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DOING BUSINESS WITH THE STATE AND FIRMS' GROWTH. GRASPING INVISIBLE RELATIONAL CAPITAL

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Abstract

This study investigates relationships between reported assets growth, human capital effectiveness, ability to do business with state and firms' growth. Longitudinal data were extracted from annual financial reports. Sample includes 80 companies in construction industry of Bosnia and Herzegovina from 2008-2013. Generalized estimating equations (GEE) approach is used for investigation of previously mentioned associations. We found that working with the state in Bosnian construction sector is dominant factor for outstanding increase in net reported income, while the human capital efficiency is negatively associated to its change. These findings support the theory of markets with asymmetric information, suggesting that the relational and social capital of the firm in the imperfect markets, where the state is dominant customer, drives the growth and that precedes firm's investments into development of intellectual capital.

Keywords: financial reporting, firms' growth, financial performance, intangibles, relational capital, imperfect market

JEL classification: M41

1. INTRODUCTION

This paper presents the research that investigates the association between firm's reported financial performance growth and some attributes of undisclosed intellectual capital. The accounting principles in International Accounting Standard 38 set strict limitations to the recognition of intangible assets (Chaudhry *et al.*, 2015). Consequently, financial reporting provides partial intangible asset valuation, but it does not provide valid estimation of intangible assets total value. Recognition and valuation of intangible assets with their intrinsic characteristics are challenges for accounting academic community.

Invisible balance sheet theory (Sveiby, 1997b) establishes relation between book and market value of the firm to measure invisible assets (knowledge capital). Thereby,

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intellectual capital valuation for firms, whose market value cannot be reliably determined, relates on an investment as proxy (such as operational expenditures, employees' education or benefits) rather than on the result of such an investment. This represents reason why significant part of the studies on intellectual capital and its measurement is observed from accounting perspective. These studies are exploring invisible resources within framework of resource-based theory (Wernerfelt, 1984). Measuring intangible assets can be a significant component in evaluating firm. Employee Know-how, Supplier Know-how are valuable competencies with assets without a legal context as networks, databases and reputation (Hall, 1992).

We assume that majority of human, structural and relational capital as a portion of intangible value of a business (Edvinsson and Malone, 1997) is not reported. Taking into account specifics of particular industry or market, relation between these segments of intellectual capital may significantly vary. In more specific, we argue that relational capital as defined by Skyrme (1998), enshrined in firm's ability to work with the state as a customer, is especially immanent in industries relying on intensive public investments in transitional economies. We found our argument in the theory of markets with asymmetric information as Stiglitz (2002) remarks: „whenever there are 'externalities' – where the actions of an individual have impacts on others for which they do not pay or for which they are not compensated – markets will not work well. But recent research has shown that these externalities are pervasive, whenever there is imperfect information or imperfect risk markets – that is always" (Dymond, 2015, p. 329).

The specific information on customer's preferences, in this case the state, may be prevailing for particular firm to become a successful bidder. This information on customer's preferences presents relational capital of the firm. If this assumption is correct, then relational capital presents the trigger for business growth in imperfect markets. Deductively, relational capital precedes investments into human capital and internal structures, whereby the firm develops infrastructure to maintain the satisfaction of customer expectations.

Welbourne (2008) notes that relational capital exercises considerable impact on financial performance. Similarly, Bollen *et al.* (2005) conclude in their model that relational capital (relationship capital) acts as an intermediary between human and structural capital and the overall performance of the firm.

The research is conducted within firms in transitional economy, i.e. "that have abandoned a command or centrally planned system based largely on state ownership and are in the process of moving to private ownership and a market-based capitalism" (Weiss, 1998, p. 290). In incomplete and imperfect emerging markets informational asymmetry may have significant influence on firms' operations. In more specific, we observe financial reports of sampled firms in construction industry in one transitional country. Relational capital is mainly captured in the advantageous position of firms, possessing insider or any other information relevant to the public procurement; and that is not necessarily accessible to its competitors. Our analysis is based on available financial and annual narrative reports, where sampled firms are divided into two groups, firms that execute public investments into infrastructure and firms that are not.

This study contributes to the relational capital related discussion within imperfect markets context, informational asymmetry in transitional economies but also any specific industry where the state presents a crucial customer. So, this research is filling existing gap by exploring association of relation capital and firms performance within imperfect markets context. This association has not been elaborated in the intellectual capital literature.

We assume that the differences in business growth measured by financial performance growth, between the firms operating with state and those that not, are associated with the level of information asymmetry. This research is conducted within one country and one industry. The results may, therefore, significantly differ from the results of the study in some other country or industry. This different socio-economic setting has still less voluminous literature than in the developed countries.

