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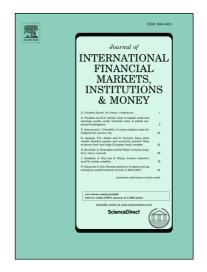Please cite this article as: A. Persakis, G.E. Iatridis, The Joint Effect of Investor Protection, IFRS and Earnings Quality on Cost of Capital: An International Study, *Journal of International Financial Markets, Institutions & Money* (2016), doi: http://dx.doi.org/10.1016/j.intfin.2016.10.001

TITLE:

The Joint Effect of Investor Protection, IFRS and Earnings Quality on Cost of Capital: An International Study

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THE JOINT EFFECT OF INVESTOR PROTECTION, IFRS AND EARNINGS QUALITY ON COST OF CAPITAL: AN INTERNATIONAL STUDY

Abstract

This study tests the impact of earnings quality, investor protection, IFRS adoption and the joint effects of these on cost of capital (measured by cost of equity capital and cost of debt) in publicly listed firms in Euro zone and Asian countries. Using 199.516 firm year observations from 11 Euro zone and 8 Asian countries over the period 2000-2014, the findings confirm all research hypotheses. The results show that the cost of capital is lower in years after the adoption of IFRS as compared to the period before the adoption in Euro zone and Asian countries. A significant negative association has been found between the cost of equity capital and earnings quality in Euro zone and Asian countries. However, earnings quality is negatively correlated with cost of debt only in Euro zone countries. Similarly, the findings indicate that there is a significantly negative relationship between the cost of capital and most investor protection indexes in Euro zone and Asian countries. With regard to the joint effects of investor protection, earnings quality and IFRS adoption on the cost of capital, the results are controversial. In particular, the cost of capital has been found to be lower for firms with a) strong investor protection and higher earnings quality, b) higher earnings quality after the FRS adoption, and c) strong investor protection after the IFRS adoption in Euro zone and Asian countries.

Keywords: IFRS; investor protection; accruals quality; cost of equity capital; cost of debt

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1. Introduction

Cost of capital is currently a much debated issued in accounting and economic research. According to Munteanu (2011), cost of capital is the cost of a firm's funds (both debt and equity), or, from an investor's point of view "the required rate of return on a portfolio firm's existing securities". There is a thoroughly extended literature that examined different aspects, inside earnings quality, investor protection and IFRS adoption, of cost of capital.

Hence, concerning the effects of investor protection on cost of capital, using various structural econometric models, Francis et al (2005), Esponisa and Trombetta (2007), Chen Boubakri and Ghouma (2010), Semper and Beltran (2014) and Blanco et al (2015) found that on average, the higher the level of investor protection, the lower is the marginal cost of capital – due to the lower risk premium.

Furthermore, another variable that have a negative impact on cost of capital is IFRS adoption. Several authors have observed the consequences of adopting IFRS. The most representative paper that analyzed the impact of adopting IFRS on the cost of equity capital came from Munteanu (2011). He claimed that most of the studies distinguish in the first place the firms that voluntarily adopted IFRS from those that adopted them mandatorily. However, in general, even though IFRS was adopted voluntarily or mandatorily, Covrig et al (2007), Daske et al (2008), Patro and Gupta (2014), Castillo-Merino et al (2014) and Christensen et al (2015) confirmed that IFRS adoption enhances the comparability of financial statements, improves corporate transparency, decreases in the cost of collecting information, increases in competition and efficiency in the capital market by reducing the information asymmetry which in turn decreases the cost of capital.

Earnings quality is another factor that has a negative impact on cost of capital. Specifically, there is a consensus view of the findings from Affleck-Graves et al (2002), Bhattacharya et al (2003), Kim and Qi (2010), Valipour and Moradbeygi (2011) and Persakis and Iatridis (2015) who tested the association between cost of capital and various earnings quality attributes. They confirmed that higher level of earnings quality leads to lower level of cost of capital.

Consequently, consistent with previous literature, the main goal of this paper is to examine the associations of investor protection, IFRS adoption and earnings quality on cost of capital. Moreover, this paper extends previous work by providing empirical evidence whether the interaction terms of these three factors influence the cost of capital. Analytically, six research questions are posed. First, it is expected that IFRS adoption reduces the cost of capital. Second, it is examined whether earnings quality reduces the cost of capital. Third, the association between cost of capital and investor protection is tested. Fourth, it is hypothesized

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that the joint effect of earnings quality and investor protection is negatively associated with cost of capital. Fifth, it is investigated whether the cost of capital is lower in firms with higher earnings quality after the adoption of IFRS. Sixth, it is expected a statistically negatively reliable association between the interaction term of investor protection and IFRS adoption on cost of capital.

The findings of this paper confirmed the hypotheses that are posed. Specifically, the results show that there is negative association between cost of capital and IFRS adoption in Euro zone and Asian countries. Further, cost of equity capital is lower in firms with higher earnings quality in Euro zone and Asian countries. Conversely, cost of debt is negatively associated with cost of capital only in Euro zone countries. Regarding the relationship between cost of capital and several proxies of investor protection, the results are controversial. However, the main idea is that the cost of capital is lower in countries with higher investor protection.

Concerning the joint effects of earnings quality, investor protection and IFRS adoption on cost of capital, the findings are consistent with most of hypotheses. In detail, cost of capital is lower in firms with strong investor protection and higher earnings quality in Euro zone and Asian countries. Similarly, the interaction term of the IFRS dummy variable and earnings quality index is negatively correlated with cost of equity capital in Euro zone countries, and the interaction term of the IFRS dummy variable and earnings quality index is negatively correlated with cost of debt in Euro zone and Asian countries. Lastly, it is found that the cost of capital is lower in firms with strong investor protection after the adoption of IFRS in Euro zone and Asian countries.

The main contribution of this paper is to enhance the previous literature by examining the effects of three main factors of cost of capital in two main economic areas worldwide, Euro zone and Asian countries. Further, it is the first paper that gives insights of joint effects of earnings quality, investor protection and IFRS adoption on cost of capital. Another remarkable point of this paper is the large sample that is used, approximately 200.000 firm year observations, which in turn makes the results stronger.

The remainder of this paper is organized as follows. Section 2 discusses the previous literature. Section 3 shows the hypotheses development. Sections 4 and 5 describe the econometric empirical strategy and datasets respectively. Section 6 presents the findings and the last section states the main conclusions combined with recommendations for future research.

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2. Literature review

2.1. Cost of capital and investor protection

The effects of investor protection on cost of capital are examined recently. The main findings of previous literature indicated that there is weaker the investor protection, the higher is the cost of capital. Specifically, Francis et al (2005) examined if firm level incentives for voluntary disclosures are a mechanism to lower the firm's cost of capital in countries outside the US where institutional differences in legal and financial systems could limit the effectiveness of such disclosures. Using 672 firm year observations covering 19 of the 35 manufacturing industries in Rajan and Zingales (1998) and 34 of the 42 countries in Center for International Financial Analysis and Research database (1993, 1995), they concluded that firms that depend on external financing are likely to undertake an expanded disclosure policy and higher disclosure level lead to a lower cost of external financing.

Esponisa and Trombetta (2007) provided evidence on the relationship between disclosure and the cost of equity capital. Using 119 firm year observations for years 1999 and 2000, they rejected the existence of an overall negative relationship between disclosure quality and cost of equity capital. Further, they confirmed the existence of the interaction equilibrium proposed by Gietzmann and Trombetta (2003) showing that the relationship between disclosure and cost of capital is crucially shaped by the choice of accounting policy.

Byun et al (2008) examined the relation between corporate governance practices and the implied cost of equity capital through 1.647 firm year observations from 2001 to 2004. They found that sound corporate governance practices are negatively related to the implied cost of equity capital estimates through reduction in agency problems and information asymmetry.

Chhabra et al (2009) enhanced the finding of La Porta et al (2000, 2002) by examining the effects of investor protection levels on share liquidity and the firm's cost of capital. Using 158 ADRs representing 26 different countries, they found that lower levels of investor protection reduce share liquidity while simultaneously resulting in a higher cost of equity capital.

Chen et al (2009) investigated the effect of firm level corporate governance on the cost of equity capital in emerging markets and how the effects is influenced by country level legal protection of investors. Using 559 firm year observations across 17 economies, their results showed that institutional investors are willing to pay a higher premium for shares in

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firms with good corporate governance, especially when the firms are in countries where the legal protection of investors is weak.

Lopes and Carvalho de Alencar (2010) conjectured that the weak association between disclosure and cost of equity capital can be caused by the high-level corporate disclosure environment found in the United States. Using 276 firm year observations for 1998 to 2005 period, they found that disclosure is strongly negatively associated with ex ante cost of equity capital for Brazilian firms.

Boubakri and Ghouma (2010) explored the effect of governance on the costs and ratings of firms' bonds. Using 256 issued for bond costs and 307 issues for bond ratings between 1996 and 1999, they documented that ultimate ownership and family control have a positive and significant effect on bond yield-spreads and a negative and significant effect on bond ratings. Moreover, they concluded that there is a negative effect between debt covenants and debt costs when there is a high expropriation risk and poor creditor rights protection.

Semper and Beltran (2014) made an empirical study of the relationship between risk disclosure and the cost of equity capital. Using 234 firm year observations from 2007 to 2009, they showed no statistically significant relationship between the latter and the cost of equity; and a statistically significant relationship, with a positive sign, between this cost and financial risk disclosure.

Finally, Blanco et al (2015) researched whether segment disclosure influences cost of capital. Using 10.002 firm year observations (1.667 unique firms) for the period 2001 to 2006, they found that improved segment reporting decrease cost of capital by reducing estimation risk.

2.2. Cost of capital and the adoption of IFRS

The most representative paper that analyzed the impact of adopting IFRS on the cost of equity capital came from Munteanu (2011). He claimed that most of the studies distinguish in the first place the firms that voluntarily adopted IFRS from those that adopted them mandatorily. Moreover, he mentioned that most of these studies focused on the EU area, as the main source of the IFRS phenomenon.

Leuz and Verrecchia (2000) studied the cost of capital in a sample of German firms that have adopted IAS or US GAAP accounting standards in their consolidated financial statements. Using 31 firms from 1993 to 1998, they showed that voluntary IFRS reduces the cost of capital.

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Daske (2006) examined whether the adoption of IFRS reduce the cost of capital for adopting firms. Using a set of German firms that have adopted such standards from the 1993-2002 period, he cannot confirm a decrease of the cost of capital, either for the companies that voluntary adopted IFRS or for those that applied US GAAP.

Another argument for the beneficial effect of IFRS adoption on cost of equity capital came from Covrig et al (2007). Using 24.592 firm year observations from 1999 to 2002 in 29 countries, they indicated that IFRS adoption can improve comparability of financial information of firms across markets and countries, making the use of information less costly for investors and, in turn, reducing the information asymmetry and leading to a lower cost of capital.

Comparing the companies that voluntarily adopted IFRS with those that adopted them mandatorily (105.527 firm year observations from 51 countries between 2001 and 2005), Daske et al (2008) found that the more significant effects occurred, 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.

Karamanou and Nishiotis (2009) tested the market's reaction on cost of capital to firm voluntary adoption of IAS. They documented strong positive abnormal returns at the announcement of voluntary adoption of IFRS and IAS and an economically significant reduction in long-run returns and information asymmetry, consistent with a reduction in the cost of capital.

Li (2010) studied whether the mandatory adoption of IFRS in European Union in 2005 reduces the cost of equity capital. Using 6.456 firm year observations of 1.084 EU firms during the 1995 to 2006 period, they documented that mandatory adoption of IFRS significantly reduces the cost of equity capital and the effects highly depend on the legal coercion system.

Daske et al (2013) evaluated the effects of voluntary adoption of IFRS. Using 69.528 firm year observations from 30 countries with fiscal year ends between January 1, 1990 and December 31, 2005, the main results of their study found no evidence of benefits for the voluntary adopters. However, they found evidence that the serious adopters recorded benefits such as: increased market liquidity and a lower cost of equity capital.

Examining whether adoption of IFRS reduces cost of equity capital for firms in Asia, Patro and Gupta (2014) found that ambiguous results. Using 563 IFRS adopting firms over the 2006-2011 periods, they concluded that the firms in Hong Kong and Philippines get benefit from the reduction in their cost of equity capital after adopting IFRS, but for firms in China and Israel cost of equity capital increased.

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Using listed Spanish firms during the 1999 to 2009 period (307 firm year observations), Castillo-Merino et al (2014) analyzed the effects of mandatory IFRS adoption by Spanish firms in 2005 on the cost of equity capital. They found that Spanish listed companies show a significant reduction in their cost of equity capital after the mandatory adoption of IFRS in 2005, after controlling by a set of firm-risk and market variables.

Finally, Christensen et al (2015) tested the impact of managerial financial reporting incentives on cost of capital around FRS adoption. Using 310 firm year observations from 17 European countries across the period 1995 to 2006, they found an impact of FRS on cost of equity capital which has mixed evidence for firms with different incentive motives of adoption.

2.3. Cost of capital and earnings quality

Concerning the factors that influence the cost of capital, there is a thoroughly literature background. Affleck-Graves et al (2002), Bhattacharya et al (2003), Francis et al (2004), Hribar and Jenkins (2004), Francis et al (2005a), Aboody et al (2005), Jayaraman (2008), Chan et al (2009), Chang et al (2009), McInnis (2010), Kim and Qi (2010), Rodriguez-Perez and Van Hemmen (2010), Ghosh and Moon (2010), Liu et al (2010), Valipour and Moradbeygi (2011), Kim and Sohn (2013), Artiach and Clarkson (2014), Khalifa and Othman (2015), Li (2015) and Persakis and Iatridis (2015) tested the consequences of different aspects of earnings quality on cost of capital. The consensus view of all these researchers is that there is negative association between earnings quality and cost of capital.

The most recent and representative analysis of the association between cost of capital and earnings quality come from Persakis and Iatridis (2015).Using 137.091 firm year observations across 17 countries from 2005 to 2012, they showed that the association between earnings quality and cost of capital is significantly negative before and during the crisis.

Affleck-Graves et al (2002) explored the relation between earnings predictability and bid-ask spread, measure of cost of equity. The findings suggested that firms with relatively less predictable earnings have a higher cost of equity capital than comparable firms with more predictable earnings streams, ceteris paribus.

Bhattacharya et al (2003) related three country level dimensions of reported accounting earnings (earnings aggressiveness, loss avoidance and earnings smoothing) to country level cost of capital measures. The results indicated that an increase in overall earnings opacity in a country is linked to an economically significant increase in the cost of equity.

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Hribar and Jenkins (2004) tested the effect of accounting restatements on a firm's cost of equity capital. Using 292 restatements from January 1, 1997 through June 30, 2002, they found that, on average, accounting restatements lead to both decreases in expected future earnings and increases in the firm's cost of equity capital.

Francis et al (2004) examined the relation between the cost of equity capital and seven attributes of earnings: accruals quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism. Using cross sectional regression test, cost of equity is significantly associated with each of earnings attributes. However, using conditional tests, ex ante cost of equity is no longer associated with smoothness, timeliness and conservatism; predictability is inversely associated with the cost of equity; and accruals quality, persistence and value relevance continue to be strongly positively associated with the cost of equity. Moreover, from the side of realized returns, they concluded that earnings quality has the largest cost of capital effect of all of the earnings attributes, and persistence has statistically positive but smaller effects.

Aboody et al (2005) examined the association between earnings quality (measured by abnormal accruals) and cost of capital. Using 989.530 firm-year observations from 1985 to 2003, they found evidence consistent with pricing of the earnings quality factor and insiders trading more profitably in firms with higher exposure to that factor.

Francis et al (2005a) investigated the relationship between accruals quality and the costs of debt and equity capital. Using a large sample for 32-year period (1970-2001), they found that firms with poorer accruals quality have higher ratios of interest expense to interest-bearing debt and lower debt ratings than firm with better accruals quality. Similarly, in terms of the cost of equity, they showed that firms with lower accruals quality have significantly larger earnings-price ratios relative to their industry peers.

Similarly with Affleck-Graves et al (2002), Jayaraman (2008) provided empirical evidence on the association between cost of equity capital, measured by bid-ask spreads, with earnings quality, measured by earnings smoothness. The results indicated that bid-ask spreads and the probability of informed trading are higher both when earnings are smoother than cash flows and also when earnings are more volatile than cash flows.

