

# Effect of Governmental Ownership on the Intellectual Capital Index in Accepted Corporation in Tehran Stock Exchange

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## Abstract

*Present study was performed to study the influence of Governmental ownership on the intellectual capital index of the firms accepted in Tehran stock exchange market since 2005 to 2011. Data was examined and analyzed during 2012 and 2013. Taking into consideration some conditions of this study, 89 firms constituted the study sample. Dependent variable of this study was intellectual capital of the firms and independent variable also was Governmental ownership percentage. Control variables including the size, financial level and market efficiency were also used to precisely evaluate the results. Finally hypothesis affirmation was performed using EViews and using chaw, Hausman, stability and regression. Results of hypothesis test indicated that significant positive relationship between Governmental ownership percentage and intellectual capital. Estimated coefficient for Governmental ownership percentage was 0.014, with 0.005 significance level, which was lower than test error level ( $\alpha=0.05$ ). Thus, study hypothesis was accepted with 99% confidence level.*

**Keywords:** *Governmental ownership, intellectual capital, stock exchange market.*

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## **1. Introduction**

Nowadays concerns of profit seeking units management is seriously towards in intra organizational resources rather than toward the environment and industry. Invisible resources which are also called as knowledge, insensible assets. Strategic asset, etc, are most important intra organizational resources which are qualified for creation and improving the sustainable competitive advantages (Moggeri et al., 2010). So in knowledge – driven economy has the more important status as the major component of wealth production compared to other visible, physical assets. In the present competitive markets where the objective of organization is attaining more market share through creation of competitive advantages, success of an organization depends on applying and management of knowledge and intellectual asset in all the organizational dimensions (Moggeri et al., 2010).

Intellectual capital is a combination of invisible asset, human capital and infrastructures that enables the firm to perform its tasks (Brooking, 1997). Intellectual capital is including the knowledge, information, intellectual capital and experience which may be efficient in wealth creation (Stewart, 1997). Intellectual capital is created through the competence, attitudes, intellectual skills and experience (Roos et al., 1997). In general, intellectual capital is capital beyond the physical and visible properties. Nowadays, the contribution of intellectual capital is important due to creation of knowledge and information, consequently. Wealth in the knowledge based economy may play an important role to create the added value and to produce of domestic gross production. So in economic entities also the financial performance of the firms may be influence by the intellectual properties and human capital (Abbasi and Sedghi, 2010). In addition, ownership architecture (including ownership centralization and composition) has been among the issues discussed in the financial literature field (Mohammadi et al., 2010). According to the trend of governmental companies assignment an decrease in governmental charge, the country is transiting from public economy to private economy. Taking the fact that the success in the privatization requires the trust of investors and capital market. Thus it is ineviTable task to adopt the requires strategies to strange then the responding culture and to improve the transparency of information and comparing them to each other. According to the importance of the subject, the major goal of this study is calculation of intellectual capital and study the effect of Governmental capital on the intellectual capital in the firms accepted in Tehran stock exchange market.

Saleh et al. (2009) concluded that there is a significant relationship between the ownership structure and performance of intellectual capital. They demonstrated that individual ownership has

a substantial negative effect on the intellectual capital. Ayanda and Sany (2011) indicated that collegiate system of Nigeria was very moderate in applying the strategic human resources management and the rate of applying these programs is greatly influenced by the fact that the university investors are private or governmental. Results also demonstrate the significant difference between the rate of regulation of human resources management, training and development, job planning system and involvement of employees in the governmental and non-governmental universities. In previous studies in Iran, Setayesh et al. (2011) also reported that corporate government strategies i.e institutional ownership, managerial ownership, family ownership, ownership centralization, percentage of bound and non- bound members and equality of management and board of directors manager, don't affect on the efficiency of intellectual capitals components. Results of study on the industry level indicate that there is a significant relationship between the kind of industry and efficiency of intellectual capitals components. Results of Moradzadeh et al., (2011) demonstrated that there is a direct, significant relationship between the rate of institutional investors and performance of intellectual capital. But there is no significant relationship between the centralization of institutional investors and performance of intellectual capital. Results of Mohamadi et al., (2010) indicated that there was a direct, positive relationship between the centralization of ownership and efficiency of the firms and there was not a significant relationship between the centralization of ownership and the value of the firms. On the other hand , results of effects of the type of ownership indicated that in contrast to the reverse relationship between the efficiency of stock and the ratio of governmental ownership, there is a positive, significant relationship between the ratio of individual, corporate private ownership and efficiency. Present study also was performed aiming to study the effect of Governmental ownership on the intellectual capital in the firms accepted in Tehran stock exchange market in Iran.

