example, Biddle et al (2009) showed in their study that higher quality of financial reporting reduces information asymmetry and agency costs and, therefore, increases investment efficiency. A study conducted by Chen et al (2011) found that firms that have few investors or primarily invest from their own funds have lower quality of financial reporting. External financing is not prevalent for such firms and there is no incentive to show true performance of the firm.

Graham et al, (2005) interviewed more than 400 managers and 96.9% of them stated that they preferred income equalization in order to have a stable operational cash flow. The most important reason for preferring this strategy is to provide assurance to suppliers and customers that their business is stable.

Using the example of Portuguese firms, Paiva (2018) explored the impact of financial reporting on borrowing. She came to an unambiguous conclusion that firms that take on larger amounts of credit have higher-quality financial statements. Such firms use less of income equalization and discretion and are more based on accounting standards and there is less delay in the publication



of financial statements. Li and Richie (2016) found that the effect of income equalization on reducing financing costs is more pronounced in firms with non-transparent information and higher business risk.

On a sample of 13 European countries, Burghstahler et al (2004) found that revenue management (income equalization) is less present in publicly traded companies. The significance of this research is that previous studies examined countries with different accounting regulations, while here the sample covered European countries that have the same regulations. They conclude that the capital market puts pressure on businesses to have better quality income data, that is, to show real economic performance. Ball and Shivakumar (2002) came to the same conclusion when examining UK firms.

In a study involving firms from 39 countries, Dou, Y. et al (2011) find that firms are more likely to engage in income equalization in countries with poor legal system. They found that income equalization is more likely to occur in countries where there is inadequate enforcement of judicial rulings. They also found that the effect of income equalization is to a greater extent present in industries where there is a high degree of enterprise connectivity. Burghstahler et al. (2004) came to the same conclusion.

### **3. Database and hypotheses to be tested, model specification and variables used in the model**

In the survey we used an unbalanced panel of the 600 largest companies in Montenegro, filtered by asset size criteria from 2017, for the period 2011-2018. The databases we used are electronically processed balance sheets of companies in the Central Bank of Montenegro, as well as data from the Credit Registry of the Central Bank of Montenegro. We excluded from the sample companies belonging to the financial institutions sector, taking into account the specificity of reporting of these companies.

Based on the available data, we test the hypotheses:

H01 - Companies with better financial reporting reduce the asymmetry of information when assessing credit risk, which leads to more favourable financing conditions (lower interest rate).

H02 - Companies which have better financial reporting reduce the asymmetry of information when assessing credit risk, leading to more credible (longer-term) sources of financing.

### *Dependent variables*

To test hypotheses H01 and H02, we selected two standard variables that describe the level of financing cost and maturity.

**LnInterest** - variable describing the cost of financing, calculated as the natural logarithm of the level of financing costs divided by the total amount of long-term and short-term financial liabilities in year (t).

**LnLong** - variable describing the longevity of a financing source, calculated as the natural logarithmic amount of the long-term debiting divided by the level of the company's assets in year (t).

### *Independent model variables*

As variables that reflect the quality of financial reporting, we use four variables that control financial reporting segments which also may indicate accounting manipulation of financial statements: **Smooth**, **Quality**, **Accruals**, and **M frozen**.

Variable (**Smooth**) controls for the practice of adjusting the net result through the years, described in Bhattacharya et al., (2003), Leuz et al., (2003) and Bharath et al., (2008). Namely, the empirical literature assumes that when a credit is contracted or restructured (refinanced), large fluctuations in financial results and income can be a signal to banks that the company's business is uncertain, which increases their risk assessment of the company and increases its borrowing costs, thus reducing its maturity. Therefore, companies are more inclined to engage in revenue management practices through acceleration or deferral of cost or income recognition before contracting a loan, using a broad interpretation of accounting practices to produce the effect of uniform financial performance over the years (Gassen and Fullbier, 2014).

To calculate the **Smooth** variable, we use a standard formula that is calculated as the correlation between the standard deviation of pre-tax income and the standard deviation of operating cash flows (Burgstahler et al., 2006; Dou et al., 2013; Leuz et al., 2003), The formula below represents  $\sigma$  as (Net income, t), the standard deviation of pre-tax net income for companies in the year t divided by total assets at the end of year t;  $\sigma$  (CFO<sub>i,t</sub>) represents standard deviation of cash flows from operating activities for business year t, divided by assets at the end of year t. In this model, the higher values of the **Smooth** variable correspond to less pressure on the amount of revenues and, consequently, reflect better accounting quality of the report. Therefore, in the regression we expect a negative coefficient of this variable in relation to the interest rate, that is, a positive coefficient in the case of long-term sources of financing.

$$\text{Smooth}_{i,t} = \sigma(\text{Net Income}_{i,t})/\sigma(\text{CFO}_{i,t}) \quad (1)$$

(2) The variable **Quality** is a dummy variable indicating the basic quality of financial reporting, controlling significant annual audits of the financial statements of companies in Montenegro. Dummy variable **Quality** takes the value 1 for the years when there is a difference in reporting net operating result for the following year ( $t + 1$ ), relative to the official data reported for the net business result position for year  $t$ . According to the sample data, 11.3% of the companies in 2013 adjusted their 2012 financial statements in the 2013 financial statements, while in 2017 that percentage was slightly reduced to 10.5%.

