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The Influence of IFRS Adoption on Banks' Cost of Equity: Evidence from European Banks

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Abstract: This study examines how mandatory adoption of International Financial Reporting Standards (IFRS) in European countries affects banks' cost of equity. Supporters of IFRS argue that its adoption improves the quality of accounting information, which in turn decreases the cost of equity. However, banking regulators could intervene in the implementation of new accounting standards to protect the stability of the banking system, which would deteriorate banks' information environment and thereby increase the cost of equity. Using a regression analysis of European listed bank data, I find that banks' cost of equity increases after the adoption of IFRS in countries with strong bank supervisory offices. I also find that strong legal enforcement and additional disclosure requirements jointly reduce banks' cost of equity, but pre-IFRS inconsistencies between local accounting standards and regulatory standards jointly increase banks' cost of equity. This study contributes to the literature on market discipline in banking and has policy implications: The findings suggest that, when implementing new accounting standards, potential conflicts between financial reporting and banking regulations should be considered.

Keywords: cost of equity; IFRS adoption; European banks; corporate governance; banking regulation

1. Introduction

The 2007 US subprime mortgage crisis shows the importance of the banking system for sustainable economic growth. The adverse effects of this crisis not only impacted the banks and debtors as parties to the mortgage loan contracts, but it also spread across the entire financial system and the real economy. As a result, despite the US government's efforts to stabilize the financial system, real domestic production per capita in the United States decreased by more than 5% from the fourth quarter of 2007 to the second quarter of 2009. This shows how the soundness of the banking system is critical to sustainable economic growth.

While several government regulations have been adopted to maintain the stability of the banking industry, innovations in financial instruments have been developing quickly, and regulatory bodies are playing catch up with the financial market. Consequently, the role of market discipline is crucial because market mechanisms can adapt more flexibly and promptly to change.

Unlike government regulators, market participants are not authorized to access banks' private information. Therefore, the public information environment is critical for the market discipline of banks. Financial statements are a reliable and comprehensive source of public information. Hence, this study investigates the influence of changes in accounting standards on European banks' financial statements post-International Financial Reporting Standards (IFRS) adoption.

Researchers argue that IFRS adoption improves accounting quality because it requires more disclosure than most local European accounting standards pre-IFRS. They suggest that IFRS adoption improves both earnings quality and the information environment. Consequently, post-IFRS, security trading by foreign investors increased, and equity values increased. These studies mainly focus on the

impact of IFRS adoption on non-financial firms and equity market characteristics, however, and pay little attention to the banking industry or to the use of accounting information in contracts [1].

IFRS adoption impacts banks differently from non-financial firms because banks possess financial assets. IFRS requires financial assets to be recorded at fair market value, which is a noisy measure of future cash flow. Hence, increased use of this measure post-IFRS could increase the noise in the prediction of cash flow from bank assets, which could increase banks' information risks. Furthermore, unlike the cost of equity for non-financial firms, that for banks could increase post-IFRS.

Furthermore, IFRS as a principle-based accounting system is more flexible than most of the pre-IFRS local accounting standards. In contrast to a rule-based accounting system, a principle-based accounting system allows managers more accounting choices. Thus, accounting information can vary depending on choices made during the preparation of the information. This could enhance decision-making because information selection could be tailored. However, the verifiability of the accounting information could suffer post-IFRS, as the same accounting information can be presented in different ways. Verifiability is critical in contracts [2] because low verifiability provides room for moral hazard regarding debt contracts using accounting information in the debt covenants. Thus, IFRS adoption could reduce the contractibility of accounting information [1]. In sum, although IFRS adoption could improve the information environment for equity markets, it could also have a negative impact on debt markets.

In most countries, the banking industry is regulated by a governmental or a non-governmental organization to protect the stability of the financial system. Should IFRS adoption increase the instability of debt markets, bank supervisors can intervene. When bank supervisors have especially strong power, they have great influence on banks' financial reporting. The bank supervisors' main concern is the stability of financial markets; therefore, if necessary, they could intervene in the financial reporting by managing the law or the implementation of accounting standards, as Skinner [3] reported using a Japanese case. Although the supervisors' intervention stabilizes the lending system of the country, the distortion in the adoption of new accounting standards damages the transparency of the accounting information. Consequently, banks' information risks increase, which increases banks' cost of equity.

Based on the argument above, I hypothesize that IFRS adoption increases banks' cost of equity in countries with strong banking regulations. I also conjecture that IFRS adoption decreases banks' cost of equity in countries with strong investor protection.

Using European listed bank data, I test my hypotheses through a multivariate regression analysis. The results show that IFRS adoption increases banks' cost of equity in countries with strong banking supervision, supporting my conjecture. In examining the effect of additional disclosure requirements, I find that strong legal enforcement and additional IFRS disclosure requirements jointly reduce banks' cost of equity. However, banks' cost of equity is increased by the joint effect of the improvement of comparability by IFRS adoption and banking regulatory power.

This study contributes to the literature in several ways. First, this is one of the few studies that examines how IFRS adoption affects the valuation of the banking sector. Armstrong et al. [4] report that the market reaction of banks' stock prices to IFRS adoption is stronger than that of other industries. Meanwhile, Daske et al. [5] and Li [6] examine the effect of IFRS adoption on market reaction, but they do not examine the banking industry.

