COST OF EQUITY, FINANCIAL INFORMATION DISCLOSURE, AND IFRS ADOPTION: A LITERATURE REVIEW

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Abstract:
The cost of equity capital is an important indicator for those who operate on the financial markets, especially for managers and financial resources providers. Even if it is not directly observable, and the models used to determine it are still debated, its importance has continuously increased, and in the last decade several researchers in the accounting field started to use it in their empirical analyses. The present paper proposes a review of the scientific literature dedicated to the cost of equity capital, by selecting the papers with a major impact in the scientific trends, and also the latest approaches on this subject, and then, by focusing on the studies in the accounting area. From the accounting perspective, the interest is related to the impact of IFRS (International Financial Reporting Standards) on the cost of equity capital. The utility of this paper is that it reviews the latest scientific works treating the impact of IFRS on the cost of equity capital but also of other variables, thus updating the knowledge base in the Romanian scientific literature.

Keywords: cost of equity capital, IFRS, disclosure, information asymmetry

JEL Classification: G32, M41

1. Introduction
In the financial literature, the term cost of equity capital refers to the cost of companies for obtaining funds (both as debt and as equity). From the investor point of view, the cost of equity capital is the return he expects from a share of the stock he keeps in his portfolio.

Even if the cost of equity capital is not an indicator directly observable, and no model of determination thereof can be labeled as a universally valid model, its importance in the financial area is beyond any dispute. Whether it is used in an investment decision, or in a corporate strategic decision with exogenous implications, this indicator is customary in the financial equations.
The variations of the cost of equity capital should be usually interpreted in terms of a reversed relation, that is, decisions aiming to improve the company image towards the stakeholders, and to supply a better information to the investors, lead to a benefit by decreasing the cost of equity capital. However, this mechanism can be hindered by other factors that diminish the expected effect, or even nullify it. For this reason, the analyses should always be made with prudence, keeping into account the local or national environment of each company.

The interest of the accounting researchers towards the capital cost increased with an unexpected event from 2002, when the European Commission issued an act, IAS Regulation (EC 2002) that made IFRS mandatory for the listed companies in the EEA (European Economic Area) with regard to their consolidated financial statements, starting from 2005. This approach was seen as an unprecedented privatization of the accounting standard regulators (Chiapello, Medjad, 2009), and, at the same time, as recognition of EU failure to harmonize with its own forces the accounting regulations in order to facilitate the comparability between the companies of its own member states.

As a sequel of this decision, considering also the spread of IFRS in many other countries, the researchers focused their attention on the benefits that the companies may enjoy through the application of IFRS standards. Therefore, many studies analyzed the cost variation of the equity capital after the IFRS adoption. They have further analyzed to what extent the cost of equity capital is influenced by a voluntary or mandatory adoption.

2. Acceptable definitions regarding the cost of equity capital

The cost of equity capital is the minimal rate of return required by the investor to provide capital to the company. As it can be seen in the equation (1), the cost of equity capital is composed of the risk free interest rate ($r_f$) and the non-diversifiable risk premium ($r_{prem}$).

$$r = r_f + r_{prem}$$

(1)

In another approach, the cost of equity capital can be described as a risk adjusted discount rate, applied by the investors to the current price of a stock. The model is known as the dividend discount formula:

$$R_e = \sum_{i=0}^{\infty} \frac{E_t(Div)}{(1+r)^t}$$

(2), where:

$E_t(Div)$ represents the expected future dividend cash flows; $P_t$ is the current price, and $r$ is the risk adjusted discount rate.
The CAPM (Capital Asset Pricing Model) derives from the first equation, but as Botosan (2006) concludes in a model evaluation “[the CAPM model] is not useful to the empiricists investigating the relation between disclosure and cost of equity capital”. Thus, the models used in the analysis of the relation between disclosure and cost of equity capital have their roots in the second equation.

Botosan and Plumlee (2005) evaluate five proxies used for estimating the cost of equity capital ($r_{DIVPREM}$, $r_{GLSPREM}$, $r_{GORPREM}$, $r_{OJNPREM}$, $r_{PEGPREM}$). We briefly present the models in what follows.