2. PRIOR LITERATURE, THEORY AND HYPOTHESIS DEVELOPMENT

Following resource-based theory (Wernerfelt, 1984), earlier studies clearly confirm that a firm's resource base constituents are physical capital and intellectual capital (*i.e.* Pulic, 2004; Ho and Williams, 2003). Still, intellectual capital, other than capitalized costs of R&D, is not a constitutive part of official financial statements. Nevertheless, the intellectual capital has been studied from a variety of theoretical perspectives. For instance, Edvinsson and Malone (1997) similar as Stewart (1997) suggested two components of intellectual capital: human capital and structural capital, sub-segmenting relational capital within structural capital of the firm.

While human and structural capital are embodied in the value that employees provide to a firm and the processes and databases that enable value creation, relation capital is more over an intangible asset of firm's relationship with other organizations and people. Nahapiet and Ghoshal (1998) recognize a relationship dimension of intellectual capital within social capital theory. Importance of the relationship dimension is recognized as part of social capital in offered social capital theory (Nahapiet and Ghoshal, 1998).

According to this relationship dimension within social capital is participating in intellectual capital creation. Other terms used to label this relationship dimension are often referred as customer & relationship capital (Roos and Roos, 1997), customer capital or external structure (Saint-Onge, 1996; Sussan, 2012; Sveiby, 1997a), relational capital (Bontis, 1999; Cricelli *et al.*, 2014; Jacobsen *et al.*, 2005; Kale *et al.*, 2000; Mavridis and Vatalis, 2012), network capital (Huggins, 2010). Good external relationships are observed as one of invisible asset components and important value driver (Greco *et al.*, 2013). Some studies questioned usage of term relational capital vs. relational asset and social capital vs. relational capital (Elfenbein and Zenger, 2010).

Relational capital importance within the concept of Integrated Reporting (*i.e.* Eccles *et al.*, 2010; Haller and van Staden, 2014) is clearly acknowledged through Integrated Reporting Framework project of the International Integrated Reporting Council (IIRC, 2013). Similar, in RICARDIS report of European Commission (2006), used definition of intellectual capital emphasizes relational resources and activities as one of key elements.

The following definition delineates the importance of relational capital: „Relational capital represents the potential an organization has due to ex-firm intangibles. These intangibles include the knowledge embedded in customers, suppliers, the government or related industry associations" (Bontis, 1999, p. 448). This relationships embedded knowledge provide crucial role in ensuring competitive advantage (Canibano *et al.*, 2000). Going one step further, Welbourne (2008) offered additional explanation of relational capital and stressed its importance for firms mainly because it represents one of barriers to competitors, since relational capital is hard to imitate. He suggests that human capital represents base for relational capital and acts through relational capital.

This potential of relation capital and its importance for financial performance is clearly outlined within the MERITUM Guidelines for Managing and Reporting on Intangibles (2002). Studies with intellectual capital disclosing focus refers to unique starting point, need for disclosure, presented within fact that relational capital and other components are important determinants of company performance (Striukova *et al.*, 2008). Although, relational capital disclosure is concerning some preparers in a way that such disclosure can influence their competitive advantage and consequently their financial performance (Beattie *et al.*, 2013). Common perception of customer capital, and therefore relational capital, importance is to be highly significant for firms' revenue growth (Sussan, 2012).

Prior literature evidences on numerous studies that contribute to the discussion on intellectual capital components, intellectual capital valuation models and the association of intellection capital with the firms' performance. Besides, studies that are making contribution to discussion on intellectual capital components and models of intellectual capital valuation, in prior literature can be found that there are various studies analysing connection of intellectual capital, or intellectual capital components performance and firms' performance (Carlucci *et al.*, 2004; Celenza and Rossi, 2014; Chen *et al.*, 2005; Firer and Williams, 2003; Gazor *et al.*, 2013; Maditinos *et al.*, 2011; Roos and Roos, 1997; Sharabati *et al.*, 2010; Zeghal and Maaloul, 2010).

Much as authors do agree that the relational capital presents segment of firm's invisible asset and its intellectual capital, previous studies considerably vary in conceptualizing its value. Inadequate measure to clearly reflect relational capital value is reason why relational capital is not expressed with financial accounting and disclosed by mandatory financial statements. So, in developed countries disclosure of intellectual resources, among them disclosure of relational capital, is mostly voluntary (Bozzolan *et al.*, 2006; Guthrie *et al.*, 2007; Striukova *et al.*, 2008).

Firm's performance is observed from various perspectives such as economic, business, operational, financial, value added efficiency, stock market, etc. The majority of prior studies use financial, accounting or market-based measures as proxies for firm's performance.

Survey conducted by Cleary and Quinn (2016) treated impact of cloud-based accounting/finance infrastructure on business performance through intellectual capital components, among them relational capital. This study provided evidence of significant influence of relation capital perception on subsequent business performance perception.

Welbourne (2008) stressed the importance of relational capital for small and medium enterprises and, building on previous stream of research, clearly indicated positive influence of relational capital on firm's performance. By doing so, he noted that firm size is not critical for this influence on particular firm's performance. However, this is exploratory study based on survey of managers where relational capital and financial performance were self rated.