Chan et al (2009) supported evidence about the linkage between different dimensions of accounting conservatism (ex ante and ex post conservatism) and the cost of equity capital. Using UK non-financial firms during the period 1987-1999, they found that ex ante conservatism is associated with higher quality of accounting information and lower costs of

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equity, whereas ex post conservatism is associated with lower quality of accounting information and higher costs of equity capital.

Chang et al (2009) studied the impact of the Sarbanes-Oxley Act (SOX) on market-based measures of earnings quality and cost of capital. Using 8.480 firm-year observations from 1999 to 2005, they found that in the post-SOX period, the market's perception of earnings quality has improved, while the firms' cost of equity capital has decreased.

McInnis (2010) examined the link between cost of capital and earnings smoothness. Whilst the projected target prices of Value Line analysts (Brav et al, 2005; Francis et al, 2005a) indicated there is a negative relation between imputed cost of capital and earnings smoothness, he found no such pattern. He resulted that there is no relation between earnings smoothness and average stock returns over the period from 01/01/1975 to 31/12/2006. He offered evidence that the inverse relation between earnings smoothness and implied cost of capital results primarily from optimistic bias in analysts' long-term earnings projections.

Kim and Qi (2010) explored whether and earnings quality, measured as accrual quality, affects the cost of equity. For period of time from 1970 to 2006, they suggested that accrual quality contributes to the cost of equity capital and that is pricing effect is associated with fundamental risk.

Using discretionary accruals, Rodriguez-Perez and Van Hemmen (2010) investigated the relationship between debt and earnings management. Consistent with the transparency hypothesis, they found that for less-diversified firms, debt reduces positive discretionary accruals, whereas in relatively more-diversified firms the impact of debt becomes positive. Moreover, the results indicated that marginal increases in debt provide incentives for managers to manipulate earnings, and diversification provides the needed context for this accounting practice to be possible.

Ghosh and Moon (2010) established linkages between debt financing and the quality of earnings (measured by accruals quality). Using 8.240 firm-year observations from 1992 to 2004, they documented a non-monotonic relation between debt and earnings quality. They suggested that firms that rely heavily on debt financing might be willing to bear higher costs of borrowing from lower earnings quality because the benefits from avoiding potential debt covenant violations exceed the higher borrowing costs.

Liu et al (2010) examined whether firms manage earnings before issuing bonds to achieve a lower cost of borrowing. Using 2.839 firm-year observations from 1970 to 2004,

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they found significant income-increasing earnings management prior to bond offerings. They also found that manage earnings upward issue debt at a lower cost.

Valipour and Moradbeygi (2011) studied the relationship between corporate debt financing and earnings quality and the dominance of positive influence of debt or negative influence of debt on earnings quality. Testing 81 firms listed in Tehran Stock Exchange during the years 2005-2009, they found that there is negative and meaningful relationship between debt and earnings quality.

Kim and Sohn (2013) investigated whether a firm's cost of equity capital is influenced by the extent of a firm's real activities management. Using 30.276 firm year observations from US for period 1987-2011, they provided evidence that the cost of capital is positively associated with the extent of earnings management through the real activities manipulation after controlling for the effect of the accrual-based earnings management.

Artiach and Clarkson (2014) sought insights into the economic consequences of accounting conservatism by examining the relation between conservatism and cost of equity capital. Using 3.138 firm-year observations from the period 1985-2000, they found an inverse relation between conservatism and the cost of equity capital, but further, that this relation is diminished for firms with low information asymmetry environments.

Khalifa and Othman (2015) tested the economic consequences of accounting conservatism by examining the relationship between conservatism and cost of equity capital. Using 1.287 firm-year observations over the four year period 2004-2007, they found that a negative association between conditional conservatism and the cost of equity capital.

Finally, Li (2015) examined the contracting benefits of accounting conservatism on international debt and equity markets. Using 140.774 firm-year observations covering 31 countries and 16 years from 1991 to 2006, he showed that firms domiciled in countries with more conservative financial reporting systems have significantly lower cost of debt and equity capital.

3. Hypotheses development

Based on previous literature, this paper examines the cost of capital, measured by cost of equity capital and cost of debt, before and after the adoption of IFRS in Euro zone and Asian countries. Then, we investigate how investor protection and earnings management affect cost of capital. Although there are few researches that examine these effects, however

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there is no paper that examines them all together and how the joint effects of investor protection, earnings management and IFRS adoption affect cost of capital.

First, regarding the effects of IFRS adoption on cost of capital, previous literature concluded that there is negative association. Specifically, Leuz and Verrecchia (2000), Daske (2006), Covrig et al (2007), Daske et al (2008), Karamanou and Nishiotis (2009), Li (2010), Daske et al (2013), Patro and Gupta (2014), Castillo-Merino et al (2014) and Christensen et al (2015) found that even though how firms adopted IFRS (voluntarily or mandatorily), the results were the same; the IFRS adoption reduces the cost of capital. Hence, to meet the first objective of this paper the following research question has been framed:

Research Question 1(RQ₁): Does IFRS adoption reduces the cost of capital for listed firms in Euro zone and Asian countries?

To answer the research question 1 the following hypothesis has been developed:

Hypothesis **1** *(H₂)***:** Cost of capital is lower in years after the adoption of IFRS as compared to the period before the adoption.

Second, the hypothesized capital market consequences of earnings management include cost of equity capital and cost of debt capital. As it is examined in the literature review, the most representative and recent analysis of the association between earnings quality and cost of capital come from Persakis and Iatridis (2015). They found that cost of capital (measured by cost of equity capital and cost of debt) is negatively associated with earnings quality (measured by ex post and ex ante conservatism, value relevance, accruals quality, earnings persistence, earnings predictability and earnings smoothness). Francis et al (2004) found that accrual quality, earnings persistence, smoothness, value relevance, and timeliness are associated with cost of equity capital in the predicted direction, while predictability and conservatism are not. Accrual quality has the largest cost of equity capital effects. Bhattacharya et al (2003) found that there is association between country-level earnings management measures including earnings aggressiveness, loss avoidance, and earnings smoothening, and country-level measures of total cost of capital. Regarding the debt market consequences of earnings management, Francis et al (2005a) found that lower quality accruals have a higher cost of debt. Hence, to meet the second objective of this paper the following research question has been framed:

Research Question 2 (RQ₂): Does earnings quality reduces the cost of capital for listed firms in Euro zone and Asian countries?

To answer the research question 2 the following hypothesis has been developed:

Hypothesis 2 (H₂): There is a negative relationship between earnings quality and cost of capital.

Third, based on previous literature, Francis et al (2005), Esponisa and Trombetta (2007), Byun et al (2008), Chhabra et al (2009), Chen et al (2009), Lopes and Carvalho de Alencar (2010), Boubakri and Ghouma (2010), Semper and Beltran (2014) and Blanco et al (2015) documented that investor protection is negatively associated with cost of capital. Hence, to meet the third objective of this paper the following research question has been framed:

Research Question 3 (RQ₃): Does investor protection reduces the cost of capital for listed firms in Euro zone and Asian countries?

To answer the research question 3 the following hypothesis has been developed:

Hypothesis 3 (H₃): There is a negative relationship between investor protection and cost of capital.

As it is examined in literature review, the effects of earnings quality, the IFRS adoption and investor protection on cost of capital have received a trustworthy attention. However, the joint effects of a) earnings quality and investor protection, b) earnings quality and IFRS adoption, and c) investor protection and IFRS adoption have not been explored yet. Consequently, to meet the third objective of this paper the following research questions have been framed:

Research Question 4 (RQ₄): Does cost of capital is lower in firms with strong investor protection and higher earnings quality?

Research Question 5 (RQ₅): Does cost of capital is lower in firms with higher earnings quality after the adoption of IFRS?

Research Question 6 (RQ₆): Does cost of capital is lower in firms with strong investor protection after the adoption of IFRS?

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To answer the research questions 4, 5 and 6 the following hypothesis has been developed:

Hypothesis 4 (H₄): The joint effects of earnings quality, adoption of IFRS and investor protection are negatively associated with cost of capital.

4. Research design

Based on previous literature, the research hypotheses 1-4 (H_{1-4}) that is presented above are examined using the following regression equation. The variables that are used in this model are the same as Dechow et al (1995), McNichols (2002), Easton (2004), Ohlson and Juettner-Nauroth (2005), Francis et al (2005), La Porta et al (1998, 2006), Daske et al (2008), Boubakri and Ghouma (2010), Li (2010), Daske et al (2013), Castillo-Merino et al (2014) and Persakis and Iatridis (2015). The following regression equation will run two times for each dataset (Euro zone and Asian countries) and simultaneously two times for each dimension of $Costofcapital_{k,it}$ measured by cost of equity capital and cost of debt.

$$Costofcapital_{k,it}$$

$$= \beta_0 + \beta_1 IFRS_{it} + \beta_2 Investorprotection_{k,it} + \beta_3 Earningsquality_{it}$$
$$+ \beta_4 IFRS_{it} * Investorprotection_{k,it} + \beta_5 IFRS_{it} * Earningsquality_{it}$$
$$+ \beta_6 Earningsquality_{it} * Investorprotection_{k,it} + \beta_7 FS_{it}$$
$$+ \beta_8 ST_{it} + \beta_9 FL_{jt} + \beta_{10} IT_{it} + \beta_{11} ROA_{it} + \beta_{12} ROE_{it} + \beta_{13} GDP_{it}$$
$$+ \beta_{14} BM_{it} + \beta_{15} BETA_{jt} + \varepsilon_{it}$$

Wherein,

$Costofcapital_{k,it}$ is a dimension of cost of capital (k= 1, 2):

$Costofcapital_{1,it}$ is cost of equity capital measured by the mean of the two implied cost of equity capital metrics based on Ohlson and Juettner-Nauroth (2005), as implemented by Gode and Mohanram (2003) and Easton (2004) which are further explained in section 4.2.5.,

$Costofcapital_{2,it}$ is cost of debt estimated based on Francis et al (2005) which is further explained in section 4.2.6.

$IFRS_{it}$ is a dummy variable that takes 0 if a firm had adopted IFRS and 1 otherwise.

Investorprotection$_{k,it}$ is the investor protection measured by 15 different metrics adopted from La Porta et al (1998, 2006) and The Global Competitiveness Report 2015-2016 by World Economic Forum (k=1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15):

Investorprotection$_{1,it}$ is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006),

Investorprotection$_{2,it}$ is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006),

Investorprotection$_{3,it}$ is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006),

Investorprotection$_{4,it}$ is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006),

Investorprotection$_{5,it}$ is rule of law index which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998),

Investorprotection$_{6,it}$ is efficiency of judicial system index which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998),

Investorprotection$_{7,it}$ is anti-director rights index which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998),

Investorprotection$_{8,it}$ is creditor rights index which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998),

Investorprotection$_{9,it}$ is ownership concentration index measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998),

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Investorprotection$_{10,it}$ is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum),

Investorprotection$_{11,it}$ is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum),

Investorprotection$_{12,it}$ is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum),

Investorprotection$_{13,it}$ is strength of investor protection index scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum),

Investorprotection$_{14,it}$ is country credit index rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum),

Investorprotection$_{15,it}$ is legal rights index scaled from 0 to 12, with higher scores for higher degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum).

Earningsquality$_{it}$ is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002) which are further explained in section 4.2.7.

$IFRS_{it} * Investorprotection_{k,it}$ is the interaction effect of the adoption of IFRS and investor protection on cost of capital.

$IFRS_{it} * Earningsquality_{it}$ is the interaction effect of the adoption of IFRS and earnings quality on cost of capital.

$Earningsquality_{it} * Investorprotection_{k,it}$ is the interaction effect of earnings quality and investor protection on cost of capital.

FS_{it} is firm size measured as the natural logarithm of total assets.

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ST_{it} is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity.

FL_{it} is financial leverage measured by the ratio of total liabilities to total assets.

IT_{it} is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country.

ROA_{it} is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets.

ROE_{it} is return on equity measured by the ratio of net income divided by equities.

GDP_{it} is the annual change in GDP.

BM_{it} is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity.

$Beta_{it}$ is stock beta.

ε_{it} is the error term.

Cost of equity capital

There are several alternative methods for estimating the cost of equity capital. However, the literature has not yet achieved a consensus on which approach performs the best in measuring the cost of equity (Botosan and Plumlee, 2005; Gode and Mohanram, 2003; Easton and Monahan, 2005; Guay et al, 2011). Some of them constructed by Fama and French (1997), Claus and Thomas (2001), Gebhardt et al (2001), Ohlson and Juettner-Nauroth (2005), Easton (2004), Palea (2007), Guay et al (2011) and Nekrasov and Ogneva (2011).

To overcome this controversial measurement of cost of capital, we use the mean of two measures of implied cost of equity capital as the proxy of cost of equity capital that are mostly used by previous literature: Ohlson and Juettner-Nauroth (2005) method, as implemented by Gode and Mohanram (2003) and Easton (2004) method. According to Francis et al (2005), the basic idea in all these approaches is to use price and analysts' earnings forecasts in the valuation equation, and to derive the ex ante cost of equity capital as the internal rate of return that equates the currents stock price and the sequence of expected (abnormal) earnings derived from analysts' forecast. Further, we utilize these two methods to estimate the implied cost of equity capital because of their practicability and adherence to other proxies of cost of capital.

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Model 1: Ohlson and Juettner-Nauroth (2005) method

$$r_{PEG} = \sqrt{\frac{eps_{t+1}}{P_1} * Growth_{t+2}}$$

Wherein,

r_{PEG} is the implied cost of equity capital, where PEG refers to price-earnings growth model,

eps_{t+1} is earnings per share forecasted for the year t+1,

P_t is stock price at t,

$Growth_{t+2}$ is the growth rate for earnings per share between periods t+1 and t+2 and is estimated as:

$$Growth_{t+2} = \frac{eps_{t+2} - eps_{t+1}}{eps_{t+1}}$$

This model is derived from the price-earnings growth ratio (PEG) and expresses cost of capital as a function of a firm's earnings and grow thin earnings.

Model 2: Easton (2004) method

Under this approach implied cost of equity capital is defined as the square root of the inverse of the price-earnings growth ratio:

$$r_{PEG} = \sqrt{\frac{eps_{t+2} - eps_{t+1}}{P_1}}$$

Wherein,

r_{PEG} is the implied cost of equity capital, where PEG refers to price-earnings growth model,

eps_{t+1} is earnings per share forecasted for the year t+1,

eps_{t+2} is earnings per share forecasted for the year t+2,

P_t is stock price at t.

Cost of debt

To formulate the cost of debt, we adopt the same methodology proposed by Francis et al (2005) who used the interest rate on the firm's debt, which is calculated as interest expense for the year divided by average short and long term debt during the year.

Earnings quality

There are different approaches of measuring earnings quality. Based on the paper of Persakis and Iatridis (2015a), there are seven main different approaches of earnings quality:

[19]

conservatism, value relevance, accruals quality, earnings persistence, earnings predictability, loss avoidance analysis and earnings smoothness.

Thus, for the purpose of this paper, we use accruals quality as a measure of earnings quality. However, there is no consensus on which approach performs the best in measuring the accruals quality. The mostly used measures are constructed by Healy (1985), DeAngelo (1986), Jones (1991), Dechow et al (1995), Sloan (1996), Peasnell et al (2000), DeFond and Park (2001), Dechow and Dichev (2002), McNichols (2002), Richardson (2003), Ashbaugh et al (2003) and Kothari et al (2005). Hence, to measure accruals quality, we use the mean of two proxies of accruals quality which are better capture the uncertainty in accruals and remove the drawbacks from previous models: Dechow et al (1995) model and McNichols (2002) model.