**Model 1: Target Price Method ($r_{DIVPREM}$)**

It’s a model that uses the equation (2), on a short horizon. Thus the infinite series of dividend cash flows is truncated at the end of year 5, by inserting a forecasted terminal value. The main feature of this model is that the forecasted dividends per share in the analyzed horizon, and the stock price at the end of the forecasted period capture the market expectation of their values. The model formula is:

$$P_5 = \sum_{t=0}^{5} \frac{(dps_t)}{(1 + r_{DIV})^t} + \frac{P_5}{(1 + r_{DIV})^5}; \; (3)$$

where:

- $P_5$ is the estimated prince at period $t=5$;
- $r_{DIV}$ is the estimated cost of equity capital;
- $dps_t$ dividends per share.

**Model 2: Industry Method ($r_{GLSPREM}$)**

It was introduced by Gebhardt, Lee and Swaminathan and it uses a residual income evaluation model, derived from equation (2) in a forecasted horizon of 12 years. The current price is determined by the equation:

$$R_0 = b_0 + \sum_{t=1}^{6} \left( \frac{(ROE_t - r_{GLS})b_{t-1}}{(1 + r_{GLS})^t} + \frac{(ROE_{t+1} - r_{GLS})b_{t+1}}{r_{GLS}(1 + r_{GLS})^t} \right); \; (4)$$

where:

- $ROE_t$ is the return on equity in period $t$, calculated:
  $$ROE_t = \frac{EPS_t}{B_{t-1}};$$
- $EPS_t$, earnings per share in period $t$;
- $b_t$ is the book value per share in year $t$;
- $r_{GLS}$ is the estimated cost of equity capital.
Model 3: Finite Horizon Method ($r_{GORPREM}$)

It is based on the growth model proposed by Gordon, and it takes into account the assumption that after the forecasted horizon, the ROE is convergent with the cost of equity capital. As the first model, this model also assumes that short term dividends forecasts and the earnings per share forecasted on the long term capture the market expectations. The model is determined by the following formula:

$$R_0 = \sum_{i=1}^{d} \frac{(dps_i)}{(1 + r_{GOR})^i} + \frac{(eps_i)}{r_{GOR}(1 + r_{GOR})^i} ; \quad (5)$$

where:

$r_{GOR}$ is the estimated cost of equity capital.

Model 4 Economy – Wide Growth Method ($r_{OJNPREM}$)

Unlike the other models, this model particularly uses a variable $\gamma$ that embeds the economy wide growth. The model is captured by the following equation:

$$r_{OJN} = A + \left\{ \frac{\gamma - 1}{\gamma} \left( \frac{\gamma_1 - \gamma_1 - (\gamma - 1)}{\gamma_1} \right) \right\} \left( \frac{1}{1/F} \right) ; \quad (6)$$

where:

$A = 1/2(\gamma - 1) + \left\{ \frac{\gamma - 1}{\gamma} \left( \frac{\gamma_1 - \gamma_1 - (\gamma - 1)}{\gamma_1} \right) \right\} \left( \frac{1}{1/F} \right)$;

$\gamma$ is the economy wide growth;

$r_{OJN}$ is the estimated cost of equity capital.

Model 5: PEG (Price/Earnings to Growth) ratio Method ($r_{PEGPREM}$)

The last model presented by Botosan and Plumlee, is based on the PEG (Price/Profit) growth ratio. In addition, it is considered that after the forecasted horizon, there is no abnormal growth in earnings. Thus the conditions $dps_1=0$, and $\gamma=1$ are imposed. Applied to equation (6) the model is reduced to the formula below:

$$r_{PEG} = \sqrt{\frac{eps_1 - eps_1}{r_{PEG}}} ; \quad \text{where:}$$

$r_{PEG}$ is the estimated cost of equity capital.

