MARKET REACTION TO MANDATORY IFRS ADOPTION: EVIDENCE FROM POLAND

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ABSTRACT

This article analyses the effects of mandatory International Financial Reporting Standards adoption in Poland. Our aim is to determine how market participants reacted to the new accounting standards on the year of the adoption and whether their behavior changed afterwards. We examine abnormal returns around annual consolidated report publication, and the value relevance of earnings. Event studies show that annual report publication does not produce unexpected information either before, on, or after the adoption. Value relevance estimations produce consistent earnings coefficients for the unexpected earnings model for adopters and non-adopters. Interestingly, IFRS adopters are valued higher before the adoption, but not afterwards. The paper contributes a comprehensive methodology for market reaction studies and offers a range of possible extensions.

⚷   *IFRS, event study, value relevance, accounting regulation*

INTRODUCTION

The endorsement of the International Financial Reporting Standards (hereafter IFRS) by all member states of the European Union is an important step towards the creation of a common capital market for all market participants. However, the reaction of market participants to the harmonization of financial reporting regulation is not uniform across the continent. For example, Armstrong *et al*. (2010) show that markets in continental Europe did not react positively to news of IFRS becoming mandatory, which may be a result of a significant divergence between their national standards and IFRS (Ding *et al*., 2006). Member states, while united, vary in terms of economic structures and institutions, culture and history, which affect the way market participants behave under the common

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standard. This paper contributes to the literature on the effects of IFRS adoption by providing empirical evidence of the market reaction to the adoption in Poland.

Poland, like other transition economies, offers a particularly interesting, yet challenging setting for accounting studies. The defining characteristic of these countries is a quick pace of change in accounting regulation and practice. In the case of Poland, it took only fifteen years to develop accounting from output-oriented communist accounting models to the adoption of IFRS. Moreover, these changes take place in a dynamic economic and institutional context, both of which are discussed in this paper. The challenges in analyzing accounting phenomena in transition economies stem from limited coverage in international financial databases, a short time-span of observations, and concerns of market inefficiency. To mitigate the first problem we obtain data from local data providers. Second, we provide evidence of weak-form market efficiency and then develop the methodology of value relevance studies to take into account potential inefficiencies of the market and rapid changes in market returns.

To identify the impact of IFRS on the valuation of Polish companies we carry out two sets of empirical studies. First, we employ event studies to measure price movements around the publication of annual financial statements. We show that there is no evidence of abnormal returns either before, on, or after the adoption of the IFRS. Then, we carry out value relevance regressions on a panel of annual financial statement data of companies listed at the Warsaw Stock Exchange over the period from 2000 to 2008. The tests are designed to identify changes in earnings coefficients that may result from the IFRS adoption. We find that the unexpected earnings model produces consistent earnings coefficients across the sample. The estimations indicate that IFRS adopters were valued higher before the adoption, but not afterwards. Further, we identify a significant effect of fundamental factors on the valuation of Polish companies, a factor which has not been taken into account in previous research.

The rest of the paper is organized as follows. We begin with an analysis of the underlying theory to develop our hypotheses. Then, we briefly describe the economic background and the development of accounting in Poland in the years preceding the IFRS adoption and immediately afterwards, as well as the market efficiency of the Warsaw Stock Exchange. Next, in the empirical section, we employ event study and value relevance methodologies to measure the market effects of the IFRS adoption. We discuss the implications of these results in the conclusion and suggest further research questions.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Since the adoption of the IFRS brings changes in a large number of accounting practices, its effect is a composite of many country-specific factors including the properties of the national accounting law, of the accounting profession, and institutional factors (Ding *et al.*, 2006). Moreover, it is not clear as to what effects researchers need to examine. In the preamble to regulation 1606/2002, which introduces the process for IFRS endorsement and adoption in the European Union, the lawmakers stress the role of IFRS in ensuring „a high level of transparency and comparability of financial reporting". The IFRS themselves are referred to as „a set of high quality" standards, while the mandatory adoption of IFRS is presented as a contribution to the „efficient and cost-effective functioning of the capital market", reinforcing freedom of movement of capital in the EU and strengthening the competitive position of European companies in the global financial market (European Council & European Parliament, 2002). Thus, the regulation echoes the terms quality, transparency and comparability from the IASB Framework for the Preparation and Presentation of Financial Statements. These properties of financial statements are examined directly in post-adoption reports (ICAEW & Financial Reporting Council, 2007; Ineum Consulting, 2008).

Academic literature explores the effects of adoption on the presentation of financial statements (Iatridis, 2010), accounting practices (Cormier *et al.*, 2009), the properties of accounting numbers (Ball *et al.*, 2003; Jeanjean & Stolowy 2008; Morais & Curto 2008), financial ratios (Lantto & Sahlström, 2009), market reaction (Daske & Gebhardt, 2006; Armstrong *et al.*, 2010) and market valuation (Aharony *et al.*, 2010). In general, studies find that the IFRS cause significant changes in accounting amounts, their properties and correlation coefficients with market prices. Valuation studies show, that IFRS accounting numbers tend to better reflect underlying, value-relevant economic factors (Beckman *et al.*, 2007; Iatridis, 2010). However, there is no evidence to suggest that IFRS statements convey new information, which was not available to the market before adoption.

