

# The Effect of Financial Risk on the Cost of Capital

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**Abstract:** The aim of this paper is discuss the possible relationship between the effects of financial risk and cost of capital and understanding the definition of financial risk and what are the main types of risks such as Objective risk, Subjective risk, Fundamental risk and Particular risk. Also the paper describe the relationship between the shareholder and specific risks in the second part of this paper discussion the identify loss exposures, analyze the loss exposure, select appropriator techniques for the loss exposure and implement and monitor the risk management program.

**Keywords:** financial risk cost of capital, loss exposure.

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## 1. INTRODUCTION

Risk in accounting and finance is defined as "the probability that an actual return on an investment will be lower than the expected return" (Business Dictionary 2015). Risk is also defined as a measure of the uncertainty surrounding the return that an investment will earn or, more formally, the variability of returns associated with a given asset (Prasanna Chandra 2011). By integrating both definitions, it is found that risk is the uncertain loss that could happen if actual returns were less than the expected ones.

Due to the important nature of risk for businesses, many different types of risks have been studied to better be able to deal with such threat. For example, when risk is identified as uncertainty, a distinction between objective and subjective risks must be made.

**Objective risk:** the relative variation of actual loss from expected loss. This type of risk can be mathematically measured such as standard deviation. This is a method used in almost all businesses to measure the success of its previous plans and budgets.

**Subjective risk:** the uncertainty based on a person's mental condition or state of mind. High subjective risk results in more conservative behavior, while low subjective risk results in less conservative behavior. This could appear in the behavior of the management of different businesses in accessing risk.

**Risk is classified into other categories such as:**

- *Fundamental risk* is the risk that affects the entire economy or a large number of persons or groups within the economy like inflation and war.
- *Particular risk*, on the contrary, is a risk that affects only individuals and not the entire economy like bank robberies or fire.

**Another classification is pure risk and speculative risk**

1. Pure risk is a situation in which there is a possibility of loss or no loss.
2. Speculative risk is a situation where there is a possibility of profit or loss.

In addition there are many types of risks a firm can face such as:

### **1. Firm-specific risks:**

- Business risk, business risk is that which the company assumes in order to create competitive advantages and added value for its shareholders. It is therefore considered as an internal company skill employed to deal with the competitive environment in which it is located. Hence, this risk refers to the possible impact that the loss of these company competitive skills might have, with the consequent influence on the possible future loss of company wealth (J. David Cabedo and Jose Miguel Tirado 2004).
- Financial risk, the chance that the firm will not be able to cover its financial obligations (Gitman, 2006).

### **2. Shareholder-specific risks:**

- Market risk, is the risk that the value of an investment will decline because of market factors that are independent of the investment such as economic, political or social events resulting from a variation in the price of certain economic magnitude and includes:
- Interest rate risk, the risk of loss caused by adverse interest rate movement. If a company issues a bond when interest rates were high, then the rates declined the company must still pay the high rates (Rejda, George E. 2005).
- Liquidity risk, a risk that an investment cannot be easily liquidated at a reasonable price. When an investor invests in an asset, he expects this asset can be converted into cash easily at any time. The more difficult it is to make this conversion, the higher the liquidity risk (Prasanna Chandra 2011).

### **3. Firm and shareholder risks:**

- *Currency exchange rate risk*, defined as the uncertainty of returns to an investor who acquires securities denominated in a currency different from his or her own (J. David Cabedo and Jose Miguel Tirado 2004). This type of risk is of special importance to those companies operating in more than one country.
- *Commodity price risk*, is the risk of losing money if the price of the commodity changes. Users and distributors of different commodities are the number one harmed from this type of risk (Rejda, George E. 2005).
- *Purchasing power risk*, the risk that the changes in prices caused by inflation or deflation will adversely affect the company's investment through affecting its purchasing power that was previously planned.
- *Tax rate risk*, is the risk that unfavorable changes in the tax law will affect the firm's investment (Prasanna Chandra 2011).
- *Operational risk*, which results from the business operations of the firm. For example, if a company uses a specific online system in operating its business. If that system is harmed by any means that could harm the whole operations harming the whole business as well (Rejda, George E. 2005).
- *Event risk*, a risk that a specific event will have a significant effect on the value of the firm or a specific investment. For example the Enron scandal caused the company to totally liquidate (Prasanna Chandra 2011).
- *Country risk*, also called political risk, is the uncertainty of returns caused by the possibility of a major change in the political or economic environment of a country (Prasanna Chandra 2011). That is obviously, what is happening in Libya due to the unstable political situation.