Model 1: Dechow et al (1995) method

Dechow et al (1995) model is applied to remove the drawbacks from Jones (1991) model which based on the assumption that managers can manipulate revenue through accounts receivables which is easier than over the recognition of cash sales. Dechow et al (1995) estimated accruals quality by using the residuals of the following regression equation:

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}}\right) + \beta_2(\Delta REV_{it} - \Delta REC_{it}) + \beta_3 GPPE_{it} + \varepsilon_t$$

Wherein

TA_{it} is total accruals scaled by lagged total assets in year t-1 (where accruals equal the year-to-year change in non-cash current assets minus current liabilities (excluding short-term debt and income taxes payable) minus depreciation),

A_{it-1} is total assets in year t-1 (or lagged total assets),

ΔREV_{it} is the change in revenues scaled by lagged total assets,

ΔREC_{it} is account receivables scaled by lagged total assets,

$GPPE_{it}$ is gross property, plant and equipment scaled by lagged total assets and

ε_{it} is the error term.

Model 2: McNichols (2002) method

McNichols (2002) model is based on cross sectional Dechow and Dichev (2002) model, augmented with the fundamental variables from the modified Jones (1991) model, namely, PPE and change in revenues (all variables are scaled by average assets). McNichols (2002) estimated accruals quality by using the residuals of the following regression equation:

$$TCA_{i,t} = \beta_{0,i} + \beta_{1,i}CFO_{i,t-1} + \beta_{2,i}CFO_{i,t} + \beta_{3,i}CFO_{i,t+1} + \beta_{4,i}\Delta REV_{i,t} + \beta_{5,i}PPE_{i,t} + \varepsilon_{i,t}$$

[20]

Wherein,

$TCA_{i,t} = (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t}) = total\ current\ accruals,$

$CFO_{i,t} = NIBE_{i,t} - TA_{i,t} = cash\ flow\ from\ operations,$

$NIBE_{i,t}$ is net income before extraordinary items,

$TA_{i,t} = (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t} - DEPN_{i,t}) = total\ accruals,$

$\Delta CA_{i,t}$ is change in current assets between year t-1 and year t,

$\Delta CL_{i,t}$ is change in current liabilities between year t-1 and year t,

$\Delta Cash_{i,t}$ is change in cash between year t-1 and year t,

$\Delta STDEBT_{i,t}$ is change in debt in current liabilities between year t-1 and year t,

$DEPN_{i,t}$ is depreciation and amortization expense between year t-1 and year t,

$\Delta REV_{i,t}$ is change in revenues between year t-1 and year t,

$PPE_{i,t}$ is gross value of PPE,

ε_{it} is the error term.

According to Francis et al (2005a), McNichols (2002) proposed this model, arguing that the change in sales and PPE are important in forming expectations about current accruals, over and above the effects of operating cash flows. She showed that adding these variables to the cross-sectional Dechow and Dichev (2002) regression significantly increases its explanatory power, thus reducing measurement error.

5. Sample selection

For the purpose of this paper, data from listed companies in Euro zone[1] and Asian[2] countries will be obtained from DataStream, Osiris BVD, the Euro Stat and World Bank databases over the period 2000-2014. Hence, the initial sample consists of 96.552 and 299.491 firm year observations for listed firms from Euro zone and Asian countries respectively.

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[1] *Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain.*

[2] *Afghanistan, Bahrain, Bangladesh, Bhutan, Brunei, Myanmar, Cambodia, China, Hong Kong, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kazakhstan, North Korea, South Korea, Kuwait, Kyrgyzstan, Laos, Lebanon, Malaysia, Maldives, Mongolia, Nepal, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syria, Taiwan, Tajikistan, Thailand, Timor-Leste, Turkmenistan, United Arab Emirates, Uzbekistan, Vietnam, Yemen.*

Based on the following four criteria, a part of the data has to be extracted. Thus, first, from the sample will be excluded the listed companies from Cyprus, Estonia, Latvia, Lithuania, Luxemburg, Malta, Slovakia, Slovenia, Afghanistan, Bahrain, Bangladesh, Bhutan, Brunei, Myanmar, Cambodia, China, Iran, Iraq, Jordan, Kazakhstan, North Korea, Kuwait, Kyrgyzstan, Laos, Lebanon, Maldives, Mongolia, Nepal, Oman, Qatar, Saudi Arabia, Syria, Tajikistan, Timor-Leste, Turkmenistan, United Arab Emirates, Uzbekistan, Vietnam and Yemen since there is no data for all investor protection indexes. Thus, the initial sample is reduced to 87.994 and 245.441 firm year observations for listed firms from Euro zone and Asian countries respectively.

Second, firms from India, Indonesia, Pakistan, Singapore and Thailand will be excluded from the sample since they have no applied International Accounting Standards (IAS) until 2013. Hence, the initial sample is further reduced to 137.319 firm year observations for listed firms from Asian countries.

Third, based on previous literature (Leuz et al, 2003; Persakis and Iatridis, 2015, 2015a), all financial institutions, such as banks, life insurance firms, nonlife insurance firms, real estate investment and services, real estate investment trusts, suspended equities and financial services in general, will be excluded since they are problematic to compute the examining variables which in turn decrease the comparability and homogeneity of the results. Hence, the initial sample is further reduced to 80.957 and 126.338 firm year observations for listed firms from Euro zone and Asian countries respectively.

Lastly, firm year observations for which there are no data for some of the examining variables will be excluded. Hence, final sample is count on 79.203 and 123.297 firm year observations for listed firms from Euro zone[3] and Asian[4] countries respectively.

Table 1: The sample

		Firm year observatios for Euro zone countries	Firm year observatios for Asian countries
	Listed firms in Euro zone and Asian countries for the years 2000-2014	96.552	299.491
minus	Countries with no data for all investor protection indexes	8.558	57.365
minus	Firms that not applied IAS until 2013	0	108.122

[3] Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain.

[4] Hong Kong, Israel, Japan, South Korea, Malaysia, Philippines, Sri Lanka, Taiwan.

minus	Financial institutions in general	7.037	10.716
minus	Firm year observations with missing data	1.754	2.975
Final no of firm year observations		**79.203**	**120.313**

Note: This table provides the distribution of the sample of 79.203 and 120.313 firm year observations across Euro zone and Asian countries for the years 2000 to 2014 respectively.

6. Empirical results

6.1. Testing the validity of data for statistical analysis

As we mentioned above, since this paper uses linear regression analysis, the data set should be tested for normality, homoscedasticity and multicollinearity. Tables 2, 3 and 4 show the necessary tests needed to test data validity of statistical analysis. The main result of these tests is that the data set that are used in this paper met all above requirements as they are explained in the following sections.

6.1.1. Normal distribution

To secure the normal distribution of the data set, Kolmogorov-Smirnov (K-S) test are used since the data set is large. The decision basis was to accept the null hypothesis that the data follow normal distribution if the probability of the K-S test is more than 0,05. Only the continuous variables are examined except from dichotomous variables (dummy variables) which are not subject to the normal distribution.

Examining the Table 2, the results indicated that the statistical value is high and significant value is less than 0,05 for all almost continuous variables which is means that there is no normal distribution in data set. Like Hamdan et al (2012), to overcome this problem, the natural logarithm of the examining variables are considered. Moreover, since the size of the sample is quite big, the lack of normal distribution may not influence the credibility of the findings of this paper.

Table 2: Test for normal distribution of the continuous variables

	Euro zone countries		Asian countries	
Variables	**K-S test**	**Prob.**	**K-S test**	**Prob.**
$\text{Investorprotection}_1$	0,616	0,000	0,651	0,000
$\text{Investorprotection}_2$	0,160	0,000	0,156	0,000
$\text{Investorprotection}_3$	0,130	0,000	0,007	0,089
$\text{Investorprotection}_4$	0,019	0,000	0,066	0,000
$\text{Investorprotection}_5$	0,196	0,561	0,987	0,000
$\text{Investorprotection}_6$	0,166	0,000	0,984	0,000
$\text{Investorprotection}_7$	0,158	0,000	0,716	0,000
$\text{Investorprotection}_8$	0,185	0,000	0,126	0,000

[23]

Investorprotection$_9$	0,186	0,160	0,166	0,000
Investorprotection$_{10}$	0,815	0,000	0,920	0,000
Investorprotection$_{11}$	0,165	0,000	0,166	0,089
Investorprotection$_{12}$	0,162	0,000	0,198	0,000
Investorprotection$_{13}$	0,846	0,000	0,215	0,000
Investorprotection$_{14}$	0,815	0,017	0,166	0,000
Investorprotection$_{15}$	0,159	0,000	0,160	0,000
Earningsquality	0,651	0,000	0,985	0,000
IFRS*Investorprotection$_1$	0,165	0,000	0,984	0,157
IFRS*Investorprotection$_2$	0,897	0,000	0,815	0,000
IFRS*Investorprotection$_3$	0,512	0,894	0,652	0,000
IFRS*Investorprotection$_4$	0,069	0,000	0,130	0,000
IFRS*Investorprotection$_5$	0,157	0,000	0,166	0,000
IFRS*Investorprotection$_6$	0,166	0,000	0,166	0,000
IFRS*Investorprotection$_7$	0,842	0,984	0,166	0,199
IFRS*Investorprotection$_8$	0,894	0,000	0,166	0,000
IFRS*Investorprotection$_9$	0,982	0,000	0,160	0,066
IFRS*Investorprotection$_{10}$	0,156	0,000	0,170	0,000
IFRS*Investorprotection$_{11}$	0,157	0,155	0,895	0,000
IFRS*Investorprotection$_{12}$	0,896	0,000	0,685	0,000
IFRS*Investorprotection$_{13}$	0,815	0,000	0,984	0,000
IFRS*Investorprotection$_{14}$	0,156	0,000	0,130	0,007
IFRS*Investorprotection$_{15}$	0,651	0,000	0,985	0,000
IFRS*Earningsquality	0,784	0,000	0,513	0,000
Earningsquality*Investorprotection$_1$	0,695	0,000	0,065	0,000
Earningsquality*Investorprotection$_2$	0,657	0,189	0,616	0,000
Earningsquality*Investorprotection$_3$	0,160	0,000	0,520	0,000
Earningsquality*Investorprotection$_4$	0,186	0,000	0,517	0,689
Earningsquality*Investorprotection$_5$	0,817	0,000	0,985	0,000
Earningsquality*Investorprotection$_6$	0,269	0,000	0,156	0,000
Earningsquality*Investorprotection$_7$	0,556	0,000	0,517	0,000
Earningsquality*Investorprotection$_8$	0,465	0,156	0,169	0,000
Earningsquality*Investorprotection$_9$	0,895	0,166	0,157	0,000
Earningsquality*Investorprotection$_{10}$	0,951	0,000	0,517	0,659
Earningsquality*Investorprotection$_{11}$	0,451	0,000	0,715	0,000
Earningsquality*Investorprotection$_{12}$	0,717	0,000	0,981	0,000
Earningsquality*Investorprotection$_{13}$	0,159	0,000	0,166	0,000
Earningsquality*Investorprotection$_{14}$	0,166	0,000	0,816	0,000
Earningsquality*Investorprotection$_{15}$	0,652	0,000	0,982	0,187
FS	0,420	0,000	0,219	0,000
ST	0,166	0,090	0,069	0,000
FL	0,165	0,000	0,155	0,000
IT	0,556	0,000	0,015	0,000
ROA	0,894	0,000	0,069	0,000
ROE	0,892	0,000	0,982	0,159
GDP	0,788	0,000	0,865	0,000
BM	0,160	0,000	0,616	0,000
Beta	0,682	0,168	0,897	0,000

Note: This table presents the normal distribution test of all examining continous variables.

[24]

Investorprotection$_1$ is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006), **Investorprotection$_2$** is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006), **Investorprotection$_3$** is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006), **Investorprotection$_4$** is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006), **Investorprotection$_5$** is rule of law which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998), **Investorprotection$_6$** is efficiency of judicial system which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998), **Investorprotection$_7$** is anti-director rights which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998), **Investorprotection$_8$** is creditor rights which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998), **Investorprotection$_9$** is ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998), **Investorprotection$_{10}$** is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{11}$** is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{12}$** is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{13}$** is strength of investor protection scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{14}$** is country credit rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{15}$** is legal rights index scaled from 0 to 12, with higher scores for higher degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Earningsquality** is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002), I**FRS*Investorprotection$_1$** is the interaction term of the IFRS dummy variable and the disclosure requirements index, **IFRS*Investorprotection$_2$** is the interaction term of the IFRS dummy variable and the liability standard index, **IFRS*Investorprotection$_3$** is the interaction term of the IFRS dummy variable and the public enforcement index, **IFRS*Investorprotection$_4$** is the interaction term of the IFRS dummy variable and the legal system dummy variable, **IFRS*Investorprotection$_5$** is the interaction term of the IFRS dummy variable and the rule of law index, **IFRS*Investorprotection$_6$** is the interaction term of the IFRS dummy variable and the efficiency of judicial system index, **IFRS*Investorprotection$_7$** is the interaction term of the IFRS dummy variable and the anti-director rights index,**IFRS*Investorprotection$_8$** is the interaction term of the IFRS dummy variable and the creditor rights index, **IFRS*Investorprotection$_9$** is the interaction term of the IFRS dummy variable and the ownership concentration index, **IFRS*Investorprotection$_{10}$** is the interaction term of the IFRS dummy variable and the strength of auditing and reporting standards index, **IFRS*Investorprotection$_{11}$** is the interaction term of the IFRS dummy variable and the efficacy of corporate boards index, **IFRS*Investorprotection$_{12}$** is the interaction term of the IFRS dummy variable and the protection of minority shareholders' interests index, **IFRS*Investorprotection$_{13}$** is the interaction term of the IFRS dummy variable and the strength of investor protection **index,IFRS*Investorprotection$_{14}$** is the interaction term of the IFRS dummy variable and the country credit index, **IFRS*Investorprotection$_{15}$** is the interaction term of the IFRS dummy variable and the legal rights index, **IFRS*Earningsquality** is the interaction term of the IFRS dummy variable and accruals quality index, **Earningsquality*Investorprotection$_1$** is the

[25]

interaction term of earnings quality and the disclosure requirements index, **Earningsquality*Investorprotection$_2$** is the interaction term of earnings quality and the liability standard index, **Earningsquality*Investorprotection$_3$** is the interaction term of earnings quality and the public enforcement index, **Earningsquality*Investorprotection4** is the interaction term of earnings quality and the legal system dummy variable, **Earningsquality*Investorprotection$_5$** is the interaction term of earnings quality and the rule of law index,**Earningsquality*Investorprotection$_6$** is the interaction term of earnings quality and the efficiency of judicial system index, **Earningsquality*Investorprotection$_7$** is the interaction term of earnings quality and the anti-director rights index, **Earningsquality*Investorprotection$_8$** is the interaction term of earnings quality and the creditor rights index, **Earningsquality*Investorprotection$_9$** is the interaction term of earnings quality and the ownership concentration index, **Earningsquality*Investorprotection$_{10}$** is the interaction term of earnings quality and the strength of auditing and reporting standards index, **Earningsquality*Investorprotection$_{11}$** is the interaction term of earnings quality and the efficacy of corporate boards index, **Earningsquality*Investorprotection$_{12}$** is the interaction term of earnings quality and the protection of minority shareholders' interests index, **Earningsquality*Investorprotection$_{13}$** is the interaction term of earnings quality and the strength of investor protection index, **Earningsquality*Investorprotection$_{14}$** is the interaction term of earnings quality and the country credit index, **Earningsquality*Investorprotection$_{15}$** is the interaction term of earnings quality and the legal rights index, **FS** is firm size measured as the natural logarithm of total assets, **ST** is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity, **FL** is financial leverage measured by the ratio of total liabilities to total assets, **IT** is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country, **ROA** is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets, **ROE** is return on equity measured by the ratio of net income divided by equities, **GDP** is the annual change in GDP, **BM** is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity, **Beta** is stock beta.

6.1.2. Multicollinearity test

Multicollinearity is a statistical phenomenon in which two or more predictor variables (independent variables) in a multiple regression model are highly correlated, meaning that one can be linearly predicted from the others with a non-trivial degree of accuracy. In the presence of multicollinearity, the estimate of one variable's impact on the dependent variable while controlling for the others tends to be less precise than if predictors were uncorrelated with another. To measure multicollinearity, the variance inflation factor (VIF) is examined since it has a clear interpretation in terms of the effects of multicollinearity on the estimated variance of the i'th regression coefficient (O'Brien, 2007). Multicollinearity is present when VIF values are lower than 10 and Tolerance values are higher than 0,1.