The Botosan and Plumlee evaluation tried to determine to what extent the estimations made through all five models can be associated with the specific risk of the company, in a stable and significant manner. The result of the evaluation was that the estimations made with the $r_{DIVPREM}$ and $r_{PEGPREM}$ models are consistently and predictably associated with the risk, while the estimations made with the other models are not. Thus, the forementioned two models are dominant over the others.
In the financial literature, the cost of equity capital is also named the \textit{expected} cost of equity capital, as it is in itself a forward-looking concept. Considering the equation (2), the stock price is observable, while the cost of equity capital and the future cash flows are not. In accordance with this feature, Elton (1999) empirically argues that the usage of realized returns in determining the risk premium opposed to the expected returns, is questionable as the correlation between the two types of data is weak. Using the forecasted data, the ex ante cost of equity capital can be determined starting from the equation (2). Gode and Mohanaram (2003) go further in their argumentation, and consider that two assumptions should be imposed: a pattern of payout ratios and the terminal value at the end of the forecasted horizon, or the pattern of the decomposition of the five-year growth rate to a perpetual growth rate. Moreover, the authors warn that even if the analysts take into consideration the two assumptions, they are not going to make that known to the public, forcing this way the researchers to make ad hoc assumptions. Their conclusion is that the models based on the analysts' forecasts should take into consideration a minimum set of assumptions, and they recommend such a model, the one proposed by Ohlson and Juettner (2005), a model included also in the benchmark of Botosan and Plumlee (2005).

Considering the analysts’ forecasts, Guay et al (2011), in a recent paper of great impact, analyze the influence of measurement errors in the analysts’ forecasts on the accuracy of cost of equity capital estimates, for which they propose some correction measures. The authors empirically document predictable errors in the estimation of the cost of equity capital, caused by the analysts’ forecasts which are vicious regarding the information from the past stock returns. The authors argue their position, by the fact that the estimates of the cost of equity capital are uncorrelated with the future realized returns. The proposed correction measures are applied through two methods that can lead to a substantial improvement of estimates of the cost of equity capital in explaining the cross-sectional variation in the future stock returns. For the first method, the analysts’ forecasts are bluntly rectified in order to prevent the expected forecast errors. The other approach, more time is given for the analysts to use in their forecasts the information in the recent price changes. More precisely, the cost of equity capital is estimated based on a stock price measured five months earlier than the time at which the analysts’ forecasts are measured. The study concludes that both methods are quite efficient, while the first one dominates the second.
Starting from the assumption that as long as the cost of equity capital is an output of a model as many other models, the quality depends in a great measure on the quality of the inputs, Nekrasov and Ogneva (2011), in a very recent paper, develop a new model for estimating the cost of equity capital, being dissatisfied with the sensitivity of the existing models to the assumptions on the expected earnings growth rate.

3. Cost of equity capital, disclosure and information asymmetry

The current theories suggest that an increased disclosure should lead to a decrease in the cost of equity capital, because of the existing information asymmetry both between companies and investors, and between buyers and sellers of stocks. Kosal (2010), distinguishes three types of theories that follow this phenomenon. The first category looks on the risk of the investor estimation, which has its roots in the investor uncertainty on the distribution of the security’s return. As long as the uncertainty of the investor regarding the estimation of distribution of the security’s return relies on the level of available information, the estimation risk is higher for the companies that disclose less information than of the risk of those that disclose more. Thus, to compensate the high estimation risk, the investor expects a higher rate of return, which of course means a higher cost of capital. On brief, this type of theories advocates that information disclosure decrease the cost of capital, by reducing the investor estimation risk. Another set of theories, associate the relation between disclosure and cost of equity capital with the market liquidity. The information asymmetry brings an increase into the transaction costs between the stock buyers and sellers, and the low market liquidity is a result of low demand from the investor’s part for stocks with high cost of transaction. The cost of equity capital is higher, because the company is supposed to give a discount to offset the investors’ reluctance to keep in their portfolio stocks with low market liquidity. With an increased disclosure, the asymmetry decrease, and the cost of equity capital also records reductions. The last category of theories assumes that the information disclosure brings an increase in the information intermediation, which leads eventually to a decrease of the cost of equity capital. In a first stage, a higher disclosure raises the interest of financial analysts that follow the company, because they acquire the information on a lower cost. An increased number of analysts that follow the company lead to a decrease in the differences of information between the investors. In a second stage, the less information differences between investors determine a decrease of the cost of equity capital. As long as the less informed investors require additional compensation for the losses they expect from the transactions with the better informed investors, the cost of
equity capital is higher for the companies with a higher degree of private information. Consequently, if the private information are to be widely spread, the cost of equity capital decreases both because of increased interest of the informed investors, and because of the reduction of additional compensations required by the uninformed investors (Easley and O’Hara, 2004).

