

Financial Accounting Quality in a European Transition Economy

The Case of the Czech Republic

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Preface

The report is a result of a research project carried out at the Center for Financial Analysis and Managerial Economics in Accounting at the Economic Research Institute at the Stockholm School of Economics.

This volume is submitted as a doctor's thesis at the Stockholm School of Economics. The author has been entirely free to conduct and present the research in her own ways as an expression of her own ideas, according to the normal practice of the Economic Research Institute.

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*If the doors of perception were
cleansed everything would appear to
man as it is, infinite.*

William Blake (1757- 1827)

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Täby, March 2009

/Katerina Hellström

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Financial Accounting Quality in a European Transition Economy: Overview and Summary of the Dissertation

This dissertation is about the quality of financial accounting information in a transition economy. It searches for answers to the following questions: Is the quality of financial accounting information different in a transition economy as compared to a well-developed market economy? If it is different, what are the differences and do they change over time?

Financial accounting information is a part of the set of information that investors use in their decision making. It affects the distribution of wealth between individuals. It determines the allocation of investors' resources and has an effect on the aggregate level of risk. It affects the allocation of resources among firms as it affects the rate of return on capital (Beaver, 1998). High quality of accounting information decreases the risk for capital investors, promotes investment activities, creates an efficient allocation of resources, and increases the chance of companies to raise funds at a reasonable cost of capital. The positive effects of accounting and disclosure quality on the cost of capital, market liquidity of shares and capital allocation are documented by Francis, LaFond, Olsson and Schipper (2004), Leuz and Verecchia (2000) and Botosan and Plumlee (2002) amongst others.

Companies which operate in countries with high quality financial accounting information presumably have a comparative advantage in attracting financial capital. Previous research showed that countries with higher disclosure quality are more likely to attract foreign capital (Young and Guenther, 2003; Bradshaw, Bushee and Miller, 2004; Aggarwal, Klapper and Wysocki, 2005).

The evidence on accounting quality in European transition economies is scarce. Jindrichovska (2001, 2005) investigated information content and conservatism of Czech accounting earnings. Jermakowicz and Gornik-Tomaszewski (1998) and Jarmalaite-Pritchard (2002) studied information content of Polish respectively Baltic earnings. Bagaeva, Kallunki and Silvola (2008) tested quality of Russian earnings in terms of conservatism. Ding, Hope and Schadewitz (2008) and Makhija and Patton (2004) investigated the

association between institutional background and the level of disclosure in the Baltic countries respectively in the Czech Republic. Martikainen and Tilli (2007) tested income statement conservatism in ten European transition countries. In summary, previous research provided some evidence on information content and conservatism of earnings and to a limited extent, on disclosure quality in several transition economies¹.

This dissertation contributes to the research by an in-depth analysis of accounting quality in one transition country. It measures accounting quality in several dimensions. It tests the value relevance of accounting numbers and the earnings quality in terms of accruals quality, persistence, predictability, smoothness, timeliness and conservatism. It tests disclosure quality in terms of mandatory disclosure requirements, compliance with mandatory requirements and voluntary disclosures. The dissertation tracks the development of accounting and disclosure quality throughout the process of transition. Last but not least, it systematically compares achieved results with results of a benchmark well-developed market economy.

European transition countries are countries which are switching from centrally planned to market economies². The transition process in Europe started in the late 1980s with the fall of communism. After the breakdown of the centrally planned economies, the European transition countries have been trying to attract foreign investors. For this purpose, well-functioning domestic capital markets must be created that promote the transition process and economic growth. Accounting regulation that conforms to the demands of a market economy must also be developed. During the transition process investors have been worried about the quality of accounting information as well as the application of accounting regulation and the control mechanisms that presumably will ensure that companies provide credible information.

¹ The purpose of the studies was not disclosure quality as such but the influence of institutional factors on disclosure quality.

² There are several definitions of a transition economy. The broadest definition comprises all emerging markets, i.e. countries which are in a transitional phase from developing to developed economies. More narrow definitions are based on a specific transition from one system to another. This dissertation defines transition as switching from centrally planned to market economy. The transition is characterized particularly by changes in the role of the state. The promotion of private-owned enterprises, capital markets and independent financial institutions is crucial.