## **2. Materials and Methods**

In this study, the firms accepted in the stock exchange market during 2005-2011 were studied. Study population in present study is the firms accepted in the stock exchange market which information related to those firms is available. Study sample of this study is including 89 firms selected by using conditional of sample selection as continuous; the samples were selected for 7 subsequent years (Table 1). Empirical data also was derived through the financial software according to the information's of accounted financial statements. Dependent variable of this study was firms intellectual capital index (VAIC) and the independent variable also was the percentage of Governmental ownership. Control variables including the size, financial lever and market

efficiency were used to precisely the results. Initial data, after extraction from above mentioned sources, was entered to Excel, so that by performing some calculations, the variables required in the study hypothesis are achieved. Watson, chaw, Hausman persistence tests and single regression model were used to analyze the information.

1	The firms theirs stock were exchanged during the period of 2005 and 2011 in the stock exchange market and their symbols are not omitted on the exchange market tableau.
2	Financial year of the firms is ended to the end of Esfand Iranian month of each year.
3	The forms which transaction symbols have not suspended more than 6 months
4	Banks, credit institutions and other monetary entities, financial agents and investment companies are excluded form statistic sample. This is due to specific conditions of reporting climate in these firms
5	The firms which create loss during this period exclude.

**Table 1:** Conditions Considered For The Selection Of The Research Sample Companies

### 3. Value Added As an Indicator of IC (The VAIC Method)

Taking into consideration the increasing importance of the role played by IC in value creation, Pulic (1998, 2004), with colleagues at the Austrian IC Research Centre, developed a new method to measure companies' IC which they called the "value added intellectual coefficient" (VAIC). This method is very important since it allows us to measure the contribution of every resource – human, structural, physical and financial – to create VA by the company.

The calculation of the VAIC method follows a number of different steps. The first step is to calculate the company's ability to create VA. In accordance with the stakeholder theory [4] (Meek and Gray, 1988; Donaldson and Preston, 1995; Riahi-Belkaoui, 2003), the VA is calculated as follows:

$$(1) \quad VA = OUT - IN$$

Outputs (OUT) represent the revenue and comprise all products and services sold on the market; inputs (IN) include all expenses for operating a company, exclusive of employee costs which are not regarded as costs.

The second step is to assess the relation between VA and physical and financial capital employed (CA). For Pulic (2004), IC cannot create value on its own. Therefore, it is necessary to take financial and physical capital into account in order to have a full insight into the totality of VA created by a company's resources. The value added capital employed coefficient (VACA) reveals how much new value has been created by one monetary unit invested in capital employed. Thus, the relation between VA and CA indicates the ability of capital employed to create value in a company:

$$(2) \quad VACA = VA / CA$$

The third step is to assess the relation between VA and HU. The value added human capital coefficient (VAHU) indicates how much VA has been created by one financial unit invested in employees. For Pulic (2004), employee costs are considered as an indicator of HU. These expenses are no longer part of the inputs. This means that expenses related to employees are not treated as a cost but as an investment. Thus, the relation between VA and HC indicates the ability of HU to create value in a company [5]:

$$(3) \quad VAHU = VA / HU$$

The fourth step is to find the relation between VA and SC. The value added structural capital coefficient (STVA) shows the contribution of SC in value creation. According to Pulic (2004), SC is obtained when HU is deducted from VA. As this equation indicates, this form of capital is not an independent indicator. Indeed, it is dependent on the created VA and is in reverse proportion to HU.