Researchers have found that the effects of IFRS adoption are modified by factors that are specific to the country and to individual firms. Country-specific factors include the development of accounting law and its proximity to the IFRS, prevailing legal and economic institutions (Ding *et al.*, 2006). For example, there is evidence of increased earnings management in France and Germany (Jeanjean & Stolowy, 2008; Paananen & Henghsiu Lin, 2009), but not in the UK or Portugal (Morais & Curto, 2008; Iatridis, 2010). Ball *et al.* (2003) show that even in countries where accounting law is relatively similar to IFRS incentive structures may cause properties of accounting numbers to be more similar to countries with macro-uniform accounting traditions. Firm-specific factors include quality of accounting before adoption, the degree to which the IFRS fits the company's reporting needs, ownership structure and information asymmetry (Daske &

Gebhardt, 2006; ICAEW & Financial Reporting Council, 2007; Armstrong *et al.*, 2010).

In this study, we focus on the relationship between accounting numbers and market valuation of company stock in Poland within the framework of positive accounting theory (Watts & Zimmerman, 1986; Jeanjean & Ramirez, 2009). This theory relies on the efficient market hypothesis, which predicts that if accounting numbers convey new information to market participants, such information will cause movements in market prices, provided it is relevant for valuation. On the other hand, accounting numbers may reflect valuation relevant economic factors which are already known to market participants. We would then expect to see no price movements at the time of the release of accounting numbers, but the accounting numbers would nevertheless be correlated with market values. Consequently, we test the following hypotheses regarding the Warsaw Stock Exchange and companies listed at that stock exchange:

> *Hypothesis 1: The publication of the first IFRS-based annual financial statements in 2005 did not convey new information to the market.*

> *Hypothesis 2: IFRS-based accounting numbers are correlated with market values of companies to a similar degree as Polish GAAP accounting numbers.*

Hypothesis 1 is tested with event study methodology, which identifies abnormal movements in market prices of company shares around the time of accounting statement publication. Such price movements can be interpreted as evidence of market reaction to the new information. Hence, if we find abnormal price movements at the time of the publication of the first IFRS statements, we will be able to reject hypothesis 1 in favor of the alternative hypothesis: IFRS statements convey new information to the market. Hypothesis 2 is tested with an association study of an accounting-based valuation model and market prices. If we find that the correlation coefficients differ significantly between IFRS and Polish GAAP reports, we will be able to reject hypothesis 2 in favor of the alternative hypothesis: IFRS-based accounting numbers are correlated to a higher or lower degree with market values.

## 2. ECONOMIC AND INSTITUTIONAL BACKGROUND

The main feature of the Polish financial market and accounting regulation is dynamism, as described by Dobija and Klimczak (2010). Poland began its transition to a market economy in 1989. The Warsaw Stock Exchange was established in 1991 with only 9 companies, but by the year 2000 this number increased to 225, and it reached 374 in 2008. In 2007, the exchange created an

alternative market, where as many as 84 companies were listed a year later. The first Accounting Act was passed in 1994; it was highly conservative, and leaned towards tax accounting. Then, a new act was passed in 2000, with amendments made to almost all articles of the previous act. Among other significant changes, the new act introduced the substance over form principle, and fair value accounting. In a 2001 study, Polish accounting was found to be much closer to the IFRS than other countries in the region (Ding *et al.*, 2009). The study found that relatively few rules were divergent, with more rules missing from the national regulation, but the law allowed Polish companies to use the IFRS in such instances. Finally, since 2005, stock listed companies have been required to publish their consolidated accounts according to IFRS. Companies which plan to apply for listing in foreign markets or are part of a capital group can report under IFRS if they choose to.

The dynamic development of financial markets mirrored the economic development. Following the depression of the early and mid-90s, the Polish economy began a rapid climb upwards. Figure 1 shows the history and forecasts of real gross domestic product and its components in fixed 2005 prices. The Polish economy doubled its output over the twenty years of transition. GDP increased every year past 1994 at an average rate of 4.85% per annum, but there were periods of higher growth between 1994 and 1998, and then from 2004 to 2008. The second period coincides with accession to the European Union and the adoption of IFRS. This recent increase in GDP appears to be fuelled in particular by a rapid growth in investment and exports. Investments increased by above 5 percent in 2004 and 2005, compared to decreases in previous years, and then continued to increase by 14% in 2006 and 19% in 2007. Exports increased by 14-15% per year as compared to 3-5% two years earlier.

It should not come as a surprise that the economic expansion of 2003-2008 is reflected in corporate earnings and stock valuations. After a period of stagnation, the Polish stock market index WIG grew rapidly starting in 2003, to collapse in the autumn of 2008 in the wake of the sub-prime crisis. While this may have been a stock market bubble, fundamental data supports higher valuation of corporate stock at the beginning of this period as companies were expected to profit from joining the European Union. When Poland ratified the accession treaty in 2003 the stock index WIG increased by 40% in half a year. Within our sample corporate profitability began to increase in 2002, reached a peak in 2005 and then declined. Thus, there were reasons for higher valuation, but the stock market seems to have responded with a lag: the stock market continued to climb even after corporate returns started declining. This may be attributed to market inefficiency or to an overwhelming impact of expected future growth in earnings on market values of stocks.