Second, this study has policy implications. The importance of market discipline in banking increases as financial instruments become more complex [7]. As seen in the 2007 Mortgage Crisis in the United States, financial instruments have recently been innovated at a rapid pace, and government regulations are not keeping up with the pace of innovation in financial instruments. However, market participants can respond quickly to market innovation, unlike government regulations. Thus, market discipline can supplement government regulation. Since investors rely on public information, high-quality accounting information is important in the market discipline of banks [8]. As this research suggests, in addition to high-quality accounting information, country-level banking governance is necessary for the efficient market discipline of banks.

Third, this study shows the interaction between the institutional environment of banks and changes in accounting standards. Researchers have pointed out that the institutional environment influences financial reporting [9–11]. Supporting this argument, studies on mandatory IFRS adoption suggest that investor protection facilitates IFRS adoption [6,12]. However, few studies have examined the role of bank regulation in adopting new accounting standards.

The remainder of this paper proceeds as follows. Section 2 summarizes prior studies regarding the effect of IFRS adoption on the cost of equity, institutional environments of the banking industry, and the economic consequences of IFRS adoption. Section 3 documents hypothesis development. Section 4 presents the research design, sample selection, and descriptive statistics. Section 5 documents the results of regression analyses. Section 6 concludes the paper.

2. Literature Review and Background

2.1. The Effect of IFRS Adoption

Prior studies argue that IFRS adoption improves several aspects of financial reporting, the information environment, and capital markets. Empirical studies find that earnings quality [13,14] and the information environment [12,15,16] are improved following IFRS adoption. Consequently, security trading [5,17,18] and equity valuation [5,6] improve post-IFRS.

Theory expects that the quality of disclosure is negatively related to the cost of equity [19–21], which is backed by empirical evidence [22,23]. Since IFRS adoption improves the transparency of accounting information and the information environment, researchers expect that IFRS adoption decreases the cost of equity. Li [6] finds evidence supporting this using European non-financial firm data.

However, IFRS adoption also has a negative consequence because it increases a manager's choice of accounting policy, which reduces the contractibility of the accounting information. Supporting this argument, Ball et al. [1] report that IFRS adoption reduces accounting-based debt covenants. This study implies that IFRS adoption is not welcomed by bank regulators because it reduces the contractibility of debt contracts, which results in instability in the financial markets. In addition, the findings of Ball et al. [1] also suggest that banks' risks increase post-IFRS because banks' lending contracts that utilize accounting information in debt covenants become inefficient.

2.2. The Institutional Environment of Listed Banks

This study focuses on the equity capital in European listed banks, which are exposed to two different types of institutional environments: Bank supervision and disclosure regulation. Listed banks are regulated by banking supervisory offices. Although the detailed structures of bank supervisory systems vary by country [24], the ultimate goal of supervisory offices is the same, namely, to safeguard the stability of the financing system because the stability of financial markets plays a critical role in the economic growth of the country. As a publicly listed firm, listed banks are also bound to the disclosure requirements of investors, whose main concern is not in protecting the stability of the markets, but in protecting investors' private interests.

The difference in policy objectives between bank regulation and corporate disclosure creates conflicts between accounting policy and bank regulation. Skinner [3] investigates the adoption of deferred tax accounting in Japan in 1998, during which Japanese banks' regulatory capital was insufficient. Thus, to maintain banks' solvency, the Japanese government and bank regulators decided to use a deferred tax asset as regulatory capital. Because maintaining the solvency of banks is more important for the country's economy, the quality of accounting information was sacrificed during the adoption of deferred tax asset accounting. Skinner [1] implies that banking regulations limit or distort the adoption of new accounting standards if the standards negatively affect the solvency of banks. IFRS adoption could necessitate regulatory intervention, as in the case investigated by Skinner [3]. Bischof [25] also pointed out that there are incentives to prevent European bank regulators from introducing new accounting standards

that affect banks' financial statements, which means that the intervention of bank supervisory offices in the adoption of new accounting standards is not limited to a specific country.

To implement accounting standards, support of institutional environments is necessary [9]. However, as prior studies show [3,25], listed banks face a potential conflict between bank regulation and financial disclosure; therefore, how IFRS adoption influences listed banks is unclear.

Basel II is a set of guidelines that shaped the mandatory adoption of IFRS in European countries. Although replaced by Basel III, Basel II is still useful in understanding the mechanism of the banking regulations. Basel II is based on the following three pillars: (1) Minimum capital requirement that requires safer capital as banks' risky assets increase; (2) review process by a government supervisory office; (3) market discipline that relies on sophisticated investors' monitoring. For the first and second pillars, private information can be required from banks or banks' auditors. Frequently, these two pillars have priority over accounting standards [3,25]. For the third pillar, market discipline penalties include direct penalty by investor activism and indirect penalties through market prices of securities, including stock prices. Due to the high information efficiency of market prices, market discipline can reflect the bank's health information at a rate that bank supervisors cannot follow. This means that market discipline is superior to bank supervisors in reflecting the consequences of financial instruments, which are rapidly becoming increasingly complex as they undergo innovation, on the health of banks. Therefore, the importance of market discipline is in an increasing trend [7].

Banking regulations affect banks' financial reporting. Bank supervisors can require banks to disclose private information found during the review process [26,27]. Furthermore, regulatory capital requirements enhance disclosure by providing timely and extensive information that is not required by accounting standards [28]. Stringent banking regulations could conflict with accounting information in that the regulations safeguard the banking system, whereas the accounting information focuses on capital providers. Moreover, banking regulators could sacrifice the quality of accounting information to stabilize the financial system [3,28] or to avoid rapid changes in the accounting numbers to minimize the negative impact on debt contracts based on accounting information [1,25].