(3) The third variable, **M frozen**, is used to describe the quality of reporting by companies known as the **Beneish M-Rating**, and represents a standard mathematical model consisting of 8 indicators that checks for possible manipulation of the net result. The Beneish M-Rating indicates that if the value of this rating is above (more positive) than -2.22, the company has the potential to manipulate balances in terms of overestimating profits. The **Beneish M-Rating** is a composite index, derived from a model composed of the following sub-indices:

DRSI (Days Sales in Receivables Index) = Receivables turnover ratio from clients reflects the level of receivables from sales contained in net sales income. A significant increase in receivables turnover may suggest accelerated income recognition to overestimate profits. According to Beneish (1999), an increase in receivables relative to sales may also suggest income inflation or may reflect a change in credit policy to affect sales in a context where a company is under pressure from increased competition.

GMI (Gross Margin Index - GMI) = The coverage margin index is an index that estimates the ratio of operating income minus variable expenses in year  $t$  divided by sales revenues. The declining gross margin sends a negative signal about the company's outlook and creates an incentive to overestimate profits.

AQI (Asset Quality Index) - An asset quality index measures the increase in long-term assets, excluding plants and equipment assets, relative to total assets. The growth of this index indicates that the company has potentially increased the probability of deferring costs to increase profits.

SGI (Sales Growth Index) = The Sales Growth Index measures the ratio of income generated in year  $t$  in relation to the previous year ( $t-1$ ).

DEPI (Depreciation Index) = This index measures the current depreciation rate as compared to the previous year. A decrease in this index may indicate that the company has implemented a new method of depreciation calculation to manipulate the result.

SGAI (Sales, General and Administrative Expenses Index) = The Sales, Administration and Administration Expenses Index compares current sales, general, and administrative expenses with those of the previous year. High sales growth does not immediately imply manipulation. However, there is concern that companies with high growth in this index are more likely to commit

financial fraud as their financial position and capital needs pressure managers to achieve targeted results.

LVGI (Leverage Index) = The debt index measures total debt to total assets ratio in year t versus year t-1. The increase in indebtedness creates an incentive for managers to manipulate income and result, in order to meet their obligations to creditors.

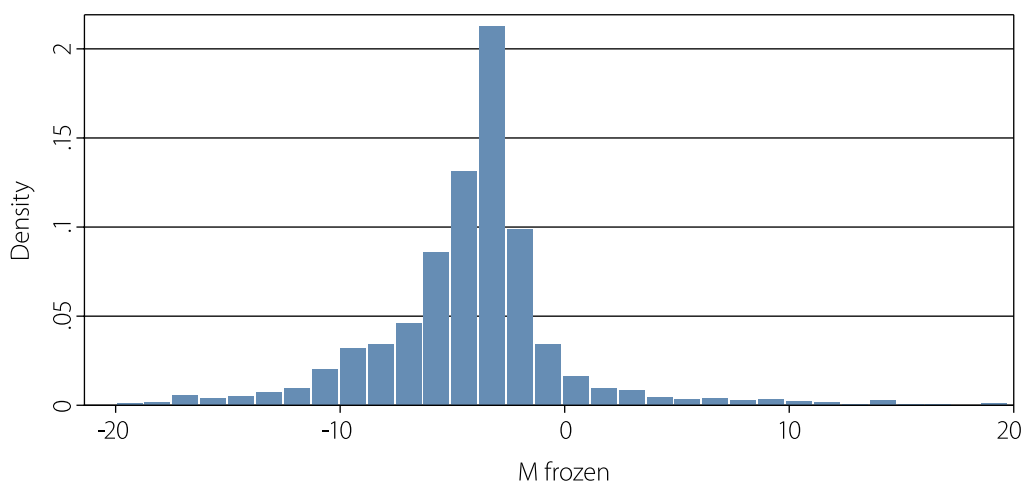
TATA (Total Accruals and Total Assets) = Total active prepayments and accruals and total assets ratio- represents the ratio of the difference between net profit and net cash flow from operative activities and total assets.

**Beneish M-Rating** is then calculated using the following formula:

$$M = -4.840 + 0.920 * DSRI + 0.528 * GMI + 0.404 * AQI + 0.892 * SGI + 0.115 * DEPI - 0.172 * SGAI + 4.679 * TATA - 0.327 * LVGI \quad (2)$$