Morariu (2014) examined intellectual capital performance and various intellectual capital components association with traditional corporate performance measured through profitability (ROE), productivity (ATO) and market value (MB). Using sample of 72 listed Romanian companies obtained results of this study has shown a non-significant association with profitability and only significant negative association of human capital performance with market value and productivity.

Influence of relational capital disclosure on financial performance was reported by Martini *et al.* (2016). This research analysed sample of 73 European listed companies and reported positive association between voluntary or mandatory relational capital disclosure

and financial performance. Financial performance is measured by net revenues, net operating cash flow and total capital expenditures.

In our study, we are using change in net income as a proxy for firm's performance that is explained in financial reporting positions. Following the theory used in accounting research (Suojanen, 1954), the enterprise theory of the firm that provided alternative perception of income as main participants' reward for participation in the firm (Morley, 1979).

We argue that knowing customers preferences, which in our case is embodied in possessing exclusive information on particular public procurement, enables extraordinary business growth and that, consequently, explains the existence of relational capital. First hypothesis is therefore proposed as follows:

H1: Firms that provide services to the state report higher positive change in net income then the firms that are not.

While, some authors have established association between structural capital and firm's performance, we do believe that the level of this association strongly depends on particular industry specifics and the level of observed market imperfection.

As to investigate the association between reported R&D in financial reports in construction industry with the change in net reported income, we set the hypothesis as follows:

H2: Firm's EVA and change in reported intangible assets, tangible assets are associated with the change in reported net income.

The efficiency of human capital is in prior literature proposed to be one of value drivers that impacts firm's performance.

We argue that within industry and market specifics this might not necessarily be the case and propose our third hypothesis as follows:

H3: The cost of employees, as a measure of human capital effectiveness, is associated with the change in net income.

We assume that the associations between variables set in H2 and H3 are not statically relevant as to provide an explanation of human and structural capital influence on overall financial performance, as in prior literature proposed. Furthermore, we do believe that the relational capital embodied in firm's ability to work with state is predominant factor of change in net reported income, as set in H1.

3. METHODOLOGY AND RESULTS

The purpose of this research is to analyse the impact of intellectual capital on firm's performance. We disaggregate the intellectual capital into structural, human and relational capital and consider each segment's impact separately.

Our sample consists of a panel of 80 non-listed construction companies in Bosnia and Herzegovina. The period of analysis is from 2008 to 2013. The incomplete financial reports are excluded, whereby the sample is comprised of 474 firm-year observations within balanced panel data. The data is gathered from official database of financial reports and available annual reports retrieved from firms' websites. Data extracted from financial reports are more reliable in comparison to data obtained from questionnaires.

Our empirical analyses are based on longitudinal design of the research. We conduct multivariate analysis as to evaluate each dependent variable's causal relationship with the

independent variable. Testing is based on panel data estimates, processed using the software STATA (Horton and Lipsitz, 1999). This longitudinal data analysis will be performed through random-effect modelling.

Table no. 1 – Sample composition statistics

Year	In total construction industry in Bosnia and Herzegovina		Within sample group of firms that do not implement state project	Within sample group of firms that implement state project
	Observed sample within total number of firms in %	Observed sample within total reported income in %	Portion (%) of total reported income of the industry	Portion (%) of total reported income of the industry
2008	4,6	50,9	17,3	33,6
2009	4,6	51,6	16,2	35,4
2010	4,8	63,8	18,7	45,1
2011	5,0	53,5	14,6	38,9
2012	5,1	60,0	14,5	45,5
2013	5,7	73,2	19,6	53,6

Total observed sample counts for about 5% of total number of firms in the industry and that have realized d 50.9 – 73.2% of total reported income in construction industry in Bosnia and Herzegovina.

3.1 Variable definitions

Since, the objective of this paper is to influence of state projects activities implementation on firms' performance, dependent variable is proxy for financial performance. So, this proxy is called income change, and it represents income change of single firm with respect to income change within construction industry. Construction industry is taken in consideration during design of this accounting-based dependent variable in order to avoid controllability problem in the form of macroeconomic distortions influence on performance measures (Merchant, 2006). By this variable we want to make sure does some construction firms in transitional countries are making higher (or lower) progress than average progress within construction industry. We assume that implementing state infrastructure projects helps firms to obtain sustainable competitive advantages in this type of industry. Income change is estimated using following formula:

$$ICH_{it} = [(I_{it} - I_{it-1}) / I_{it-1}]*100 / [(Ic_t - Ic_{t-1}) / Ic_{t-1}] \quad (1)$$

where ICH_{it} is percentage of income change for firm i year t in regard (with respect) to percentage of income change for construction industry in year t. Iit represents net income of firm i in year t. Ic_t represents income for construction industry in year t.