The influence of investor protection is the same for banks and non-financial firms. Strong investor protection provides incentives to managers to provide transparent accounting information [10,11,29]. Consequently, IFRS adoption reduces banks' cost of equity [6,30,31].

2.3. IFRS Adoption in the Banking Sector

Compared with the previous local accounting standards, IFRS adoption brought several changes. The two most important changes for this study [2,14] include an increase in fair value measurement and an increase in accounting choices.

As the fair value measure increases, the statement of financial position (balance sheet in US Generally Accepted Accounting Principles terminology) increases in relevance for equity valuation. However, the market volatility included in fair value increases the noise in measuring banks' future cash flows. Even though fair value measures do not directly rely on level 1 inputs, which are market values, level 2 or level 3 inputs of fair value measures do not alleviate the information risk because they are discretionary. In sum, extended use of fair value measures increases information risks, which are unfavorable for both investors and bank regulators.

In addition, although the increase in accounting choices enhances the relevance of the statement of financial position to equity valuation, this increase could influence the banking industry negatively. The increase in accounting choices complicates verification of compliance with the debt covenants. This provides opportunities for moral hazard for both parties of the debt contract. The reduction of contractibility of accounting information could have a significant impact on capital markets, which necessitates intervention by banking regulators [3,25].

3. Hypothesis Development

Regarding IFRS adoption and banks' cost of equity, two risks should be considered. The first risk is banks' business risks, which come from operating characteristics; for example, borrowers' credit risks. The second is information risk [19,20]. Both risks increase banks' cost of equity.

Because the minimum capital regulation is applied stringently, the regulatory capital ratio efficiently reduces banks' risk [28]. This risk reduction decreases banks' cost of equity. If banks' risk is already lowered by banking regulations, IFRS adoption has little impact on the disclosure of information about banks' risks. Therefore, IFRS adoption has little impact on the cost of equity if capital regulation is strong. Based on this conjecture, I suggest the following hypotheses:

H1: *Banks' cost of equity decreases as the minimum capital regulation strengthens.*

H2: *Strong capital regulation weakens the impact of IFRS adoption on banks' cost of equity.*

If banking regulatory agencies have strong power, they can require private information directly from banks or banks' auditors for regulatory actions [1,28]. Therefore, bank regulation strength reduces banks' cost of equity because strong banking regulators can monitor and discipline banks.

Banking regulations have priority over financial reporting in most countries; therefore, these regulations could interfere with IFRS adoption if new accounting standards have a negative effect on the banking system. IFRS adoption increases choice among accounting rules; therefore, using accounting information for debt covenants allows for moral hazard for any one of the contracting parties in debt contracts [1]. Several banks' contracts use accounting information for debt covenants; hence, changes in accounting standards could affect banks' existing contracts. Therefore, bank supervisors have the incentive to intervene in the adoption of new accounting standards to prevent potential turmoil, which would interfere with the faithful implementation of IFRS [3,25]. The intervention of bank supervisors increases information risk of banks, which would increase bank supervisors' power. Based on this conjecture, I suggest the following hypotheses:

H3: *Banks' cost of equity decreases as the bank supervisors' power strengthens.*

H4: *IFRS adoption increases banks' cost of equity in the countries with strong banking supervisors.*

Market discipline needs a good information environment including high-quality accounting information. Country-level investor protection improves accounting quality by helping faithful financial reporting [9,29], which leads to a reduction in the cost of equity [11,30,31]. Thus, in countries with strong investor protection, IFRS adoption reduces banks' cost of equity. In relation to the institutional aspects of the banking sector, I therefore suggest the following hypothesis:

H5: *The influence of IFRS adoption on banks' cost of equity is weakened when investor protection is strengthened.*

The impact of IFRS adoption varies with the extent of changes that occur in IFRS adoption [32]. In most European countries, IFRS adoption requires more disclosure. Thus, the impact of IFRS adoption increases additional disclosure requirements. Moreover, the impact of IFRS adoption varies with the inconsistencies between IFRS and the local accounting standards implemented before IFRS adoption. Accordingly, I propose the following hypotheses.

H6: *The influence of IFRS adoption increases when IFRS adoption requires additional disclosures.*

H7: *The influence of IFRS adoption increases when inconsistencies exist between IFRS and the local accounting standards implemented before IFRS adoption.*

4. Research Design

4.1. Regression Model

I use the implied cost of equity as my proxy for expected returns because it has fewer errors than realized-return-based proxies [30,31,33] from information shocks. I average four estimates calculated using the models of Easton [34], Gode and Mohanram [35], Gebhardt et al. [36], and Claus and Thomas [37] to mitigate error in each measurement [30,31].

Studies on the effect of IFRS adoption frequently use a difference-in-differences model using voluntary adopters as the control group. This model controls for the influence that occurs simultaneously with IFRS adoption. However, except the treatment, the control group of the difference-in-differences model should be identical to the treatment group. Furthermore, only three countries have banks that adopted IFRS voluntarily. Most European banks adopt IFRS mandatorily, which means that IFRS adoption was an exogenous event for most European banks. Hence, I do not use the difference-in-differences design.