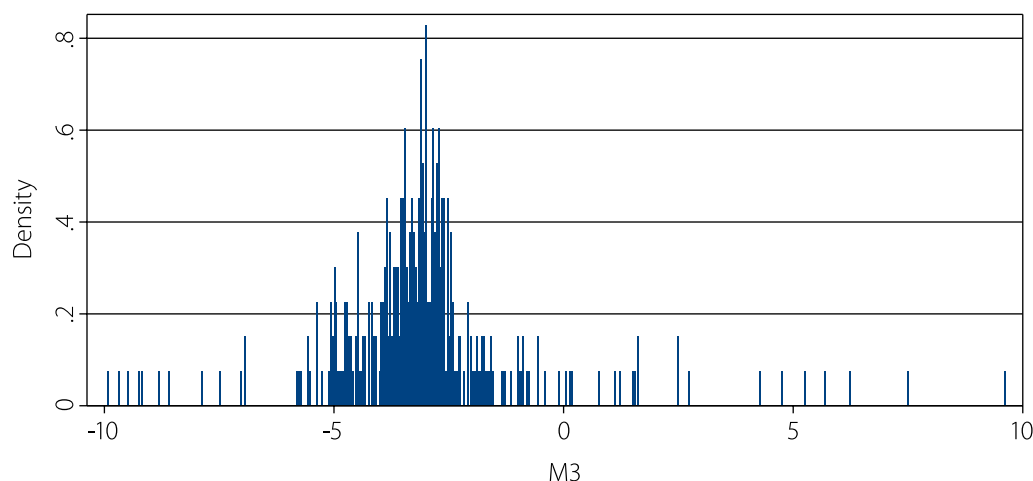
where M rating higher than -2.22 indicates a potential manipulation of profit through its overestimation. Regarding the companies in Montenegro, taking the database from the period 2012-2017, an average of about 21.4% of companies overestimated their results through financial reporting as measured by **Beneish M-Rating**, which can be seen from the Beneish M-Rating, as it can be seen from the Beneish M-Rating histogram, controlled for outliers and extreme values at both ends.

*Graph 1 - Histogram of Beneish M-Ratings of Top 600 Montenegrin Companies (2012-2017)*

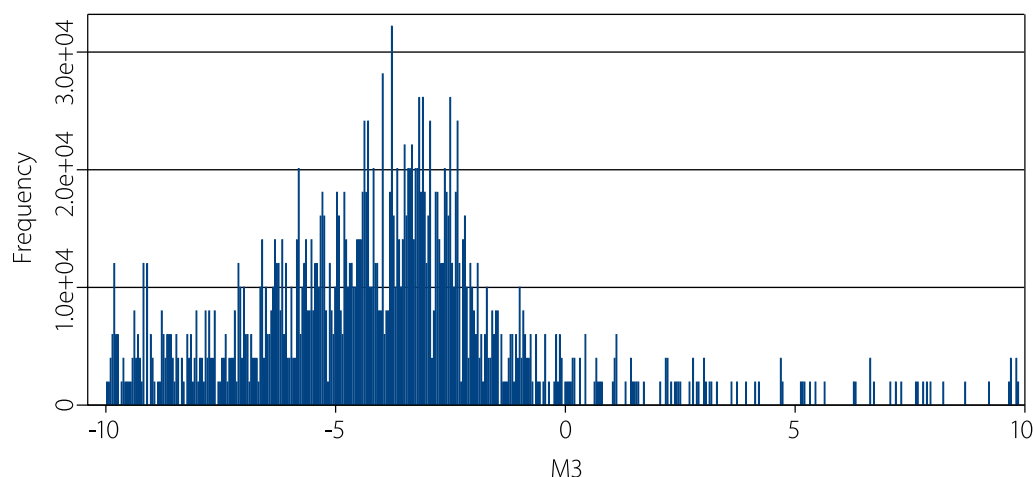


What is interesting is that Beneish M-Rating indicates that the overestimation of net results is represented more in the state than in the private companies (Graphs 2 and 3). Thus, the average Beneish M-Rating for Montenegrin private companies is -3.90, while the average Beneish M-Rating for Montenegrin state companies is -3.05.

*Graph 2 - Histogram of Beneish M-Ratings of Montenegrin State Companies (2012-2017)*



*Graph 3 - Histogram of Beneish M-Ratings of Montenegrin Private Companies (2012-2017)*



(iv) The fourth variable that describes the quality of the financial statements are **Prepayments and Accruals** and they represent the deviation between the company's annual earnings and cash flows. The assumption in the empirical literature (Bhojraj and Swaminathan, 2009) suggests that a smaller cash flow relative to a company's annual high incomes (high Prepayments and Accruals) creates pressure to generate more incomes in the coming period. Since companies are less likely to generate income, they will also suffer higher pressure to manipulate financial statements. This means that high Prepayments and Accruals are positively correlated with worse financial reporting, and consequently worse financing conditions. Thus, we expect a positive sign of the coefficient of this variable in the model for estimating the cost of financing (contributing to the rise in interest rates). We calculate Prepayments and Accruals as the difference between the operating incomes from its operating activities' cash flow from in the year  $t$ , divided by the average assets of the company.

### *Other independent variables*

Other independent variables which are a part of the model control the level of credit risk of companies, the fixed effect of time and industry as well as ownership structures. The variable **LnSize** - the size of the company given as the logarithmic value of the assets (ln natural logarithm) should have a positive impact on the financing conditions, given the assumption that companies proved to have been going concerns have more stable and diversified sources of income (Blume et al., 1998), and that in line with “pecking order theory” smaller companies reach out for external financing only when they have exhausted internal sources of financing, the **ROA variable** (return on the company's assets in year t), is the variable controlling the quality of the company's business, where it is assumed that more successful companies should provide better financing conditions (Michaelas et al., 1999). So we imply that the specification will determine a negative sign for the cost of financing. With the dummy variables **GOD** and **IND**, the fixed effect years of the financial statements and the specificity of the companies' industries are controlled.