Figure 1. **Economic indicators for Poland 1989-2008 and forecast until 2012 in constant 2005 prices (billion PLN)**
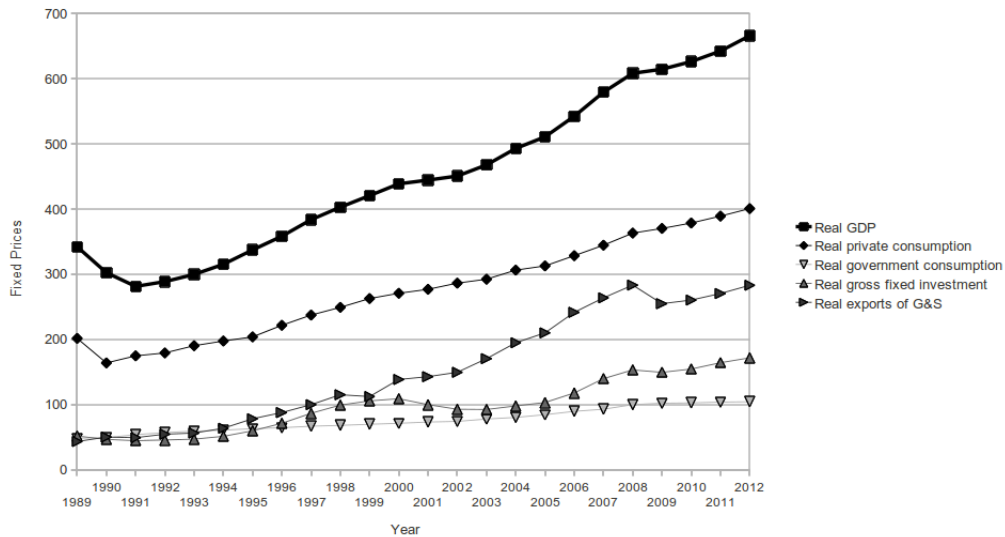
(Source: OECD)

2.1. Market efficiency

Concerns of inefficiency are often raised in interpreting results of value relevance studies in emerging and transition economies (Abdel-Khalik *et al.*, 1999; Aboody *et al.*, 2002; Hellström, 2009; Filip & Raffournier, 2010). In the previous section we mentioned that the Polish stock market seems to have been lagging in its pricing of future earnings. One reason for this may be that at the time these earnings were highly uncertain. Another reason may be that the market does not efficiently price information. While there are no reasons to believe that the Polish market is subject to official or illicit control by influential individuals, the Warsaw Stock Exchange is a young and relatively small market. Therefore, we need to address the question of market efficiency before we proceed to testing our hypotheses.

To answer the question of market efficiency we refer to a body of previous research, which shows that the Warsaw Stock Exchange is at least weak-form efficient since the year 2000 when our sample begins. An early study found that the Warsaw Stock Exchange was inefficient and official intervention in the pricing of shares was common (Gordon & Rittenberg, 1995). However, market efficiency was then found to steadily increase (Letza *et al.*, 1998). Szyszka (2003) finds that the market promptly responded to stock splits and stock purchase announcements,

but he also finds delayed responses to quarterly results announcements and earnings forecasts adjustments. Kompa and Matuszewska-Janicka (2009) studied the 2000-2006 period to find that the daily index returns generally followed a random walk with the exception of the strong bull market period of 2003-2006. Dobija and Klimczak (2010) tested market efficiency from 1997 to 2009 for monthly, weekly and daily returns. They find evidence of weak-form efficiency, with the exception of 1997-1999 for weekly returns and 2000-2004 for daily returns.

2.2. Impact of IFRS adoption on reported accounting numbers

Companies that underwent the mandatory transition to IFRS in 2005 were required to publish a reconciliation for the reporting year of 2004 (under IFRS 1). This provided Jaruga *et al.* (2007) with data for analysis of the impact of the new standards on reported accounting numbers in Poland. Their study shows that IFRS adoption caused increases in book value of equity by a factor of 10% and more in a third of the sample (up to 100% in one case), while few companies reported negative changes. There were also significant effects on earnings, but with both signs and by a much lower factor. In particular, the adoption of IFRS caused significant changes in the accounting treatment of events in the following areas:

1. property, plant and equipment valuation,
2. recognition of certain lease contracts,
3. reclassification of investment property as a result of different definition,
4. de-recognition of negative goodwill and changes in amortization of goodwill,
5. decrease in earnings caused by de-recognition of future earnings under long-term contracts,
6. decrease in earnings caused by recognition of share-based payments as expenses,
7. new accounting rules for financial instruments in companies that were allowed not to comply with IFRS-based regulation before,
8. accounting for business combinations.

We verify the conclusions of the Jaruga *et al.* (2007) study within our sample, in which 67 companies published IFRS reconciliations for the financial year 2004. We pair IFRS reconciliations with original 2004 reports under Polish GAAP. We then calculate changes and scale them by previous year items (for flow items) or total assets (for balance sheet items) to obtain comparable figures. The comparison of original statements and IFRS restatements generally supports the findings of the previous study (*Table 1*). Restatements affected mostly balance sheet items, especially tangible fixed assets and investments. While they did affect earnings, the effects were less pronounced. For the median firm there was no significant change in revenue, operating profit or earnings, while quartiles ranged from a decrease of about 0.3% to an increase of 0.66%. Even in extreme cases net earnings did not change by more than 12%.

Table 1. **Descriptive statistics of changes in major items after IFRS adoption (N=67)**