As of today (2009), some European transition countries have completed the transition³ and are now market economies. Other countries are still struggling with the transition process, and others have not entered the transition path⁴. Thus the understanding of accounting and the transition process has not lost its importance. It has implications for other emerging markets - markets which did not experience the same political and economic changes as the transition economies but also have underdeveloped capital markets.

This dissertation also has more general implications. It brings about insights about methods since tests of the quality of financial accounting information are applied in an environment that differs from the capital markets of well-developed market economies. Tests of value relevance or attributes of accounting quality can thus give an idea about whether results from developed markets are general or economy specific and whether the applied method is appropriate.

The Czech Republic has been chosen as an example of a transition economy. The country has experienced a fast transition, which was completed in 2001⁵ (Transition Report, 2001). The limited period makes it possible to study the

³ European Bank for Reconstruction and Development (EBRD) developed a set of criteria which describes the stage of transition process in a country. The progress is measured as a scale of 1 to 4+, where 1 represents no change and 4+ represents the standards of an industrialized market economy.

⁴ All transition countries of Central and Eastern Europe which are members of European Union and Croatia have an average transition score of 3.3 or more which can be defined as a completed transition process. Belarus, Turkmenistan and Uzbekistan have an average score below 2.1., which can be seen only as a very early stage of a transition process. All other countries of former Soviet Union, of former Republic of Yugoslavia, Albania and Mongolia have scores in between 2.1-3.3 and are thus in the process of the transition of their economies. The averages have been calculated from 14 different transition criteria used by the EBRD. The classification of countries as European transition economies is also taken from the EBRD statistics. All scores are as of 31 December 2008 (Transition indicators, 2008).

⁵ Completed transition means that the privatization process has been finished and ownership transferred from state to private investors, institutional background has been changed (new institutions, legislation and control mechanisms have been developed), capital markets and independent financial institutions have been created. In terms of EBRD's ranking, a transition process is defined here as completed when the average score is higher than 3.3. However, the completion of the transition process does not necessarily mean that the new market economy functions in all respects as an established well-developed market economy.

entire process of transition. Sweden is chosen as a benchmark since it is a well-developed market economy⁶. The country is of about the same size as the Czech Republic and belongs historically to the same accounting tradition (Continental accounting tradition with German and French influences⁷). This has implications for the interpretation of comparative results⁸.

The sample consists of Czech and Swedish companies listed at the Prague and Stockholm Stock Exchanges respectively during the period 1994-2001. The samples of the first and the second studies include all companies listed at the stock exchanges during the studied period. The samples of the third and fourth studies include 47 Czech companies and 25 Swedish companies. The companies were chosen based on availability of the annual reports (Czech sample) and randomly (Swedish sample).

Since only the Czech Republic is studied, doubts may be raised whether the results can be generalized to other transition economies. There are obviously differences but also similarities among the transition countries.

Transition countries have per definition a similar starting point – a centrally planned economy with state ownership and control of production resources. Accounting serves as a tool of state control over the enterprise units. In the transition process, these countries have to privatize enterprises and develop institutions and legislation which would promote private ownership and capital markets. Domestic capital is in general scarce in transition economies and foreign investments are needed. Accounting regulation has to be developed to serve the needs of new (private) investor groups.

Some differences among the transition countries existed before the transition started. Particularly, in some countries, private ownership was allowed (Hungary, Poland and former Yugoslavia) while it was forbidden in other countries (for example, the Czech Republic and Slovakia). However, usually only small companies could be privately owned⁹.

⁶ The countries were also chosen with respect to the author who speaks both languages fluently (Czech as a mother tongue).

⁷ Seal, Sucher and Zelenka, 1995; Heurlin and Peterssohn, 2003

⁸ More details on the historical development and institutional background of the chosen countries are provided in part one.

⁹ EBRD transition score is 1.0 for all transition countries in 1989 except for Poland, Hungary and countries in former Yugoslavia which range between 1.2 – 1.4.

Most differences are related to the transition process – particularly differences in the choice of the privatization method and the speed of transition. The privatization method had implications for the corporate governance structure in the new market economy which in turn influences the accounting and disclosure quality. For example, voucher privatisation as applied in the Czech Republic lead to dispersed institutional ownership, direct sales as applied in Hungary lead to concentrated strategic ownership.