**Leverage** variable – represents debt label to the company's assets in year t ratio. It is a variable that assumes that more indebted companies must have higher risk and can count on new borrowing only under more strict conditions. On the long side, **Leverage** also implies a longer period of connection between the bank and the company, which can lead to more favourable financing conditions. Also, following Warfield et al. (1995) and Paiva (2018), we control a company's risk level, assuming that companies with higher risk will not be able to provide sources of financing under better conditions. The **RISK** variable represents standard deviation of the net result of the company from year t, divided by the asset value from the previous year (t-1).

**CFO** variable - calculated as the standard deviation of cash from operations in the business year t, divided by the total assets of the company at the end of the year. The cash flow indicates the level of liquidity, assuming that more liquid companies have less need for borrowing. At the same time, it indicates that high undistributed cash flow has an impact on increasing information uncertainty, which may in turn increase the cost of financing (Easley and O'Hara, (2004) and Francis et al., 2004). **STATE** - represents a dummy variable that controls the effect of ownership structure, taking a value 1 for the state company.

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*Table 1 – Overview of the variables used in the model and the sign we expect in the estimated models*

Symbol	Explanation	Supposed sign of influencing the cost of capital	Supposed sign of influencing the length of the loan
<b>Dependent variables</b>			
<i>lnInterest</i>	Natural logarithm of financing costs and total debt ratio		
<i>lnLong</i>	Natural logarithm of long-term indebtedness to book keeping assets of banks ratio		
<b>Independent variables</b>			
<i>lnSize</i>	Size- the natural logarithm of the book keeping value of company's assets	-	+
<i>Leverage</i>	Leverage - company's liabilities to its assets ratio	+/-	-
<i>ROA</i>	Return on assets is the net result to company's assets ratio in the year t	-	+
<i>CFO</i>	Cash flow divided by the assets- standard deviation of the cash flow divided by the total company's assets at the end of the year t	-/+	-
<i>RISK</i>	Standard deviation of the net result of the company from year t, divided by the value of assets from the previous year (t-1).	+	-
<i>STATE</i>	Dummy variable of ownership structure takes the value 1 if the company is state owned and 0 if it has other ownership structures.	+/-	+/-
<i>GOD</i>	Dummy variable that takes value 1 for each sample year or 0 for the others (2012-2017)	+/-	+/-
<i>IND</i>	Dummy variable that takes value 1 for each industry, Industry 1-11 in the sample, and value 0 for the other industries.	+/-	+/-
<i>Smooth</i>	Adjustments of net results over the years are calculated as the correlation between the standard deviation of pre-tax income and standard deviation of operating cash flows.	-	+
<i>Mfrozen</i>	Variable that checks for the presence of possible manipulation of profit and indicates the presence of an overestimation of income/ net results if M frozen > -2,22	+	-
<i>Accruals</i>	Variable represents the difference between the annual income and the company's cash flow, which is calculated as follows: Cash flow from operating activities/average assets (t, t-1)	+	-
<i>Quality</i>	Dummy variable controlling a significant annual financial statement audits assumes value 1 if there was a significant audit of results reported in year t	+	-

In Table 2, we provide descriptive statistics of Pearson's correlation of the most important continuous variables in the models. As we can see the Pearson correlation matrix shows a linear correlation between the variables where we can determine that the strongest correlation is between the profitability variable (**ROA**) and the new debt (**Leverage**) amounting to 0.725 \*.

*Table 2 – Pearson correlation matrix of the most important continuous variables*

	LnInterest	Mfrozen	CFO	LnSize	Leverage	ROA	RISK	LnLong
LnInterest	1.000							
M frozen	-0.049*	1.000						
CFO	0.109*	-0.022*	1.000					
LnSize	0.001	0.0015	0.2901*	1.000				
Leverage	-0.125*	0.029*	-0.0253*	-0.351*	1.000			
ROA	-0.002	-0.012	0.0274*	0.267*	0.725*	1.000		
RISK	-0.014	-0.002	-0.010	-0.039*	0.120*	-0.213*	1.000	
LnLong	-0.2775*	0.041*	-0.127*	-0.214*	0.232 *	-0.206*	-0.010	1.000

### *Selected model and estimator*

The dynamic specification of the model, with the incorporation of the lagged dependent variable into the regression, excludes otherwise unidentified dynamics from the random error and incorporates it into the estimated part of the model. To evaluate the dynamic panel model, we use GMM estimation (Bond, 2002; and Roodman, 2006). Both “difference” and “system” GMM estimators were developed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). We find that it is possible to implement it in this model estimation, given the characteristics of the variables that are part of the model and the characteristics of the database: the database has a relatively large number of observations (600 largest companies) and a relatively small T, that is, small number of years 2012-2017.

