

The Impact of Hedge Accounting on a Firm Market Value

Lenka Čiperová*

Abstract:

In 2018, the International Accounting Standards Board (IASB) introduced International Financial Reporting Standard 9 (IFRS 9), which sets out principles for hedge accounting and replaces International Accounting Standard 39 (IAS 39). IFRS 9 aims to provide better information about companies' risk management policies by simplifying reporting requirements and improving risk disclosures compared to IAS 39. The objective of hedge accounting is to facilitate investors' understanding of companies' risk management strategies and provide information on the effectiveness of hedging. In this study, we attempt to determine how hedge accounting fulfils the IASB's objective and whether better risk management information translates into value attributed by investors. In the empirical part of this study, a firm valuation framework is used to analyse the impact of hedge accounting on the market value of a sample of Polish companies listed on the Warsaw Stock Exchange. The results show the positive effect of using hedge accounting, suggesting that information about risk management strategies can positively affect investors' valuation of the firm. The results also show that the simplified reporting requirements under IFRS 9 motivated companies that used hedge accounting to switch to the new accounting standard but, contrary to expectations, did not motivate new companies to adopt hedge accounting.

Keywords: Firm Market Value; Hedge Accounting; IFRS 9; Risk Management.

JEL classification: M41; M48.

1 Introduction

In 2001, IASB adopted IAS 39 Financial Instruments: Recognition and Measurement, a standard originally issued in 1999 by the International Accounting Standards Committee (IASC), which includes regulation of hedge accounting. IAS 39 sets out the conditions under which hedge accounting is permitted and the procedures and requirements for hedge accounting. Hedge accounting is an optional accounting policy. When implemented it should better align financial accounting results with the underlying economic strategy of a company and it should increase

* Lenka Čiperová; Prague University of Economics and Business, Faculty of Finance and Accounting, Department of Financial Accounting and Auditing, Winston Churchill Square 1938/4, 130 67 Prague, Czech Republic, <lenka.ciperova@vse.cz>, ORCID iD: 0009-0004-1778-0506. The article is processed as an output of a research project *The Impact of the Implementation of Hedge Accounting Under IFRS 9 on the Firm Market Value* registered by the Internal Grant Agency of Prague University of Economics and Business under the registration number F1/3/2022.

the transparency of a company's risk management activities. The record-keeping requirements of IAS 39 for assessing hedging effectiveness, however, were sometimes considered too demanding by companies and discouraged them from applying hedge accounting even if they used financial instruments to mitigate their risk exposures (Glaum and Klöcker, 2011; Walton, 2004). Neither did the disclosures on hedge accounting provide external users of accounting information with sufficient explanation of risk exposures, risk management strategies or the effectiveness of risk management strategies (Frestad and Beisland, 2015). The International Accounting Standards Board (IASB) listened to comments from companies, auditors, and other stakeholders and developed a more principle-based approach to hedge accounting in IFRS 9. It has simplified documentation requirements, increased the eligibility of hedged items, and improved disclosure requirements to better inform external users of accounting information about companies' risk management activities.

If, in line with the IASB's intention, hedge accounting should provide investors with a better understanding of companies' risks and enhance comprehension of the effectiveness of the hedging instruments used, it could have an impact on the market-assigned risk premium (Wang and Makar, 2019). The empirical hedge accounting research was primarily focused on US companies regulated under Statement of Financial Accounting Standard no. 133 (SFAS 133) or Financial Accounting Standard no. 161 (FAS 161) issued by the Financial Accounting Standard Board (FASB) (Pierce, 2020; Ranasinghe *et al.*, 2022; Wang and Makar, 2019). This study seeks to extend the existing literature on hedge accounting by empirically examining the impact of IASB regulations. Moreover, it is one of the first empirical studies to focus on the effects of hedge accounting under the new standard IFRS 9.