This means that the greater the share of HC in the created VA, the smaller the share of SC. Thus, the relation between VA and HU is calculated as:

$$(4) \quad STVA = SC / VA$$

Then, the fifth step is to calculate the value added intellectual capital coefficient (VAIN), which shows the contribution of IC in value creation. Given that IC is composed of HC and SC, the VAIN is obtained by adding up VAHU and STVA:

$$(5) \quad VAIN = VAHU + STVA$$

Finally, the sixth step is to assess each resource that helps to create or produce VA. Therefore, VAIC measures how much new value has been created per invested monetary unit in each resource. A high coefficient indicates a higher value creation using a company's resources, including its IC. Thus, VAIC is calculated as follows:

$$(6) \quad VAIC = VAIN + VACA$$

#### 4. Study Model

In present study, following model was used to test the study hypothesis and to evaluate the effect of Governmental ownership on the intellectual capital.

$$Y_{it} = \beta_0 + \beta_1 Governmental_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \beta_8 Rm_t + v_{it}$$

Where:

$Y_{it}$  is the intellectual capital of the firm I in the year t;

$B_i$  is the estimated coefficients of regression model;

$Governmental_{it}$  is the firm with Governmental ownership

$Size_{it}$  is the size of the firm i at the end of the year;

$Lev_{it}$ : financial lever of the firm i at the end of the year;

$RM_{it}$ : The changes in the total cost of market at the end of year;

$V_{it}$ : model error

#### 5. Statistic Methods and Hypothesis Test

A regression model was used to test the hypothesis. Where intellectual capital index was considered as a dependent variable and the percentage of governmental ownership was considered as independent variables (size, financial lever and market efficiency) of the study were added to this regression model as independent variables. To confirm the fitness of statistic tests, the regression model was identified as suitable. For this purpose, F-limer (Chaw test) and Hausman tests were used. F-limer test helps to select the best among the pooled method and panel method. Hausman test will compare the estimation method of stable and random effects. So, firstly pooled method based on the regression model was fitted and then chaw test was performed on the fitted regression, statistic hypothesis related to this test is as follows:

$H_0$  = Regression method is pooled (lack of stable effects)

$H_1$  = Regression method is panel (presence of stable effects)

In the models basing on the panel data, it is required to test the estimation methods basing on the fact that the effects are randomized or stable, then the most suitable method is selected. In this regard, firstly regression model was fitted based on the randomized effects and then through Hausman test, adequacy of applied method is studied. Statistic hypothesis related to Hausman test are as follows:

$H_0$ : Regression is based on the stable effects (there is no relationship between individual effects and descriptive variables)

$H_1$ : Regression is based on the randomized effects (there is a relationship between individual effects and descriptive variables).

To test the first hypothesis, after performing Hausman test and selecting the stable effects method, model coefficients were evaluated by using the estimated generalized least squares (EGLS). It's worth mentioning that to evaluate the best estimation and to remove the self correlation in the model confusion elements and to correct the Watson –Dorbin statistics, variables AR (1) and AR (2) were used.

In present study, Dorbin – Watson test was used to test the lack of correlation of residues which is a hypothesis of the analysis and regression analysis and is called self- correlation. Statistic hypothesis relating to the Dorbin- Watson test are as follows:

Statistic Hypothesis of Dorbin- Watson  
Test:

$H_0$ : There is no relationship between the errors.

$H_1$ : There is a relationship between the errors.

To affirm the study results and to confirm the available relationship in the regression are not artificial and significance of the variables, persistence test performed and study variables square roots were calculated in EGLS model, where statistic variables are structured as follows:

Hypothesis Related To Mannay Test:

$H_0$ : presence of unit root.  
 $H_1$ : lack of unit root

Finally, based on the study model, study hypothesis were classified and interpreted as follows.  
 $H_0$ : There is no significant relationship between Governmental ownership and intellectual capital.  
 $H_1$ : There is significant relationship between Governmental ownership and intellectual capital.

## 6. Results and Discussion

Results of chaw test for study hypothesis model are given in total 2. According to the fact that the significance level of the test is lower than error level (0.05),  $H_0$  is rejected. On this ground, it is suggested to use panel- data to fit the regression model of hypothesis test.

The null hypothesis	F-statistic	df	Prob.	Result of Chow Test
Sectional and time effects were significant (Method of Panel-Data were fit).	13.301447	(88,529)	0.0000	Hypothesis $H_0$ was rejected.