At the same time, the condition that the independent variable that reflects the quality of financial reporting is not a fully exogenous variable is fulfilled, with the assumption that interest rate and loan maturity depend on their past values. Namely, following the theory of “relationship lending” according to Jayaratne and Wolken (1999); Berger and Udell (2002); Stein (2002); Takats (2004); Berger et al., (2005), Petersen and Ryan (1995), Berlin and Mester (1998), Ferri and Messori (2000), the "soft information" which a bank receives from its clients during the debt collection process is very important in the process of negotiation on new loan distribution and financing conditions.

Given the existing literature, we implement our preferred dynamic data model estimated by GMM as follows:

$$\begin{aligned}
 LnInterest_{it} = & c + \beta_1 LnInterest_{it-1} + \beta_2 LnSize_{it} + \beta_3 Leverage_{it} + \beta_4 STATE_{it} + \\
 & \beta_5 Mfrozen(Quality, Accruals, Smooth)_{it} + \beta_6 RISK_{it} + \beta_7 CFO_{it} + \beta_7 ROA_{it} + \\
 & \pi \sum_{t=2013}^{2017} GOD_t + q \sum_{t=2013}^{2017} IND_t + u_i + v_{it}
 \end{aligned} \tag{3}$$

That is, for the evaluation of hypothesis H02, we estimate the following dynamic model by GMM:



$$\begin{aligned} \ln Long_{it} = & c + \beta_1 \ln Long_{it-1} + \beta_2 \ln Size_{it} + \beta_3 CFO_{it} + \beta_4 ROA_{it} + \beta_5 Leverage_{it} + \\ & \beta_6 STATE_{it} + \beta_6 Mfrozen(Quality, Accruals, Smooth)_{it} + \beta_7 RISK_{it} + \pi \sum_{t=2013}^{2017} GOD_t + \\ & q \sum_{t=2013}^{2017} IND_t + u_i + v_{it} \end{aligned} \quad (4)$$

where  $i$  represents the cross-sectional dimension and  $t$  represents the time period, where  $i = (1, 2, 3, \dots, 314)$  and  $t = (2013, \dots, 2017)$ ;  $\beta_{1, 2, \dots, 7}$  are parameters that must be estimated;  $\pi$  represents the vector of year effects to be estimated;  $u_i$  represents a group-specific error, which controls the undetected heterogeneity of companies, which may have an impact on the amount of interest or the loan maturity. The assumption is that  $u_i$  is constant or slow moving; and finally,  $v_{it}$  represents a specific observation error.

## 4. Models results and diagnostics

### *Models diagnostics*

Diagnostics of the models presented in Table 3 and Table 4 suggest that the estimated model is properly specified and can be used as a mechanism for generating statistics to support economic interpretation. Our final model specification is guided by the proper selection of instruments, which has been verified with standard specification efficiency tests: (a) the series autocorrelation test for differentiated residuals (Arellano-Bond test for AR (1), and more precisely the first and second differentiated residuals) and Hansen test. Autocorrelation in models is tested with the AR (1) and AR (2) proposed by Arrelano and Bond (1991) and tests the first and second level autocorrelation. The results in all specifications show that there is a negative autocorrelation in the first degree, while the autocorrelation disappears in the second degree.

The Hansen test is an enhanced version of Sargan's test for overestimated identification of restrictions, consistently giving p-values ranging from  $p$  (Specification1) = 0.209 to  $p$  (Specification 3) = 0.81. The results of the Hansen test showed that the null hypothesis that "instrumental variables are eligible" was not rejected at the 5% level of significance. In other words, the instrumental variables used to estimate the dynamic model of the GMM system are valid with both models. They are not too high (approaching  $p = 1$ ), which would suggest the weakening of the test.

*Table 3 – Models diagnostics that test the impact of financial reporting on interest rates*

	Specification 1	Specification 2	Specification 3	Specification 4
Number of companies	254	204	314	306
Wald test	Wald chi2(21) = 225.84 Prob> chi2 = 0.00	Wald chi2(21) = 128.02 Prob> chi2 = 0.00	Wald chi2(22) = 176.6 Prob> chi2 = 0.00	Wald chi2(21) = 151.19 Prob> chi2 = 0.00
Number of instruments	38	38	39	38

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*Table 3 – Models diagnostics that test the impact of financial reporting on interest rates - continued*