The remainder of the article is organised as follows: first, major hedging theories are reviewed and hedge accounting policies under IFRS and their intended impact on the presentation of risk management policies in the financial statements are outlined in Section 2. Next, the source of data, sample formation, variables identification, and model specifications are provided in Section 3. Finally, the results of the tests are presented and discussed in Section 4. Section 5 concludes.

2 Literature review

2.1 Hedging theories and research

The influence of hedging strategies on a firm value has been extensively examined since 1985 when Smith and Stulz (1985) developed their positive theory of value-maximising hedging policies in imperfect capital market conditions. Their approach to corporate risk management builds on the classical theory of irrelevance of

financing to firm value in perfect capital market conditions (Modigliani and Miller, 1958). The value maximization approach, also referred to as the financial economic theory (Klimczak, 2008) identifies reasons for hedging that include higher debt capacity, lower bankruptcy costs, lower information asymmetry (DeMarzo and Duffie, 1995) and securing internal financing (Froot *et al.*, 1993), which should increase firm value.

Empirical tests of the impact of hedging were conducted to provide evidence for the theory of value maximization. The conclusions of studies on the impact of risk management strategies on enterprise value yield mixed results. Graham and Rogers (2002), Bartram *et al.* (2011), and Gilje and Taillard (2017) show a positive relation between hedging and the firm leverage and firm value respectively. Allayannis and Weston (2001) found a positive relation between hedging and firm value, the hedging premium was statistically and economically significant for firms with exposure to exchange rates. Judge (2006) found evidence linking the expected costs of bankruptcy and the decision to hedge. Bodnar *et al.* (1995) surveyed 530 non-financial firms in the United States and concluded that in most cases minimising cash flow fluctuations was the predominant reason for using derivatives as opposed to using derivatives for management of accounting earnings. Similarly, Guay (1999) and Guay and Kothari (2003) found only a limited impact of hedging on a company's earnings.

Agency theory brings into the risk management research a managerial perspective on the motivations for hedging (Klimczak, 2008). Any misalignment of risk management objectives between managers and shareholders is limited by the presence of established hedging policies. In the empirical research, we find only limited support for the agency theory (*e.g.*, Tufano, 1996). The determinants of hedging were tested in a more recent study (Klimczak, 2008) and no support was identified for the argument that firms hedge to decrease shareholders' risk.

This study aims to extend the existing risk management literature by examining the effect of hedge accounting on firm value. As already mentioned, the evaluation of the main theories of corporate hedging (value maximization theory and agency theory) shows mixed empirical validation. We intend to test the validity of value-maximising hedging theory in the case of hedge accounting.

The IASB is currently examining the effectiveness of IFRS 9 and hedge accounting. It invites companies and users of financial information to comment on whether the standard has met its objective of providing users with better information about companies' risk management activities. In our study, we examine the impact of hedge accounting for the period from 2016 to 2019, two years before and after the introduction of IFRS 9, to test whether the more flexible requirements of IFRS 9 compared to IAS 39 had any effect on the value attributed by investors.

2.2 Hedge accounting

IAS 39 and IFRS 9 classify financial assets and financial liabilities based on their measurement (at fair value or amortised cost) and based on whether the changes to carrying value (gains and losses) are reported in profit or loss (P&L) or the other comprehensive income (OCI). IFRS 9 emphasises the classification and measurement of financial assets at fair value, with changes in fair value recognised in P&L unless strict criteria for classification and measurement of the asset at either amortised cost or fair value through OCI are met.

Hedge accounting is an optional accounting policy under both IAS 39 and IFRS 9. The objective of hedge accounting is to reflect the results of hedging activities by recognising the effects of the hedging instruments (derivatives) and the hedged risk in P&L or OCI in the same accounting period. Hedge accounting reduces the volatility in P&L (or OCI) that arises when the two items (hedging and hedged) are accounted for separately, *i.e.*, without the application of hedge accounting.