A research performed by Botosan and Plumlee (2002) has results opposed to the expectations. Normally, the more disclosure increases, the less the cost of equity capital should be. It seems, however, that an excessive disclosure leads to reversed effects. The study structures the disclosures in three categories: annual reports, quarterly and other reports, and relationship with investors. Thus, Botosan and Plumlee find that the annual reports, as expected, decrease the cost of equity capital, while the quarterly reports have a positive relation with the cost of equity capital, leading to the increase of its value. The reason is that more frequent disclosure increases the volatility, and the volatility increases the cost of equity capital. Even if this documentation is opposed to theories, the authors declare that it is in accordance with what the managers claim: that a more frequent disclosure, increases the cost of equity capital.

Geitzmann and Ireland (2005) are the first who made a study that looks on the relation between disclosure and cost of equity capital in UK. At the same time, they combat the study of Botosan and Plumlee (2002). Without denying the relation between disclosure frequency and volatility, they consider that the Botosan and Plumlee study was too restrictive with respect to the corporate communication. Thus, they structure the communications in two categories: choices of accounting policies and disclosures regarding strategic ventures. Their results were opposed to those of Botosan and Plumlee, showing a negative relation between disclosure frequency and cost of equity capital. In addition, the companies that chose aggressive accounting policies encounter a higher cost of equity capital than the companies with more conservative policies. The first category however, can decrease the cost of equity capital by an increased disclosure.

From the perspective of investor’s welfare, a recent study of Gao (2010) is remarkable. Starting from the hypothesis that a higher quality disclosure brings a better welfare for investors, the study shows that this relation is valid only in specific circumstances. Developed in a production economy, with perfect competition between investors, the model proposed by Gao demonstrates three major points: (a) the cost of equity capital increases with the quality of disclosure when the new investments are sufficiently elastic; (b) there are conditions that can negatively affect the welfare of investors; (c) the cost of equity capital can vary in a reverse relation with the investors welfare, while the quality of disclosure changes.
Another recent study of Christensen et.al (2010), points out that the great majority of lately research studies that follow the relation between disclosure of financial information and the cost of equity capital are focused on the cost of equity capital subsequent to the information communication, naming it suggestively: the \textit{ex post} cost of equity capital. The study show that the reduction of the \textit{ex post} cost of equity capital is compensated by an equal increase of \textit{pre posterior} cost of equity capital in the period preceding the information communication.

Easley and O’Hara (2004) developed a model of great impact in the financial literature, in which they show that the differences in the structure of information between public and private affect the cost of equity capital. The Easley and O’Hara (EO) study proposes some measures for reducing the cost of equity capital by choosing better accounting treatments, a better following of the company by the analysts and the market microstructure.

The previous two studies were comparatively analyzed by Clich and Lombardi (2011). Practically, the authors are looking on the impact of internal information acquiring in accordance with EO model, which state that the internal transfer of information from public to private leads to an increase in the cost of equity capital. The Christensen model (2010) apprises however that on a fixed acquisition cost of information, the result of EO model is reversed. The authors follow two scenarios: (a) whether the acquisition cost is increasing with precision; (b) if the benefits of private information acquisition allude to more companies. The study conclusion is that the EO model can maintain the results in a model of internal information acquisition.