Examining the Table 3, the results indicated that there is no collinearity problem in the model that is used in this thesis since VIF values are less than 10 and Tolerance values are higher than 0,1 of all independent variables.

Table 3: Test for multicollinearity of all independent variables

Variables	Euro zone countries		Asian countries	
	VIF	Tolerance	VIF	Tolerance

[26]

IFRS	5,626	0,250	6,982	0,298
$Investorprotection_1$	2,165	0,219	0,202	0,199
$Investorprotection_2$	0,159	0,330	5,984	0,198
$Investorprotection_3$	3,198	0,194	0,917	0,895
$Investorprotection_4$	0,198	0,196	0,982	0,920
$Investorprotection_5$	5,198	0,185	9,982	0,298
$Investorprotection_6$	0,490	0,398	4,892	0,498
$Investorprotection_7$	0,893	0,917	2,982	0,399
$Investorprotection_8$	9,984	0,398	0,912	0,720
$Investorprotection_9$	0,464	0,815	5,968	0,620
$Investorprotection_{10}$	5,160	0,532	4,968	0,199
$Investorprotection_{11}$	0,296	0,320	0,697	0,126
$Investorprotection_{12}$	0,182	0,127	1,984	0,350
$Investorprotection_{13}$	0,319	0,717	0,398	0,497
$Investorprotection_{14}$	0,512	0,699	3,984	0,698
$Investorprotection_{15}$	2,894	0,198	2,981	0,897
Earningsquality	5,189	0,151	0,820	0,620
$IFRS*Investorprotection_1$	7,166	0,127	2,917	0,298
$IFRS*Investorprotection_2$	0,916	0,298	5,982	0,198
$IFRS*Investorprotection_3$	9,159	0,366	9,981	0,398
$IFRS*Investorprotection_4$	1,198	0,820	7,988	0,599
$IFRS*Investorprotection_5$	6,198	0,917	2,816	0,298
$IFRS*Investorprotection_6$	8,198	0,598	6,198	0,698
$IFRS*Investorprotection_7$	6,020	0,620	9,966	0,298
$IFRS*Investorprotection_8$	2,198	0,268	0,166	0,892
$IFRS*Investorprotection_9$	3,199	0,198	0,962	0,920
$IFRS*Investorprotection_{10}$	8,198	0,165	3,982	0,299
$IFRS*Investorprotection_{11}$	0,199	0,698	9,982	0,699
$IFRS*Investorprotection_{12}$	0,720	0,546	2,984	0,490
$IFRS*Investorprotection_{13}$	0,920	0,649	2,717	0,689
$IFRS*Investorprotection_{14}$	5,198	0,398	0,982	0,199
$IFRS*Investorprotection_{15}$	8,198	0,489	0,916	0,690
$IFRS*Earningsquality$	2,198	0,820	0,198	0,199
$Earningsquality*Investorprotection_1$	3,198	0,717	6,313	0,189
$Earningsquality*Investorprotection_2$	0,198	0,190	3,985	0,842
$Earningsquality*Investorprotection_3$	2,198	0,698	0,130	0,460
$Earningsquality*Investorprotection_4$	8,198	0,199	8,984	0,198
$Earningsquality*Investorprotection_5$	5,198	0,130	4,915	0,895
$Earningsquality*Investorprotection_6$	0,219	0,912	2,916	0,915
$Earningsquality*Investorprotection_7$	0,298	0,650	0,620	0,920
$Earningsquality*Investorprotection_8$	2,198	0,265	6,157	0,550
$Earningsquality*Investorprotection_9$	6,189	0,197	8,982	0,189
$Earningsquality*Investorprotection_{10}$	4,198	0,398	0,916	0,719
$Earningsquality*Investorprotection_{11}$	9,190	0,368	2,984	0,650
$Earningsquality*Investorprotection_{12}$	2,189	0,297	6,982	0,498
$Earningsquality*Investorprotection_{13}$	3,897	0,398	3,916	0,985
$Earningsquality*Investorprotection_{14}$	6,489	0,820	3,130	0,598
$Earningsquality*Investorprotection_{15}$	7,892	0,599	0,198	0,693

FS	0,892	0,699	9,982	0,198
ST	0,916	0,299	6,917	0,599
FL	6,918	0,182	3,816	0,487
IT	0,139	0,170	3,166	0,698
ROA	5,849	0,299	5,168	0,490
ROE	1,984	0,599	7,982	0,820
GDP	6,984	0,689	3,962	0,398
BM	0,170	0,498	0,197	0,198
Beta	0,817	0,720	0,166	0,712

Note: This table presents the multicollinearity test of all examining independent variables. IFRS is a dummy variable that takes 0 if a firm had adopted IFRS and 1 otherwise, **Investorprotection$_1$** is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006), **Investorprotection$_2$** is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006), **Investorprotection$_3$** is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006), **Investorprotection$_4$** is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006), **Investorprotection$_5$** is rule of law which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998), **Investorprotection$_6$** is efficiency of judicial system which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998), **Investorprotection$_7$** is anti-director rights which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998), **Investorprotection$_8$** is creditor rights which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998), **Investorprotection$_9$** is ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998), **Investorprotection$_{10}$** is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{11}$** is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{12}$** is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{13}$** is strength of investor protection scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{14}$** is country credit rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{15}$** is legal rights index scaled from 0 to 12, with higher scores for higher degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Earningsquality** is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002), **IFRS*Investorprotection$_1$** is the interaction term of the IFRS dummy variable and the disclosure requirements index, **IFRS*Investorprotection$_2$** is the interaction term of the IFRS dummy variable and the liability standard index, **IFRS*Investorprotection$_3$** is the interaction term of the IFRS dummy variable and the public enforcement index, **IFRS*Investorprotection$_4$** is the interaction term of the IFRS dummy variable and the legal system dummy variable, **IFRS*Investorprotection$_5$** is the interaction term of the IFRS dummy variable and the rule of law index, **IFRS*Investorprotection$_6$** is the interaction term of the IFRS dummy variable and the efficiency of judicial system index, **IFRS*Investorprotection$_7$** is the interaction term of the IFRS dummy variable and the anti-director rights index, **IFRS*Investorprotection$_8$** is the interaction term of the IFRS dummy variable and the creditor rights index, **IFRS*Investorprotection$_9$** is the interaction term of the IFRS dummy variable and the ownership concentration index, **IFRS*Investorprotection$_{10}$** is the interaction term of the IFRS dummy variable and the strength of auditing and reporting standards index, **IFRS*Investorprotection$_{11}$** is the interaction term of the IFRS dummy

variable and the efficacy of corporate boards index, **IFRS*Investorprotection$_{12}$** is the interaction term of the IFRS dummy variable and the protection of minority shareholders' interests index, **IFRS*Investorprotection$_{13}$** is the interaction term of the IFRS dummy variable and the strength of investor protection **index,IFRS*Investorprotection$_{14}$** is the interaction term of the IFRS dummy variable and the country credit index, **IFRS*Investorprotection$_{15}$** is the interaction term of the IFRS dummy variable and the legal rights index, **IFRS*Earningsquality** is the interaction term of the IFRS dummy variable and accruals quality index, **Earningsquality*Investorprotection$_1$** is the interaction term of earnings quality and the disclosure requirements index, **Earningsquality*Investorprotection$_2$** is the interaction term of earnings quality and the liability standard index, **Earningsquality*Investorprotection$_3$** is the interaction term of earnings quality and the public enforcement index, **Earningsquality*Investorprotection4** is the interaction term of earnings quality and the legal system dummy variable, **Earningsquality*Investorprotection$_5$** is the interaction term of earnings quality and the rule of law **index,Earningsquality*Investorprotection$_6$** is the interaction term of earnings quality and the efficiency of judicial system index, **Earningsquality*Investorprotection$_7$** is the interaction term of earnings quality and the anti-director rights index, **Earningsquality*Investorprotection$_8$** is the interaction term of earnings quality and the creditor rights index, **Earningsquality*Investorprotection$_9$** is the interaction term of earnings quality and the ownership concentration index, **Earningsquality*Investorprotection$_{10}$** is the interaction term of earnings quality and the strength of auditing and reporting standards index, **Earningsquality*Investorprotection$_{11}$** is the interaction term of earnings quality and the efficacy of corporate boards index, **Earningsquality*Investorprotection$_{12}$** is the interaction term of earnings quality and the protection of minority shareholders' interests index, **Earningsquality*Investorprotection$_{13}$** is the interaction term of earnings quality and the strength of investor protection index, **Earningsquality*Investorprotection$_{14}$** is the interaction term of earnings quality and the country credit index, **Earningsquality*Investorprotection$_{15}$** is the interaction term of earnings quality and the legal rights index, **FS** is firm size measured as the natural logarithm of total assets, **ST** is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity, **FL** is financial leverage measured by the ratio of total liabilities to total assets, **IT** is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country, **ROA** is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets, **ROE** is return on equity measured by the ratio of net income divided by equities, **GDP** is the annual change in GDP, **BM** is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity, **Beta** is stock beta.

6.1.3. Homoscedasticity test

Homoscedasticity exists when all variables have the same finite variance. The null hypothesis for the test of homogeneity of variance states that the variance of the dependent variable is equal across groups defined by the independent variables, i.e. the variance is homogeneous. Martin and Bridgmon (2012) stated that a Levene's test verified the equality of variances in the samples (homogeneity of variance) (p>0,05). Consequently, if the p-value is below 0,05 the null hypothesis is rejected and it is assumed that there is heteroscedasticity. On contrary, if the p-value is above 0,05 the null hypothesis is accepted and it is assumed that there is homoscedasticity.

Examining the Table 4, the results showed that the null hypothesis is accepted and it is assumed that there is homoscedasticity in the model in this paper.

Table 4: Test for homoskedasticity

Dependent variable	Euro zone countries		Asian countries	
	Levene Statistic	**Sig.**	**Levene Statistic**	**Sig.**
Costofcapital$_1$	0,920	0,190	0,517	0,160
Costofcapital$_2$	0,198	0,126	0,498	0,139

Note: This table presents the homoskedasticity test of the model. Costofcapital$_1$ is cost of equity capital measured by the mean of the two implied cost of equity capital metrics based on Ohlson and Juettner-Nauroth (2005), as implemented by Gode and Mohanram (2003) and Easton (2004), **Costofcapital$_2$** is cost of debt estimated based on Francis et al (2005).

6.2. Descriptive statistics

Tables 5 and 6 report descriptive statistics of (in)dependent variables used in the empirical analysis. From Table 5, it can be noted that the results for investor protection in Euro zone and Asian countries are controversial. Euro zone countries appear higher scores in rule of law (Investorprotection$_5$), efficiency in judicial system (Investorprotection$_6$), ownership concentration (Investorprotection$_9$), efficacy of corporate boards (Investorprotection$_{11}$) and country credit rating (Investorprotection$_{14}$) indices rather than Asian countries. On contrary, Asian countries appear higher scores in disclosure requirement (Investorprotection$_1$), liability standard (Investorprotection$_2$), public enforcement (Investorprotection$_3$), anti-director rights (Investorprotection$_7$), creditor rights (Investorprotection$_8$), strength of auditing and reporting standards (Investorprotection$_{10}$), protection of minority shareholders' interests (Investorprotection$_{12}$), strength of investor protection (Investorprotection$_{13}$) and legal rights (Investorprotection$_{15}$) indices rather than Euro zone countries. In overall, Euro zone countries appear higher total investor protection index than Asian countries. Further, from Table 5, it can be concluded that countries which are categorized by Leuz (2010) in cluster 3 (Greece, Italy, Portugal, Philippines and Sri Lanka) and characterized as insider economies with weaker legal enforcement systems appear lower investor protection indices than countries that are categorized into outsider economies with strong outsider protection and legal enforcement (cluster 1: Ireland, Hong Kong, Israel and Malaysia) and insider economies with better legal enforcement systems (cluster 2: Austria, Belgium, Finland, France, Germany, Netherlands, Spain, Japan, South Korea and Taiwan).

From Table 6, it can be noted that cost of capital, measured by either cost of equity capital (Costofcapital$_1$) or cost of debt (Costofcapital$_2$), decreased after the adoption of IFRS in Euro zone and in Asian countries. However, the results among the countries are mixed. Specifically, countries with weak legal enforcement systems, like Greece, Portugal, Philippines and Sri Lanka, cost of equity capital and cost of debt were increased after the adoption of IFRS.

Further, from Table 6 it can be excluded that earnings quality (Earningsquality) increased for all Euro zone and Asian countries after the IFRS adoption.

Lastly, Table 6 shows controversial changes of control variables after the IFRS adoption. Specifically, Euro zone countries exhibit lower means of share turnover (ST), inflation rate (IT), the annual change in GDP (GDP), book-to-market ratio (BM) and stock beta (Beta), and higher means of firm size (FS), financial leverage (FL), return on assets (ROA) and return on equity (ROE). In the same vein, Asian countries appears higher means of share turnover (ST), financial leverage (FL), inflation rate (IT), return on assets (ROA), return on equity (ROE) and stock beta (Beta), and lower means of firm size (FS), the annual change in GDP (GDP) and stock beta (Beta).

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Table 5: Sample distribution and investor protection indexes per country

Country (Year of IFRS adoption)	Sample distribution		Investor protection indexes			
	Pre IFRS adoption	Post IFRS adoption	Investorprotection$_1$	Investorprotection$_2$	Investorprotection$_3$	Investorprotection$_4$
Austria (2005)	485	756	0,25	0,11	0,17	0
Belgium (2005)	958	1418	0,42	0,44	0,15	1
Finland (2005)	729	1058	0,50	0,66	0,32	1
France (2005)	4203	7375	0,75	0,22	0,77	1
Germany (2005)	3830	5419	0,42	0,00	0,22	0
Greece (2005)	1687	2446	0,33	0,50	0,32	1
Ireland (2005)	314	429	0,67	0,44	0,37	1
Italy (2005)	1414	2450	0,67	0,22	0,48	1
Netherlands (2005)	1118	1118	0,50	0,89	0,47	1
Portugal (2005)	326	442	0,42	0,66	0,58	1
Spain (2005)	9404	31824	0,50	0,66	0,33	1
Euro zone countries	**24468**	**54735**	**0,49**	**0,44**	**0,38**	
Hong Kong (2005)	4590	10995	0,92	0,66	0,87	1
Israel (2008)	3052	5030	0,67	0,66	0,63	1
Japan (2010)	14426	30237	0,75	0,66	0,00	0
South Korea (2010)	7371	15045	0,75	0,66	0,25	0
Malaysia (2010)	4328	8354	0,92	0,66	0,77	1
Philippines (2005)	1162	2178	0,83	1,00	0,83	1
Sri Lanka (2005)	1204	2170	0,75	0,39	0,43	1
Taiwan (2013)	3842	6329	0,75	0,66	0,52	0
Asian countries	**39975**	**80338**	**0,79**	**0,67**	**0,54**	

Table 5: Sample distribution and investor protection indexes per country (cont'd)

Country (Year of IFRS adoption)	Investor protection indexes					
	Investorprotection$_5$	Investorprotection$_6$	Investorprotection$_7$	Investorprotection$_8$	Investorprotection$_9$	Investorprotection$_{10}$
Austria (2005)	10,00	9,50	2	3	0,58	5,80
Belgium (2005)	10,00	9,50	0	2	0,54	5,60

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Finland (2005)	10,00	10,00	3	1	0,37	6,50
France (2005)	8,98	8,00	3	0	0,34	5,50
Germany (2005)	9,23	9,00	1	3	0,48	5,80
Greece (2005)	6,18	7,00	2	1	0,67	4,10
Ireland (2005)	7,80	8,75	4	1	0,39	4,80
Italy (2005)	8,33	6,75	1	2	0,58	4,20
Netherlands (2005)	10,00	10,00	2	2	0,39	6,00
Portugal (2005)	8,68	5,50	3	1	0,52	4,40
Spain (2005)	7,80	6,25	4	2	0,51	4,60
Euro zone countries	**8,82**	**8,20**	**2,27**	**2**	**0,49**	**5,21**
Hong Kong (2005)	8,22	10,00	5	4	0,54	6,20
Israel (2008)	4,82	10,00	3	4	0,51	5,70
Japan (2010)	8,98	10,00	4	2	0,18	6,00
South Korea (2010)	5,35	6,00	2	3	0,23	4,50
Malaysia (2010)	6,78	9,00	4	4	0,54	5,50
Philippines (2005)	2,73	4,75	3	0	0,57	5,00
Sri Lanka (2005)	1,90	7,00	3	3	0,60	4,90
Taiwan (2013)	8,52	6,75	3	2	0,18	5,70
Asian countries	**5,91**	**7,94**	**3,38**	**2,75**	**0,42**	**5,44**