If a hedging instrument is measured at fair value with gains and losses recognised in profit or loss while the hedged item is measured at amortised cost, or if changes in the carrying amount of the hedged item are recognised in OCI, there will be an imbalance in recognition of gains and losses on both items. When hedging and hedged items meet qualifying criteria for hedge accounting their gains and losses can be recognised and offset in P&L (or OCI) in the same accounting period and the volatility in profit or loss from the hedging and hedged items gains or losses will be reduced or eliminated.

Both IAS 39 and IFRS 9 define three types of hedging relationships in hedge accounting: fair value hedge (hedging exposure to changes in fair value that could affect profit or loss), cash flow hedge (hedging exposure to volatility of cash flows) and hedge of net investment in foreign operations. In the case of a fair value hedge, the hedged item (asset or liability) is adjusted for changes in fair value that are attributable to the hedged risk and the fair value changes are recognised in profit or loss together with the changes in fair value of the hedging instrument which is measured at fair value. For the cash flow hedge, if the hedge is effective, changes in the fair value of the hedging instrument are initially recognised in equity and they are reclassified to the P&L in the same period when the hedged transaction affects profit or loss (Glaum and Klöcker, 2011). The ineffective portion of the hedge is recognised in profit or loss.

Similarly, in the case of hedging of net investment in a foreign operation, the effective part of hedging is recognised in equity and the ineffective part in profit or loss. Gain or loss from revaluation of the hedged item that is accumulated in equity is reclassified to profit or loss on the disposal or partial disposal of the foreign operation.

The differences in hedge accounting between IAS 39 and IFRS 9 lie in the qualifying criteria and reporting requirements mainly. IFRS 9 has removed IAS 39's strict requirements for retrospective testing of hedge effectiveness and focuses on prospective assessment of hedge effectiveness based on more flexible principles and allows more hedging relationships to be included in hedge accounting (Müller, 2020).

Firms have a choice to account for financial instruments used for the management of risk exposure as hedging instruments and apply hedge accounting according to IFRS 9 or they can decide to continue to apply hedge accounting in line with IAS 39 or they can apply IAS 39 for a portfolio fair value hedging of the interest rate exposure and IFRS 9 for other hedging instruments. A hedge accounting policy is a voluntary choice of the company's management. They decide which form of risk management policy will be applied and how it will be presented in the financial statements.

According to IFRS 9, *“The objective of hedge accounting is to represent, in the financial statements, the effect of an entity's risk management activities that use financial instruments to manage exposures arising from particular risks that could affect profit or loss (or other comprehensive income...)”* (IFRS 9.6.1.1). Companies that elect to apply hedge accounting following IFRS 9 must meet the criteria for hedge accounting of the IFRS standard. The criteria are eligibility of hedging and hedged items, formal documentation of the hedging relationship at its inception and the effectiveness of the hedging relationship.

If a firm elects not to apply hedge accounting or when its hedging instruments do not qualify for hedge accounting requirements, it will account for financial instruments used for managing risk exposure as trading financial instruments with fair value changes recognised in profit or loss. Costs of implementation of hedge accounting and maintenance of hedging documentation play an important role when firms decide whether to apply hedge accounting or not. The introduction of IFRS 9 brought a partial simplification in the required hedging documentation which could motivate firms to adopt hedge accounting policy. We therefore expect that firms will adopt the hedge accounting in line with IFRS 9 and formulate the following hypothesis:

H1: The introduction of IFRS 9 will motivate companies to adopt hedge accounting.

A review of hedging literature provides evidence of both the positive and negative effects of hedge accounting. Wang and Makar (2019) report that SFAS 133 cash flow hedge accounting provides risk-relevant information to investors. Müller (2020) examined the consequences of cash flow hedge accounting on portfolio earnings and concluded that IAS 39 hedge accounting regulation may lead to higher