	Specification 1	Specification 2	Specification 3	Specification 4
Hansen test (H0; over-identifying restrictions are valid)	Prob > chi2 = 0.459	Prob > chi2 = 0.568	Prob > chi2 = 0.810	Prob > chi2 = 0.758
Arellano-Bond test for AR(1) in first differences	z = -2.82 Pr > z = 0.00	z = -3.45 Pr > z = 0.01	z = -2.85 Pr > z = 0.00	z = -3.57 Pr > z = 0.00
Arellano-Bond test for AR(2) in first differences	z = -0.69 Pr > z = 0.48	z = -1.88 Pr > z = 0.11	z = -1.52 Pr > z = 0.12	z = -1.40 Pr > z = 0.16
<b>Difference-in-Hansen tests of exogeneity of instrument subsets</b>				
GMM instruments for levels Hansen test excluding group	Prob > chi2 = 0.334	Prob > chi2 = 0.474	Prob > chi2 = 0.949	Prob > chi2 = 0.623
Difference (null H = exogenous): gmm (L.LnKamata, lag(1 .))	Prob > chi2 = 0.595	Prob > chi2 = 0.572	Prob > chi2 = 0.318	Prob > chi2 = 0.712
Hansen test excluding group: Difference (null H = exogenous) gmm (Mfrozen, lag(2 .))	Prob > chi2 = 0.217	Prob > chi2 = 0.302	Prob > chi2 = 0.774	Prob > chi2 = 0.809
Hansen test excluding group Difference (null H = exogenous)	Prob > chi2 = 0.701	Prob > chi2 = 0.735	Prob > chi2 = 0.643	Prob > chi2 = 0.529
Hansen test excluding group Difference (null H = exogenous)	Prob > chi2 = 0.394	Prob > chi2 = 0.585	Prob > chi2 = 0.706	Prob > chi2 = 0.637
Difference (null H = exogenous)	Prob > chi2 = 0.478	Prob > chi2 = 0.456	Prob > chi2 = 0.702	Prob > chi2 = 0.678

*Table 4 – Models diagnostics that test the impact of financial reporting on borrowing maturity*

	Specification 1	Specification 2	Specification 3	Specification 4
Number of companies	234	302	314	
Wald test	Wald chi2(21) = 6914.85 Prob > chi2 = 0.00	Wald chi2(21) = 4458.04 Prob > chi2 = 0.00	Wald chi2(22) = 3323.40 Prob > chi2 = 0.00	Wald chi2(21) = 5212.71 Prob > chi2 = 0.00
Number of instruments	37	37	37	31
Hansen test (H0; over-identifying restrictions are valid)	Prob > chi2 = 0.677	Prob > chi2 = 0.488	Prob > chi2 = 0.235	Prob > chi2 = 0.209
Arellano-Bond test for AR(1) in first differences	z = -3.43 Pr > z = 0.00	z = -2.72 Pr > z = 0.01	z = -2.97 Pr > z = 0.003	z = -2.96 Pr > z = 0.00
Arellano-Bond test for AR(2) in first differences	z = 0.47 Pr > z = 0.639	z = -0.23 Pr > z = 0.821	z = 0.56 Pr > z = 0.575	z = -0.00 Pr > z = 0.99
<b>Difference-in-Hansen tests of exogeneity of instrument subsets</b>				
GMM instruments for levels Hansen test excluding group	Prob > chi2 = 0.992	Prob > chi2 = 0.768	Prob > chi2 = 0.792	Prob > chi2 = 0.260
Difference (null H = exogenous): gmm(L.Inlong, lag(1 1))	Prob > chi2 = 0.123	Prob > chi2 = 0.186	Prob > chi2 = 0.121	Prob > chi2 = 0.234
Hansen test excluding group: Difference (null H = exogenous) gmm(Smooth, lag(2 2))	Prob > chi2 = 0.500	Prob > chi2 = 0.680	Prob > chi2 = 0.287	Prob > chi2 = 0.967
Hansen test excluding group Difference (null H = exogenous)	Prob > chi2 = 0.670	Prob > chi2 = 0.310	Prob > chi2 = 0.289	Prob > chi2 = 0.066
Hansen test excluding group Difference (null H = exogenous)	Prob > chi2 = 0.830	Prob > chi2 = 0.192	Prob > chi2 = 0.690	Prob > chi2 = 0.027
Difference (null H = exogenous)	Prob > chi2 = 0.419	Prob > chi2 = 0.758	Prob > chi2 = 0.140	Prob > chi2 = 0.827

### *Interpretation of the impact of financial reporting quality on the financing cost*

In all the specifications presented in Table 5, there is a strong, constant presence ( $p = 0.00$  in all four specifications) of a positive ratio for the lagged variable **LnInterest**, which indicates a partial value adjustment of interest rates in each year. This indicates that previous interest rates have impact on the interest rate on a new loan. The results show that an increase in the interest rate over the time period  $t-1$  by 1 percentage points would contribute to an increase in the interest rate from 0.37 to 0.47 percentage points, depending on the model specification, for the new loan approved to the same company over a period of time  $t$ . This result also specifies that informal know-your-customer through the process of approving and monitoring the client's old credit is very important in the process of credit risk assessment. This also points to a potential substitute effect that banks, having a general impression of unreliability of their financial statements, resort to alternative means using the experience of a client's past credit file and their past position towards settling bank liabilities.

The results presented in Table 5, in the case of all financial reporting quality specifications (**Mfrozen**, **Quality**, **Smooth**, and **Accrual**), clearly indicate that the banking sector recognizes the manipulation of financial statements in Montenegro, and that they charge higher effective interest rates to clients with poor quality financial statements. Thus, for instance, from Specification 1, **Mfrozen's** 1% growth (overstatement of income) leads to an increase in the interest rate, on average by 0.00006 percentage points. Much stronger effect of interest rate adjustment due to poorer financial reporting of companies that have unusually low capital flow relative to operating income, where 1% growth in the **Accruals** variable (capital flows in relation to income) of a company in a year  $t$  leads to an increase in the interest rate on the extended loans of 0.889 percentage points. Other variables that are controlled for the quality of financial reporting are not statistically significant at the 90% probability level, but with their sign, they fit completely in the expectation that poorer quality of financial reporting (higher **Smooth** or **Quality**) contributes to interest rate growth.