Table 5: Sample distribution and investor protection indexes per country (cont'd)

Country (Year of IFRS adoption)	Investor protection indexes					Total investor protection
	$Investorprotection_{11}$	$Investorprotection_{12}$	$Investorprotection_{13}$	$Investorprotection_{14}$	$Investorprotection_{15}$	
Austria (2005)	5,80	4,90	6,30	89,00	5	**142,41**
Belgium (2005)	5,80	5,00	6,20	82,10	4	**131,75**
Finland (2005)	6,10	6,10	5,60	90,80	7	**147,95**
France (2005)	5,60	4,50	6,80	83,30	4	**131,76**
Germany (2005)	5,60	4,70	5,90	94,00	6	**145,35**
Greece (2005)	4,00	4,10	5,80	32,80	3	**71,80**
Ireland (2005)	5,70	4,80	7,30	68,00	7	**121,02**
Italy (2005)	4,00	3,50	6,70	66,80	2	**107,23**

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Netherlands (2005)	5,90	5,30	5,20	90,30	3	**141,95**
Portugal (2005)	4,50	4,10	5,90	54,70	2	**95,96**
Spain (2005)	4,90	3,70	6,40	65,40	5	**112,05**
Euro zone countries	**5,26**	**4,61**	**6,19**	**74,29**	**4,36**	**122,66**
Hong Kong (2005)	5,40	5,40	8,10	82,50	7	**144,81**
Israel (2008)	4,60	4,90	7,10	71,30	6	**123,89**
Japan (2010)	5,60	5,30	6,30	81,70	4	**135,47**
South Korea (2010)	4,10	3,70	6,70	81,50	5	**123,74**
Malaysia (2010)	5,60	5,30	7,40	72,00	7	**129,47**
Philippines (2005)	5,30	4,40	4,20	55,90	3	**91,51**
Sri Lanka (2005)	5,00	4,50	5,90	31,70	3	**72,07**
Taiwan (2013)	5,20	5,20	6,40	81,40	4	**130,28**
Asian countries	**5,10**	**4,84**	**6,51**	**69,75**	**4,88**	**118,91**

Note: This table presents the sample distribution and investor protection indexes per country. **Investorprotection$_1$** is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006), **Investorprotection$_2$** is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006), **Investorprotection$_3$** is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006), **Investorprotection$_4$** is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006), **Investorprotection$_5$** is rule of law which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998), **Investorprotection$_6$** is efficiency of judicial system which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998), **Investorprotection$_7$** is anti-director rights which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998), **Investorprotection$_8$** is creditor rights which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998), **Investorprotection$_9$** is ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998), **Investorprotection$_{10}$** is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{11}$** is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{12}$** is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{13}$** is strength of investor protection scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{14}$** is country credit rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum) and **Investorprotection$_{15}$** is legal rights index scaled from 0 to 12, with higher scores for higher degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum).

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Table 6: Descriptive statistics

Variables/Countries (Year of IFRS adoption)	Pre IFRS adoption											
	Austria (2005)	Belgium (2005)	Finland (2005)	France (2005)	Germany (2005)	Greece (2005)	Ireland (2005)	Italy (2005)	Netherlands (2005	Portugal (2005)	Spain (2005)	Euro zone countries
Costofcapital$_1$	1,653	0,842	0,717	2,685	3,197	8,794	10,986	6,985	4,985	16,987	5,968	**6,342**
Costofcapital$_2$	0,182	0,590	0,420	0,689	0,199	0,965	0,599	0,690	0,499	0,799	0,619	**0,624**
Earningsquality	20,651	45,897	10,968	85,986	66,985	92,985	50,986	25,988	56,985	48,985	73,199	**59,347**
FS	65,984	85,982	105,988	158,985	198,962	43,982	68,987	158,982	111,984	95,919	100,962	**117,971**
ST	0,897	0,982	0,298	0,398	0,482	0,685	0,595	0,798	0,398	0,498	0,829	**0,699**
FL	16,987	18,982	26,917	2,982	8,985	36,982	93,978	15,892	23,982	10,984	36,982	**30,057**
IT	2,080	2,060	1,740	1,880	1,520	3,320	4,180	2,540	2,620	3,280	3,220	**2,878**
ROA	5,666	2,985	6,985	15,985	65,984	1,987	7,985	85,984	35,982	3,982	19,982	**24,862**
ROE	0,630	0,199	0,842	0,649	0,498	0,698	0,250	0,698	0,187	0,487	0,820	**0,616**
GDP	1,460	1,400	2,380	1,560	0,800	3,540	5,140	1,200	1,340	1,120	3,080	**2,373**
BM	6,298	4,982	9,166	8,060	8,396	9,594	8,259	3,919	7,916	6,984	9,197	**8,361**
Beta	0,159	0,698	0,498	0,820	0,598	0,290	0,961	0,816	0,984	0,499	0,397	**0,647**

Variables/Countries (Year of IFRS adoption)	Post IFRS adoption											
	Austria (2005)	Belgium (2005)	Finland (2005)	France (2005)	Germany (2005)	Greece (2005)	Ireland (2005)	Italy (2005)	Netherlands (2005	Portugal (2005)	Spain (2005)	Euro zone countries
Costofcapital$_1$	1,531	0,741	0,616	2,531	3,001	12,368	8,961	4,325	2,368	18,356	3,697	**5,654**
Costofcapital$_2$	0,125	0,111	0,025	0,389	0,001	1,145	0,523	0,246	0,013	1,358	0,359	**0,423**
Earningsquality	15,348	21,895	2,198	65,978	24,985	49,985	19,917	21,789	22,984	6,984	55,972	**33,091**
FS	75,982	100,986	185,985	201,189	269,982	58,987	99,962	201,962	105,986	65,987	129,895	**147,891**
ST	0,298	0,720	0,689	0,489	0,689	0,599	0,898	0,490	0,298	0,698	0,199	**0,570**
FL	11,917	19,917	22,919	9,984	3,982	21,982	69,917	54,982	69,985	48,917	15,982	**33,315**
IT	2,080	2,070	1,900	1,480	1,590	2,230	1,490	1,870	1,780	1,750	2,220	**2,062**
ROA	7,982	9,915	15,982	29,982	88,980	6,984	11,982	92,303	52,398	6,199	36,917	**36,049**
ROE	0,798	0,398	0,998	0,898	0,598	0,998	0,689	0,802	0,698	0,720	0,919	**0,858**
GDP	1,600	1,600	1,110	1,170	1,450	-1,430	2,450	-0,310	1,225	-0,020	0,850	**0,959**

BM	5,698	3,981	7,916	6,984	4,916	6,199	7,917	1,916	3,982	4,984	8,972	**6,585**
Beta	0,199	0,298	0,820	0,498	0,687	0,478	0,598	0,398	0,820	0,188	0,498	**0,544**

Pre IFRS adoption

Variables/Countries (Year of IFRS adoption)	Hong Kong (2005)	Israel (2008)	Japan (2010)	South Korea (2010)	Malaysia (2012)	Philippines (2005)	Sri Lanka (2012)	Taiwan (2013)	Asian countries
Costofcapital$_1$	10,985	31,190	26,986	39,986	10,985	14,986	5,198	18,986	**19,913**
Costofcapital$_2$	0,685	0,189	0,898	0,498	0,298	0,792	0,998	0,292	**0,581**
Earningsquality	25,198	63,490	14,190	25,895	98,896	48,968	55,190	21,895	**44,215**
FS	33,984	59,166	152,985	26,985	14,198	36,984	45,985	99,984	**58,784**
ST	0,982	0,165	0,387	0,595	0,699	0,199	0,380	0,848	**0,532**
FL	33,986	5,020	42,169	55,166	63,197	23,197	12,987	7,942	**30,458**
IT	-2,280	1,513	-0,250	3,130	2,225	3,820	10,025	1,063	**2,406**
ROA	22,985	62,985	48,985	71,985	25,985	32,985	69,985	15,968	**43,983**
ROE	0,598	0,298	0,689	0,720	0,249	0,398	0,584	0,327	**0,483**
GDP	4,360	3,950	0,580	4,660	5,050	4,520	5,533	4,185	**4,105**
BM	5,987	8,985	1,985	6,984	4,946	5,985	2,985	0,489	**4,793**
Beta	0,984	0,694	0,489	0,696	0,792	0,996	0,482	0,898	**0,754**

Post IFRS adoption

Variables/Countries (Year of IFRS adoption)	Hong Kong (2005)	Israel (2008)	Japan (2010)	South Korea (2010)	Malaysia (2012)	Philippines (2005)	Sri Lanka (2012)	Taiwan (2013)	Asian countries
Costofcapital$_1$	5,985	2,984	7,986	26,985	3,985	19,316	7,389	11,985	**10,827**
Costofcapital$_2$	0,460	0,100	0,242	0,389	0,198	1,236	1,258	0,023	**0,488**
Earningsquality	19,894	53,199	11,198	13,189	88,198	43,189	45,189	18,198	**36,532**
FS	49,985	85,984	201,490	36,985	21,985	45,127	58,199	105,199	**75,619**
ST	0,498	0,698	0,298	0,797	0,998	0,220	0,398	5,985	**1,237**
FL	31,198	8,170	46,984	43,165	79,133	29,197	21,197	8,398	**33,430**
IT	3,040	2,543	0,420	2,360	2,300	4,610	5,900	1,000	**2,772**
ROA	18,987	79,985	58,690	70,197	35,119	49,170	62,199	26,197	**50,068**

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ROE	0,350	0,298	0,599	0,998	0,489	0,689	0,485	0,698	**0,576**
GDP	3,940	3,386	1,500	3,740	5,400	5,310	5,667	2,950	**3,987**
BM	6,850	0,589	2,984	7,942	9,985	7,917	4,986	2,987	**5,530**
Beta	0,912	0,492	0,698	0,299	0,199	0,698	0,487	0,896	**0,585**

Note: This table presents the means of examining variabls in pre and post IFRS adoption. Costofcapital$_1$ is cost of equity capital measured by the mean of the two implied cost of equity capital metrics based on Ohlson and Juettner-Nauroth (2005), as implemented by Gode and Mohanram (2003) and Easton (2004), **Costofcapital$_2$** is cost of debt estimated based on Francis et al (2005), **Earningsquality** is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002), **FS** is firm size measured as the natural logarithm of total assets, **ST** is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity, **FL** is financial leverage measured by the ratio of total liabilities to total assets, **IT** is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country, **ROA** is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets, **ROE** is return on equity measured by the ratio of net income divided by equities, **GDP** is the annual change in GDP, **BM** is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity, **Beta** is stock beta.

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6.3. Correlation analysis

Examining Pearson correlation matrix (not reported here), there is diversity in correlation among examining independent variables and between Euro zone and Asian countries. However, for brevity, this paper outlines the most important correlations among independent variables that are positively and negatively correlated in Euro zone and Asian countries simultaneously. It is noteworthy that the correlation coefficients between test variables generally appear to be close to 1 which implies that these linear relationships are strong.

The correlation matrix indicates that the IFRS adoption dummy variable (IFRS) is positively correlated with legal system dummy variable (Investorprotection$_4$), rule of law index (Investorprotection$_5$), earnings quality (Earningsquality), the interaction terms of the IFRS dummy variable and the disclosure requirements index (IFRS*Investorprotection$_1$), the IFRS dummy variable and the rule of law index (IFRS*Investorprotection$_5$), earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$), implying that investor protection and earnings quality are higher after the adoption of IFRS, whereas the joint effects of a) earnings quality and investor protection and b) the adoption of IFRS and investor protection are positively influenced after the adoption of IFRS.

Disclosure requirements index (Investorprotection$_1$) and liability standard index (Investorprotection$_2$) are positively correlated with the interaction terms of the IFRS dummy variable and the efficiency of judicial system index (IFRS*Investorprotection$_6$), the IFRS dummy variable and the protection of minority shareholders' interests index (IFRS*Investorprotection$_{12}$), the IFRS dummy variable and accruals quality index (IFRS*Earningsquality), earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$) and earnings quality and the legal system dummy variable (Earningsquality*Investorprotection$_4$), and negatively correlated with public enforcement index (Investorprotection$_3$), rule of law index (Investorprotection$_5$), the interaction terms of earnings quality and the strength of auditing and reporting standards index (Earningsquality*Investorprotection$_{10}$) and earnings quality and the protection of minority shareholders' interests index (Earningsquality*Investorprotection$_{12}$). Public enforcement index (Investorprotection$_3$) and legal system dummy variable (Investorprotection$_4$) are positively correlated with the interaction terms of earnings quality and the ownership concentration index (Earningsquality*Investorprotection$_9$) and negatively correlated with the interaction terms of the IFRS dummy variable and the ownership concentration index (IFRS*Investorprotection$_9$), the IFRS dummy variable and the strength of

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auditing and reporting standards index (IFRS*$Investorprotection_{10}$). Rule of law index ($Investorprotection_5$) and efficiency of judicial system index ($Investorprotection_6$) are positively correlated with the interaction terms of earnings quality and the anti-director rights index (Earningsquality*$Investorprotection_7$), earnings quality and the strength of auditing and reporting standards index (Earningsquality*$Investorprotection_{10}$) and earnings quality and the legal rights index (Earningsquality*$Investorprotection_{15}$), and negatively correlated with the interaction terms of the IFRS dummy variable and the legal rights index (IFRS*$Investorprotection_{15}$). Anti-director rights index ($Investorprotection_7$) is positively correlated with the interaction terms of earnings quality and the anti-director rights index (Earningsquality*$Investorprotection_7$) and earnings quality and the creditor rights index (Earningsquality*$Investorprotection_8$), and negatively correlated with the interaction terms of earnings quality and the disclosure requirements index (Earningsquality*$Investorprotection_1$) and earnings quality and the liability standard index (Earningsquality*$Investorprotection_2$). Protection of minority shareholders' interests index ($Investorprotection_{12}$) and strength of investor protection index ($Investorprotection_{13}$) are negatively correlated with the interaction term of the IFRS dummy variable and the strength of auditing and reporting standards index (IFRS*$Investorprotection_{10}$). Country credit rating index ($Investorprotection_{14}$) and legal rights index ($Investorprotection_{15}$) are positively correlated with earnings quality (Earningsquality), the interaction terms of the IFRS dummy variable and the disclosure requirements index (IFRS*$Investorprotection_1$) and the IFRS dummy variable and the public enforcement index (IFRS*$Investorprotection_3$). These negative (positive) signs indicate that firms with strong (weak) investor protection are likely to resort to (use) earnings management and appear lower (higher) levels of interaction terms of a) the adoption of IFRS and earnings quality, b) investor protection and earnings quality and c) the adoption of IFRS and investor protection.

Earnings quality (Earningsquality) is positively correlated with the interaction terms of the IFRS dummy variable and the public enforcement index (IFRS*$Investorprotection_3$) and the IFRS dummy variable and the legal system dummy variable (IFRS*$Investorprotection_4$), suggesting that earnings quality is higher in firms with high investor protection after the adoption of IFRS.