volatility of portfolio earnings whereas IFRS 9 hedge accounting leads to less volatility in portfolio earnings. DeMarzo and Duffie (1995) studied the US Generally Accepted Accounting Principles (US GAAP) issued by FASB and argued that while financial hedging improves information about reported corporate earnings, the choice of hedge accounting can also lead to suboptimal hedging strategies if managers' and shareholders' views of disclosure requirements differ. Chen *et al.* (2013) studied the effects of hedge accounting on managerial hedging strategies. They conducted experiments to evaluate how fair value hedge accounting under SFAS 133 affects managerial economic decisions. They found that when the price volatility of the hedged item is higher, fair value hedging leads to suboptimal managerial hedging decisions (*e.g.*, foregoing economically beneficial hedging opportunities). Melumad *et al.* (1999), also investigated hedge accounting under SFAS 133 and argued that the attitude of long-term and short-term shareholders to risk management strategies differ. Long-term shareholders prefer fair value hedge accounting to no hedge accounting, while the preference of short-term shareholders will depend on their attitude towards risk, so hedge accounting will not necessarily lead to higher market value. They also concluded that the accounting method used will have an impact on managerial hedging decisions and consequently on wealth effects for shareholders. Frestad (2018) developed a model that shows that non-financial firms will optimise their hedging strategy and hedge accounting choices to achieve predictable profits under both SFAS 133 and IAS 39 standards. Similar findings were described for IFRS hedge accounting by Panaretou *et al.* (2013), who found that earnings are more predictable under hedge accounting. Pirchegger (2006) analysed firms' incentives for hedging and hedge accounting under both US GAAP and IAS/IFRS and concluded that shareholders prefer hedging to no hedging, while hedge accounting is preferred only in periods with increased differences in risk exposures. In summary, previous empirical research has shown only modest effects of hedge accounting, which may be due to the demanding requirements and qualification criteria of hedge accounting.

We build on previous research on risk management theory and the value relevance of hedge accounting and examine whether the adoption of hedge accounting has a significant impact on the value attributed by investors. The prior empirical research was mainly conducted in US GAAP. Although not certain, we hypothesise that IAS/IFRS hedge accounting could improve investors' understanding of risk management activities and we formulate the following hypothesis:

H2: The use of hedge accounting increases the value relevance of accounting information for investors.

3 Data and Methodology

The sample consists of data on the TOP 100 (by market capitalization) companies whose shares were publicly traded on the Warsaw Stock Exchange over four years from 2016 to 2019. Market data and data from annual reports were used for the analysis. The Warsaw Stock Exchange has been selected because it is the largest capital market in Central and Eastern Europe. Hedging data were hand-collected from annual reports. Firm-level financial data were sourced from the Amadeus database. In line with the previous literature on hedging (Bartram *et al.*, 2011; Graham and Rogers, 2002; Geczy *et al.*, 1997) financial firms were excluded from the sample. After excluding 14 financial firms and 14 firms for which financial statements were not available, the sample consists of panel data with 284 observations

In the empirical tests, the study is inspired by Feltham and Ohlson (1995) and Ohlson (1995) models which incorporate accounting information in the equity valuation. The model of Feltham and Ohlson (1995) includes the market value of equity as the dependent variable and the book value of equity, operating assets, operating earnings and other information as independent variables. In this study hedging information variable is added to the model to identify whether the application of hedge accounting has a significant impact on firm value. Two dummy variables for hedging are included, one for the application of hedge accounting according to IFRS 9 and one for IAS 39. We have also tested the model where a dummy variable for hedge accounting, in general, is added instead of the two hedging variables to eliminate the possible effects of hedgers using the alternative hedging policy from the non-hedging sample.

In the value relevance model in Equation (1), the market value of a company is a function of accounting variables and other factors affecting the firm market value.

$$Market\ Value_{i,t} = f(Accounting\ information, Other\ determinants) + e_{i,t} \quad (1)$$

Dependent variable *Market Value* represents the market capitalisation of a company. Independent variables representing *Accounting information* are variables presented in financial statements (*BV*, *OA*, *OE*) and *Other determinants* are other factors affecting the firm *Market value*. In our model, we include variables indicating whether the company is using hedge accounting or not (*IFRS9*, *IAS39*, *HA*). Due to the possible correlation between book value (*BV*) and operating assets variable (*OA*), we first run the regressions without the *OA* variable and then with the variable included. We test each model for multicollinearity using VIF tests.