In addition, some types of risk are related to others, meaning they affect each other. For example, market risk can increase financial risk because if the value of a firm's investment decreased, the company won't be able to pay debts. A significant relationship exists between the market measure of risk (systematic risk) and the fundamental measures of risk (business risk, financial risk and liquidity risk) (Prasanna Chandra 2011).

Of course, there are endless types of risks that a firm could face, some are of special importance to investors, some are of importance to creditors and most of them are of importance to owners. For example, an investor would be more interested in liquidity risk than in country risk. The reason behind that is he lives in a country where he will invest anyway. On the other hand, it would be of great concern for him if he can liquidate his investment easily. Also creditors might be obviously more interested in financial risk than tax rate risk. The reason for that is obviously because they want to make sure the company is able to pay them, while the tax rate applied on that company would be of no interest at all. Users of such information are many with various reasons. A better picture about probable risks would make an investor make more

informed decisions. It would also guide creditors to who deserves their money and who might cause troubles. As for the management, it would inform them about areas that need more investments and areas that are of no good. All in all, risk is a very influential concept in which lots of decisions are based upon.

Moving forward, it's important to know how to deal with such risks. That will lead us to the concept of risk management. Every type of risk has its special measurement tool used to measure them. But more importantly, what should users do with such measurements. Risk management firstly is defined as "a process that identifies loss exposure faced by an organization and selects the most appropriate techniques for treating such exposures." The term "loss exposure" here is used due to the ambiguous nature of the term "risk", say risk managers. They then define loss exposure as "any situation or circumstance in which a loss is possible regardless of whether a loss occurs." As for financial risk management, it is defined as "the identification, analysis and treatment of speculative financial risks". Risk management's objectives are pre and post loss ones. The first one is to avoid loss in

The first place, and the second is how to perfectly deal with a loss after happening. Steps of risk management are:

- 1- Identify loss exposures
- 2- Analyze the loss exposure
- 3- Select appropriate techniques for the loss exposure
- 4- Implement and monitor the risk management program

Risk management was not of a very important concept before the financial crisis. After the financial crisis, more light was shed on the important of such concept. Some argue that the reason behind the financial crisis wasn't the failure of accounting standards to allocate value properly to the assets being bought and sold. It is rather a failure of risk management systems in companies and public entities that didn't identify the dangers posed to the global economic system, and thus also to every enterprise. They cared about taking advantage of the growing economy more than the risks caused by their actions to the entire economy.

#### **Paper Question:**

Quite a number of scientists have extensively studied the financial risk. The main question that is going to be answers in this dissertation is:

**“How does financial risk affect the cost of capital? ”**

#### **Aims:**

- 1- Proving whether there is a relationship between cost of capital and financial risk or not.
- 2- Whether the size of the firm makes a difference in this relationship or not.
- 3- Whether the type of industry the firm regulates this relationship is operating in.

#### **Hypotheses:**

Hypothesis 1:

"There is no significant relationship between Financial Risk and Cost of Capital"

Hypothesis 2:

"There is no significant relationship between the size of the firm and Cost of Capital"

Hypothesis 3:

"There is no significant relationship between the type of industry and Cost of Capital"

#### **Importance:**

Importance of research regarding to answers below questions

- 1- Does financial risk affect the cost of capital?
- 2- Does the size of the firm act as a control factor for the cost of capital?
- 3- Does the type of industry the firm is operating in, act as a control factor for the cost of capital?

## 2. LITERATURE REVIEW

### 1. Alan J. Richardson and Michael Welker 2001:

#### *Social disclosure, financial disclosure and the cost of equity capital:*

This paper examines the relation between financial and social disclosure and the cost of equity capital. A sample of Canadian firms was examined quantitatively. Results show that the quantity and quality of financial disclosure are negatively related to the cost of equity capital for firms, but there is a significant positive relation between social disclosures and the cost of equity capital, which may be due to biases in social disclosures.

### 2. J. David Cabedo and Jose Miguel Tirado 2004:

#### *The disclosure of risk in financial statements:*

This paper addresses the inadequate nature of accounting information a user has that does not help make a sound investment decision. It shows all the risks that can affect firms and proposing a quantification model for each one. They argue that, despite realizing the importance of risk disclosure, a formal framework has still not been established within which companies can operate when it comes to deciding which risks they should report, how these risks should be quantified and where they should be presented. That is why it suggests a set of risk quantification models to help better communicate main three types of risks, which are business, strategic and financial risks. They concluded that the value at risk is a suitable method for quantifying most of a company's risks.