	Min	Q1	Median	Q3	Max	Mean	St. Dev.
Panel A: Percent change over original GAAP statement							
Revenue	-121.27%	-0.10%	0.00%	0.00%	38.39%	-1.40%	17.87%
Operating Profit	-6.07%	-0.52%	0.00%	0.60%	17.91%	0.97%	4.20%
EBT	-26.94%	-0.28%	0.00%	0.75%	16.22%	0.43%	4.90%
Net Earnings	-6.18%	-0.26%	0.00%	0.66%	12.80%	0.42%	2.83%
Net Cash Flows	-7.34%	-0.15%	0.00%	0.00%	42.50%	1.30%	7.64%
Cash Flows from Operations	-12.39%	-0.18%	0.00%	0.36%	47.23%	1.35%	8.42%
Cash Flows from Investing	-11.10%	-0.14%	0.00%	0.01%	12.31%	-0.37%	2.92%
Cash Flows from Financing	-10.65%	0.00%	0.00%	0.22%	14.02%	0.24%	2.79%
Panel B: Change over original GAAP statement as fraction of original total assets							
Intangible Assets	-46.02%	0.00%	0.05%	0.98%	13.84%	0.51%	6.52%
Goodwill	-1.34%	0.00%	0.00%	0.00%	0.00%	-0.12%	0.36%
PPE	-31.33%	-0.00%	0.50%	3.88%	90.05%	6.15%	17.39%
Long-term financial investments	-44.26%	-4.76%	-1.06%	-0.03%	0.00%	-4.81%	8.88%
Receivables	-76.94%	-0.65%	0.00%	0.83%	35.65%	-1.16%	12.10%
Short-term Financial Investments	-42.94%	-14.245%	-8.51%	-4.49%	-0.29%	-11.04%	10.15%
Cash and Equivalents	-35.79%	-9.48%	-5.63%	-2.44%	-0.20%	-7.88%	7.95%
Total Assets	-51.17%	-0.85%	0.21%	3.60%	63.57%	3.72%	14.50%
Total Equity	-50.22%	-0.22%	0.66%	4.96%	51.47%	3.51%	13.18%
Revaluation Reserve	-15.43%	-2.00%	-0.17%	0.00%	0.94%	-2.24%	4.13%
Provisions	-16.71%	-4.46%	-1.74%	-0.59%	5.95%	-2.73%	3.68%
Total Liabilities	-10.86%	-1.17%	0.00%	0.72%	15.67%	0.44%	3.62%
Long-term liabilities	-3.34%	0.24%	1.22%	4.60%	31.11%	3.88%	6.50%
Short-term Liabilities	-9.04%	0.12%	1.04%	2.84%	18.57%	2.15%	4.24%
Note: Data from 2004 annual statements and restatements published in 2005 for the year 2004. In Panel A figures are calculated as percent change over original statement. In Panel B figures are calculated as IFRS value less original Polish GAAP value and scaled by total assets.							

3. MARKET REACTION TO REPORT PUBLICATION

To find out how investors react to financial statement publication we carry out event studies and test for the magnitude of abnormal returns around statement publication dates. We use a random sample of 32 companies over a period from 2004 to 2006, that is one year before the adoption, on the year of the adoption, and

one year later. The reason for use of a random sample is a practical one: data on announcement dates is not available in corporate databases and needed to be collected manually. Companies were drawn randomly from the population of mandatory IFRS adopters and non-adopters. Observations for three companies (Budimex, Paged and Rafako) were subsequently dropped because they exhibited unusual abnormal returns in all periods. We obtained data on stock quotes from a local data vendor, stooq.pl.

We calculate abnormal returns on the basis of a standard market model (Loderer & Mauer, 1992). For each event we perform regressions of the return on the market index (WIG) on the return of each stock over the period of 20 to 270 sessions before the announcement. The model is then used to estimate the expected return over specific window periods around the publication date. Afterwards we subtract the expected return from actual return to obtain the abnormal return (in excess of expectations). These abnormal returns are summed (cumulated) over the window period into cumulated abnormal returns. Then, we standardize returns to comparative figures following the methodology of Loderer and Mauer (1992). Finally, we sum the cumulated standardized abnormal returns across the sample (or sub-sample) and standardize them following the same methodology. Results are presented in *Table 2*, grouped by fiscal year and reporting standard.

Table 2. **Abnormal returns around annual financial statement publication by statement year and reporting standard**

	IFRS				Polish GAAP			
	N	Z-stat	P(Z)		N	Z-stat	P(Z)	
Annual financial statement releases for the year 2004								
W20_5					19	0.72	0.47	
W15_5					19	1.17	0.24	
W10_5					22	1.04	0.30	
W5_5					22	1.22	0.22	
W20_1					20	0.47	0.64	
W15_1					20	0.79	0.43	
W10_1					23	1.07	0.29	
W5_1					23	1.22	0.22	
Annual financial statement releases for the year 2005								
W20_5	16	-0.53	0.60		12	0.11	0.91	
W15_5	16	-0.61	0.54		12	0.31	0.75	
W10_5	16	-1.21	0.22		12	0.71	0.48	
W5_5	16	-0.35	0.73		12	2.00	0.05	***
W20_1	16	-0.73	0.46		12	-1.11	0.27	
W15_1	16	-0.86	0.39		12	-1.05	0.29	
W10_1	16	-1.62	0.11		12	-0.85	0.40	
W5_1	16	-0.72	0.47		12	0.33	0.74	

	IFRS				Polish GAAP			
	N	Z-stat	P(Z)		N	Z-stat	P(Z)	
Annual financial statement releases for the year 2006								
W20_5	19	-1.78	0.07	**	10	0.45	0.65	
W15_5	19	-1.58	0.11		10	0.11	0.91	
W10_5	19	-0.80	0.42		10	-1.06	0.29	
W5_5	19	-1.18	0.24		10	-0.83	0.41	
W20_1	19	-1.65	0.10	**	10	0.62	0.53	
W15_1	19	-1.42	0.15		10	0.26	0.79	
W10_1	19	-0.53	0.60		10	-1.05	0.29	
W5_1	19	-0.96	0.33		10	-0.82	0.41	
Note: Z-values are normally distributed (0,1) cumulated standardized abnormal returns over different windows (e.g. W20_5 denotes a window from -20 sessions before event to +5 sessions after event). Significance codes: 0 '***' 0.01 '**' 0.05 '*' 0.01. Source: author's own calculations in R statistical package.								