The model in Equation (1) is adapted into four sub-models. The purpose of the sub-models is to evaluate the impact of hedge accounting when it is applied in line with IFRS 9 or IAS 39 (Models (1A) and (1C)) and when it is applied in line with any of

the two standards (Model (1B) and (1D)). The dummy variables for hedge accounting (*IFRS9*, *IAS39*, *HA*) are the primary variables of our interest. They indicate whether hedge accounting has any impact on a stock return. A positive coefficient for hedge accounting dummy variables would indicate that hedge accounting information disclosed in the financial statements increases the value relevance of financial statements.

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OE_{i,t} + \beta_3 IFRS9_{i,t} + \beta_4 IAS39_{i,t} + e_{i,t} \quad (1A)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OE_{i,t} + \beta_3 HA_{i,t} + e_{i,t} \quad (1B)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OA_{i,t} + \beta_3 OE_{i,t} + \beta_4 IFRS9_{i,t} + \beta_5 IAS39_{i,t} + e_{i,t} \quad (1C)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OA_{i,t} + \beta_3 OE_{i,t} + \beta_4 HA_{i,t} + e_{i,t} \quad (1D)$$

Our sample consists of a broad range of non-financial firms. To eliminate the effects of industry sectors we add an industry variable (*IND*) to the original model. In line with the hedging literature (Bartram *et al.*, 2011; Gilje and Taillard, 2017; Graham and Rogers, 2002) we have also included leverage (*LEV*) in the extended model to control for the effect of leverage on stock returns. The extended models are:

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OE_{i,t} + \beta_3 IFRS9_{i,t} + \beta_4 IAS39_{i,t} + \beta_5 IAS39_{i,t} + \beta_5 LEV_{i,t} + \beta_6 IND_{i,t} + e_{i,t} \quad (2A)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OE_{i,t} + \beta_3 HA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 IND_{i,t} + e_{i,t} \quad (2B)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OA_{i,t} + \beta_3 OE_{i,t} + \beta_4 IFRS9_{i,t} + \beta_5 IAS39_{i,t} + \beta_6 LEV_{i,t} + \beta_7 IND_{i,t} + e_{i,t} \quad (2C)$$

$$MV_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 OA_{i,t} + \beta_3 OE_{i,t} + \beta_4 HA_{i,t} + \beta_5 LEV_{i,t} + \beta_6 IND_{i,t} + e_{i,t} \quad (2D)$$

A list of all variables included in the models with definitions is presented in Tab. 1. Operating assets in Feltham and Ohlson (1995) are defined as all assets other than net financial assets. Net financial assets represent the difference between “marketable securities” and debt (“bonds payable”). In the analysis, operating assets are defined as total assets net of cash and cash equivalents and other short-term assets. Short-term assets in the Amadeus database contain financial assets and short-term prepayments and accruals which should be included in the operating assets, but the database does not allow to separate these items. The inclusion of these

operating assets is not considered to have a major impact on the test results. Operating liabilities represent short-term liabilities.

Tab. 1 Variables definitions

Variable		Measurement
<i>MV</i>	Market value of equity	Share price multiplied by the number of outstanding shares at the end of year t (in EUR mil.)
<i>BV</i>	Book value of equity	Stockholders' equity at the end of year t (in EUR mil.)
<i>OA</i>	Operating assets	Operating assets net of operating liabilities at the end of year t (in EUR mil.)
<i>OE</i>	Operating earnings	Operating earnings for period $(t-1, t)$ (in EUR mil.)
<i>IFRS9</i>	Hedge accounting IFRS 9	Equals 1 if a firm applied hedge accounting in accordance with IFRS 9 in year t , else 0
<i>IAS39</i>	Hedge accounting IAS 39	equals 1 if a firm applied hedge accounting in accordance with IAS 39 in year t , else 0
<i>HA</i>	Hedge accounting	equals 1 if a firm applied hedge accounting in accordance with either IFRS 9 or IAS 39 in year t , else 0
<i>LEV</i>	Leverage	Total debt divided by total assets
<i>IND</i>	Industry	

Source: Authorial computation.