Botosan and Plumlee (2007) confirm the EO model, and another model proposed by Lambert et.al (2006). Their results confirm the predictions: the cost of equity capital increase with the proportion of the ratio between the set of private and public information; decreases on the informed investors side; and not lastly, decreases with better precision and quality of information.

In the relation between cost of equity capital and financial disclosure, Cheng et.al (2006) introduced another variable: shareholder rights. The study results show that the companies that adopt a strong shareholder rights regime and a high level of financial transparency record a significantly reduced cost of equity capital. In addition, they show that a high level of one of the variable can be canceled by a low level of the other one.
4. Effects of other variables on the cost of equity capital

The influences over the cost of equity capital were followed by researcher also from the perspective of other variables. Thus, Ionașcu et.al (2011) analyzes the relation between the policies of corporate governance and the cost of equity capital on a sample of listed Romanian companies. Starting from the hypothesis launched by Chen et.al (2004), which states that in some of the emerging markets, because of the weak corporate governance, the cost of equity capital is not influenced by the quality of the financial reporting. For the estimation of the cost of equity capital, the authors used one of the dominant models from the Botosan and Plumlee (2005) evaluation, \( r_{PEGPREM} \). The results show that Romanian companies with stronger corporate governance recorded a higher cost of equity capital.

From the perspective of globalization, Stulz (1999) analyzes its impact on the cost of equity capital. The study found a reduction in the cost of equity capital, but not as much as it was expected.

The adoption of the well known Sarbanes – Oxley Act (SOX), characterized by former president Bush as: “the most far-reaching reform of American business practices since the time of Franklin Delano Roosevelt”, raised the attention of many researchers, among whom, Chang, Fernando and Liao (2009). They are the first researchers who investigated the impact of SOX on the perception of earnings in the market, and also on the cost of capital. As known, the SOX role was to reestablish people's confidence in the financial markets, by enhancing the quality and the quantity of the disclosed information. The findings of the study show that after the SOX adoption, the perception improved and the cost of capital decreased. As proxy for cost of capital estimation, the authors used the \( r_{PEGPREM} \) model, a state of art model.

In the relation between the financial disclosure and the cost of capital, Cheng et.al (2006) introduced a new variable: shareholder rights. Using one of the models evaluated by Botosan and Plumlee, \( r_{PEGPREM} \) to estimate the cost of equity capital, the findings of the study show that the companies who adopt a strong shareholder rights regime and a high level of financial transparency, achieve a significantly lower cost of equity capital. In addition, a high level recorded by one of the variables (be it increased disclosure, or stronger shareholder rights) can be annulled by a low level of the other.

Very recently, Barth et.al (2011) made a study which analyzes for the first time the relation between the cost of equity capital and the earnings transparency. The study shows that a higher transparency of earnings can be associated with a decrease of the cost of equity capital.
5. The impact of adopting IFRS on the cost of equity capital

From the accounting perspective, the current interest is related to the impact of IFRS (International Financial Reporting Standards) adoption on the cost of equity capital. Most research papers from the accounting area start the analysis from the statement of the former chairman of SEC (Securities and Exchange Commission), Arthur Levitt (1998): “the truth is that high quality accounting standards […] reduce the cost of capital”.

Starting from this hypothesis, many research papers tried to test its validity. Although in general the hypothesis can be considered validated, there are cases where the results do not confirm it. As the results of the researchers started to be discrepant, more variables were introduced in the analysis in order to determine a context where the hypothesis can be highly confirmed.

Thus, considering that the decision for adopting IFRS affected many companies that were not planning to use them as standards for financial reporting, the impact of these companies in the studies raised many problems for the researchers. Consequently, most of the studies distinguish in the first place the companies that voluntarily adopted IFRS from those that adopted them mandatorily.

Considering the context in which the IFRS were propelled, most studies focused on the EU area, as the main source of the IFRS phenomenon. Taking into account both the type of adoption, voluntary or mandatory, and the location, numerous studies have used Germany as a raw model, Germany being a country that allowed the voluntary adoption of either IFRS or US-GAAP since 1998. As other countries, for instance UK, did not have such option, some studies used Germany data as a model, then, those data were extrapolated to carry out tests in UK. Such approach was used by Christensen et.al (2007).