We propose the model:

$$ICH_{it} = \beta_0 + \beta_1 IA_{it} + \beta_2 ICOE_{it} + \beta_3 EVA_{it} + \beta_4 INTCH_{it} + \beta_5 TANCH_{it} + \beta_6 SZ_{it} + \beta_7 ST_i + \varepsilon_i \quad (2)$$

Independent variables are constructed within financial reports positions as described in Table no. 2.

Table no. 2 – Independent variables definitions

Variable	Formula	Definition
IA_{it}	$IA_{it}= I_{it}/A_{it}$	Net income of firm i in year t divided by total assets of firm i in year t
$ICOE_{it}$	$ICOE_{it}=I_{it}/COE_{it}$	Net income of firm i in year t divided by cost of employees of firm i in year t
EVA_{it}	$EVA_{it} = NOPAT_{it} – (WACC \times K)_{it}$	Economic Value Added (EVA) is included in this model as one of independent variables since we follow opinion that represents highly influential measure used in governance of the firm (Biondi, 2011, p. 5)
$INTCH_{it}$	$INTCH_{it}=INT_{it}-INT_{it-1}$	Intangible change in absolute amount, because small value
$TANCH_{it}$	$TANCH_{it}= (TAN_{it}-TAN_{it-1})*100/ TAN_{it-1}$	Percentage of tangible change
SZ_{it}	$SZ_{it}=\log(A_{it})$	Size of firm measured by log of book value of total assets
ST_i	0 or 1 dependent of firm	Dummy variable for group. 0 group represent firms that have business relations only with private sector. Group 1 are firms that implemented state project in observed period.

3.2 Empirical results and discussion

Variable definitions are excluding one year observation, because majority of variables have basis previous year, so there is difference between observed firm-year data and number of observations in results. Following table presents results of descriptive statistics (mean, standard deviation, minimum and maximum) of all variables for the final usable sample.

Table no. 3 – Descriptive Statistics by groups[1)]

Group 0					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ICH	200	-117.9036	1278.87	-14753.99	3317.009
IA	200	0.0424063	0.1194276	-.5405289	0.658916
ICOE	199	10.72486	11.41468	0.615811	135.3514
EVA	200	-853493.4	6457371	-8.62e+07	1.02e+07
INTCH	200	-1314.215	19804.26	-102758	186209
TANCH	200	4.772149	58.62209	-89.66654	620.015
SZ	200	6.657261	0.6967811	5.075817	8.34363
Group 1					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ICH	195	146.0348	907.7175	-2312.363	9634.975
IA	195	0.0350679	0.0863853	-.1429691	0.5346334
ICOE	195	11.99893	15.1689	0.5648092	169.6565
EVA	195	-1456935	4667186	-3.97e+07	2252794
INTCH	195	3972.554	69232.69	-127242	902136
TANCH	195	13.86155	79.26062	-79.54141	988.0464
SZ	195	6.901027	0.6294042	5.429028	8.737034

Note: [1)] Group 0 represent firms that have business relations only with private sector. Group 1 are firms that implemented public procurement in observed period.
ICH as dependent variable represents firm's net income change with respect of net income industry change. Independent variables are following: IA represents net income of firm i in year t divided by total assets of firm i in year t; ICOE represents net income of firm i in year t divided by cost of employees of firm i in year t; EVA is Economic Value Added; INTCH represents intangible change in absolute amount; TANCH represents percentage of tangible change; SZ represents size of firm measured by log of book value of total assets.

Descriptive statistics on the variables is performed by the groups of interest for this analysis. Thus, following our research intention two groups were defined within dummy independent variable. In first stage research, we sorted firms into two groups by their direct involvement in state project implementation during observed time period. Existence of direct involvement is obtained from construction firm references published in their web pages. Group coded 0 include firms that have no interaction with implementation state projects. These firms during observed period implemented projects in interaction with private sector. Contrary to this, group coded 1 represent firms that had direct interaction with state authorities in form of implementation construction project services provision during given period. It is interesting to compare results of descriptive statistics for these groups.

Table no. 3 summarizes results of descriptive statistics by group of firms that did not implement state project and group of firms that did implement state project in given period (2008-2013). Groups are similar size as it can be seen by the number of observations and means of variable SZ.

Correlational analysis, known as initial statistical technique, is employed in exploration of relationship between used variables. Pearson's correlation coefficients are presented in Table no. 4.

Table no. 4 – Correlation coefficients

	ICH	IA	ICOE	EVA	INTCH	TANCH	SZ	ST
ICH	1.0000							
IA	-0.0226	1.0000						
ICOE	-0.1948*	0.0498	1.0000					
EVA	-0.0111	0.1122*	0.0026	1.0000				
INTCH	0.0780	0.0014	0.0399	0.0664	1.0000			
TANCH	0.0227	0.1482*	0.0351	-0.0188	0.0032	1.0000		
SZ	0.0211	-0.2269*	0.0332	-0.2972*	0.0124	-0.0591	1.0000	
ST	0.1182*	-0.0352	0.0476	-0.0535	0.0523	0.0653	0.1809*	1.000

*Note: * Correlation coefficient significant at the 0.05 level.*
ICH as dependent variable represents firm's net income change with respect of net income industry change. Independent variables are following: IA represents net income of firm i in year t divided by total assets of firm i in year t; ICOE represents net income of firm i in year t divided by cost of employees of firm i in year t; EVA is Economic Value Added; INTCH represents intangible change in absolute amount; TANCH represents percentage of tangible change; SZ represents size of firm measured by log of book value of total assets; ST represents dummy variable for group. 0 group represent firms that have business relations only with private sector. Group 1 are firms that implemented state project in observed period.