As *Table 2* indicates, cumulated standardized abnormal returns are not significantly different from zero in most cases. One year before the IFRS adoption no abnormal returns are detected. On the year of the adoption we find only one case of significant abnormal returns: for statements under Polish GAAP from five sessions before the release, to five sessions after the release. Importantly, we detect no significant abnormal returns in any of the event windows for IFRS reporting companies. We do find evidence of abnormal returns for IFRS reports for the year 2006. However, these are found only in the longest windows (starting 20 sessions before the release). Thus, results show that the publication of annual financial statements does not tend to cause abnormal price movements regardless of the reporting standard.

4. VALUE RELEVANCE OF ACCOUNTING NUMBERS

The second type of market effects that we consider is the relationship between accounting earnings and stock prices. We use two models from recently published papers. First, we use the unexpected returns model presented by Dobija and Klimczak (2010) in their study of the development of accounting in the Polish market. Second, we use the long-standing returns model (Easton & Harris, 1991) employed by Filip and Raffournier (2010) in their study of the Romanian market. Finally, as a robustness check, we use earnings yield from the second model as a proxy for unexpected earnings and regress it on realized stock returns.

4.1. Data

We carry out the value relevance estimations on a panel of 582 year-firm observations of Polish companies listed at the Warsaw Stock Exchange. The panel

consists of annual report data and stock prices over the period from 2000 to 2008: five years of data before IFRS adoption and four years since then. Company fundamental data was obtained from a regional data provider, Notoria Serwis, and historical stock quotes were obtained from an online service stooq.pl. The companies are assigned two sector labels, manufacturing and services, which split the sample into two equal groups which are later used as control variables. Banks, financial intermediaries and insurers are not included in the sample, nor are voluntary IFRS adopters. *Table 3* presents the composition of the sample.

All companies in the sample close their books on December 31st, which allows us to use the same month for sampling stock prices and calculating annual returns. Since our main unit of sampling is a fiscal year, we smooth short-term variations in prices by using average monthly close prices rather than end-of-month prices. Following the suggestion by Filip and Raffournier (2010), we tested the months from October before fiscal-year-end to the following March and determined that value relevance models produce the strongest estimates when average prices of January are used. We screened the annual report data, removing companies with negative book value of equity or negative earnings (Papadaki & Siougle, 2007; Filip & Raffournier, 2010). Further, we removed outliers by dropping observations from the bottom and top five percentiles in the distribution of stock returns, return on equity and Cook's distance the from full sample estimation of our models. This procedure reduced the sample size by 159 observations, but improved the standard errors of coefficient estimates.

Table 3. **Sample composition**

		Year								
		2000	2001	2002	2003	2004	2005	2006	2007	2008
IFRS reports										
	Manufacturing						19	28	36	39
	Services						18	28	42	57
	Subtotal						37	56	78	96
Polish GAAP reports										
	Manufacturing	21	15	22	32	37	22	20	19	16
	Services	23	16	24	28	31	10	15	13	16
	Subtotal	44	31	46	60	68	32	35	32	32
Whole sample										
	Manufacturing	21	15	22	32	37	41	48	55	55
	Services	23	16	24	28	31	28	43	55	73
	Total	44	31	46	60	68	69	91	110	128
Note: Financial companies are not included in the sample. Companies are assigned sector labels according to their European classification code (Manufacturing below code 38, Services above code 38).										

Table 4 shows the descriptive statistics of the sample after the adjustments listed above. The statistics are grouped by period to illustrate changes in variables after IFRS adoption in comparison with the pre-adoption period. In the following section we present separate estimations for the two periods. We also split the sample into mandatory adopters and non-adopters, which are assigned dummy variables, as described in the next section. Descriptive statistics show that IFRS adopters tend to be larger than non-adopters, a consequence of adoption being mandatory in Poland only for consolidated statements of capital groups.

Table 4. **Descriptive statistics**

	N	Minimum	Q1	Median	Q3	Maximum	Mean	Std.Dev.
Before adoption								
R	90	-0.1458	-0.0328	0.0285	0.0977	0.2679	0.0374	0.0921
UR	48	-53.4857	-11.2919	-5.7226	-1.3504	100.0046	-5.5740	18.9936
EYBV	88	0.0113	0.0680	0.1306	0.2278	2.2075	0.2425	0.3822
UEYBV	47	-63.9006	-4.5473	-1.4295	0.6477	105.2374	-0.0221	20.6860
EPS/P	90	0.0075	0.1061	0.3675	1.0683	9.3887	1.0182	1.8685
ΔEPS/P	90	-2.6787	-0.0037	0.0992	0.5870	6.2770	0.4638	1.2445
MTBV	90	0.0102	0.1190	0.4673	1.4280	25.2518	1.5812	3.7163
Revenue	90	13600	111053	222917	597070	1.23e+07	1067754	2423330
After adoption								
R	237	-0.2211	-0.1105	-0.0357	0.0604	0.2450	-0.0251	0.1130
UR	202	-32.5364	-1.1877	1.3853	10.3414	249.9062	8.2830	26.0079
EYBV	235	0.0001	0.0478	0.1045	0.2101	4.0263	0.1808	0.3564
UEYBV	200	-79.1928	-2.2550	0.2106	7.5790	226.5542	5.9609	25.8191
EPS/P	237	0.0000	0.0155	0.1007	0.4464	6.3109	0.3830	0.7623
ΔEPS/P	237	-15.2868	-0.0492	-0.0006	0.0667	4.7017	-0.1506	1.5003
MTBV	237	0.0057	0.2330	0.8745	2.7725	2027.6500	14.7743	133.0439
Revenue	237	517	117191	325587	929178	1.84e+07	1184338	2849700
Non-adopters 2000-2004								
R	136	-0.2033	-0.0369	0.0095	0.0897	0.2372	0.0234	0.0893
UR	74	-95.4066	-11.3331	-3.8313	0.9926	45.9777	-7.3012	23.4473
EYBV	136	0.0024	0.0313	0.0812	0.1907	1.2333	0.1437	0.1794
UEYBV	74	-69.3276	-7.5544	-0.9540	2.8706	54.9028	-2.2335	17.7097
EPS/P	136	0.0011	0.0341	0.1564	0.9231	11.8009	1.0589	2.0733
ΔEPS/P	136	-14.1889	-0.0524	0.0201	0.2264	19.1044	0.1870	2.5145
MTBV	136	0.0024	0.0947	0.4059	1.2919	58.5225	2.6688	7.0691
Revenue	136	3699	66626	154605	394089	1645419	312578	379074
Non-adopters 2005-2008								
R	119	-0.2212	-0.1063	-0.0101	0.0690	0.2142	-0.0115	0.1108
UR	63	-26.7096	-0.1496	0.2891	4.4098	282.8901	18.4296	49.4475
EYBV	117	0.0009	0.0692	0.1598	0.3121	4.0000	0.3588	0.6406