### 3. Dan S. Dhaliwal, Oliver Zhen Li, Albert Tsang and Yong George Yang 2011:

#### *Voluntary Nonfinancial disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting:*

This paper studies the effect of corporate social responsibility (CSR) disclosure on the cost of equity. CSR prepared reports were used in this study along with an empirical regression model. Results show that firms who voluntarily disclose CSR enjoy a subsequent reduction in the cost of equity capital. Those firms attract investors and analyst coverage is almost free from errors and dispersion. Initiating firms are more likely than non-initiating firms to raise equity capital following the initiations. As for raising equity capital, initiating firms raise a significantly larger amount than do non-initiating firms.

### 4. Agung Nur Probodono, Greg Tower and Rusmin Rusmin 2011:

#### *Risk disclosure during the global financial crisis:*

The purpose of this paper is to examine voluntary risk disclosures within annual reports in four key South-East Asian countries' (Indonesia, Malaysia, Singapore, and Australia) manufacturing listed companies over the Global Financial Crisis (GFC) 2007-2009 financial years. Both Longitudinal and cross-country analyses test are done. A comprehensive risk disclosure index (RDI) checklist is created with key predictor variables (country, company size, managerial ownership and board independence) tested to explain the dissemination of CSR information over time. Four aspects are studied that are supposed to affect the level of risk disclosure, which are country; company size; managerial ownership and board independence. The country's accounting rules and regulations influence the level of risk disclosure. If risk disclosure is mandatory, companies are more towards disclosing risk than if it is voluntary. As for company size, they find a positive relationship between that and risk disclosure. The bigger the size, the greater the disclosure. Managerial ownership has an impact on voluntary risk disclosure. Companies with lower level of managerial ownership, have higher levels of voluntary risk disclosure. Finally yet importantly, the more independent the board is, the more voluntary risk disclosure there is.

### 5. Mohsen Souissi and Hichem Khelif 2011:

#### *Meta-analytic review of disclosure level and cost of equity capital:*

The purpose of this paper is to examine the relationship between voluntary disclosure and cost of equity capital in a specific disclosure environment. A quantitative meta-analysis technique is used to measure results. Results show that investors, in low-disclosure environments, carefully consider corporate disclosure policy while making decisions about their resources allocations. However, in high disclosure environment, investors already have sufficient information available to them to make decisions regarding the allocation of their resources. As a result, it is expected that the

association in high disclosure environment represented by the US, the UK and Canada countries will be non-significant because investors will benefit from the sophisticated disclosure regime that allows investors to have access to timely material information, such as press releases or analysts' forecasts, which is not necessarily incorporated in annual reports.

**6. Elena Petrova, Georgios Georgakopoulos, Ioannis Sotiropoulos and Konstantinos Z. Vasileiou 2011:**

***Relationship between Cost of Equity Capital and Voluntary Risk Disclosure:***

This study examines the relation between disclosure and the cost of equity. Utilizing the Residual Income Valuation Model, the implied cost of capital is estimated for a sample of 121 Swiss listed, non-financial companies. The results show that firms on the Swiss market can reduce their cost of equity capital by increasing the level of their voluntary corporate disclosures. The results persist even after controlling for various firm specific risks, such as firm size or financial leverage and regardless of company's reporting strategy (conservative or aggressive).

**7. Zaini Embong, Norman Mohd-Saleh and Mohamat Sabri Hassan 2012:**

***Firm size, disclosure and cost of equity capital:***

The purpose of this study is to know whether bigger firms benefit more from risk disclosure than smaller ones through examining the relationship between the level of disclosure and the cost of equity. The importance of size here is because of its influence on returns required by investors, which are the cost of equity from the point of view of investors. A sample of 460 listed firms in Malaysia are studied cross sectionally using size as a moderating variable. Before testing the hypothesis using multiple regression, inspection of data by means of descriptive statistic and correlation analysis is performed. Results show that there is a significant negative relationship between disclosure and cost of equity capital for large firms and not significant for small firms. That is why small firms do not feel encouraged to disclose their private information. However, because disclosure is beneficial for the market and the whole economy, those firms should be encouraged to do so through promoting firm growth as one of the solutions. Another finding is that, managers of firms could strategize the firm's disclosure policy by taking into consideration that the benefit of disclosure in reducing the cost of equity may depend on the size of the firms.