The interaction terms of the IFRS dummy variable and the disclosure requirements index (IFRS*$Investorprotection_1$), the IFRS dummy variable and the liability standard index (IFRS*$Investorprotection_2$) and the IFRS dummy variable and the legal system dummy variable (IFRS*$Investorprotection_4$) are positively correlated with the interaction terms of earnings quality and the country credit index (Earningsquality*$Investorprotection_{14}$) and

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earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$). The interaction terms of the IFRS dummy variable and the efficiency of judicial system index (IFRS*Investorprotection$_6$), the IFRS dummy variable and the anti-director rights index (IFRS*Investorprotection$_7$) and the IFRS dummy variable and the creditor rights index (IFRS*Investorprotection$_8$) are positively correlated with the interaction terms of earnings quality and the protection of minority shareholders' interests index (Earningsquality*Investorprotection$_{12}$), and negatively correlated with the interaction term of earnings quality and the strength of auditing and reporting standards index (Earningsquality*Investorprotection$_{10}$). The interaction terms of the IFRS dummy variable and the efficacy of corporate boards index (IFRS*Investorprotection$_{11}$) and the IFRS dummy variable and the protection of minority shareholders' interests index (IFRS*Investorprotection$_{12}$) are negatively correlated with the interaction term of earnings quality and the strength of investor protection index (Earningsquality*Investorprotection$_{13}$). The interaction terms of the IFRS dummy variable and the strength of investor protection index (IFRS*Investorprotection$_{13}$), the IFRS dummy variable and the country credit index (IFRS*Investorprotection$_{14}$) and the IFRS dummy variable and the legal rights index (IFRS*Investorprotection$_{15}$) are negatively correlated with the interaction term of earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$). These positive (negative) signs indicate that firms with high (low) investor protection after the adoption of IRS reflect higher (lower) level of earnings quality and strong (weak) investor protection.

The interaction term of the IFRS dummy variable and accruals quality index (IFRS*Earningsquality) is positively correlated with the interaction terms of earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$) and earnings quality and the liability standard index (Earningsquality*Investorprotection$_2$), and negatively correlated with the interaction terms of earnings quality and the creditor rights index (Earningsquality*Investorprotection$_8$) and earnings quality and the ownership concentration index (Earningsquality*Investorprotection$_9$). These positive (negative) signs reflect the favorable (unfavorable) effects of the interaction term of the adoption of IFRS and earnings quality on various interaction terms of earnings quality and investor protection.

6.4. Regression analysis

6.4.1. Cost of capital and IFRS adoption

The first hypothesis aims to examine the impact of the IFRS adoption on cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there

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is no relationship between IFRS adoption and cost of capital and the alternative hypothesis states that IFRS adoption reduces the cost of capital in Euro zone and Asian countries.

Table 7 Panel A reports multiple regression between cost of equity capital and IFRS adoption. The results indicate that there is negative association between cost of equity capital (Costofcapital$_1$) and IFRS adoption dummy variable (IFRS) in Euro zone and Asian countries.

In the same vein, examining the association between cost of debt and IFRS adoption, Table 7 Panel B shows that the IFRS adoption dummy variable (IFRS) coefficients are significant and have negative values and for Euro zone and Asian countries respectively.

In overall, the above results are consistent with H_1 and the finding of Leuz and Verrecchia (2000), Daske et al (2008), Karamanou and Nishiotis (2009), Daske et al (2013), Castillo-Merino et al (2014) and Mazzi et al (2015), which implies that the cost of capital (measured by cost of equity capital and cost of debt) is significantly lower than the cost of capital after the adoption of IFRS in Euro zone and Asian countries.

6.4.2. Cost of capital and earnings quality

The second hypothesis aims to examine the association between earnings quality and cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there is no relationship between earnings quality and cost of capital and the alternative hypothesis states that an increase of earnings quality reduces the cost of capital in Euro zone and Asian countries.

Table 7 Panel A reports that the negative sign of coefficients of earnings quality (Earningsquality) in Euro zone and Asian countries implies that higher earnings quality may lead to decrease of cost of equity capital (Costofcapital$_1$). Therefore, consistent with the findings of Francis et al (2004), Jayaraman (2008), Chan et al (2009), McInnis (2010), Artiach and Clarkson (2012), Artiach and Clarkson (2014) and Persakis and Iatridis (2015), H_2 is accepted.

Table 7 Panel B shows that H_2 holds only for Euro zone countries, implying that earnings quality (Earningsquality) has negative association with cost of debt (Costofcapital$_2$). On contrary, inconsistent with H_2, the coefficient of earnings quality (Earningsquality) in Asian countries is positive and significant with cost of debt (Costofcapital$_2$). These results support the findings of Francis et al (2004, 2005a), Jayaraman (2008), Chan et al (2009), Liu

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et al (2010), Valipour and Moradbeygi (2011) and Persakis and Iatridis (2015) for only Euro zone countries which imply that higher earnings quality indicates lower cost of debt.

6.4.3. Cost of capital and investor protection

The third hypothesis aims to examine the association between investor protection indexes and cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there is no relationship between investor protection and cost of capital and the alternative hypothesis states that cost of capital is lower in countries with high level of investor protection and legal enforcement.

Table 7 Panels A and B report that there is controversial relationship between cost of capital and investor protection in Euro zone and Asian countries. Specifically, as shown in Table 7 Panel A, the coefficients of disclosure requirements index (Investorprotection$_1$), liability standard index (Investorprotection$_2$), rule of law index (Investorprotection$_5$), anti-director rights index (Investorprotection$_7$), protection of minority shareholders' interests index (Investorprotection$_{12}$), country credit rating index (Investorprotection$_{14}$) and legal rights index (Investorprotection$_{15}$) in Euro zone countries, and the coefficients of disclosure requirements index (Investorprotection$_1$), public enforcement index (Investorprotection$_3$), efficacy of corporate boards index (Investorprotection$_{11}$), strength of investor protection index (Investorprotection$_{13}$), country credit rating index (Investorprotection$_{14}$) and legal rights index (Investorprotection$_{15}$) in Asian countries are negative and significant with cost of equity capital (Costofcapital$_1$). Therefore, consistent with the results of Botosan and Plumlee (2000), Ashbaugh et al (2004), Byun et al (2008), Lopes and Carvalho de Alencar (2010), Semper and Beltran (2014) and Blanco et al (2015), H$_3$ is accepted which implies that lower cost of equity capital is related with higher investor protection. Conversely, inconsistent with H$_3$, the coefficients of liability standard index (Investorprotection$_2$), ownership concentration index (Investorprotection$_9$), strength of auditing and reporting standards index (Investorprotection$_{10}$) and efficacy of corporate boards index (Investorprotection$_{11}$) in Euro zone countries, and the coefficients of efficiency of judicial system index (Investorprotection$_6$), creditor rights index (Investorprotection$_8$) and strength of auditing and reporting standards index (Investorprotection$_{10}$) in Asian countries are positive and significant with cost of equity capital (Costofcapital$_1$).

Similarly, Table 7 Panel B reports that the negative signs of coefficients of public enforcement index (Investorprotection$_3$), rule of law index (Investorprotection$_5$), ownership

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concentration index (Investorprotection$_9$), efficacy of corporate boards index (Investorprotection$_{11}$), protection of minority shareholders' interests index (Investorprotection$_{12}$) and strength of investor protection index (Investorprotection$_{13}$) in Euro zone countries, and the negative signs of coefficients of disclosure requirements index (Investorprotection$_1$), liability standard index (Investorprotection$_2$), creditor rights index (Investorprotection$_8$), strength of auditing and reporting standards index (Investorprotection$_{10}$), efficacy of corporate boards index (Investorprotection$_{11}$), strength of investor protection index (Investorprotection$_{13}$) and legal rights index (Investorprotection$_{15}$) in Asian countries with cost of debt (Costofcapital$_2$) imply that higher investor protection may lead to lower cost of debt. Consequently, consistent the results of Hail and Leuz (2006), Byun et al (2008), Chhabra et al (2009), Chen et al (2009), Boubakri and Ghouma (2010) and Semper and Beltran (2014), H$_3$ is accepted. Contrariwise, H$_3$ is rejected in the case of positive signs of disclosure requirements index (Investorprotection$_1$) and liability standard index (Investorprotection$_2$) in Euro zone countries, and in the case of positive signs of rule of law index (Investorprotection$_5$) and anti-director rights index (Investorprotection$_7$) in Asian countries.

6.4.4. The joint effect of investor protection and earnings quality on cost of capital

The fourth hypothesis aims to examine the joint effect of investor protection and earnings quality on cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there is no joint effect of investor protection and earnings quality on cost of capital and the alternative hypothesis states that there is negative joint effect of investor protection and earnings quality on cost of capital.

Table 7 Panel A reports that H$_4$ is accepted since there is negative association between cost of equity capital (Costofcapital$_1$) and the interaction terms of the earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$), earnings quality and the liability standard index (Earningsquality*Investorprotection$_2$), earnings quality and the rule of law index (Earningsquality*Investorprotection$_5$), earnings quality and the anti-director rights index (Earningsquality*Investorprotection$_7$), earnings quality and the strength of auditing and reporting standards index (Earningsquality*Investorprotection$_{10}$), earnings quality and the efficacy of corporate boards index (Earningsquality*Investorprotection$_{11}$), earnings quality and the strength of investor protection index (Earningsquality*Investorprotection$_{13}$) and earnings quality and the legal rights index

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(Earningsquality*Investorprotection$_{15}$) in Euro zone countries, and the interaction terms of earnings quality and the legal system dummy variable (Earningsquality*Investorprotection$_4$), earnings quality and the efficiency of judicial system index (Earningsquality*Investorprotection$_6$), earnings quality and the creditor rights index (Earningsquality*Investorprotection$_8$), earnings quality and the strength of auditing and reporting standards index (Earningsquality*Investorprotection$_{10}$), earnings quality and the efficacy of corporate boards index (Earningsquality*Investorprotection$_{11}$), earnings quality and the protection of minority shareholders' interests index (Earningsquality*Investorprotection$_{12}$) and earnings quality and the country credit index (Earningsquality*Investorprotection$_{14}$) in Asian countries. These negative sign of interaction terms indicate that cost of equity capital is lower in firms with strong investor protection and higher earnings quality. On contrary, H$_4$ is rejected since there is positive association between cost of equity capital (Costofcapital$_1$) and the interaction term of earnings quality and the ownership concentration index (Earningsquality*Investorprotection$_9$) in Euro zone countries and the interaction terms of earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$) and earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$) in Asian countries.

Table 7 Panel B reports that there is negative and significant association between cost of debt (Costofcapital$_2$) and the interaction terms of earnings quality and the liability standard index (Earningsquality*Investorprotection$_2$), earnings quality and the legal system dummy variable (Earningsquality*Investorprotection$_4$), earnings quality and the creditor rights index (Earningsquality*Investorprotection$_8$), earnings quality and the strength of auditing and reporting standards index (Earningsquality*Investorprotection$_{10}$), earnings quality and the efficacy of corporate boards index (Earningsquality*Investorprotection$_{11}$), earnings quality and the protection of minority shareholders' interests index (Earningsquality*Investorprotection$_{12}$) and earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$) in Euro zone countries, and the interaction terms of earnings quality and the liability standard index (Earningsquality*Investorprotection$_2$), earnings quality and the rule of law index (Earningsquality*Investorprotection$_5$), earnings quality and the anti-director rights index (Earningsquality*Investorprotection$_7$), earnings quality and the creditor rights index (Earningsquality*Investorprotection$_8$), earnings quality and the efficacy of corporate boards index (Earningsquality*Investorprotection$_{11}$), earnings quality and the protection of minority shareholders' interests index (Earningsquality*Investorprotection$_{12}$) and earnings quality and the legal rights index (Earningsquality*Investorprotection$_{15}$) in Asian countries. Hence, consistent with H$_4$, these

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negative sign of interaction terms indicate that cost of debt is lower in firms with strong investor protection and higher earnings quality. Antithetically, there is positive and significant association between cost of debt (Costofcapital$_2$) and the interaction terms of earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$), earnings quality and the efficiency of judicial system index (Earningsquality*Investorprotection$_6$) and earnings quality and the strength of investor protection index (Earningsquality*Investorprotection$_{13}$) in Euro zone countries, and the interaction term of earnings quality and the disclosure requirements index (Earningsquality*Investorprotection$_1$) in Asian countries and therefore H$_4$ is rejected.

6.4.5. The joint effect of IFRS adoption and earnings quality on cost of capital

The fifth hypothesis aims to examine the joint effect of IFRS adoption and earnings quality on cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there is no joint effect of IFRS adoption and earnings quality on cost of capital and the alternative hypothesis states that there is negative joint effect of IFRS adoption and earnings quality on cost of capital.

Table 7 Panel A reports that the coefficient of the interaction term of the IFRS dummy variable and earnings quality index (IFRS*Earningsquality) in Euro zone countries is negative and significant with cost of equity capital (Costofcapital$_1$) and therefore H$_4$ is accepted. It means that cost of equity capital is lower in firms with higher earnings quality after the IFRS adoption. On contrary, the coefficient of the interaction term of the IFRS dummy variable and earnings quality index (IFRS*Earningsquality) in Asian countries is positive and significant with cost of equity capital (Costofcapital$_1$) and therefore H$_4$ is rejected.

Table 7 Panel B reports that the interaction term of the IFRS dummy variable and earnings quality index (IFRS*Earningsquality) in Euro zone and Asian countries is negatively associated with cost of debt (Costofcapital$_2$). This result indicates that cost of debt is lower in firms with higher earnings quality after the IFRS adoption.

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6.4.6. The joint effect of IFRS adoption and investor protection on cost of capital

The sixth hypothesis aims to examine the joint effect of IFRS adoption and investor protection on cost of capital in Euro zone and Asian countries. In other words, the null hypothesis states that there is no joint effect of IFRS adoption and investor protection on cost of capital and the alternative hypothesis states that there is negative joint effect of IFRS adoption and investor protection on cost of capital.

Table 7 Panel reports that the interaction terms of the IFRS dummy variable and the disclosure requirements index (IFRS*Investorprotection$_1$), the IFRS dummy variable and the public enforcement index (IFRS*Investorprotection$_3$), the IFRS dummy variable and the rule of law index (IFRS*Investorprotection$_5$), the IFRS dummy variable and the efficiency of judicial system index (IFRS*Investorprotection$_6$), the IFRS dummy variable and the creditor rights index (IFRS*Investorprotection$_8$), the IFRS dummy variable and the strength of auditing and reporting standards index (IFRS*Investorprotection$_{10}$), the IFRS dummy variable and the protection of minority shareholders' interests index (IFRS*Investorprotection$_{12}$), the IFRS dummy variable and the strength of investor protection index (IFRS*Investorprotection$_{13}$) and the IFRS dummy variable and the country credit index (IFRS*Investorprotection$_{14}$) in Euro zone countries, and the interaction terms of the IFRS dummy variable and the rule of law index (IFRS*Investorprotection$_5$), the IFRS dummy variable and the efficiency of judicial system index (IFRS*Investorprotection$_6$), the IFRS dummy variable and the anti-director rights index (IFRS*Investorprotection$_7$), the IFRS dummy variable and the ownership concentration index (IFRS*Investorprotection$_9$), the IFRS dummy variable and the efficacy of corporate boards index (IFRS*Investorprotection$_{11}$) and the IFRS dummy variable and the strength of investor protection index (IFRS*Investorprotection$_{13}$) in Asian countries are negatively correlated with cost of equity capital (Costofcapital$_1$). These results indicate that cost of equity capital is lower in firms with strong investor protection after the IFRS adoption and therefore H$_4$ is accepted. Contrariwise, the interaction terms of the IFRS dummy variable and the legal system dummy variable (IFRS*Investorprotection$_4$) and the IFRS dummy variable and the ownership concentration index (IFRS*Investorprotection$_9$) in Euro zone countries, and the interaction terms of the IFRS dummy variable and the public enforcement index (IFRS*Investorprotection$_3$) and the IFRS dummy variable and the country credit index (IFRS*Investorprotection$_{14}$) in Asian countries are positively correlated with cost of equity capital (Costofcapital$_1$) and therefore H$_4$ is rejected.