To test H1 to H5, I use the following model (1):

$$\begin{aligned} CoC = \alpha + \beta_1 POST + \beta_2 ENFORCE + \beta_3 OFFICE + \beta_4 CAPITAL + \beta_5 POST*ENFORCE \\ + \beta_6 POST*OFFICE + \beta_7 POST*CAPITAL + CONTROLS + \varepsilon \end{aligned} \quad (1)$$

Variable definitions are in the Appendix A. *POST* is the variable of interest. I include measures for the strength of capital regulation (*CAPITAL*), the power of bank supervisors (*OFFICE*), and the efficiency of legal enforcement (*ENFORCE*) in the regression model. *CAPITAL* and *OFFICE* are measured by The Bank Regulation and Supervision Survey 2003 conducted by the World Bank [28,38]. I centered *CAPITAL*, *OFFICE*, and *ENFORCE* by the sample mean of each variable to mitigate multicollinearity problems from biases of spurious correlations [39].

I control firm-level risks using proxies of size, return volatility, financial leverage, total capital ratio, and book-to-price ratio. Size, return volatility, and leverage are measured by the decile rank of each variable to mitigate measurement errors. I include variables to control for cross-listing on the US stock market because investor protection in the US market is stronger than it is in most European countries, but it is not affected by mandatory IFRS adoption. I also control for the annual inflation rate and the indicator variable for the adoption of IFRS 7, which could affect banks. I include the bias and dispersion of analyst forecasts to mitigate the effect of biases and the nonlinearity of the models for the implied cost of equity [37,40]. Many bank-year observations have only one one-year-ahead earnings forecast; hence, I include an indicator variable for the observations to control for potential bias and replace the dispersion of analyst forecasts with zero. I adjust the influence of the firm-level serial correlation using a firm-clustered standard error in all of the regression results in this study [41].

To test H6 and H7, I revise model (1) by including additional disclosure requirements (*ADD*) and inconsistencies between IFRS and the local accounting standards (*INC*). I use the survey of Nobes [42] to measure *ADD* and *INC*. Nobes [42] did not focus on banks; thus, items irrelevant to banks, for example, inventory or plant assets, are included. To avoid potential measurement errors from irrelevant items, I exclude items irrelevant to bank operations from *ADD* and *INC*. I centered *ADD* and *INC* by their sample means to avoid multicollinearity problems [39]. The following are the models for H6 and H7, respectively. Model (2) and model (3) are models for testing the effects of *ADD* and *ICC*, respectively.

$$\begin{aligned} CoC = \alpha + \beta_1 POST + \beta_2 ENFORCE + \beta_3 OFFICE + \beta_4 CAPITAL + \beta_5 POST*ENFORCE \\ + \beta_6 POST*OFFICE + \beta_7 POST*CAPITAL + \beta_8 ADD + \beta_9 POST*ADD \\ + \beta_{10} POST*ENFORCE*ADD + \beta_{11} POST*OFFICE*ADD + \beta_{12} POST*CAPITAL*ADD + \\ CONTROLS + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} CoC = \alpha + \beta_1 POST + \beta_2 ENFORCE + \beta_3 OFFICE + \beta_4 CAPITAL + \beta_5 POST*ENFORCE + \\ \beta_6 POST*OFFICE + \beta_7 POST*CAPITAL + \beta_8 INC + \beta_9 POST*INC + \beta_{10} POST*ENFORCE*INC + \\ \beta_{11} POST*OFFICE*INC + \beta_{12} POST*CAPITAL*INC + CONTROLS + \varepsilon \end{aligned} \quad (3)$$

4.2. Sample Selection

Mandatory IFRS adoption by the European Union provides the setting for a natural experiment. Therefore, I use data from listed banks of European countries from 1995 to 2009. The observations are required to have the Standard Industry Code between 6020 and 6099. Analyst forecast data and financial data are obtained from I/B/E/S and Compustat Global, respectively. I match the stock prices and analyst forecasts of seven months after the previous fiscal-year end to make sure that precious accounting information is fully incorporated. Non-positive earnings forecasts were excluded. If three-year-ahead to five-year-ahead analyst forecasts are missing, I fill in missing values using long-term earnings growth rate forecasts. I use the average of a historical three-year payout ratio to calculate the expected dividend payout ratio. If the payout ratio is missing, or smaller (larger) than 0 (1), I use the country-median value instead. I exclude banks that do not have observations both before and after the mandatory IFRS adoption in 2005. I classify years before 2004 as the pre-mandatory adoption period and years from 2005 as the post-mandatory adoption period [6,30,31].

Table 1 presents the composition of the final sample, which has 376 observations from 52 banks in 12 countries having 7 voluntary adopters and 45 mandatory adopters. Among the 376 observations, 52 and 324 observations are obtained from voluntary and mandatory adopters, respectively. Only three countries, namely, Germany, Greece, and Poland, have voluntary adopters. However, voluntary adopters could not provide a good benchmark for difference-in-differences tests, because they are not evenly distributed. The sample selection did not drive this result. By examining the entire Compustat Global database, I confirm that only three countries have banks that voluntarily adopted IFRS. This result implies that IFRS adoption is more like an exogenous event than an endogenous one. Furthermore, this also implies that financial reporting and banking regulations could have conflicting goals.

Table 1. Sample composition.

Panel A: Number of observations				
	Voluntary adopters	Mandatory adopters	Pre-mandatory adoption period (Before 2005)	Post-mandatory adoption period (From 2005)
Belgium	0	11	7	4
Denmark	0	17	8	9
Finland	0	6	1	5
France	0	34	16	18
Germany	33	4	23	14
Greece	7	29	17	19
Ireland	0	21	15	6
Netherlands	0	17	10	7
Poland	12	28	16	24
Spain	0	38	18	20
Sweden	0	37	26	11
UK	0	82	53	29
Sum	52	324	210	166
Panel B: Number of banks				
	Voluntary adopters	Mandatory adopters		
Belgium	0	1		
Denmark	0	3		
Finland	0	1		
France	0	5		
Germany	4	1		
Greece	1	4		
Ireland	0	3		

Table 1. Cont.