It is also evident that companies with better **ROA** business result and higher **LnSize** assets are able to obtain a loan on more favourable terms. At the same time, know-your-customer through **Leverage** has impact on more favourable funding conditions. Fewer long-term at higher interest rates loans are approved to riskier companies. The **STATE** and **RISK** variables, albeit with expected sign, are not significant at 90% probability. The **CFO** in the latest specification indicates that companies with a lot of cash in circulation create an increase in uncertainty concerning its efficient use, which can lead to a deterioration of financing conditions, but very marginally (to the eighth decimal), so this effect can be neglected, although being statistically significant.

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*Table 5 – Dynamic Panel GMM System - Assessment of the Impact of Financial Reporting Quality on Financing Cost - Short-Term Impact Assessment*

*Dependent variable: LnInterest*

	Specification 1 (short-term effects)	Specification 2 (short-term effects)	Specification 3 (short-term effects)	Specification 4 (short-term effects)
Lagged dependent variable (INTEREST <sub>t-1</sub> )	0.435*** (0.00)	0.39*** (0.00)	0.38*** (0.00)	0.475*** (0.00) 90.00
M frozen	0.00006*** (0.00)			
Quality	-	1.18 (0.314)		
Smooth	-		-0.147 (0.66)	
CFO			9.11e-09*** (0.00)	1.17e-08** (0.03)
Accruals				0.889** (0.05)
Leverage	-0.745** (0.016)	-0.264*** (0.00)	-0.308*** (0.00)	
LnSize	-0.146** (0.03)	-0.078 (0.308)	-0.134* (0.07)	-0.123* (0.09)
ROA	-0.13 (0.134)	-0.298** (0.012)	-0.348*** (0.00)	0.301 (0.178)
RISK	0.00004 (0.19)	0.00009 (0.47)	0.00008 (0.51)	.0001 (0.48)
STATE	0.017 (0.09)	0.19 (0.337)	0.22 (0.267)	0.24 (0.213)
Dummy year (2017 omitted year)	Yes	Yes	Yes	Yes
Dummy Industry (Industry 6 omitted)	Yes	Yes (0.04)	Yes	Yes
Constant	1.12 (0.99)	-0.894 (0.528)	0.43 (0.34)	0.004 (0.997)

*Note: The p-values given in parentheses denoted by \*\*\*, \*\*, and \* indicate the statistical significance of the variables with a probability level of 99%, 95%, and 90% respectively. P-values were obtained by estimating a two-step dynamic panel with Windmeyer's corrected robust standard errors.*

### *Interpretation of the impact of financial reporting quality on the maturity of funding sources*

In all the specifications presented in Table 6, as well as in the interest rate model, there is a strong, constant presence ( $p = 0.00$  in all four specifications) of a positive ratio for the **LnLong** lagged variable. It also only confirms the premise that having an experience with a client in repaying a previous loan, as well as obtaining “soft information” from them, is an extremely important feature for the bank in assessing both credit risk and the maturity of a new loan.

The results presented in Table 6, just as in the case of all the specifications of the quality of interest rate reporting in Table 5, indicate that the banking sector recognizes the manipulation of financial statements in Montenegro (in the case of the three specifications (**Quality**, **Smooth** and **Accrual**), and that clients with poor quality financial statements are less likely to approve long-term funding sources. This rule alone does not apply to the specification with the variable **M frozen**, where an increase of this variable by 1% (overestimation of results) can lead to an increase in the long-term debt to lending interest rate ratio by an average of 0.0014 percentage points, that is, it has a marginal positive impact. **Accruals** have a much stronger adjustment effect due to the poorer financial reporting of companies on the unavailability of longer-term funding sources. Other variables that are controlled for the quality of financial reporting (**Quality**, **Smooth**) are not statistically significant at the 90% probability level, but they fully fit the expectation that poorer quality of financial reporting contributes to reducing long-term funding sources ratio.

From the specifications of the estimated model presented in Table 6, in line with the expected result, the companies that have a better business result and have a higher **CFO** cash flow, have less need for long-term borrowing. This is practically small effect, but it is statistically constantly significant. At the same time, the companies at higher risk (**RISK**) are less likely to receive long-term funding sources. Also, state-owned companies (**STATE**), on average, can count on shorter-term funding sources. Finally, companies with higher profit (**ROA**) have less incentive to borrow over the long term, which is in line with expectations of the “pecking order theory”, given that these companies have larger internal funding sources that they can rely on first.