Table no. 5 – Correlation coefficients

	ICH (Y=2)	ICH (Y=3)	ICH (Y=4)	ICH (Y=5)	ICH (Y=6)
ICH (Y=2)	1.0000				
ICH (Y=3)	-0.1316	1.0000			
ICH (Y=4)	0.0653	0.1070	1.0000		
ICH (Y=5)	-0.3087	-0.3113	-0.1714	1.0000	
ICH (Y=6)	-0.1294	0.2073	-0.1121	0.0465	1.0000

Considering Pearson's correlation coefficients we can conclude that significant weak negative correlation exists between ICH and ICOE (-0.1948), between IA and SZ (-0.2269), between EVA and SZ (-0.2972). Significant weak positive correlation exists between SZ

and ST (0.1809). Based on correlation coefficients in Table no. 5 that do not exceed 0.30, it can be concluded that multicollinearity problem is not a concern.

After previous analyses we can perform a repeated measures analysis of variance in order to examine the hypotheses of this research. This research features allows usage of ANOVA since time points are equally spaced and less than 10 within strongly balanced data. (Locascio and Atri, 2011) So, using income change (ICH) as dependent variable (Y) and groups of firms (ST) as independent variable, a two-way ANOVA was implemented on this panel data (see Table no. 6).

Table no. 6 – ANOVA

Source of variance	Partial SS	Degrees of freedom	Mean square	F-statistics	p-value
Model	103413452	86	1202482.12	0.95	0.5976
ST	6878165.04	1	6878165.04	7.27	0.0086
Y	16657606.2	4	4164401.55	3.30	0.0115
ST#Y	6922106.82	4	1730526.71	1.37	0.2439
Residual	388777644	308	1262265.08		
R^2					0.2101

Results of firms groups comparison using ANOVA on this panel data suggested that group of firms that provide services to state (variable ST) has significant ($p=0.0086<0.05$) difference in change in reported net income. This finding was somehow expected.

Further analysis is going to be performed using generalized linear models with random-effect. We choose random-effect model over fixed-effect model, because fixed-effects model omits time-invariant variable (Frees, 2004). Our interest for dummy (time-invariant) variable prevailed and random-effect model enabled inclusion of dummy variable in the model.

Table no. 7 – Regression (GLM with random-effect)

Independent variable	Coefficients	Standard error	z-statistic	Significance
IA	-110.4116	546.2618	-0.20	0.841
ICOE	-17.04113	4.135171	-4.12	0.000
EVA	-1.46e-06	0.0000103	-0.14	0.887
INTCH	0.0017701	0.0010935	1.62	0.105
TANCH	0.3739316	0.8041161	0.47	0.642
SZ	3.051258	88.91619	0.03	0.973
ST	271.4784	112.639	2.41	0.016
CONS	47.51061	599.6862	0.08	0.937
AIC				16.85327
BIC				4.62e+08

To provide more robust estimates we will use generalized estimating equations with unstructured correlation.

Table no. 8 – Generalized Estimating Equations (unstructured correlation)

Independent variable	Coefficients	Standard error	z-statistic	Significance
IA	55.34042	487.3925	0.11	0.910
ICOE	-14.8878	3.864947	-3.85	0.000
EVA	-4.59e-06	9.98e-06	-0.46	0.645
INTCH	0.0015931	0.0009586	1.66	0.097
TANCH	-0.1089039	0.7251499	-0.15	0.881
SZ	-47.07787	74.27997	-0.63	0.526
ST	337.8247	94.86607	3.56	0.000
CONS	308.1506	501.4083	0.61	0.539
Wald chi2 (7)				29.87
Prob > chi2				0.0001

Probability ($p = 0.0001$) of Wald Chi-Square statistics (Cameron and Trivedi, 2009) shows that minimum one estimated coefficient is different than 0.

Table no. 9 – Generalized Estimating Equations (unstructured correlation)

Independent variable	Coefficients	Standard error	z-statistic	Significance
ST	303.8609	90.4138	3.36	0.001
CONS	-143.1319	63.52629	-2.25	0.024
Wald chi2 (2)				47.42
Prob > chi2				0.0008

Standard errors are smaller within generalized estimating equations than in case of generalized linear model standard errors presented in Table no. 7.