**8. Todd Kravet and Volkan Muslu 2013:**

***Textual risk disclosures and investors' risk perception:***

The objective of this study is examining the effect of risk disclosure on the investor's perception towards risk and volume of trading. The results of the study suggest that increased textual risk disclosure increases the investor's risk perception. They use a quantitative study to test how changes in risk disclosures relate with changes in activities of investors and analysts-before and after the filings. A changes model is used in order to examine the effect of new risk disclosures and address potential correlated omitted variables. They examine this relation through the filings the companies do, which are annual reports they provide the government upon which the investor makes his/her

Investment decisions. They find that the annual increase in the number of risk sentences in a company's 10-K filing is associated with higher return volatility (particularly higher volatility of negative returns) and higher trading volume during the 60 trading-day period after the filing relative to the 60 trading-day period before the filing. In addition, they observed changes like the length and complexity of the filings, changes in performance, ownership, and managerial earnings forecasts, and changes in market-level economic factors around the filings.

**9. Hichem Khlif a and Khaled Hussainey 2013:**

***The association between risk disclosure and firm characteristics:***

The purpose of this paper is to find the relationship between risk and firm characteristics. This is done by analyzing the findings of 42 empirical studies using a meta-analysis technique to examine whether differences in the findings are attributable to random error or not. They examine four factors, which are, size, leverage, profitability and risk factor. Five moderating factors are examined in the analysis, including legal system, the level of uncertainty avoidance, disclosure regimes, industry types, and the proxies used to measure explanatory variables. Findings show that corporate size, leverage ratio, profitability and risk factor are positively associated with risk reporting. Tests for moderators provide evidence that corporate size and leverage ratio are positively and significantly associated with risk reporting under voluntary disclosure regime. In addition, corporate size and leverage ratio exert a significant positive effect on risk reporting in civil law countries, while corporate size and profitability are positively associated with risk reporting in high

uncertainty-avoidance settings. Finally, the association between the four corporate characteristics and risk reporting is non-significant when researchers use samples that include both financial and non-financial companies.

**10. Tracy C Artiach and Peter M Clarkson 2013:**

***Conservatism, disclosure and the cost of equity capital:***

This study examines the relation between conservatism and cost of equity capital. An econometric model was used to define the relationship quantitatively. Results show an inverse relation. The strength of this relation depends on the environment, being the strongest for firms with high information asymmetry and the weakest for firms with low information asymmetry. In addition, evidence indicates that there are economic benefits associated with the adoption of conservative reporting practices and leads us to conclude that conservatism has a positive role in accounting principles and practices, despite its increasing rejection by accounting standard setters.

**11. Mohamed Hassan Abdel-Azim and Zakia Abdelmoniem 2015:**

***Risk management and disclosure and their impact on firm value: the case of Egypt***

This study investigates the relationship between risk management and disclosure and their effect on enterprise value. For testing the first relationship, Tobin's Q ratio is used for calculating firm value. The Capital Asset Pricing Model (CAPM) Model is used for calculating Beta for systematic market risk, and the voluntary disclosure is measured using the disclosure index technique including 26 financial and non-financial items. The results show that increasing risk disclosure i.e. voluntary disclosure would reduce the risk exposure a matter that would increase the firm value. It is found also that firm value would increase as well by managing market risk.

**12. John E. Corea. Luzi Hailb & Rodrigo S. Verdia 2015:**

***Mandatory Disclosure Quality, Inside Ownership and Cost of Capital:***

This study tests whether disclosure can have a direct and an indirect effect on the cost of capital, with the indirect effect flowing through governance mechanisms such as inside ownership. After a regression model is used, results suggest that the direct effect of disclosure quality outweighs the indirect effect by a ratio of, on average, about five to one. First results show a negative relation between ownership and cost of capital. Second, evidence are provided of the direct and indirect effects of disclosure on the cost of capital. In addition, the direct effect is negative, whereas the indirect effect is positive, thereby attenuating the total negative relation between disclosure quality and the cost of capital.