Netherland	0	2
Poland	2	6
Spain	0	5
Sweden	0	4
UK	0	10
Sum	7	45
Panel C: Number of mandatory adopter observations		
	Pre-adoption	Post-adoption
Belgium	7	4
Denmark	8	9
Finland	1	5
France	16	18
Germany	2	2
Greece	14	15
Ireland	15	6
Netherland	10	7
Poland	11	17
Spain	18	20
Sweden	26	11
UK	53	29
Sum	181	143

4.3. Descriptive Statistics

Panel A in Table 2 shows the means of the main variables for regression analyses by country. Means of implied cost of equity are from 10% to 14%, whereas means of the regulatory capital ratio are larger than 10% and lower than 14.5%. Only three countries, namely, Germany, Greece, and Poland, have banks that voluntarily adopted IFRS. This implies that, unlike non-financial industries, European banks' IFRS adoption might be regulated by banks [6,25]. Voluntary adopters have a higher regulatory capital ratio than mandatory adopters in the same countries, suggesting the possibility that sound banks choose to adopt IFRS voluntarily to indicate their financial stability. Panel B presents the descriptive statistics for the full sample.

Table 2. Descriptive statistics.

Panel A: Country mean value of the cost of equity, market value, and regulatory capital ratio				
	N	CoC	Market value of equity	Total regulatory capital ratio
Belgium	11	0.1088	21,299	13.20%
Denmark	17	0.1386	10,351	11.25%
Finland	6	0.1039	2,270	12.23%
France	34	0.1282	41,695	11.00%
Germany	37	0.1086	23,640	11.57%
(Mandatory adopters)	4	0.1011	2,355	13.07%
Greece	36	0.1288	8,335	13.10%
(Mandatory adopters)	29	0.1285	8,133	13.06%
Ireland	21	0.1228	12,645	12.29%
Netherland	17	0.1146	21,282	11.83%
Poland	40	0.1250	4,356	14.47%
(Mandatory adopters)	28	0.1285	4,701	14.01%
Spain	38	0.1116	36,571	11.65%
Sweden	37	0.1017	13,381	10.44%
UK	82	0.1037	109,912	13.19%

Table 2. Cont.

Panel B. Summary statistics of the main variables for the regression analyses					
Variable	Mean	STD	25%	50%	75%
CoC	0.1150	0.0306	0.0960	0.1093	0.1270
SIZE (=logTA)	12.5453	2.5862	10.9217	12.2901	13.4738
OTC	0.1649	0.3716	0	0	0
EXCH	0.1383	0.3457	0	0	0
PP	0.0559	0.2299	0	0	0
INFLA	2.7212	2.3848	0.69565	2.134	4.2124
RETVOL	0.0891	0.0592	0.0501	0.0717	0.1087
LEV	0.9418	0.0311	0.9312	0.9510	0.9625
CAP Ratio	12.2579	4.5377	10.8	11.7	13.1
CAPR_DUM	0.3431	0.4754	0	0	1
FBIAS	0.0081	0.0395	−0.0090	−0.0010	0.0115
BPR	0.6449	0.5156	0.3877	0.5368	0.7352
DISP	0.0041	0.0164	0	0	0.0048
FOLLOW	3.6170	4.1617	1	1	5

Table 3 presents the differences in bank characteristics before and after IFRS adoption. The variables in Table 3 are chosen differently from those in Panel B of Table 2, because the purpose of Table 3 is to present the changes in bank characteristics intuitively. CoC significantly changes after the mandatory IFRS adoption. However, this univariate test does not confirm that the difference is due to IFRS adoption.

Table 3. Differences in bank characteristics before and after the mandatory International Financial Reporting Standards (IFRS) adoption.

Variable	Pre-Adoption (A)	Post-Adoption (B)	Difference (B−A)	t-Value	p-Value	
CoC	0.104	0.130	0.026	7.87	0.000	***
TA	243,865	581,665	337,800	5.10	0.000	***
MKT	16,309	31,747	15,438	3.64	0.000	***
RETVOL	0.089	0.084	−0.005	−0.72	0.470	
BPR	0.493	0.815	0.322	5.07	0.000	***
LEV	0.943	0.943	0.000	−0.01	0.993	
CAP Ratio	12.474	11.784	−0.690	−1.44	0.151	
FBIAS	0.003	0.010	0.007	1.74	0.083	*
DISP	0.005	0.003	−0.001	−0.68	0.497	
Follow	4.039	2.902	−1.137	−2.48	0.014	**
ONEFORECAST	0.475	0.601	0.126	2.27	0.024	**

*, **, and *** indicate significance at the 10%, 5%, and 1% levels by two-tailed tests, respectively.

5. Analysis Results

5.1. The Influence of IFRS Adoption and Institutional Environment on the Cost of Equity

Table 4 documents variables for institutional environments, and Table 5 presents the estimation results of model (1). ENFORCE, OFFICE, and CAPITAL have negative coefficients in both full and partial sample analyses. However, the coefficient on CAPITAL is insignificant in the partial sample analysis. These results imply that investor protection and bank regulation reduce banks' risk in general.

Table 4. Country characteristics.