	N	Minimum	Q1	Median	Q3	Maximum	Mean	Std.Dev.
UEYBV	63	-69.7011	-1.1631	0.0000	3.0020	253.1675	12.6803	46.6688
EPS/P	119	0.0005	0.0171	0.0746	0.2584	8.4672	0.5502	1.3321
ΔEPS/P	119	-31.6806	-0.0256	0.0032	0.0695	30.7114	0.0277	4.1615
MTBV	119	0.0036	0.3472	1.7399	8.3921	755.2813	16.4457	72.9059
Revenue	119	3547	22377	77983	218983	1700854	203194	349836
Whole sample								
R	582	-0.2212	-0.0715	-0.0050	0.0696	0.2679	-0.0014	0.1070
UR	387	-95.4066	-3.9284	0.0000	6.1207	282.8901	5.2361	31.1574
EYBV	576	0.0001	0.0539	0.1069	0.2278	4.0263	0.2176	0.4125
UEYBV	384	-79.1928	-3.4004	0.0000	5.3412	253.1675	4.7519	28.8694
EPS/P	582	0.0000	0.0273	0.1257	0.5681	11.8009	0.6733	1.4902
ΔEPS/P	582	-31.6806	-0.0324	0.0055	0.1384	30.7114	0.0598	2.4870
MTBV	582	0.0024	0.1987	0.7464	2.6852	2027.6500	10.2471	91.2387
Revenue	582	517	73610	202697	515347	1.84e+07	761988	2110672

Variable codes: R – total annual stock return over average January stock prices including dividends, UR – unexpected total annual stock return, EYBV – earnings scaled by beginning-of-period book value of equity, UEYBV – unexpected EYBV, EPS/P – earnings per share scaled by beginning-of-period stock price, ΔEPS/P – annual change in EPS scaled by beginning-of-period stock price, MTBV – market to book value of equity calculated for average stock price in January following fiscal-year-end, Revenue – net revenues from sales. The number of observations for variables UR and UEYBV is lower, because a number of companies was dropped during the estimation of these variables.

4.2. Methodology

The first model used in this study is the unexpected returns model. It rests on the assumption, derived from the efficient market hypothesis and event study methodology, that earnings have an impact on returns only if they deviate from expectations. Dobija and Klimczak (2010) present a model in which unexpected returns are measured with residuals from a market model. Unexpected earnings yield is proxied with residuals from a regression of the annual mean of earnings yield in the sample on each firm's earnings yield. As a result, the model assumes that investors expect each firm to follow the market in a consistent way, both in terms of stock returns and earnings. The model takes the following form:

(1) $$UR_{it} = \alpha_0 + \alpha_1 UEYBV_{it} + \varepsilon_{1it},$$

where UR_{it} is the residual from a market model of firm i in year t, and $UEYBV_{it}$ is the unexpected earnings yield (earnings divided by beginning-of-period book value of equity).

The return model is commonly used in value relevance studies (Easton & Harris, 1991; Hellström, 2006; Filip & Raffournier, 2010). The model takes the following form:

(2) $$R_{it} = \beta_0 + \beta_1 EPS_{it}/P_{i,t-1} + \beta_2 \Delta EPS_{it}/P_{i,t-1} + \varepsilon_{2it},$$

where R_{it} represents total stock return for firm i in year t, $EPS_{it}/P_{i,t-1}$ and $\Delta EPS_{it}/P_{i,t-1}$ are respectively earnings per share and the annual change in earnings per share scaled by beginning-of- period share price.

The last model is a compromise between the two approaches. It assumes that the realized stock return R_{it} depends on unexpected earnings, but the unexpected earnings are proxied with the change in earnings-per-share ($\Delta EPS_{it}/P_{i,t-1}$), rather than with an expectations process as in the case of model (1). That is, the model assumes that earnings are expected to stay constant. The model takes the following form, which uses the same variables as model (2):

(3) $$R_{it} = \gamma_0 + \gamma_1 \Delta EPS_{it}/P_{i,t-1} + \varepsilon_{3it},$$

Following Dobija and Klimczak (2010), we measure the impact of IFRS adoption with coefficient estimates on earnings variables multiplied by a dummy variable for IFRS adopters. The variable takes value one if the company is a mandatory IFRS adopter, and zero otherwise. For the pre-adoption period (2000-2004) we assign value of one to companies which adopt IFRS in the year 2005. In the post-adoption period we assign value of one to companies which file an IFRS-based report in a given year. That is, companies that adopt later than 2005 are assigned value of one on the year of adoption.