4 Results and Discussion

4.1 Summary statistics

Tab. 2 provides summary statistics of all variables and compares firms using hedge accounting with firms that do not apply hedge accounting. All firm-year observations are included. Accounting data from consolidated financial statements and the share price data were retrieved from the Amadeus database. All continuous variables are winsorised at the top and bottom 1% level. Our results show that adopters of hedge accounting in our sample report significantly higher market value, book value, operating assets and operating earnings than the non-adopters of hedge accounting. The statistical significance of these results is examined by t -tests for the mean differences. These findings are consistent with previous literature about hedging firms (Bodnar *et al.*, 1995; Ranasinghe *et al.*, 2022).

Tab. 3 presents the results of the correlation analysis with market value and four explanatory variables. Book value of equity (*BV*), operating assets (*OA*) and operating earnings (*OE*) are scaled by market value. There is no significant correlation between the variables, except as expected, the book value of equity is

positively correlated with operating assets. The correlation coefficient of *OA* and *BV* is 0.919. To ensure reliable and solid results, each model was tested for multicollinearity using VIF tests.

Tab. 2 Summary statistics

Variable	<i>n</i>	Mean	Median	<i>SD</i>	Min	Max	
<i>Hedgers</i>							
<i>MV</i>	147	1300.30	456.73	2013.20	67.92	8813.60	
<i>BV</i>	147	1563.50	347.93	2457.10	20.35	9777.90	
<i>OA</i>	148	1883.60	407.62	2895.60	−511.09	11959.00	
<i>OE</i>	147	162.01	47.75	293.31	−291.05	1328.70	
<i>LEV</i>	148	0.47	0.48	0.14	0.22	0.92	
<i>Non-hedgers</i>							
							Diff <i>p</i> (2-tailed)
<i>MV</i>	135	591.97	303.45	866.72	67.92	6297.10	0.000
<i>BV</i>	137	256.08	182.92	354.20	−36.09	2597.90	0.000
<i>OA</i>	140	199.02	122.04	334.11	−511.09	2265.20	0.000
<i>OE</i>	137	35.77	24.92	58.42	−287.72	228.81	0.000
<i>LEV</i>	140	0.52	0.50	0.36	0.06	2.75	0.118

Source: Authorial computation.

Note: The Diff column shows the *p*-value of the *t*-test for equal means of the hedging and non-hedging firms; *MV*, *BV*, *OA*, and *OE* in EUR mil.

Tab. 3 Correlation matrix (years 2016–2019, *n* = 284)

Variable	<i>MV</i>	<i>BV</i> scaled	<i>OA</i> scaled	<i>OE</i> scaled	<i>LEV</i>
<i>MV</i>	1.000	0.008	0.049	0.060	−0.070
<i>BV</i> scaled		1.000	0.919	0.109	−0.160
<i>OA</i> scaled			1.000	0.156	−0.141
<i>OE</i> scaled				1.000	−0.327
<i>LEV</i>					1.000

Source: Authorial computation.

Note: *BV*, *OA*, and *OE* were scaled by *MV*.

Tab. 4 shows the number of companies that changed their hedge accounting policy in 2018 following the introduction of IFRS 9. The first row (before the implementation of IFRS 9 in 2018) shows that from the total sample of 72 firms, 37 were using hedge accounting. The next line shows that after the introduction of the new standard, no new companies chose to use hedge accounting, 24 companies

switched from IAS 39 to hedge accounting policy under IFRS 9 and the remaining 13 companies chose to continue to use hedge accounting under IAS 39.