Table no. 10 – Generalized Estimating Equations (unstructured correlation)

Independent variable	Coefficients	Standard error	z-statistic	Significance
ICOE	-14.83531	3.873264		0.000
ST	339.9262	93.65227	3.63	0.000
CONS	-4.038208	77.78021	-0.05	0.959
Wald chi2 (2)				26.52
Prob > chi2				0.0000

This reduced model as model presented in Table no. 10 has probability ($p < 0.05$) of Wald Chi-Square statistics. Table no. 9 has the smallest standard errors, so this model is chosen one. Independent variable of this model has significant impact of dependent variable. Coefficient of independent variable ST is 303.8609 meaning that firms that provide services to state has 303.86 times higher positive change in net income scaled by construction industry change of net income.

These estimated coefficients show that:

- The control variable of providing services to the state was significant for the change in net reported income and that provides support for Hypothesis 1 (H1);

- Human capital effectiveness is significantly negatively associated with the change in net reported income and that supports Hypothesis 3 (H3).

On the other hand, EVA, change in intangible and tangible assets as well as size do not have significant association with the change in net reported income and that does not support Hypothesis 2 (H2).

3.3 Study limitations

The results should have interpretation with respect to a number of limitations related to this study. Taking into consideration that the association explored within our research is rather novel in the relational capital literature, the comparable research results could not be presented and used.

The lack in financial reports data accessibility has led to the usage of six years' time frame for the firms sampled. Furthermore, the analysis is based on financial reports of construction firms. We propose further analysis, based on established research, path within other industries or country context.

Another limitation is tied to determination of firms that provide services to state. Specific data as exact amount of such services and that kind relationship length were unavailable. So, we obtained data through their references on web that resulted time-invariant variable. This is acceptable if we consider time-frame used and type of industry.

Generalized estimating equations are rarely used in accounting research, but were necessary for estimation of time invariant variable.

4. CONCLUSIONS

In the intellectual capital literature has been explored the relationship between relational capital and firms' performance on various grounds, but rarely with respect to the theory of markets with asymmetric information and imperfect markets functioning (Stiglitz, 2002). This theory is rarely elaborated within social and relational capital literature.

We assumed that the firm's ability to provide services to the state by possessing crucial information on customer's preferences may drive its growth. Accordingly, we have grouped the sampled firms based on this control variable and have explored its association with the change in net reported income. We found that doing business with state in construction sector in Bosnia and Herzegovina is predominant factor for outstanding increase in net reported income over six years period. On the other hand, we have not found any statistically relevant association between reported intangible assets and the change in net reported income. Furthermore, we have found out that the human capital is negatively associated with the change in net reported income.

With respect to findings of this study, we propose further exploration of needed relational capital mandatory or voluntary disclosure. We believe more research is needed, whereby future efforts could focus on other industries where state plays dominant role in overall consumption of goods, works or services. Consequently, significant impact of customer dominant role on financial growth leads to introduction of "dominant customer" needed disclosure. Disclosure of this important fact would decrease information asymmetry between preparers and disclosure users.

References

Beattie, V., Roslender, R., and Smith, S. J., 2013. Balancing on a Tightrope: Customer Relational Capital, Value Creation and Disclosure. *3-4*, 19-32. doi: http://dx.doi.org/10.3280/FR2013-003003

Biondi, Y., 2011. The Pure Logic of Accounting: A Critique of the Fair Value Revolution. *1*(1). doi: http://dx.doi.org/10.2202/2152-2820.1018

Bollen, L., Vergauwen, P., and Schnieders, S., 2005. Linking intellectual capital and intellectual property to company performance. *Management Decision, 43*(9), 1161-1185. doi: http://dx.doi.org/10.1108/00251740510626254

Bontis, N., 1999. Managing organisational knowledge by diagnosing intellectual capital: framing and advancing the state of the field. *International Journal of Technology Management, 18*(5/6/7/8), 433-462. doi: http://dx.doi.org/10.1504/IJTM.1999.002780

Bozzolan, S., O'Regan, P., and Ricceri, F., 2006. Intellectual capital disclosure (ICD): A comparison of practice in Italy and the UK. *10*(2), 92-113. doi: http://dx.doi.org/10.1108/14013380610703111

Cameron, A. C., and Trivedi, P. K., 2009. *Microeconometrics Using Stata*. USA: Stata Press Publication.

Canibano, L., Garcia-Ayuso, M., and Sanchez, P., 2000. Accounting for intangibles: A literature review. *19*, 102-124.

Carlucci, D., Marr, B., and Schiuma, G., 2004. The knowledge value chain: How intellectual capital impacts on business performance. *International Journal of Technology Management, 27*(6/7), 575-590. doi: http://dx.doi.org/10.1504/IJTM.2004.004903

Celenza, D., and Rossi, F., 2014. Intellectual capital and performance of listed companies: Empirical evidence from Italy. *Measuring Business Excellence, 18*(1), 22-35. doi: http://dx.doi.org/10.1108/MBE-10-2013-0054

Chaudhry, A., Coetsee, D., Bakker, E., Varughese, S., Mcllwaine, S., Fuller, C., . . . Balasubramanian, T. V., 2015. *2015 Interpretation and Application of International Financial Reporting Standards*. Hoboken, New Jersey: John Wiley & Sons, Inc.