**Table 2:** Chow Test For Regression Model Of Research Hypothesis Test

Results of Hausman test for study hypothesis model is given in Table 3. The findings demonstrate the acceptance of  $H_0$ . On this basis, it is suggested to use stable effects for fitness of regression model of hypothesis test. Thus, regression model of hypothesis test, based on the panel data and in the stable effects the method is fitted.

Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Result of Hausman Test
0.000000	4	1.0000	Hypothesis H <sub>0</sub> was accepted.

**Table 3:** Hausman Test For Regression Model Of Research Hypothesis Test

Results of persistence test are given is Table 4. Results of variable persistence test indicate that all the variables of present study are persistence. Thus H<sub>0</sub>, based on the fact that variables have the same unit root, is rejected.

Variables	Method	Statistic	Prob.**
VAIC	Hadri Z-stat	13.7416	0.0000
Governmental Ownership	Hadri Z-stat	14.3948	0.0000
Size	Hadri Z-stat	14.9456	0.0000
Lev	Hadri Z-stat	12.4935	0.0000
Rm	Hadri Z-stat	14.9468	0.0000

**Table 4:** Unit Root Test For Research Variables

Results of study hypothesis test are reported in Table 5. Determination coefficient of regression model is 0.892 and indicated that this model was able to define 89.2 % of changes in the adjustment of statistic samples intellectual capital predication through independent and control variables. Based on the results of the best fitness of study model, all the correlation coefficients of the model are significant and the amount of Dorbin- Watson statistics is 2.18 indicating the lack of correlation between the errors and H<sub>0</sub> of Dorbin- Watson is accepted.

Thus, there is no significant self correlation between the regression patter errors. Lack of self-correlation between the errors is accepted as a fundamental hypothesis of regression in respect of fitted model. Significance level of F statistics also is smaller than test error rate ( $\alpha = 0.05$ ). Thus the evaluated regression is significant statistically and the relationship between the study variables is linear. Estimated coefficient for variable the Governmental ownership percentage is 0.014 with 0.005 significance rate which is smaller than test error level ( $\alpha = 0.05$ ). On this basis, H<sub>0</sub> is rejected.

This finding demonstrates a positive, significance relationship between this variable and intellectual capital. Thus, the hypothesis one is supported in 99 % confidence level.

$$Y_{it} = \beta_0 + \beta_1 \text{Governmental}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Lev}_{it} + \beta_4 \text{Rm}_{it} + v_{it}$$

Variables	Coefficient	Std. Error	t-Statistic	Prob.	
C	8.336.67	0.550363	15.14648	0.0000	
Governmental	0.014147	0.005038	2.808221	0.0053	
SIZE	0.165974	0.047893	3.465513	0.0006	
LEV	-6.429350	0.309275	-20.77848	0.0000	
RM	-0.608534	0.292074	-2.083492	0.0379	
AR(1)	0.333247	0.058040	5.741667	0.0000	
AR(2)	-0.004142	0.046100	-0.089849	0.9285	
F-statistic	Prob. (F-statistic)	R-squared	Adjusted squared	R-	Durbin-Watson stat
40.10786	0.000000	0.915274	0.892453		2.180256

**Table 5:** Results Of Statistic Analysis For Research Model Test After Selection Of Best Estimate

## 7. Conclusion And Suggestion

In general the results of hypothesis test in this study indicated a positive, significant relationship between the Governmental ownership rate and intellectual capital. Results of this study in general is consistent to the results of Saleh et al. (2009) indicating the relationship capital. But Saleh et al. (2009) concluded in their study in Malaysia that there is a significant negative relationship between individual ownership and intellectual capital. Also similar results on the effect of ownership on the intellectual capital have been provided previously in the reports of Setayesh et al (2011), Moradzadeh and Adili (2011), Goh (2005), Warfield et al. (1995), Ayanda and Sani (2011). According to the studies by Bathayi (2006), Esmaeilzadeh-Magarri et al. (2010). Namazi and Ebrahimi (2010), Madhoushi and Asgharnejad (2009) and many other studied researches, firms with higher intellectual capital, their financial performance is better. Thus intellectual capital in the firms must be more concerned. While in present study a positive, significant relationship

was achieved between percentage of Governmental ownership and intellectual capital. Thus the firms with Governmental ownership also, despite being private, benefit from more indirect support of the government. Also investors can individually provide a strong support for the firms.

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