The final formulations of the models are as follows:

(4) $$UR_{it} = \alpha_0 + \alpha_{11} UEYBV_{it} + \alpha_{12}(IFRS_{it} * UEYBV_{it}) + \varepsilon_{4it},$$

(5) $$R_{it} = \beta_0 + \beta_{11} EPS_{it}/P_{i,t-1} + \beta_{12}(IFRS_{it} * EPS_{it}/P_{i,t-1}) + \beta_{21} \Delta EPS_{it}/P_{i,t-1} + \beta_{22}(IFRS_{it} * \Delta EPS_{it}/P_{i,t-1}) + \varepsilon_{5it},$$

(6) $$R_{it} = \gamma_0 + \gamma_{11} \Delta EPS_{it}/P_{i,t-1} + \gamma_{12}(IFRS_{it} * \Delta EPS_{it}/P_{i,t-1}) + \varepsilon_{6it},$$

The effect of IFRS adoption can be deemed significant if the coefficient estimate on an earnings variable multiplied by the dummy (α_{12} in model (4), β_{12} and β_{22} in model (5) or γ_{12} in model (6)) in the post-adoption period is statistically significant and different from estimates in the pre-adoption period. This would imply that the coefficient on the earnings variable is different for IFRS companies and non-IFRS companies. The composite coefficient for IFRS companies can be calculated by

adding together the coefficient estimates on the base earnings variable and the variable multiplied by the dummy (e.g. α_{11} and α_{12} in model (4)).

We develop these empirical methods further by making two significant adjustments: we use a panel data estimator with robust standard errors, and we carry out the estimations separately for the pre-adoption period and the post-adoption period. The first improvement strengthens the calculation of standard errors and, consequently, the assessment of coefficient estimates. We use the fixed effects estimator, because the valuation models used in this study explain the changes in market return over time, rather than across the sample. The coefficients estimated with the fixed effects estimator represent averages of firm-specific coefficients, and the standard errors measure the homogeneity of the coefficients across the sample.

The second improvement is designed to tackle the problem of sample selection bias. Companies which adopted IFRS are usually larger, more mature and diversified than companies which did not have to adopt the IFRS. As a result, comparisons of IFRS adopters with non-adopters are not meaningful. We approach this problem by splitting the sample into two periods at the adoption year and then within each period distinguish between mandatory IFRS adopters (future or present) and non-adopters. As a result, IFRS dummies, described above, are present in both estimations. However, in the pre-adoption period they denote companies that will adopt the IFRS in 2005, while in the post-adoption period they denote companies that have already adopted the IFRS in 2005 or later.

We also take into account the fact that the earnings coefficients may vary across our sample for other firm-specific reasons. To mitigate this problem we introduce two more dummy variables in a manner similar to that for IFRS adopters: a size variable and a sector variable. We assign the size dummy variable a value of one if the company is in the top quartile of the distribution of revenues from sale. We tested a similar dummy for the bottom quartile of the distribution, but found it insignificant. The sector dummy variable takes a value of one if the company belongs to the broadly defined manufacturing sector.

Finally, we include additive dummy variables for the boom and bust years, to remove the influence of time-specific factors that are common to the market as a whole. The boom variable is assigned a value of one for all observations for the fiscal years 2003 and 2005, while the bust variable is assigned a value of one for all observations for the fiscal year 2007. The addition of the 2005 dummy is particularly important: that year was characterized by unusually high returns across the sample. Without the dummy variable, this effect could be mistakenly attributed to the IFRS adoption.

4.3. Results

The unexpected earnings model produces the most consistent results (*Table 5*). Unexpected returns increase on average by 0.77 percentage points for every percentage point of unexpected earnings yield both in the pre-adoption period and after the adoption (the 95% confidence intervals are 0.52-1.0 and 0.63-0.91 respectively). Future IFRS adopters are valued higher, relative to their unexpected earnings, in the pre-adoption period. The premium they receive is 0.41 for every percentage point of unexpected earnings (although the standard error of this estimate is relatively large). This effect is incremental to the premium of 0.67 per percentage point received by large companies. However, results do not indicate a significant premium after the adoption of IFRS, even though the earnings coefficient for non-adopters remains unchanged in the post-adoption period.

The other two models produced inconsistent results. In the pre-adoption period the coefficients for both EPS and the change in EPS are not significant. In the post-adoption period, we find significant negative estimates for the change in EPS. Since this would imply that companies earn a lower return on their stock if their earnings increase, a negative coefficient cannot be accepted as evidence of the underlying relationship. In the post adoption period, the coefficient estimate for EPS is positive and significant at 10% confidence level, but IFRS adopters do not receive a premium.
The coefficients for control variables are significant in many cases. Large companies receive positive corrections in coefficient estimates in the pre-adoption period in both the unexpected earnings and returns models, but in the first case the coefficient is positive, and in the second one it is negative. Companies from the broadly defined manufacturing sector receive higher coefficient estimates for the change in eps in the returns model.

Results of all estimations show that the economic cycle has a significant impact on valuations. The dummy variables for boost and bust years are significant and relatively high in magnitude in all models and are responsible for a notable improvement in R-square. This observation is important, because fundamental factors have not been included as control variables in previous research into changes in valuation coefficients over time. Their omission can lead to heteroscedasticity or bias in coefficient estimates in panel data estimations without fixed time effects.

Summing up, the results of value relevance regressions show that the unexpected returns model produces consistent results for both the pre-adoption and the post-adoption period, while the returns model provides insignificant or negative coefficient estimates. In contrast to the authors of previous studies (Filip & Raffournier, 2010), we cannot attribute the negative coefficient estimates in the returns model to market inefficiencies, as we have shown that the Polish market is

at least weak-form efficient during the sample period. Moreover, event studies, which were presented in the previous section, show that no abnormal returns occur at the time of annual report publication. This would indicate that the information about accounting performance is reflected in market values long before the publication of annual reports. Thus, the results indicate that the returns model may not be adequate for studies of transition economies. The unexpected returns model performs better in measuring the relationship between earnings and stock valuation.