Hail and Leuz (2007), in their empirical research, found evidence of a decrease in the cost of equity capital of those companies that mandatorily adopted IFRS. Even if the voluntary adopters achieved smaller benefits in 2005, they had received a good reward during the period preceding the mandatory adoption.

Another group of authors, Daske et.al (2007), evaluated the effects of voluntary adoption of IFRS. As a novelty, the authors were focused on the heterogeneity of the economic consequences, taking into account that companies enjoyed a considerable discretion as concerns the way of adopting IFRS. To illustrate the differences, the firms were classified in two categories: (a) firms that were serious adopters; (b) firms that adopted them just as a label. On average, the study found no evidence of benefits for the voluntary adopters. However, according to their predictions, they found evidence that the serious adopters recorded benefits such as: increased market liquidity and a lower cost of equity.
capital. For the cost of equity capital estimation, the authors used some of the models evaluated by Botosan and Plumlee (2005).

In an empirical study of Siqi Li (2010), on a sample of 6456 firm-month observations resulted from a number of 1084 EU companies, during the period 1995-2006, the author documented an average decrease in the cost of equity capital of 47 basis points. Furthermore, the study shows that this decrease occurs in the countries with legal strong legal coercion, and behind the reduction there is an increase in disclosure and a comparability improvement. Overall, the study shows that mandatory adoption of IFRS significantly reduces the cost of equity capital and the effects highly depend on the legal coercion system.

Taking advantage of the special case of Germany, Daske (2006) analyzes the cost of capital on a sample of 13000 local GAAP, 4500 IRFS, and 3000 US.GAAP firm-month observations. For the cost of capital estimation, he uses along with other models, the \( r_{GLSPREM} \) proxy. Contrary to the expectations, the study cannot confirm a decrease of the cost of capital, either for the companies that voluntarily adopted IFRE, or for those that applied US GAAP.

Pretato et al (2009) propose an analytical study of the effect of mandatory IFRS adoption on the analyst’s earnings forecasts in EU and Australia. The research was done on a sample of 53299 firm-month observations, in the period 2002-2007. The study shows a significant decrease in the analysts’ forecast errors and dispersion, in the period subsequent to the mandatory IFRS adoption. As a result, the quality of the financial reporting increases after IFRS adoption. These benefits depend however, as Siqi Li also showed, on the legal coercion. Indirectly, the study brings evidence for the reduction of capital cost, and of information asymmetry, as a result of the mandatory IFRS adoption.

On global level, Daske et al (2008) proposes a study that analyzes the economic consequences of mandatory IFRS adoption on a sample of 26 countries. The main conclusions show that the overall market liquidity increased around the time of IFRS adoption and the cost of capital decreased, but only before the official date of adoption. These consequences appear however in the countries where the companies were motivated to be transparent, and where the legal coercion is strong. Comparing the companies that voluntarily adopted IFRS with those that adopted them mandatorily, the more significant effects occurred, as expected, in the companies that voluntarily adopted IFRS, both in the period when they voluntarily switched to IFRS and in the period when IFRS became mandatory.
6. Conclusions
This paper proposed a review of the most important current scientific works that dealt with the cost of equity capital, its role and options for reducing it. There has been considered the role of financial information disclosure in the cost of capital reduction. Distinctions were made between private and public information that influence on the information asymmetry both between investors and the company management and between sellers and buyers of stocks. The paper analyzed, from the accounting research point of view, the impact of IFRS adoption on the cost of equity capital. Most of studies made clear distinction between companies that voluntarily apply IFRS and those that apply them mandatorily. Most of the reviewed studies show a decrease in the cost of equity capital, especially in the case of voluntary adopters and serious adopters. Although decreases in the cost of capital are recorded also by the mandatory adopters, the reduction is not significant as most of the studies showed, even if some of them showed otherwise.

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