Panel A: Country means of variables					
Country	Legal enforcement (ENFORCE)	The index of official supervisory power of bank regulators (OFFICE)	Regulatory restrictions on bank capital (CAPITAL)	Additional disclosure required by IFRS adoption for banks (ADD)	Total no. of inconsistencies between local standards and IFRS for banks (INC)
Belgium	9.44	—	—	7	13
Denmark	10	8	2	5	13
Finland	10	8	4	7	13
France	8.68	7	2	5	15
Germany	9.05	10	1	6	16
Greece	6.82	10	3	8	14
Ireland	8.36	9	1	0	15
Netherlands	10	8	3	2	5
Poland	—	—	—	3	14
Spain	7.14	9	4	8	18
Sweden	10	6	3	4	9
UK	9.22	11	3	0	15

Panel B: Summary statistics of the full sample					
Variable	Mean	STD	25%	50%	75%
CoC	0.1150	0.0306	0.0960	0.1093	0.1270
SIZE	12.5453	2.5862	10.9217	12.2901	13.4738
OTC	0.1649	0.3716	0	0	0
EXCH	0.1383	0.3457	0	0	0
PP	0.0559	0.2299	0	0	0
INFLA	2.7212	2.3848	0.69565	2.134	4.2124
RETVOL	0.0891	0.0592	0.0501	0.0717	0.1087
LEV	0.9418	0.0311	0.9312	0.9510	0.9625
CAP Ratio	12.2579	4.5377	10.8	11.7	13.1
CAPR_DUM	0.3431	0.4754	0	0	1
FBIAS	0.0081	0.0395	−0.0090	−0.0010	0.0115
BPR	0.6449	0.5156	0.3877	0.5368	0.7352
DISP	0.0041	0.0164	0	0	0.0048
FOLLOW	3.6170	4.1617	1	1	5

Table 5. Basic regression analysis.

Parameter	(A) Full Sample Period			(B) From 2003 to 2006		
	Coef	t-Value		Coef	t-Value	
Intercept	0.0852	(14.18)	***	0.2003	(5.70)	***
POST	0.0061	(2.20)	**	−0.0177	(−0.60)	
ENFORCE	−0.0054	(−2.73)	***	−0.0076	(−3.49)	***
OFFICE	−0.0023	(−1.81)	*	−0.0049	(−1.96)	*
CAPITAL	−0.0078	(−3.24)	***	−0.0021	(−0.86)	
POST*ENFORCE	0.0010	(0.39)		−0.0024	(−0.88)	
POST*OFFICE	0.0037	(2.75)	***	0.0044	(2.53)	**
POST*CAPITAL	−0.0016	(−0.50)		0.0012	(0.40)	
IFRS7	0.0226	(3.04)	***			
SIZE_DEC	−0.0007	(−1.43)		−0.0007	(−0.64)	
OTC	−0.0049	(−0.89)		−0.0036	(−0.68)	
EXCH	0.0100	(3.06)	***	0.0082	(1.47)	
INFLA	0.0023	(2.51)	**	0.0000	(0.01)	
RETVOL_DEC	0.0000	(−0.03)		−0.0006	(−0.88)	
LEV_DEC	0.0011	(1.56)		0.0007	(0.93)	
CAPR	−0.0001	(−0.83)		0.0014	(1.62)	
CAPR_DUM	−0.0041	(−0.83)		0.0075	(0.70)	
FBIAS	0.2182	(1.90)	*	0.3136	(1.68)	
DISP	0.0780	(2.72)	***	0.2251	(0.42)	
ONEFORECAST	0.0029	(1.29)		0.0047	(1.16)	
BPR	0.0188	(2.77)	***	0.0155	(1.84)	*
# of OBS	285			131		
ADJ R2	0.572			0.3528		

*, **, and *** indicate significance at the 10%, 5%, and 1% levels by two-tailed tests, respectively. t-values are adjusted by firm cluster.

The interaction term of *POST* and *OFFICE* has positive coefficients, suggesting that banks in countries with strong regulations experience an increase in the cost of equity. Financial reporting and banking regulations conflict regarding IFRS adoption. In this case, banking regulations have priority over financial reporting [26]. Therefore, bank supervisors intervene in the IFRS adoption to suppress the negative impact of IFRS on the banking system, at least temporarily [3,25]. The intervention in IFRS adoption reduces the quality of accounting information and increases the uncertainty of banks and the cost of equity. This supports H4. However, the interaction terms of *ENFORCE* or *CAPITAL* with *POST* are insignificant; thus, H2 and H5 are not supported. The results are qualitatively consistent with the results for non-financial firms. Listed banks are also exposed to disclosure requirements; therefore, the results should be consistent with prior study [6].

5.2. The Changes in Disclosure Requirements by IFRS Adoption on Cost of Equity

Panel A of Table 6 documents the regression result of model (2). In column (A), the sign of the three-way interaction term of *ENFORCE* shows that legal enforcement facilitates the implementation of additional disclosure requirements by mandatory IFRS adoption, resulting in the decrease in banks' cost of equity. However, the coefficients on the three-way interaction terms of *CAPITAL* and *OFFICE* are insignificant. The result of the subsample period test presented in column (B) is qualitatively the same, except that the significance and magnitude are weaker. The results support the conjecture that the institutional environment for investor protection supports the implementation of IFRS adoption because it improves the relevance of accounting information on the equity valuation.

Table 6. The effect of changes in bank disclosures on cost of equity.