**13. Ying Cao, James N. Myers, Linda A. Myers and Thomas C. Omer 2015:**

***Company reputation and the cost of equity capital:***

This study investigates whether companies with better reputations enjoy a lower cost of equity financing. A sample of 9,276 large US companies from 1987 to 2011 and the reputation rankings from Fortune's "America's Most Admired Companies" list is used to measure reputation, while rate of growth in residual income for portfolios of companies are used to measure cost of capital. Results show that company reputation helps companies lower their cost of equity by reducing the information asymmetry and increasing investor recognition, which allows more efficient risk sharing. These results should also be of interest to managers and directors who are concerned about the effects of reputation on corporate financing.

**14. Saurabh Chadha and Anil K. Sharma 2015:**

***Determinants of capital structure: an empirical evaluation from India:***

This paper studies the key determinants of capital structure for Indian manufacturing firms. A sample size of 422 listed Indian manufacturing companies on Bombay Stock Exchange has been considered to do the empirical evaluation. A ten year period from 2003-2004 to 2012-2013 and annual financial standalone data have been considered for study. Ratio analysis and panel data approach have been applied to perform the empirical evaluation. Total debt to total capital and total debt to total assets are used as the proxy for firm financial leverage. It was found that size, age, asset tangibility, growth, profitability, business risk, uniqueness and ownership structure are statistically significantly correlated with the firm financial leverage or key determinants of capital structure in the Indian manufacturing sector. In addition, other variables like dividend payout, liquidity, interest coverage ratio, India inflation and GDP growth rate are empirically found to be insignificant to determine the capital structure of Indian manufacturing sector.



### 3. RESEARCH METHODOLOGY

Following is a schedule of the variables and tools measuring them

Variable	Definition	How to measure?
Independent Variable: Financial Risk	The chance that the firm will be unable to cover its financial obligations	<ul style="list-style-type: none"> <li>• Debt ratio</li> <li>• Times Interest Earned ratio</li> </ul>
Dependent Variable: Cost of Capital	It is the cost associated with various capital sources, whether it is debt, equity or a combination of the two. The cost of debt is merely the interest rate paid by the company on such debt. As for the cost of equity, it is the required rate of return demanded by equity investors.	<ul style="list-style-type: none"> <li>• WACC</li> <li>• Financial Leverage</li> <li>• Economic Value Added</li> <li>• Return on Equity</li> <li>• Return on Assets</li> <li>• DuPont analysis</li> </ul>

Following is a schedule of how each ratio will be calculated and the purpose of it

Ratio	Equation	Purpose
1- WACC: Weighted Average Cost of Capital	$(w1*k1) + (w2*k2)$ , where <ul style="list-style-type: none"> <li>• W1: proportion of long-term debt in capital structure</li> <li>• W2: proportion of common stock equity in capital structure</li> <li>• K1: cost of debt</li> <li>• K2: cost of equity</li> </ul>	This equation is used to measure the cost of each type of capital and their total
2- Degree of Financial Leverage	$\% \text{ change in EPS or EBIT} / \% \text{ change in EBIT-Interest}$	Measures the sensitivity of EPS to changes in EBIT as a result of changes in debt
3- EVA: Economic Value Added	Net Operating Profit after Tax - Cost of funds (WACC*\$amount of funds)	Used to determine whether an investment contributes positively to the owner's wealth
4- ROE: Return on Equity	Net income / Stockholders Equity	Measures the return earned on stockholders' investment in the firm
5- Debt ratio	Total liabilities / Total assets	Measures the proportion of total assets financed by the firm's creditors
6- Times interest-earned ratio	EBIT/ Interest	Measures the, firm's ability to make interest payments
7- ROA: Return on Assets Or ROI: Return on Investment	Net income / Total assets	Measures the effectiveness of management in generating profits from invested capital
8- DuPont analysis	$\text{ROE} = \text{Profit Margin (Profit/Sales)} * \text{Total Asset Turnover (Sales/Assets)} * \text{Equity Multiplier (Assets/Equity)}$	It measures three things: <ul style="list-style-type: none"> <li>- Operating efficiency, which is measured by profit margin</li> <li>- Asset use efficiency, which is measured by total asset turnover</li> <li>- Financial leverage, which is measured by the equity multiplier</li> </ul>