In the beginning of the transition period, similarities prevailed but different speed of transition and different privatization methods might have increased differences among the countries by 2001. However, particularly EU candidate countries had a common objective of harmonizing their accounting legislation with EU-directives in the 1990s. This might imply a similar development of the quality of accounting information. In other words, the results for the Czech Republic can be believed to be representative for European transition economies in general.

The dissertation consists of two parts – part one includes the first study and part two includes studies two, three and four. The length of part one reflects the fact that the first study is a thesis publicly defended in 2004 for achieving a Swedish degree of licentiate¹⁰. It includes a number of chapters which provide common background to all studies in the dissertation (institutional background of the Czech Republic, development of Czech accounting regulation and comparisons to Sweden). All studies may be, though, read independently. The defended thesis was published in a shorter version in the *European Accounting Review* (Hellström, 2006).

In the first study “The Value Relevance of Accounting Information in a Transition Economy: The Case of the Czech Republic” (part one), the value relevance of accounting information is studied. Value relevance is in this project defined as a statistical association between stock market prices and accounting numbers.

In the second study “Accounting Quality in a Transition Economy: Market- and Accounting-based Attributes of Accounting Information in the Czech Republic” (part two, chapter 1), the concept of accounting quality is expanded and accounting- and market-based attributes of accounting quality

¹⁰ Swedish licentiate's degree equals completion of the coursework required for postgraduate studies and a dissertation formally equivalent to half of a doctoral dissertation.

are tested. Accounting-based attributes of accounting quality are accruals quality, persistence of earnings, predictability of earnings and smoothness of earnings. Market-based attributes of accounting quality are value relevance, timeliness and conservatism of accounting.

In the third study “The Complementary Role of Regulation and Compliance in Achieving Accounting Quality: The Case of the Czech Republic” (part two, chapter 2), disclosure quality is investigated in terms of mandatory disclosure requirements and the level of compliance with mandatory disclosure requirements.

In the fourth study “Voluntary disclosures in a Transition Economy: The Case of the Czech Republic” (part two, chapter 3), the content and importance of voluntary disclosure, i.e. the information provided by companies beyond the mandatory disclosure requirements, is studied.

Below, the four studies are discussed in more detail. For every study, the purpose, the method of investigation and the results are stated. The discussion starts with the concept of the overall quality of accounting information.

The quality of financial accounting information and its components

Testing the quality of financial accounting information is a broad and complex issue. There is no consensus opinion about the concept of accounting quality. The overall accounting quality includes accounting laws and standards and their characteristics, the application of accounting standards by companies, disclosure requirements, disclosure practices, and the investors’ assessment of accounting information.

The quality of accounting information is determined by how well accounting captures various aspects of the firm’s activities. Accounting standard-setters should strive for implementing accounting standards based on principles which enhance the view of the economic reality of the firm, implying that accounting earnings should try to capture the true value creation process in the company. The principles are a function of the relevance and reliability of accounting information. Since there usually exists a trade-off between these

two characteristics, the accounting principles might capture the economic reality in different ways.

Accounting principles and policies often require discretionary choices in the process of preparing the financial statements. Therefore, accounting quality is influenced by how firms make choices of alternative accounting policies. Such policy choices may be insufficiently understood if they are not properly disclosed. In such a case, financial reports might be less credible. If accounting standards produce financial reports of lower quality, but the reasons behind this and a comparison with alternative choices is disclosed, the disclosure decreases the information problem. Mandatory disclosures – the requirements on what information must be disclosed and how – therefore influence the overall quality of financial accounting information. Additional voluntary disclosures may add value to the decision making based on accounting information.

Finally, the behavior of investors - how they use accounting information as well as alternative information channels - can reveal whether accounting information is of high quality or not. However, investors' behavior might be perceived rather as a consequence of the quality of the information environment.

The quality of accounting information in terms of how well accounting numbers capture aspects of the firm's activities is tested in the first two studies of the dissertation. The tests cannot, however, fully separate between the quality of accounting numbers (their characteristics as outcomes of applied accounting principles) and disclosure quality (the amount and characteristics of the information provided in the companies' financial statements). The aim of the third and the fourth studies is to overcome these deficiencies and study disclosure quality in terms of both mandatory and actual disclosure.

Part one - The Value Relevance of Accounting Information in a Transition Economy: The Case of the Czech Republic

The general purpose of the first study is to evaluate the quality of financial accounting information in the Czech Republic in terms of its value relevance.