Our expectation in H1, that the less restrictive requirements of IFRS 9 would encourage companies to use hedge accounting, was only partially met. More than two-thirds of companies have switched from IAS 39 to IFRS 9, but the new standards have not attracted new companies to start using hedge accounting in the first two years after the introduction of the standard.

Tab. 4 Transition matrix

	Non-hedgers	HA IAS 39	HA IFRS 9	HA total
Before implementation of IFRS 9 (year 2017)	35	37	0	37
After implementation of IFRS 9 (years 2018 and 2019)	35	13	24	37

Source: Authorial computation.

Note: In 2018 and 2019, the number of hedge accounting users and non-users was the same.

4.2 Regression analysis

Tab. 5 presents the results of the regression analysis. Firm market value is regressed on dummy variables for hedge accounting and in line with Feltham and Ohlson (1995) also on the book value of equity (*BV*), and operating earnings (*OE*). The models where *OA* was included are not estimated due to identified multicollinearity issues. We present the results of the models where the operating assets variable is excluded (1A, 1B, 2A, 2B).

To eliminate the correlation between market value and the explanatory variables, the explanatory variables (*BV* and *OE*) were scaled by market value. For each model, we compute the pooled OLS model, the fixed effect model with individual effects and the random effects model. Then, a series of tests was run to detect the most suitable model. We perform the *F*-test and Breusch-Pagan LM test to control for the existence of fixed or random effects, and the Hausman test to select between fixed and random effects models if both are superior to the pooled OLS model.

The results show that coefficients on hedging dummies for both hedging policies (IFRS 9 and IAS 39) are positive and statistically significant (p -value < 0.05) in Model 1A. Indicating that the information provided by hedge accounting is valued by investors. There is no significant difference between the two coefficients to suggest that investors value IFRS 9 hedge accounting policy more than IAS 39.

Hedge accounting dummy variables are equal to 1 if the company used a hedge accounting policy in line with IFRS 9 (or IAS 39) and zero if it did not use the IFRS 9 (or IAS 39) hedge accounting policy. To eliminate the effect of “other hedgers”, *i.e.*, the IAS 39 hedgers from a non-hedging sample of IFRS 9, we have also run the regression with a dummy variable for hedge accounting in general, where the dummy variable is equal to 1 if the company used any form of hedge accounting (IAS 39 or IFRS 9) and 0 if it was not using hedge accounting policy at all. The model 1B presents the outputs of regression with the general hedge accounting dummy variable. The coefficient on the general hedge accounting variable is positive, statistically significant (p -value < 0.05), and does not differ from the outputs of the previous model (1A) as well as the coefficients on other explanatory variables.

Tab. 5 Regression results: basic model

	Model 1A	Model 1B
Constant	0.812*** (0.146)	0.812*** (0.145)
<i>IFRS9</i>	0.821** (0.371)	
<i>IAS39</i>	0.823** (0.368)	
<i>HA</i>		0.822** (0.368)
<i>BV</i>	-0.282*** (0.056)	-0.282*** (0.054)
<i>OE</i>	-0.014 (0.069)	-0.014 (0.067)
<i>R</i> ²	4.3%	4.3%

Source: Authorial computation.

Note: * p -value < 0.10 , ** p -value < 0.05 , *** p -value < 0.01 .

The results of Models 1A and 1B show that hedge accounting enhances the value relevance of accounting information and that the transition from IAS 39 to IFRS 9 did not have a significant effect on investors' assessments.

Tab. 6 presents the results from extended Model 2 where leverage (*LEV*) and industry effects (*IND*) were included. The inclusion of control variables for industry effects and financial leverage captured significant company specificities, which was confirmed by a higher R^2 that increased from 4% to 26%. The coefficients on hedging variables are positive and significant (p -value < 0.05) and are consistent with the coefficients identified in the original equation. There is no significant difference between IFRS 9 and IAS 39 hedge accounting effects. The extended

model confirmed our finding that hedge accounting increases firm value and that the investors do not differentiate between IAS 39 and IFRS 9 hedge accounting.