Panel A: Effect of additional disclosures						
Parameter	(A) Full sample period			(B) From 2003 to 2006		
	Coef	t-Value		Coef	t-Value	
<i>Intercept</i>	0.0869	(10.33)	***	0.0794	(6.17)	***
<i>POST</i>	−0.0147	(−1.53)		−0.0082	(−0.82)	
<i>ENFORCE</i>	−0.0046	(−0.97)		−0.0050	(−1.03)	
<i>OFFICE</i>	−0.0023	(−1.12)		−0.0031	(−1.26)	
<i>CAPITAL</i>	−0.0081	(−2.23)	**	−0.0035	(−0.92)	
<i>ADD</i>	0.0002	(0.08)		0.0015	(0.70)	
<i>POST*ENFORCE</i>	0.0163	(1.10)		0.0041	(0.38)	
<i>POST*OFFICE</i>	0.0009	(0.27)		0.0002	(0.05)	
<i>POST*CAPITAL</i>	−0.0160	(−1.49)		−0.0033	(−0.36)	
<i>POST*ADD</i>	0.0009	(0.25)		−0.0031	(−1.04)	
<i>POST*ENFORCE*ADD</i>	−0.0069	(−2.16)	**	−0.0050	(−1.71)	*
<i>POST*OFFICE*ADD</i>	−0.0026	(−1.69)		−0.0001	(−0.06)	
<i>POST*CAPITAL*ADD</i>	0.0031	(1.47)		0.0019	(1.09)	
<i>IFRS7</i>	0.0232	(2.81)	***			
<i>SIZE_DEC</i>	−0.0011	(−1.59)		−0.0005	(−0.48)	
<i>OTC</i>	−0.0038	(−0.67)		−0.0030	(−0.58)	
<i>EXCH</i>	0.0103	(2.96)	***	0.0074	(1.41)	
<i>INFLA</i>	0.0024	(2.24)	**	−0.0001	(−0.10)	
<i>RETVOL_DEC</i>	0.0002	(0.37)		−0.0002	(−0.28)	
<i>LEV_DEC</i>	0.0009	(1.35)		0.0006	(0.77)	
<i>CAPR</i>	−0.0001	(−0.68)		0.0016	(1.79)	*
<i>CAPR_DUM</i>	−0.0049	(−0.94)		0.0089	(0.84)	
<i>FBIAS</i>	0.2212	(1.94)	*	0.3116	(1.77)	*
<i>DISP</i>	0.0766	(2.75)	***	−0.0595	(−0.12)	
<i>ONEFORECAST</i>	0.0016	(0.71)		0.0013	(0.33)	
<i>BPR</i>	0.0186	(2.50)	**	0.0231	(2.16)	**
No. of OBS	285			131		
ADJ R2	0.5772			0.3757		

Table 6. Cont.

Panel B. Effect of inconsistencies						
Parameter	(A) Full sample period			(B) From 2003 to 2006		
	Coef	t-Value		Coef	t-Value	
<i>Intercept</i>	0.0882	(14.92)	***	0.0775	(7.01)	***
<i>POST</i>	0.0073	(1.29)		−0.0001	(−0.03)	
<i>ENFORCE</i>	−0.0078	(−3.12)	***	−0.0110	(−4.40)	***
<i>OFFICE</i>	−0.0015	(−1.04)		−0.0041	(−1.43)	
<i>CAPITAL</i>	−0.0085	(−3.87)	***	−0.0016	(−0.63)	
<i>INC</i>	−0.0013	(−2.16)	**	−0.0013	(−1.50)	
<i>POST*ENFORCE</i>	0.0018	(0.50)		−0.0057	(−1.54)	
<i>POST*OFFICE</i>	0.0031	(1.85)	*	0.0061	(3.01)	***
<i>POST*CAPITAL</i>	−0.0094	(−2.20)	**	−0.0087	(−3.41)	***
<i>POST*INC</i>	−0.0016	(−0.83)		−0.0012	(−1.01)	
<i>POST*ENFORCE*INC</i>	0.0018	(1.59)		0.0011	(1.18)	
<i>POST*OFFICE*INC</i>	0.0009	(1.15)		0.0024	(3.43)	***
<i>POST*CAPITAL*INC</i>	0.0064	(2.04)	**	0.0051	(2.93)	***
<i>IFRS7</i>	0.0233	(3.12)	***			
<i>SIZE_DEC</i>	−0.0010	(−1.81)	*	−0.0007	(−0.61)	
<i>OTC</i>	−0.0039	(−0.76)		−0.0036	(−0.83)	
<i>EXCH</i>	0.0108	(3.60)	***	0.0077	(1.46)	
<i>INFLA</i>	0.0019	(1.96)	*	−0.0009	(−0.81)	
<i>RETVOL_DEC</i>	−0.0002	(−0.40)		−0.0010	(−1.42)	
<i>LEV_DEC</i>	0.0010	(1.54)		0.0008	(1.08)	
<i>CAPR</i>	−0.0001	(−0.82)		0.0016	(1.99)	*
<i>CAPR_DUM</i>	−0.0038	(−0.78)		0.0107	(1.12)	
<i>FBIAS</i>	0.2151	(1.77)	*	0.3305	(1.77)	*
<i>DISP</i>	0.0752	(2.62)	**	0.1549	(0.37)	
<i>ONEFORECAST</i>	0.0021	(0.95)		0.0027	(0.75)	
<i>BPR</i>	0.0193	(2.69)	**	0.0330	(3.16)	***
No. of OBS	285			131		
ADJ R2	0.5814			0.4146		

*, **, and *** indicate significance at the 10%, 5%, and 1% levels by two-tailed tests, respectively. t-values are adjusted by firm cluster.