The first objective is to investigate whether financial accounting information in the Czech Republic is more or less value relevant than in a well-developed market economy, represented by Sweden.

The second objective is to investigate whether the value relevance of Czech financial accounting information has changed over time and to identify key factors that can explain why such changes have occurred.

The International Accounting Standards (IAS)¹¹ conceptual framework recognizes relevance of accounting information – that is the ability of accounting information to influence the economic decisions of investors¹² by helping them to evaluate past, present and future events - as one of the important qualitative characteristics of accounting. Accounting information in the financial statements is an outcome of some set of accounting principles and methods required by the accounting regulation as applied by the companies. Accounting principles and rules are different in different countries and are influenced by the institutional environment and the accounting tradition of the country¹³. The value relevance of accounting numbers can thus differ across countries. In centrally planned economies, there were no capital markets and the only investor was the state. Accounting regulation did not take into consideration the needs of other

¹¹ The International Accounting Standards as applicable in 2001 are used throughout the dissertation.

¹² The investors are explicitly mentioned in the IASB Exposure Draft: Conceptual Framework for Financial Reporting (2008): “*The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to present and potential equity investors, lenders and other creditors in making decisions in their capacity as capital providers.*”

¹³ For example, legal tradition of the country or the character of the financial markets in a country influences the choice of accounting practices.

investors. During the transition period, new types of investors appeared. Accounting regulation had to incorporate the demand of the new investors for accounting information.

The value relevance is defined in the study as a statistical association between market prices and accounting numbers. If the accounting principles and methods give a good view of the company's performance, investors should be able to use the accounting numbers in the pricing of company shares. In such a case, there should be a strong association between the accounting and market numbers. The statistical association between market prices and accounting numbers is operationalised as:

- returns regression (association between market returns and earnings and changes in earnings)
- scaled price regression (association between market price and earnings and book value of owners' equity, all variables scaled by the beginning of the period book value of owners' equity¹⁴)
- logarithmic regression (association between the logarithm of market price and the logarithms of earnings and book value of owners' equity)¹⁵
- hedge portfolio investment strategy based on perfect pre-knowledge of accounting earnings

The accounting numbers are value relevant if there is a robust association between market returns or prices and accounting numbers in terms of the explanatory power of the regressions and if the coefficients of the accounting numbers are significant. The accounting numbers are also value relevant if abnormal return can be earned with a perfect pre-knowledge of accounting earnings.

The regression tests presume market efficiency in the semi-strong sense (Fama, 1970). Under the presumption of information¹⁶ market efficiency in the semi-strong sense, market prices incorporate all publicly available information including the financial statements information. In an efficient market, we can assume that the observed market value corresponds to the

¹⁴ The price regression is scaled in order to adjust for size effects and avoid heteroscedasticity in the sample.

¹⁵ The logarithmic version of a price regression is another method of adjusting for size.

¹⁶ Information is interpreted data which may affect prices.

intrinsic value of the firm. If, on the other hand, the market is inefficient, the observed market values may deviate from the intrinsic value and the effect of the changes in accounting policies might be questioned. Barth, Beaver and Landsman (2001), however, pointed out that share prices reflect investors' consensus beliefs about the underlying economic value and not necessarily the underlying economic value itself. Thus the resulting inferences relate to the extent to which the accounting measures reflect measures implicitly assessed by investors. In such a case, market efficiency is not required as long as we interpret only the explanatory power of the statistical tests. However, as soon as the coefficients are interpreted based on theoretical benchmarks derived from a valuation model, the assumption of market efficiency becomes important. This study does not derive any theoretical benchmarks for the coefficients neither tests deviations from these.

The results in the first study showed that the value relevance of accounting information in the Czech Republic is lower than in Sweden throughout the whole transition period (1994-2001). The difference between the explanatory power of the Czech sample as compared to the Swedish sample is large in the beginning of the transition period (8.8% compared to 27.5% in the scaled price regression, 2.7% compared to 5.7% in the returns regression and 63.7% compared to 88.5% in the logarithmic regression). However, the results of the regressions are inconclusive towards the end of the transition period since the difference in the explanatory power between the two samples is small (14.4% compared to 15.2% in the scaled price regression, 12.1% compared to 5.0% in the returns regression and 72.9% compared to 75.3% in the logarithmic regression).