Our empirical evidence supports the hypothesis that hedge accounting policy increases the value relevance of accounting information (H2). Our results are contrary to the findings of Guay (1999) and Guay and Kothari (2003), who find limited or no effect of hedge accounting on firm value. Our results support the findings of Wang and Makar (2019) who found positive effects of cash flow hedge accounting on market-assigned risk premiums. The findings are also consistent with the IASB's expectation for the use of hedge accounting, *i.e.*, to reduce investors' assessment of enterprise risk and the value-maximising theory.

Tab. 6 Regression results: extended model

	Model 2A	Model 2B
Constant	0.544*** (0.145)	0.543*** (0.145)
<i>IFRS9</i>	0.860** (0.415)	
<i>IAS39</i>	0.845** (0.409)	
<i>HA</i>		0.849** (0.410)
<i>BV</i>	−0.320*** (0.073)	−0.318*** (0.071)
<i>OE</i>	−0.033 (0.069)	−0.030 (0.068)
<i>LEV</i>	−0.311** (0.121)	−0.309** (0.120)
Industry effects	Included	Included
No. of observations	282	282
<i>R</i> ²	25.9%	25.9%

Source: Authorial computation.

Note: **p*-value < 0.10, ***p*-value < 0.05, ****p*-value < 0.01.

5 Conclusion

This article aimed to empirically test whether the information on hedging policies is useful in the decision-making process of investors. Our findings could also indicate whether disclosures about hedge effectiveness have an impact on investors and their valuation of the company.

As the process of revising the hedge accounting part of IFRS 9 after its implementation by IASB is imminent, this study could contribute to the research on the impact of the implementation of IFRS 9. The results of the study could also be useful for companies using or considering the use of hedge accounting to assess whether these efforts will have an impact on investor valuations.

A hedge accounting policy was introduced to improve the reporting of a firm's risk management decisions and to enhance the transparency of risk management to the external users of the financial statements. The intention of IASB when introducing the IFRS 9, was to provide adequate tools to companies that would be comprehensible to the financial statements' users. This article examines whether hedge accounting is an important factor in determining a firm's market value.

Empirical analysis was performed on a sample of firms whose shares were traded at the stock exchange to see whether the application of the hedging policy is rewarded also by investors. We have found out that the application of hedge accounting has a positive statistically significant impact on the firm value confirming the value-maximising theory. The simplified reporting requirements of IFRS 9 have motivated companies to adopt the new hedge accounting standard. Two-thirds of the companies under review that were already using hedge accounting switched from IAS 39 to IFRS 9 hedge accounting policy. However, no new companies in our sample chose to use hedge accounting after the much-anticipated change in documentation requirements, increased eligibility of hedged items, and improved disclosure requirements. Our results show that the IASB's expectations were only partially met, the introduction of IFRS 9 did not motivate new companies to adopt hedge accounting but it motivated the existing hedgers to switch to hedge accounting regulation under IFRS 9.

The limitation of the results is due to a possible lack of generalisability, the sample consists of companies traded on the Warsaw Stock Exchange only. Results might differ when analysing other countries or regions. We have selected the Polish market for several reasons; it is the largest stock market in the CEE region, which allowed us to collect data on companies whose shares were traded in the required period before and after the introduction of IFRS 9. Only a limited number of companies are traded on other stock markets in the CEE region. The implications of the study results for other markets may be limited, but they provide some insight into the usefulness of the information provided by hedge accounting and may motivate other companies to consider adopting a hedge accounting policy.

Potential future research should investigate the impact of the individual hedge accounting methods (cash flow hedge accounting, fair value hedge accounting and hedges of net investment in foreign operations). Other regression models could be examined. For example, Wang and Makar (2019) examine the impact of cash flow

hedge accounting on currency risk for a sample of U.S. companies and find that the market attributes lower risk premia to companies that use cash flow hedge accounting under SFAS no. 133. A similar study could be carried out for companies reporting under IFRS.

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