Chen, M. C., Cheng, S. J., and Hwang, Y., 2005. An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital, 6*(2), 159-176. doi: http://dx.doi.org/10.1108/14691930510592771

Cleary, P., and Quinn, M., 2016. Intellectual capital and business performance – an exploratory study of the impact of cloud-based accounting and finance infrastructure. *Journal of Intellectual Capital, 17*(2), 255-278. doi: http://dx.doi.org/10.1108/JIC-06-2015-0058

Cricelli, L., Greco, M., and Grimaldi, M., 2014. An overall index of intellectual capital. *Management Research Review, 37*(10), 880-901. doi: http://dx.doi.org/10.1108/MRR-04-2013-0088

Dymond, L. H., 2015. *A Recent History of Recognized Economic Thought: Contributions of the Nobel Laureates to Economic Science*: Lulu Publishing Services.

Eccles, R. G., Cheng, B., and Saltzman, D., 2010. *The Landscape of Integrated Reporting -Reflections and Next Steps*. Cambridge, MA: Harvard Business School.

Edvinsson, L., and Malone, M. S., 1997. *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower*. New York, NY: HarperBusiness Press.

Elfenbein, D. W., and Zenger, T. R., 2010. *The economics of relational (social) capital: Exploring the value of exchange relationships in industrial procurement. (Working paper)*. St. Louis: Washington University in St. Louis.

European Commission, 2006. RICARDIS: Reporting Intellectual Capital to Augment Research, Development and Innovation in SMEs. Brussels: European Commission, Directorate-General for Research.

Firer, S., and Williams, S. M., 2003. Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital, 4*(3), 348-360. doi: http://dx.doi.org/10.1108/14691930310487806

Frees, E. W., 2004. *Longitudinal and panel data: analysis and applications in the social sciences*: Cambridge University Press.

Gazor, H., Kohkan, F., Kiarazm, A., and Rastegari, H., 2013. Impact of intellectual capital on performance in audit institutes. *5*(1), 60-72. doi: http://dx.doi.org/10.5296/ajfa.v5i1.2682

Greco, M., Cricelli, L., and Grimaldi, M., 2013. A strategic management framework of tangible and intangible assets. *European Management Journal*, *31*(1), 55-66. doi: http://dx.doi.org/10.1016/j.emj.2012.10.005

Guthrie, J., Petty, R., and Ricceri, F., 2007. *Intellectual Capital Reporting: Lessons from Hong Kong and Australia*. *Research Report*. Edinburgh, Scotland: The Institute of Chartered Accountants of Scotland.

Hall, R., 1992. The strategic analysis of intangible resources. *Strategic Management Journal, 13*(2), 135-144. doi: http://dx.doi.org/10.1002/smj.4250130205

Haller, A., and van Staden, C., 2014. The value added statement - an appropriate instrument for Integrated Reporting. *Accounting, Auditing & Accountability Journal, 27*(7), 1190-1216. doi: http://dx.doi.org/10.1108/AAAJ-04-2013-1307

Ho, C. A., and Williams, S. M., 2003. International comparative analysis of the association between board structure and the efficiency of value added by a firm from its physical capital and intellectual capital resources. *The International Journal of Accounting, 38*(4), 465-491. doi: http://dx.doi.org/10.1016/j.intacc.2003.09.001

Horton, N. J., and Lipsitz, S. R., 1999. Review of software to fit generalized estimating equation regression models. *The American Statistician, 53*(2), 160-169. doi: http://dx.doi.org/10.1080/00031305.1999.10474451

Huggins, R., 2010. Forms of network resource: Knowledge access and the role of inter-firm networks. *International Journal of Management Reviews, 12*(3), 335-352. doi: http://dx.doi.org/10.1111/j.1468-2370.2009.00266.x

International Integrated Reporting Council, 2013. Capitals Background Paper for <IR>. *Integrated Reporting <IR>*. http://integratedreporting.org/wp-content/uploads/2013/03/IR-Background-Paper-Capitals.pdf

Jacobsen, K., Hofman-Bang, P., and Nordby, R., 2005. The I.C. RatingTM model by Intellectual Capital Sweden. *Journal of Intellectual Capital, 6*(4), 570-587. doi: http://dx.doi.org/10.1108/14691930510628834

Kale, P., Singh, H., and Perlmutter, H., 2000. Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal, 21*(3), 217-237. doi: http://dx.doi.org/10.1002/(SICI)1097-0266(200003)21:3<217::AID-SMJ95>3.0.CO;2-Y