### 4. DATA COLLECTION

**Primary Data:** It will be collected from books, journals, articles, websites, dissertations and previous studies.

**Research Model:**

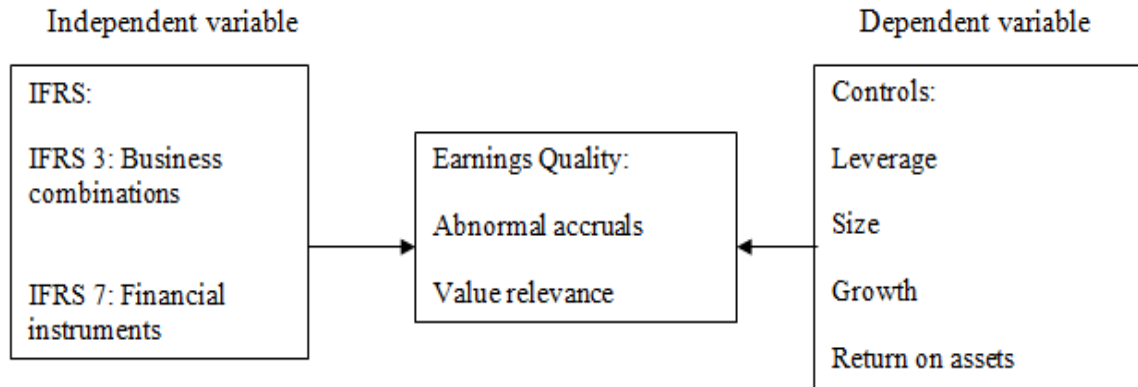
The researcher examined the change in earnings quality after the adoption of IFRS by looking at the extent of abnormal accruals and value relevance of earnings.

The independent variable, International Financial Reporting Standards (IFRS) will be measured by using the financial statements of the companies.

The dependent variable, Earnings quality has been traditionally measured in the literature by the investigation of two dimensions: abnormal accruals and value relevance.

**Model:**

The researcher suggests the following model



Abnormal accruals model: Dechow and Park (2001) estimate AWCA using the following formula:

$$AWCA_t = WC_t - \left[ \frac{WC_{t-1}}{S_{t-1}} \right] * S_t$$

where:

AWCA = the abnormal working capital accrual.

WC = non-cash working capital accruals, which is calculated as follows: (current assets - cash and short-term investments) - (current liabilities - short-term debt).

S = year's sales.

-The researcher measures the relation between accounting standards and abnormal accruals using the following regression:

$$AWCA_{i,t} = \alpha + b_1IFRS_{i,t} + b_2LEV_{i,t} + b_3SIZE_{i,t} + b_4GROWTH_{i,t} + b_5ROA_{i,t} + \epsilon_{i,t}$$

Where

AWCA<sub>i,t</sub> = the abnormal working capital accruals for firm i in year t.

IFRS<sub>i,t</sub> = is a dummy variable given a value of 1 if the company adopts IFRS, 0 otherwise; for firm i in year t.

LEV<sub>i,t</sub> = leverage is the total debt divided by total assets for firm i at the end of fiscal year t.

SIZE<sub>i,t</sub> = is the natural logarithm of total assets for firm i in year t.

GROWTH<sub>i,t</sub> = is the annual change in net assets for firm i at the end of fiscal year t.

ROA<sub>i,t</sub> = return on assets is the operating profit divided by total assets for firm i in year t.

In line with the previous literature, a set of control variables is also included in the regression to control for other firm-level factors that can influence earnings quality. Earlier studies have found that financial leverage is associated with accruals (Frankel, Johnson, & Nelson, 2002), for this reason variable LEV is introduced in the model. Return on assets is included in the model to control for extreme performance, which may affect the level of accruals (Johnson, Khurana, & Reynolds, 2002), for this reason variable ROA is introduced. As accruals are likely to be associated with a company's growth opportunities (Carey & Simnett, 2006), for this reason variable GROWTH is introduced. Abnormal accruals are found to be negatively associated with size (Bedard, Chtourou, & Courteau, 2004), for this reason variable SIZE is introduced.



**Value relevance model:**

Ohlson (1995) suggested the price-earnings model, where stock prices are regressed on both earnings and book value of equity. According to Ohlson (1995), the value of firm's equity can be expressed as a function of its earnings and book value, as follows:

$$P_{i,t} = \alpha_0 + \alpha_1 \text{EPS}_{i,t} + \alpha_2 \text{BVPS}_{i,t} + \varepsilon_{i,t}$$

where:

$P_{i,t}$  = the price of a share of firm i three months after fiscal year-end t.

$\text{EPS}_{i,t}$  = the earnings per share of firm i during the year t.

$\text{BVPS}_{i,t}$  = the book value per share of firm i at the end of year t.

$\varepsilon_{i,t}$  = represents other value relevant information of firm i for year t.

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