Table 5. **Results of value relevance regression estimations**

Model	(4)	(4)	(5)	(5)	(6)	(6)
Dependent variable	UR	UR	R	R	R	R
Period	pre-adoption	post-adoption	pre-adoption	post-adoption	pre-adoption	post-adoption
UEYBV	0.7665***	0.7728***				
	(6.34)	(10.75)				
UEYBV*IFRS	0.4116*	-0.0217				
	(1.83)	(-0.17)				
EPS/P			-0.0086	0.0266*		
			(-0.98)	(1.74)		
EPS/P*IFRS			0.0155	-0.0242		
			(1.65)	(-1.29)		
ΔEPS/P			0.0016	-0.0049***	-0.0024	-0.0047***
			(0.47)	(-2.95)	(-0.52)	(-3.03)
ΔEPS/P*IFRS			-0.0131	-0.0058	0.0023	-0.0055
			(-1.55)	(-1.25)	(0.31)	(-1.22)
Control variables:						
UEYBV*LARGE	0.6713*	0.2644				
	(1.74)	(1.30)				
UEYBV*MANUF	-0.3574	-0.1256				
	(-1.66)	(-1.15)				
EPS/P*LARGE			-0.0655***	0.0538		
			(-3.32)	(1.14)		
EPS/P*MANUF			0.0142	-0.0255		
			(1.54)	(-1.24)		
ΔEPS/P*LARGE			0.0016	-0.0011	0.0290	0.0406*
			(0.06)	(-0.03)	(1.02)	(1.70)
ΔEPS/P*MANUF			0.0055	0.0094***	0.0110**	0.0092***
			(1.51)	(3.14)	(2.29)	(3.25)
BOOM	-13.5263***	4.6474**	0.0715***	0.1128***	0.0691***	0.1125***
	(-4.35)	(2.15)	(5.14)	(8.36)	(4.98)	(8.43)

Model	(4)	(4)	(5)	(5)	(6)	(6)
Dependent variable	UR	UR	R	R	R	R
BUST		6.7578***		-0.1086***		-0.1105***
		(4.21)		(-9.13)		(-9.74)
R-square	64.84%	84.84%	20.72%	51.73%	17.40%	51.05%
N of observations	121	263	226	356	226	356
N of firms	41	127	86	161	86	161
Significance codes: * p<0.5, ** p<0.05, *** p<0.01. Variable codes: R – total annual stock return over average January stock prices including dividends, UR – unexpected total annual stock return, EYBV – earnings scaled by beginning-of-period book value of equity, UEYBV – unexpected EYBV, EPS/P – earnings per share scaled by beginning-of-period stock price, ΔEPS/P – annual change in EPS scaled by beginning-of-period stock price. Dummy variables: IFRS – denotes mandatory IFRS adopters both before and after adoption, LARGE – denotes companies in the upper quartile of the distribution of revenues, MANUF – denotes companies from the manufacturing sector, BOOM – denotes years of unusually high returns across the sample (2003 and 2005), BUST – denotes the year 2007.						

CONCLUSIONS

The market effects of IFRS adoption in Poland have been analyzed in two steps. First, we conducted event studies around annual report publication dates. Second, we estimated value relevance regressions for adopters and non-adopters both before and after the adoption year. The results of event studies provide no evidence of an abnormal reaction, or a surprise effect, at the time of first IFRS statement publications. Value relevance regressions, namely the unexpected earnings model, produce consistent coefficient estimates for non-adopters. IFRS adopters receive a premium before the adoption, but not afterwards. These results extend previous research into market valuation of accounting numbers in transition economies by providing the first evidence on the impact of IFRS adoption in Poland.

Findings presented in this paper indicate that the average impact of IFRS adoption can be relatively small, even in a transition economy. In the case of Poland, low market reaction may be caused by the existence of an efficient market with extensive interim reporting requirements. Easy access to information and efficient processing of this information can serve as a substitute for more informative accounting standards. Hence, the usefulness of accounting information should be discussed in the context of market institutions which have an impact on the quantity and quality of information available to investors. Studies of the interactions between market institutions and the use of accounting information would be of benefit to the standard setting process.

The paper contributes a methodological framework which can be used in research of other transition economies and further refined. In particular, the value relevance methods used in the paper address concerns raised by Filip & Raffournier (2010). We show that the unexpected earnings model in a panel data framework can produce consistent coefficient estimates. Concerns of inefficiency can be mitigated by using monthly average stock prices, rather than end-of-month prices. The choice of the month from which stock prices are taken into the regressions should be preceded by testing at least three months before and after fiscal-year-end. Finally, fundamental factors that drive the development of transition economies can have an impact on valuation coefficients. In this study, the variables for boom and bust years have proven to influence estimation results significantly.

Effects of IFRS adoption in transition economies are a captivating topic, which offers possibilities not only for country-specific studies, but also for comparative research. Studies of specific countries can focus more closely on the first disclosures under IFRS, in particular the first interim disclosures, and measure the impact of changes in accounting numbers on abnormal returns identified around the disclosure. Comparative studies can extend the inter-temporal framework used in this paper to analyze the cross-sectional factors that affect the consequences of IFRS adoption. Such studies can exploit the international variations in institutional structures to focus on firm characteristics and accounting choices among IFRS adopters rather than comparing IFRS adopters with non-adopters.

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