Locascio, J. J., and Atri, A., 2011. An overview of longitudinal data analysis methods for neurological research. *Dementia and Geriatric Cognitive Disorders. Extra, 1*(1), 330-357. doi: http://dx.doi.org/10.1159/000330228

Maditinos, D., Chatzoudes, D., Tsairidis, C., and Theriou, G., 2011. The impact of intellectual capital on firms' market value and financial performance. *Journal of Intellectual Capital, 12*(1), 132-151. doi: http://dx.doi.org/10.1108/14691931111097944

Martini, S. B., Corvino, A., Doni, F., and Rigolini, A., 2016. Relational capital disclosure, corporate reporting and company performance: Evidence from Europe. *Journal of Intellectual Capital, 17*(2). doi: http://dx.doi.org/10.1108/JIC-07-2015-0065

Mavridis, D. G., and Vatalis, K. I., 2012. Intellectual Capital Accounting Indicators. *Procedia Economics and Finance, 1*, 276-285. doi: http://dx.doi.org/10.1016/S2212-5671(12)00032-9

Merchant, K. A., 2006. Measuring general managers' performances: Market, accounting and combination-of-measures systems. *Accounting, Auditing & Accountability Journal, 19*(6), 893-917. doi: http://dx.doi.org/10.1108/09513570610709917

MERITUM project, 2002. Guidelines for Managing and Reporting on Intangibles. Intellectual Capital Report. *website of Per Nikolaj Bukh*. http://www.pnbukh.com/files/pdf_filer/MERITUM_Guidelines.pdf

Morariu, C. M., 2014. Intellectual capital performance in the case of Romanian public companies. *Journal of Intellectual Capital, 15*(3), 392-410. doi: http://dx.doi.org/10.1108/JIC-05-2014-0061

Morley, M. F., 1979. The value added statement in Britain. *The Accounting Review, 54*(3), 618-629.

Nahapiet, J., and Ghoshal, S., 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23*, 242-266. doi: http://dx.doi.org/10.5465/AMR.1998.533225

Pulic, A., 2004. Intellectual capital - does it create or destroy value? *Measuring Business Excellence, 8*(1), 62-68. doi: http://dx.doi.org/10.1108/13683040410524757

Roos, G., and Roos, J., 1997. Measuring your company's intellectual performance. *Long Range Planning, 30*(3), 413-426. doi: http://dx.doi.org/10.1016/S0024-6301(97)90260-0

Saint-Onge, H., 1996. Tacit knowledge: The key to the strategic alignment of intellectual capital. *Strategy and Leadership, 24*(2), 10-15. doi: http://dx.doi.org/10.1108/eb054547

Sharabati, A. A. A., Naji Jawad, S., and Bontis, N., 2010. Intellectual capital and business performance in the pharmaceutical sector of Jordan. *Management Decision, 48*(1), 105-131. doi: http://dx.doi.org/10.1108/00251741011014481

Skyrme, D. J., 1998. Valuing knowledge: is it worth it? *Managing information, 5*(2), 24-26.

Stewart, T. A., 1997. *Intellectual Capital: The New Wealth of Organisation*. London: Nicholas Brealey.

Stiglitz, J., 2002. There is no invisible hand. *The Guardian: Higher education.* from www.theguardian.com/education/2002/dec/20/highereducation.uk1

Striukova, L., Unerman, J., and Guthrie, J., 2008. Corporate reporting of intellectual capital: Evidence from UK companies. *The British Accounting Review, 40*(4), 297-313. doi: http://dx.doi.org/10.1016/j.bar.2008.06.001

Suojanen, W. W., 1954. Accounting theory and the large corporation. *The Accounting Review, 29*(3), 391-398.

Sussan, F., 2012. Consumer interaction as intellectual capital. *Journal of Intellectual Capital, 13*(1), 81-105. doi: http://dx.doi.org/10.1108/14691931211196222

Sveiby, K. E., 1997a. The Intangible Asset Monitor. *Journal of Human Resource Casting and Accounting, 2*(1), 73-97. doi: http://dx.doi.org/10.1108/eb029036

Sveiby, K. E., 1997b. *The new organizational wealth: managing & measuring knowledge-based assets*. San Francisco, CA: Barrett-Kohler.

Weiss, J., 1998. Cost--benefit analysis and assessing privatisation projects in transitional economies. *Impact Assessment and Project Appraisal, 16*(4), 289-294. doi: http://dx.doi.org/10.1080/14615517.1998.10600139

Welbourne, T. M., 2008. Relational capital: Strategic advantage for small and medium-size enterprises (SMEs) through negotiation and collaboration. *18*(5), 438-492. doi: http://dx.doi.org/10.1007/s10726-008-9138-6

Wernerfelt, B., 1984. A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171-180. doi: http://dx.doi.org/10.1002/smj.4250050207

Zeghal, D., and Maaloul, A., 2010. Analysing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital, 11*(1), 39-60. doi: http://dx.doi.org/10.1108/14691931011013325