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*Table 6 – Dynamic Panel GMM System - Assessment of the Impact of Financial Reporting Quality on Maturity - Short-Term Impact Assessment*

*Dependent variable: LnLong - long-term financing*

	Specification 1 (short-term effects)	Specification 2 (short-term effects)	Specification 3 (short-term effects)	Specification 3 (short-term effects)
Lagged dependent variable (LNLONG <sub>t-1</sub> )	0.595*** (0.00)	0.457*** (0.00)	0.498*** (0.00)	0.618*** (0.00)
M frozen	0.0014*** (0.00)			
Quality	-	-0.939 (0.215)		
Smooth	-		0.1813 (0.335)	
Accruals				-0.461*** (0.00)
CFO	-1.46e-09 (0.728)	-3.25e-09 (0.323)	-5.69e-09 ** (0.03)	-1.39e-08** (0.02)
LnSize	0.0055 (0.945)	-0.065 (0.385)	0.0722 (0.506)	0.117 (0.226)
ROA	0.069 (0.211)	-0.0914*** (0.00)	-0.106*** (0.00)	-0.153*** (0.00)
RISK	-0.00054*** (0.00)	-0.0005*** (0.00)	-0.0005 *** (0.00)	-0.0006*** (0.00)
STATE	-0.3429 (0.235)	-0.643** (0.02)	-0.779*** (0.00)	-0.856*** (0.00)
Dummy year (2017 omitted year)	Yes	Yes	Yes	Yes
Dummy Industry (Industry 6 omitted industry)	Yes	Yes	Yes	Yes
Constant	1.12 (0.99)	0.6137 (0.593)	-0.776 (0.460)	-2.25 (0.128)

*Note: The p-values given in parentheses denoted by \*\*\*, \*\*, and \* indicate the statistical significance of the variables with a probability level of 99%, 95%, and 90% respectively. P-values were obtained by estimating the dynamic panel. Summarising the results of model diagnostics, we find that the model is well enough specified as a statistical mechanism that can support the interpretation of economic relations results.*

## 5. Conclusion

Using an unbalanced panel of financial statements and credit results for 600 largest companies in Montenegro for the period 2011-2018, the hypothesis was tested whether the quality of financial reporting, presented with several variables that are controlled for the existence of accounting manipulation of financial statements, is important to ensure efficiency when assessing credit risk and approving loans to clients in the banking system of Montenegro. In such manner, we are filling a significant gap in the empirical literature of Montenegro in the area of analytics of the impact of inadequate quality of financial statements on funding sources in Montenegro. As far as we are aware from the review, this topic has been analysed in the context of Montenegro mainly from a theoretical point of view. Using the dynamic model, estimated by the Generalized Method of Moments (GMM), the results invariably confirm the following:

*The first conclusion* is that in the process of checking the credit risk of a client, the banks in Montenegro recognize the manipulation or quality/poor quality of their financial statements, and “punish” the clients through a marginal increase in the price of the loan (risk premium) in order to take into account future uncertainty and the cost of tracking the loan. At the same time, banks are less willing to approve long-term funding sources to clients with lower quality financial statements.

*The second conclusion*, as pointed out by the very strong permanence and significance of the effect of interest rate and maturity of the previously taken loan, indicates that in order to assess the credit risk of a client, banks reach out to their creditworthiness, that is, loans granted from the previous period, as extremely relevant information. This is in support of the fact that, due to poor client financial statements, banks rely on alternative methods to obtain relevant credit risk assessment information. This practice inevitably leads to an increase in the interest rate and an increase in the cost of approving loans, affecting other segments of the approved interest rate.

*The third conclusion* is that, as expected, banks in Montenegro provide better financing conditions to companies with better financial performance, lower riskiness and less indebtedness. When it comes to the ownership structure of companies, banks have no direct preferences when assessing credit risk.

*The fourth conclusion* is that, considering the basic statistics of the variables used to evaluate the quality of the financial statements in Montenegro, their quality in Montenegro is not satisfactory, although it is slowly improving from 2012 to 2017. The fact that on average 12% of the top 600 largest companies in Montenegro submits financial statements that will be audited next year, and that on average one-fifth of these companies tend to either overestimate or underestimate revenues and financial results, points to the urgency of tighter oversight of the market of accounting companies in Montenegro.

*Policy recommendations for relevant institutions and further research work*

There is now also empirically reliable evidence that companies in Montenegro have relatively poor quality financial statements, which lead to an increase in interest rates and a decrease in the maturity of the loan. Also, the hypothesis is also confirmed that the manipulation of financial statements creates uncertainty and asymmetric information that is penalized during credit risk assessment. This leads to the conclusion that, inter alia, further reduction of interest rates also depends on the quality of the market organization in which the accounting institutions in Montenegro do their business. Greater oversight and setting of more stringent licensing standards for accounting and auditing firms are straightforward instruments that can contribute to improving financing conditions for companies in Montenegro.

A strong and persistent impact of the know-your-customer and their company approach through previous loan granted is a substitute for the information the bank receives from a client's financial statements when assessing credit risk. Specifically, we receive confirmation from the EMIR research that banks rely heavily on their previous experience with a client when assessing their credit risk. This conclusion points to the fact that the Montenegrin market is more than ever ready to open the market for a reputable and independent assessment of the credit rating and credit-worthiness of clients. Finally, the CBCG will also, through the initiated development of off-site supervision and early warning system (EWS) through pairing of the annual accounts database with credit registers, contribute indirectly to the improvement of financial reporting in Montenegro in the upcoming period.



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