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Table 7 Panel B reports that the coefficients of the interaction terms of IFRS dummy variable and the liability standard index (IFRS*Investorprotection$_2$), the IFRS dummy variable and the ownership concentration index (IFRS*Investorprotection$_9$), the IFRS dummy variable and the strength of auditing and reporting standards index (IFRS*Investorprotection$_{10}$), the IFRS dummy variable and the efficacy of corporate boards index (IFRS*Investorprotection$_{11}$) and the IFRS dummy variable and the legal rights index (IFRS*Investorprotection$_{15}$) in Euro zone countries, and the coefficients of the interaction terms of the IFRS dummy variable and the disclosure requirements index (IFRS*Investorprotection$_1$), the IFRS dummy variable and the public enforcement index (IFRS*Investorprotection$_3$), the IFRS dummy variable and the legal system dummy variable (IFRS*Investorprotection$_4$), the IFRS dummy variable and the efficiency of judicial system index (IFRS*Investorprotection$_6$), the IFRS dummy variable and the creditor rights index (IFRS*Investorprotection$_8$) and the IFRS dummy variable and the protection of minority shareholders' interests index (IFRS*Investorprotection$_{12}$) in Asian countries are negative and significant with cost of debt (Costofcapital$_2$). Hence, consistent with H$_4$, cost of debt is lower in firms with strong investor protection after the adoption of IFRS. On contrary, inconsistent with H$_4$, the coefficients of the interaction terms of the IFRS dummy variable and the rule of law index (IFRS*Investorprotection$_5$), the IFRS dummy variable and the anti-director rights index (IFRS*Investorprotection$_7$) and the IFRS dummy variable and the creditor rights index (IFRS*Investorprotection$_8$) in Euro zone countries, and the coefficients of the interaction terms of the IFRS dummy variable and the rule of law index (IFRS*Investorprotection$_5$), the IFRS dummy variable and the ownership concentration index (IFRS*Investorprotection$_9$), the IFRS dummy variable and the efficacy of corporate boards index (IFRS*Investorprotection$_{11}$), the IFRS dummy variable and the strength of investor protection index (IFRS*Investorprotection$_{13}$) and the IFRS dummy variable and the legal rights index (IFRS*Investorprotection$_{15}$) in Asian countries are positive and significant with cost of debt (Costofcapital$_2$).

6.4.7. Control variables

The regression results of control variables are similar to the findings of Francis et al (2005), Daske et al (2008), Boubakri and Ghouma (2010), Li (2010), Daske et al (2013), Castillo-Merino et al (2014) and Persakis and Iatridis (2015). Specifically, Table 7 Panel A reports that the coefficients of firm size (FS), financial leverage (FL) and return on assets (ROA) in Euro zone countries, and the coefficients of share turnover (ST), book-to-market

ratio (BM) and stock beta (Beta) in Asian countries are positive and significant with cost of equity capital (Costofcapital$_1$) except from the coefficients of share turnover (ST), the annual change in GDP (GDP) and book-to-market ratio (BM) in Euro zone countries, and the coefficients of financial leverage (FL), inflation rate (IT), return on equity (ROE) in Asian countries which are negative and significant.

Table 7 Panel B reports that the coefficients of firm size (FS), return on assets (ROA), the annual change in GDP (GDP) and stock beta (Beta) in Euro zone countries, and the coefficients of financial leverage (FL), return on assets (ROA), the annual change in GDP (GDP) and stock beta (Beta) in Asian countries are positive and significant with cost of debt (Costofcapital$_2$) except from the coefficients of share turnover (ST), inflation rate (IT) and book-to-market ratio (BM) in Euro zone countries, and the coefficients of firm size (FS), share turnover (ST) and share turnover (ST) in Asian countries which are negative and significant.

Table 7: Regression analysis

Panel A: Regression results of OLS regression analysis for the dependent variable cost of equity capital (Costofcapital$_1$)

Variable(s)	Exp. Sign	Euro zone countries Coefficients		Variable(s)	Exp. Sign	Asian countries Coefficients	
IFRS	-	-0,013*	(0,001)	IFRS	-	-0,000***	(0,0000)
Investorprotection$_1$	-	-0,653*	(0,008)	Investorprotection$_1$	-	-0,263*	(0,001)
Investorprotection$_2$	-	-0,023**	(0,0000)	Investorprotection$_3$	-	-0,578*	(0,248)
Investorprotection$_4$	-	0,002*	(0,001)	Investorprotection$_6$	-	5,318**	(3,258)
Investorprotection$_5$	-	-2,365*	(0,136)	Investorprotection$_8$	-	3,257**	(1,247)
Investorprotection$_7$	-	-3,658**	(2,356)	Investorprotection$_{10}$	-	6,147**	(6,001)
Investorprotection$_9$	-	0,000*	(0,0000)	Investorprotection$_{11}$	-	-6,456**	(4,254)
Investorprotection$_{10}$	-	5,634**	(1,368)	Investorprotection$_{13}$	-	-9,396**	(8,364)
Investorprotection$_{11}$	-	5,367**	(2,367)	Investorprotection$_{14}$	-	-75,318**	(55,349)
Investorprotection$_{12}$	-	-7,368**	(1,159)	Investorprotection$_{15}$	-	-11,382**	(9,367)
Investorprotection$_{14}$	-	-53,689**	(35,487)	Earningsquality	-	-37,658***	(3,578)
Investorprotection$_{15}$	-	-10,125**	(5,368)	IFRS*Investorprotection$_3$	-	0,364***	(0,0000)
Earningsquality	-	-25,367***	(11,257)	IFRS*Investorprotection$_5$	-	-5,627***	(1,328)
IFRS*Investorprotection$_1$	-	-0,001***	(0,0000)	IFRS*Investorprotection$_6$	-	-10,367**	(6,357)
IFRS*Investorprotection$_3$	-	-0,015***	(0,001)	IFRS*Investorprotection$_7$	-	-5,327**	(3,186)
IFRS*Investorprotection$_4$	-	0,0000*	(0,0000)	IFRS*Investorprotection$_9$	-	-0,0000***	(0,00000)
IFRS*Investorprotection$_5$	-	-5,637*	(3,368)	IFRS*Investorprotection$_{11}$	-	-5,328**	(3,249)
IFRS*Investorprotection$_6$	-	-9,367*	(8,693)	IFRS*Investorprotection$_{13}$	-	-8,527**	(5,249)
IFRS*Investorprotection$_8$	-	-3,648*	(5,689)	IFRS*Investorprotection$_{14}$	-	68,319**	(34,658)
IFRS*Investorprotection$_9$	-	0,036***	(0,0000)	IFRS*Earningsquality	-	49,321*	(22,159)
IFRS*Investorprotection$_{10}$	-	-5,634***	(3,679)	Earningsquality*Investorprotection$_1$	-	159,630**	(12,320)
IFRS*Investorprotection$_{12}$	-	-7,986***	(6,549)	Earningsquality*Investorprotection$_4$	-	-163,329**	(85,326)
IFRS*Investorprotection$_{13}$	-	-9,632***	(4,368)	Earningsquality*Investorprotection$_6$	-	-596,302**	(400,301)
IFRS*Investorprotection$_{14}$	-	-99,326**	(46,329)	Earningsquality*Investorprotection$_8$	-	-409,608**	(328,620)
IFRS*Earningsquality	-	-36,248***	(5,349)	Earningsquality*Investorprotection$_{10}$	-	-688,311**	(423,316)

Variable	Sign	Coefficient	(SE)	Variable	Sign	Coefficient	(SE)
Earningsquality*Investorprotection$_1$	-	160,361**	(10,639)	Earningsquality*Investorprotection$_{11}$	-	-380,329**	(270,396)
Earningsquality*Investorprotection$_4$	-	269,630**	(13,354)	Earningsquality*Investorprotection$_{12}$	-	-700,368**	(62,315)
Earningsquality*Investorprotection$_5$	-	-569,323*	(55,630)	Earningsquality*Investorprotection$_{14}$	-	-999,326**	(569,300)
Earningsquality*Investorprotection$_7$	-	-682,254*	(22,333)	Earningsquality*Investorprotection$_{15}$	-	459,358**	(159,652)
Earningsquality*Investorprotection$_9$	-	222,369*	(62,369)	ST	+/-	0,0000**	(0,0000)
Earningsquality*Investorprotection$_{10}$	-	203,658**	(69,360)	FL	+/-	-6,895**	(0,365)
Earningsquality*Investorprotection$_{11}$	-	609,329**	(55,653)	IT	+/-	-15,369**	(11,369)
Earningsquality*Investorprotection$_{13}$	-	-900,362*	(635,630)	ROE	+/-	-2,358***	(1,257)
Earningsquality*Investorprotection$_{15}$	-	-742,326*	(326,358)	BM	+/-	4,689***	(2,657)
FS	+/-	6,257*	(5,635)	Beta	+/-	0,160***	(3,910)
ST	+/-	-11,268**	(3,268)	R$_2$		126,368	
FL	+/-	2,367*	(0,001)	F test		55,217***	
ROA	+/-	7,658***	(3,689)				
GDP	+/-	-6,537***	(0,368)				
BM	+/-	-8,254*	(0,684)				
R$_2$		63,158					
F test		98,368***					

This panel shows the OLS regression analysis to explain the effects of earnings quality, investor protection and IFRS adoption on cost of equity capital. Costofcapital$_1$ is cost of equity capital measured by the mean of the two implied cost of equity capital metrics based on Ohlson and Juettner-Nauroth (2005), as implemented by Gode and Mohanram (2003) and Easton (2004), **IFRS** is a dummy variable that takes 0 if a firm had adopted IFRS and 1 otherwise, **Investorprotection$_1$** is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006), **Investorprotection$_2$** is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006), **Investorprotection$_3$** is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006), **Investorprotection$_4$** is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006), **Investorprotection$_5$** is rule of law which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998), **Investorprotection$_6$** is efficiency of judicial system which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998), **Investorprotection$_7$** is anti-director rights which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998), **Investorprotection$_8$** is creditor rights which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998), **Investorprotection$_9$** is ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998), **Investorprotection$_{10}$** is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{11}$** is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{12}$** is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{13}$** is strength of investor protection scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{14}$** is country credit rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{15}$** is legal rights index scaled from 0 to 12, with higher scores for higher degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Earningsquality** is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002), **IFRS*Investorprotection$_1$** is the interaction term of the IFRS dummy variable and the disclosure requirements index, **IFRS*Investorprotection$_2$** is the interaction term of the IFRS dummy variable and the liability standard index, **IFRS*Investorprotection$_3$** is the interaction term of the IFRS dummy variable and the public enforcement index, **IFRS*Investorprotection$_4$** is the interaction term of the IFRS dummy variable and the legal system dummy variable, **IFRS*Investorprotection$_5$** is the interaction term of the IFRS dummy variable and the rule of law index, **IFRS*Investorprotection$_6$** is the interaction term of the IFRS dummy variable and the efficiency of judicial system index,

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IFRS*Investorprotection$_7$ is the interaction term of the IFRS dummy variable and the anti-director rights index,**IFRS*Investorprotection$_8$** is the interaction term of the IFRS dummy variable and the creditor rights index, **IFRS*Investorprotection$_9$** is the interaction term of the IFRS dummy variable and the ownership concentration index, **IFRS*Investorprotection$_{10}$** is the interaction term of the IFRS dummy variable and the strength of auditing and reporting standards index, **IFRS*Investorprotection$_{11}$** is the interaction term of the IFRS dummy variable and the efficacy of corporate boards index, **IFRS*Investorprotection$_{12}$** is the interaction term of the IFRS dummy variable and the protection of minority shareholders' interests index, **IFRS*Investorprotection$_{13}$** is the interaction term of the IFRS dummy variable and the strength of investor protection index,**IFRS*Investorprotection$_{14}$** is the interaction term of the IFRS dummy variable and the country credit index, **IFRS*Investorprotection$_{15}$** is the interaction term of the IFRS dummy variable and the legal rights index, **IFRS*Earningsquality** is the interaction term of the IFRS dummy variable and accruals quality index, **Earningsquality*Investorprotection$_1$** is the interaction term of earnings quality and the disclosure requirements index, **Earningsquality*Investorprotection$_2$** is the interaction term of earnings quality and the liability standard index, **Earningsquality*Investorprotection$_3$** is the interaction term of earnings quality and the public enforcement index, **Earningsquality*Investorprotection$_4$** is the interaction term of earnings quality and the legal system dummy variable, **Earningsquality*Investorprotection$_5$** is the interaction term of earnings quality and the rule of law index, **Earningsquality*Investorprotection$_6$** is the interaction term of earnings quality and the efficiency of judicial system index, **Earningsquality*Investorprotection$_7$** is the interaction term of earnings quality and the anti-director rights index, **Earningsquality*Investorprotection$_8$** is the interaction term of earnings quality and the creditor rights index, **Earningsquality*Investorprotection$_9$** is the interaction term of earnings quality and the ownership concentration index, **Earningsquality*Investorprotection$_{10}$** is the interaction term of earnings quality and the strength of auditing and reporting standards index, **Earningsquality*Investorprotection$_{11}$** is the interaction term of earnings quality and the efficacy of corporate boards index, **Earningsquality*Investorprotection$_{12}$** is the interaction term of earnings quality and the protection of minority shareholders' interests index, **Earningsquality*Investorprotection$_{13}$** is the interaction term of earnings quality and the strength of investor protection index, **Earningsquality*Investorprotection$_{14}$** is the interaction term of earnings quality and the country credit index, **Earningsquality*Investorprotection$_{15}$** is the interaction term of earnings quality and the legal rights index, **FS** is firm size measured as the natural logarithm of total assets, **ST** is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity, **FL** is financial leverage measured by the ratio of total liabilities to total assets, **IT** is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country, **ROA** is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets, **ROE** is return on equity measured by the ratio of net income divided by equities, **GDP** is the annual change in GDP, **BM** is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity, **Beta** is stock beta.

***, **, * indicate statistical significance at 1%, 5% and 10% levels (two-tailed) respectively and the standard errors may be found in the parentheses.

Panel B: Regression results of OLS regression analysis for the dependent variable cost of debt (Costofcapital$_2$)

Variable(s)	Exp. Sign	Euro zone countries Coefficients		Variable(s)	Exp. Sign	Asian countries Coefficients	
IFRS	-	-0,258*	(0,001)	IFRS	-	-0,684*	(0,015)
Investorprotection$_1$	-	0,000**	(0,0000)	Investorprotection$_1$	-	-0,0000*	(0,0000)
Investorprotection$_2$	-	0,013**	(0,139)	Investorprotection$_2$	-	-0,008*	(0,001)
Investorprotection$_3$	-	-0,582**	(0,219)	Investorprotection$_5$	-	8,635**	(5,634)
Investorprotection$_5$	-	-7,568***	(4,562)	Investorprotection$_7$	-	6,315**	(4,359)
Investorprotection$_9$	-	-0,283***	(0,002)	Investorprotection$_8$	-	-2,345*	(0,0000)
Investorprotection$_{11}$	-	-6,637***	(4,257)	Investorprotection$_{10}$	-	-1,359*	(0,0000)
Investorprotection$_{12}$	-	-7,634***	(6,329)	Investorprotection$_{11}$	-	-6,579***	(2,351)
Investorprotection$_{13}$	-	-9,324***	(7,259)	Investorprotection$_{13}$	-	-2,347***	(0,0000)
Earningsquality	-	-68,649***	(25,368)	Investorprotection$_{15}$	-	-12,352***	(10,658)
IFRS*Investorprotection$_2$	-	-0,095**	(0,956)	Earningsquality	-	98,254*	(65,248)
IFRS*Investorprotection$_5$	-	7,639*	(4,693)	IFRS*Investorprotection$_1$	-	-0,348**	(0,085)
IFRS*Investorprotection$_7$	-	6,315*	(5,789)	IFRS*Investorprotection$_3$	-	-0,025**	(0,005)
IFRS*Investorprotection$_8$	-	4,852***	(4,322)	IFRS*Investorprotection$_4$	-	-0,0000***	(0,0000)
IFRS*Investorprotection$_9$	-	-0,0000***	(0,0000)	IFRS*Investorprotection$_5$	-	4,638**	(3,654)
IFRS*Investorprotection$_{10}$	-	-7,582**	(4,637)	IFRS*Investorprotection$_6$	-	-7,159***	(2,328)
IFRS*Investorprotection$_{11}$	-	-1,356***	(0,006)	IFRS*Investorprotection$_8$	-	-4,539***	(4,631)