Panel B of Table 6 shows the influence of the improved comparability on banks' cost of equity. I use model (3) for this test. *INC* indicates the differences between IFRS and the pre-IFRS local accounting standards. Therefore, *INC* also proxies for the improved comparability across countries. Unlike *ADD*, *INC* indicates disclosure requirement changes to the pre-existing accounting standards. Therefore, from the banking regulators' point of view, *INC* could be a threat to the debt market because it relates to compliance with debt covenants of the pre-existing debt contracts. By contrast, *ADD* is likely unrelated to the compliance with debt covenants because *ADD* indicates new disclosure requirements. The items related to *ADD* were not in the previous accounting standards; hence, those items have little impact on debt covenants. Thus, the effect of bank supervisors' intervention is related to *INC*, not to *ADD*.

The three-way interaction term of *CAPITAL* and *OFFICE* is positive. This means that mandatory IFRS adoption increases the cost of equity in countries with stringent banking regulations and where the pre-existing accounting standards change significantly. As *INC* increases, bank supervisors' incentive to intervene in the implementation of IFRS increases because the adoption decreases the contractibility of accounting information [1,3,25]. Moreover, changes in accounting standards impact the regulatory capital ratio, which potentially impacts the stability of the banking system. As a result of the intervention, accounting standards are implemented to minimize the potential negative influence on the debt markets, which increases information risks.

6. Conclusions

This study examines the effect of mandatory IFRS adoption on European banks' cost of equity. The empirical results of this study show that the impact of IFRS adoption on banks' cost of equity varies depending on institutional aspects. Strong investor protection is helpful in decreasing the cost of equity following IFRS adoption. However, banking regulation increases banks' cost of capital, especially when IFRS adoption has a strong impact on debt contracts. These results show that market monitoring and bank regulation are potentially at odds because of differences in policy objectives. Consequently, the cost of capital is affected differently by IFRS adoption in two institutional aspects.

The results of this study have policy implications. Unlike other industry sectors, the banking sector has a strong regulatory environment. Therefore, the incentives of banking regulators must be considered when designing a disclosure policy for the banking sector. If these incentives are ignored, a disclosure policy can be distorted; hence, the intended results cannot be obtained. Furthermore, this policy can yield results opposite to the intended ones. In addition, although market discipline is an important part of the banking regulatory system, factors that enhance market discipline can easily be weakened by bank supervisors. As market discipline has become more important because of rapid innovations in the finance sector, policy makers should carefully design policies related to the banking system.

This study also has several limitations. First, due to availability, some countries are not included in the analysis, which could cause a selection bias. Second, I incorporate only two aggregate measures of bank regulation, which are not enough to explain every detail of banking regulation. Third, the effects of specific regulatory events that occurred during my sample period are not totally addressed in this study. Fourth, this study focuses only on listed banks. Several banks are unlisted; hence, market discipline on unlisted banks should be addressed in future research settings. Finally, this study does not address the impact of IFRS adoption on several aspects other than stock price; for example, credit allocation activities. These could be examined separately in other studies.

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Appendix A

Table A1. Variable definitions.

Name	Definition
<i>ADD</i>	Increase in disclosure requirements that are not related to assets with a tangible form, e.g., depreciable assets or inventory [42]
<i>BPR</i>	Ratio of book value of equity to market value of common shares outstanding
<i>CAPITAL</i>	Regulatory restrictions on bank capital from Caprio et al. [38]
<i>Capital Ratio</i>	Ratio of the sum of core and supplementary capital to risk weighted assets
<i>CAPR</i>	Ratio of core and supplementary capital to risk weighted assets. Missing value is replaced by zero
<i>CAPR_DUM</i>	1 if CAPR is not available, 0 otherwise
<i>CoC</i>	Average of four estimates of implied cost of equity calculated by the models of Easton [33], Gode and Mohanram [34], Gebhardt et al. [35], and Claus and Thomas [36]
<i>DISP</i>	Standard variation of one-year-ahead earnings forecasts less actual earnings scaled by the forecast-period stock price if more than 1 one-year-ahead earnings forecasts exists, 0 otherwise
<i>ENFORCE</i>	Average of three indices for the efficiency of judicial system, rule of law, and corruption from La Porta et al. [43]

Table A1. Cont.

Name	Definition
EXCH	1 if a firm trades its shares in major stock markets (NYSE, NASDAQ, or Amex)
FBIAS	One-year-ahead earnings forecast less actual earnings scaled by the forecast-period stock price
FOLLOW	The number of analysts following
IFRS7	1 if the year of an observation is after 2007, 0 otherwise
INC	Total number of inconsistencies for banks between local accounting standards and IFRS measured by Nobes [42]
INFLA	Inflation rate measured by the wholesale price index
LEV	Total liabilities divided by total assets
LEV_DEC	Decile of LEV
MKT	Market value of equity in million US dollars
OFFICE	Index of official supervisory power of bank regulators from Caprio et al. [38]
ONEFORECAST	1 if only one analyst follows, and 0 otherwise
OTC	1 if a firm trades its shares in the US over-the-counter markets, and 0 otherwise
POST	1 if a firm-year observation falls in 2005 or later, and 0 otherwise
PP	1 if a firm trades its shares in a private placement under Rule 144A
RETVOL	Standard deviation of monthly stock returns for the last 12 months before the fiscal year end
RETVOL_DEC	Decile of RETVOL
SIZE	Natural log of the value of total assets in million US dollars
SIZE_DEC	Decile of the value of total assets
TA	Value of total assets in million US dollars
VOLUNT	1 if the bank adopted IFRS voluntarily, and 0 otherwise

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