IFRS*Investorprotection$_{15}$	-	-11,753***	(1,258)	IFRS*Investorprotection$_9$	-	0,058**	(0,001)	
IFRS*Earningsquality	-	-99,315***	(58,264)	IFRS*Investorprotection$_{11}$	-	2,369**	(1,258)	
Earningsquality*Investorprotection$_1$	-	168,689*	(63,257)	IFRS*Investorprotection$_{12}$	-	-5,249**	(2,347)	
Earningsquality*Investorprotection$_2$	-	-64,159*	(32,364)	IFRS*Investorprotection$_{13}$	-	10,324*	(9,238)	
Earningsquality*Investorprotection$_4$	-	-85,312*	(35,267)	IFRS*Investorprotection$_{15}$	-	10,852**	(4,257)	
Earningsquality*Investorprotection$_6$	-	575,369*	(453,635)	IFRS*Earningsquality	-	-48,632***	(4,358)	
Earningsquality*Investorprotection$_8$	-	-639,325**	(563,325)	Earningsquality*Investorprotection$_1$	-	159,357**	(10,329)	
Earningsquality*Investorprotection$_{10}$	-	-536,318**	(42,368)	Earningsquality*Investorprotection$_2$	-	-267,529**	(136,852)	
Earningsquality*Investorprotection$_{11}$	-	-238,649**	(123,369)	Earningsquality*Investorprotection$_5$	-	-756,954**	(652,319)	
Earningsquality*Investorprotection$_{12}$	-	-26,359**	(11,257)	Earningsquality*Investorprotection$_7$	-	-968,583**	(752,316)	
Earningsquality*Investorprotection$_{13}$	-	856,348**	(752,324)	Earningsquality*Investorprotection$_8$	-	-350,639**	(251,009)	
Earningsquality*Investorprotection$_{15}$	-	-759,531**	(529,461)	Earningsquality*Investorprotection$_{11}$	-	-702,522**	(631,350)	
FS	+/-	6,325*	(9,236)	Earningsquality*Investorprotection$_{12}$	-	-592,583**	(250,368)	
ST	+/-	-3,258***	(0,001)	Earningsquality*Investorprotection$_{15}$	-	-599,006***	(423,651)	
IT	+/-	-5,215***	(5,214)	FS	+/-	-0,369***	(7,528)	
ROA	+/-	0,021**	(0,0000)	ST	+/-	-0,257***	(6,157)	
GDP	+/-	0,368*	(0,0000)	FL	+/-	2,689*	(0,158)	
BM	+/-	-7,365***	(2,348)	IT	+/-	-0,128**	(2,587)	
Beta	+/-	0,111**	(2,465)	ROA	+/-	5,695*	(0,0000)	
R$_2$		15,962		GDP	+/-	6,245***	(0,001)	
F test		63,257**		Beta	+/-	0,189**	(2,896)	
				R$_2$		23,683		
				F test		7,852*		

This panel shows the OLS regression analysis to explain the effects of earnings quality, investor protection and IFRS adoption on cost of debt. Costofcapital$_2$ is cost of debt estimated based on Francis et al (2005), **IFRS** is a dummy variable that takes 0 if a firm had adopted IFRS and 1 otherwise, **Investorprotection$_1$** is the arithmetic mean of six proxies (prospect, insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties) of the strength of specific disclosure requirements pertaining to the promoter's problem which compute the "disclosure requirements index" (La Porta et al, 2006), **Investorprotection$_2$** is the arithmetic mean of four liability standards against issuers and directors, distributors and accountants which compute the "liability standard index" (La Porta et al, 2006), **Investorprotection$_3$** is the arithmetic mean of five aspects of public enforcement – supervisor characteristics index, rule-making power index, investigative powers index, orders index and criminal index – which compute the "public enforcement index" (La Porta et al, 2006), **Investorprotection$_4$** is a dummy variable that takes 0 if the legal system of the country is civil law and 1 otherwise (La Porta et al, 2006), **Investorprotection$_5$** is rule of law which scaled from 0 to 10, with lower scores for less tradition for law and order (La Porta et al, 1998), **Investorprotection$_6$** is efficiency of judicial system which scaled from 0 to 10, with lower scores for lower efficiency levels (La Porta et al, 1998), **Investorprotection$_7$** is anti-director rights which scaled from 0 to 6, with higher scores for stronger legal systems which favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, including the voting process (La Porta et al, 1998), **Investorprotection$_8$** is creditor rights which scaled from 0 to 4, with higher scores for stronger legal protection against managers (La Porta et al, 1998), **Investorprotection$_9$** is ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country. Firms in countries with poor investor protection have more concentrated ownership of their shares (La Porta et al, 1998), **Investorprotection$_{10}$** is strength of auditing and reporting standards index scaled from 1 to 7, with higher scores for stronger financial auditing and reporting standards (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{11}$** is efficacy of corporate boards index scaled from 1 to 7, with higher scores for great extent of management accountable to investors and boards of directors (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{12}$** is protection of minority shareholders' interests index scaled from 1 to 7, with higher scores for fully protected of minority shareholders' interests by the legal system (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{13}$** is strength of investor protection scaled from 0 to 10, with higher scores for higher degree of investor protection (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{14}$** is country credit rating scaled from 0 to 100, with 100 representing the least chance of default (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Investorprotection$_{15}$** is legal rights index scaled from 0 to 12, with higher scores for higher degree to

which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending (The Global Competitiveness Report 2015-2016 by World Economic Forum), **Earningsquality** is proxied by accruals quality estimated by using the mean of the two accruals quality metrics based on Dechow et al (1995) and McNichols (2002), **IFRS*Investorprotection$_1$** is the interaction term of the IFRS dummy variable and the disclosure requirements index, **IFRS*Investorprotection$_2$** is the interaction term of the IFRS dummy variable and the liability standard index, **IFRS*Investorprotection$_3$** is the interaction term of the IFRS dummy variable and the public enforcement index, **IFRS*Investorprotection$_4$** is the interaction term of the IFRS dummy variable and the legal system dummy variable, **IFRS*Investorprotection$_5$** is the interaction term of the IFRS dummy variable and the rule of law index, **IFRS*Investorprotection$_6$** is the interaction term of the IFRS dummy variable and the efficiency of judicial system index, **IFRS*Investorprotection$_7$** is the interaction term of the IFRS dummy variable and the anti-director rights **index,IFRS*Investorprotection$_8$** is the interaction term of the IFRS dummy variable and the creditor rights index, **IFRS*Investorprotection$_9$** is the interaction term of the IFRS dummy variable and the ownership concentration index, **IFRS*Investorprotection$_{10}$** is the interaction term of the IFRS dummy variable and the strength of auditing and reporting standards index, **IFRS*Investorprotection$_{11}$** is the interaction term of the IFRS dummy variable and the efficacy of corporate boards index, **IFRS*Investorprotection$_{12}$** is the interaction term of the IFRS dummy variable and the protection of minority shareholders' interests index, **IFRS*Investorprotection$_{13}$** is the interaction term of the IFRS dummy variable and the strength of investor protection **index,IFRS*Investorprotection$_{14}$** is the interaction term of the IFRS dummy variable and the country credit index, **IFRS*Investorprotection$_{15}$** is the interaction term of the IFRS dummy variable and the legal rights index, **IFRS*Earningsquality** is the interaction term of the IFRS dummy variable and accruals quality index, **Earningsquality*Investorprotection$_1$** is the interaction term of earnings quality and the disclosure requirements index, **Earningsquality*Investorprotection$_2$** is the interaction term of earnings quality and the liability standard index, **Earningsquality*Investorprotection$_3$** is the interaction term of earnings quality and the public enforcement index, **Earningsquality*Investorprotection$_4$** is the interaction term of earnings quality and the legal system dummy variable, **Earningsquality*Investorprotection$_5$** is the interaction term of earnings quality and the rule of law index, **Earningsquality*Investorprotection$_6$** is the interaction term of earnings quality and the efficiency of judicial system index, **Earningsquality*Investorprotection$_7$** is the interaction term of earnings quality and the anti-director rights index, **Earningsquality*Investorprotection$_8$** is the interaction term of earnings quality and the creditor rights index, **Earningsquality*Investorprotection$_9$** is the interaction term of earnings quality and the ownership concentration index, **Earningsquality*Investorprotection$_{10}$** is the interaction term of earnings quality and the strength of auditing and reporting standards index, **Earningsquality*Investorprotection$_{11}$** is the interaction term of earnings quality and the efficacy of corporate boards index, **Earningsquality*Investorprotection$_{12}$** is the interaction term of earnings quality and the protection of minority shareholders' interests index, **Earningsquality*Investorprotection$_{13}$** is the interaction term of earnings quality and the strength of investor protection index, **Earningsquality*Investorprotection$_{14}$** is the interaction term of earnings quality and the country credit index, **Earningsquality*Investorprotection$_{15}$** is the interaction term of earnings quality and the legal rights index, **FS** is firm size measured as the natural logarithm of total assets, **ST** is share turnover measured as the accumulated trading volume divided by the market value of outstanding equity, **FL** is financial leverage measured by the ratio of total liabilities to total assets, **IT** is inflation rate measured as the yearly median of one-year-ahead realized monthly changes in the consumer price index in a country, **ROA** is return on assets measured by the ratio of earnings before interest and tax (EBIT) divided by total assets, **ROE** is return on equity measured by the ratio of net income divided by equities, **GDP** is the annual change in GDP, **BM** is book-to-market ratio measured as the natural logarithm of the ratio of the book value of equity to the market value of equity, **Beta** is stock beta.

***, **, * indicate statistical significance at 1%, 5% and 10% levels (two-tailed) respectively and the standard errors may be found in the parentheses.

7. Conclusion

This paper examines whether IFRS adoption, investor protection and earnings quality are associated with cost of capital, measured by cost of equity capital and cost of debt, in Euro zone and Asian countries. After measuring these effects, the joint effects of IFRS adoption, investor protection and earnings quality on cost of capital are tested. Hence, for the purpose of this paper six hypotheses are investigated.

First, it is hypothesized that cost of capital is lower in years after the adoption of IFRS as compared to the period before the adoption. The results show that there is negative association between cost of capital (measured by either cost of equity capital or cost of debt) and IFRS adoption in Euro zone and Asian countries.

Second, it is expected that earnings quality reduces the cost of capital. The results are consistent the second hypothesis. Specifically, the findings indicate that earnings quality is negatively associated with cost of equity capital in Euro zone and Asian countries. However, the second hypothesis holds only for Euro zone countries, implying that earnings quality is negative associated with cost of debt.

Third, regarding the effect of investor protection on cost of capital, it is expected a negative association. The results report that there is controversial relationship between cost of capital and investor protection indexes in Euro zone and Asian countries. Disclosure requirements index, liability standard index, rule of law index, anti-director rights index, protection of minority shareholders' interests index, country credit rating index and legal rights index in Euro zone countries, and disclosure requirements index, public enforcement index, efficacy of corporate boards index, strength of investor protection index, country credit rating index and legal rights index in Asian countries are negatively associated with cost of equity capital. In the same vein, public enforcement index, rule of law index, ownership concentration index, efficacy of corporate boards index, protection of minority shareholders' interests index and strength of investor protection index in Euro zone countries, and disclosure requirements index, liability standard index, creditor rights index, strength of auditing and reporting standards index, efficacy of corporate boards index, strength of investor protection index and legal rights index in Asian countries are negatively associated with cost of debt. These negative signs imply that higher investor protection may lead to lower cost of capital.

Fourth, it is hypothesized that the joint effect of earnings quality and investor protection is negatively associated with cost of capital. Hence, most of the results are consistent with the fourth hypothesis. In general, cost of capital is lower in firms with strong investor protection and higher earnings quality in Euro zone and Asian countries. Thoroughly, cost of equity capital is negatively associated with the interaction terms of the earnings quality and the disclosure requirements index, earnings quality and the liability standard index, earnings quality and the rule of law index, earnings quality and the anti-director rights index, earnings quality and the strength of auditing and reporting standards index, earnings quality and the efficacy of corporate boards index, earnings quality and the strength of investor protection index and earnings quality and the legal rights index in Euro zone countries, and the interaction terms of earnings quality and the legal system dummy variable, earnings quality and the efficiency of judicial system index, earnings quality and the creditor rights index, earnings quality and the strength of auditing and reporting standards index, earnings quality and the efficacy of corporate boards index, earnings quality and the

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protection of minority shareholders' interests index and earnings quality and the country credit index in Asian countries. In addition, there is negative association between cost of debt and the interaction terms of earnings quality and the liability standard index, earnings quality and the legal system dummy variable, earnings quality and the creditor rights index, earnings quality and the strength of auditing and reporting standards index, earnings quality and the efficacy of corporate boards index, earnings quality and the protection of minority shareholders' interests index and earnings quality and the legal rights index in Euro zone countries, and the interaction terms of earnings quality and the liability standard index, earnings quality and the rule of law index, earnings quality and the anti-director rights index, earnings quality and the creditor rights index, earnings quality and the efficacy of corporate boards index, earnings quality and the protection of minority shareholders' interests index and earnings quality and the legal rights index in Asian countries.

Fifth, it is expected that cost of capital in firms with higher earnings quality after the adoption of IFRS. The findings verify the fifth hypothesis. Particularly, the interaction term of the IFRS dummy variable and earnings quality index is negatively correlated with cost of equity capital in Euro zone countries, and the interaction term of the IFRS dummy variable and earnings quality index is negatively correlated with cost of debt in Euro zone and Asian countries.

Sixth, the cost of capital is expected to be lower in firms with strong investor protection after the adoption of IFRS. Concerning each of investor protection index, the results are controversial. Analytically, the interaction terms of the IFRS dummy variable and the disclosure requirements index, the IFRS dummy variable and the public enforcement index, the IFRS dummy variable and the rule of law index, the IFRS dummy variable and the efficiency of judicial system index, the IFRS dummy variable and the creditor rights index, the IFRS dummy variable and the strength of auditing and reporting standards index, the IFRS dummy variable and the protection of minority shareholders' interests index, the IFRS dummy variable and the strength of investor protection index and the IFRS dummy variable and the country credit index in Euro zone countries, and the interaction terms of the IFRS dummy variable and the rule of law index, the IFRS dummy variable and the efficiency of judicial system index, the IFRS dummy variable and the anti-director rights index, the IFRS dummy variable and the ownership concentration index, the IFRS dummy variable and the efficacy of corporate boards index and the IFRS dummy variable and the strength of investor protection index in Asian countries are negatively correlated with cost of equity capital. Correspondingly, the interaction terms of IFRS dummy variable and the liability standard index, the IFRS dummy variable and the ownership concentration index, the IFRS dummy

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variable and the strength of auditing and reporting standards index, the IFRS dummy variable and the efficacy of corporate boards index and the IFRS dummy variable and the legal rights index in Euro zone countries, and the interaction terms of the IFRS dummy variable and the disclosure requirements index, the IFRS dummy variable and the public enforcement index, the IFRS dummy variable and the legal system dummy variable, the IFRS dummy variable and the efficiency of judicial system index, the IFRS dummy variable and the creditor rights index and the IFRS dummy variable and the protection of minority shareholders' interests index in Asian countries are negatively correlated with cost of debt.

There are several implications of this paper concerning the effects of IFRS adoption, earnings quality and investor protection on cost of capital. Whether there is sufficient previous literature that examine these effects, the significance of this paper stems from being the first to measure the joint effects of them on cost of capital. In addition, this paper compares the two largest economic areas worldwide. It uses a large number of firms from 2000 to 2014 which is counted on 199.516 firm year observations which in turn makes the results stronger. Further the findings are useful for investors and accounting regulators when preparing new rules or changing the existing regulations as they shed light on the effects and the joint effects of the adoption of IFRS, earnings quality and investor protection on cost of capital. With other words, the results give insights to regulators to establish stronger investor protection rules and stronger mechanisms that protect discourage earnings management techniques which in turn decrease the earnings quality in case to decrease the cost of capital.

To conclude, the results of this paper creates prospects for further research. First, the findings should be compared by examining other attributes of earnings quality, like earnings conservatism, earnings smoothness, loss avoidance analysis, earnings predictability etc. Further, future papers should examine revised proxies of investor protection and no stand with the investor protection proxies that are measured by La Porta et al (1998, 2006) and are over used in global literature. Lastly, this paper compare only countries from Euro zone and Asian countries. Future research should compare the findings of this paper by examining other economies worldwide.

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Highlights

The cost of capital is lower after IFRS adoption.

A significant negative association has been found between cost of equity capital and earnings quality.

The cost of capital is negatively associated with most investor protection indexes.

The cost of capital has been found to be lower for firms with strong investor protection and earnings quality and higher earnings quality