The hedge portfolio investment strategy showed that the value relevance of accounting information is lower also towards the end of the transition period in the Czech Republic, since lower abnormal returns can be earned based on perfect pre-knowledge of accounting earnings for the Czech sample (22.1% as compared to 41.0% for the Swedish sample). The conclusion is that the value relevance of accounting information improved in the Czech Republic over the period 1994-2001 but it did not reach the level of the Swedish accounting value relevance.

The key factors identified as drivers of increased value relevance in the Czech Republic are i) improved accounting legislation, ii) increased internationalisation of the Czech business community and society in general and iii) changes in the business climate which include higher sophistication of both the producers of financial statements information and the investors.

Part two, Chapter 1 - Accounting Quality in a Transition Economy: Market- and Accounting-based Attributes of the Accounting Information in the Czech Republic

The general purpose of the second study is to assess accounting quality in the Czech Republic in terms of accounting- and market-based attributes of accounting quality.

The objective is to investigate whether accounting- and market-based attributes of accounting quality are consistent with the value relevance results in the first study.

The first study showed improvements in the value relevance of accounting numbers in the Czech Republic throughout the transition period. Value relevance is a function of predictive value, feedback value and timeliness of accounting information. Predictive value helps investors to make predictions about future events, feedback value helps to confirm or correct the expectations, and timeliness helps to predict future events and correct expectations in time. The second study seeks to identify such attributes of accounting quality which affect the predictive value, the feedback value and the timeliness of accounting information, and thus assess whether these attributes contributed to the improvement of the value relevance in the Czech Republic.

Tests of accounting-based attributes are independent of market values, while tests of market-based attributes employ the market figures. In other words, the accounting-based attributes show whether accounting principles and methods generate high quality accounting numbers no matter whether this knowledge is implied by market prices or not. The quality of market-based attributes is influenced not only by the applied accounting policies and methods but also by the level of information disclosure.

The following accounting-based attributes of accounting quality are assessed:

- Accruals quality - the function of accruals is to match revenues and expenses in the correct accounting period and thus give an

appropriate picture of the income generation of the company. The accruals quality is tested in a cash flow model where total accruals are related to cash flows from operations in three periods (past, present and future). The model tries to capture the cash component of accruals which is consistent with the assumption that earnings with larger cash components are of higher quality (in the long-run). The measure of accruals quality is the standard deviation of the regression model.

- Persistence of earnings – this attribute captures the proportion of recurring items in accounting earnings. A larger proportion of recurring items increases the value relevance of accounting earnings. The persistence of earnings is operationalised as the slope coefficient in a regression of current earnings on past earnings.
- Predictability of earnings – high quality accounting earnings can be used for the prediction of future earnings. The measure of predictability of earnings is the prediction error from the regression of current earnings on past earnings.
- Smoothness of earnings – this is the stability/variation of accounting earnings. Smoothness is measured in this study as the variation in earnings relative to the variation in cash flow from operations. The attribute relates to the timing of income recognition which is a potential source of earnings management. If earnings are smoothed due to earnings management, smoothness decreases their value relevance. However, if earnings are smoothed due to the choice of accounting policy, the effect on value relevance may be both positive and negative. Smoothness will be positive for example if percentage of completion method is chosen over completed contract method. Smoothness will be negative when fair value accounting is applied since this increases volatility of earnings as compared to historical cost accounting.

At first sight, there might be a contradiction between persistent earnings and more volatile earnings both defined to increase the value relevance. However, persistence means only that earnings include more recurring items, not necessarily that these are stable. The stability/instability of earnings depends on the underlying value creation.

The following market-based attributes of accounting quality are assessed¹⁷:

- Timeliness – timeliness is defined as the speed with which accounting earnings incorporate economic income over time. It is measured as the explanatory power of a reversed returns regression (i.e. a regression of accounting earnings on market returns). Timely earnings increase the value relevance.
- Conservatism – the income statement definition of conservatism is used, meaning that accounting is conservative when companies do not anticipate any profits but anticipate all losses. Conservatism is measured as the sensitivity of earnings to negative and positive returns. Under the income statement definition, conservatism is positive, since it avoids recognition of unrealized income¹⁸.

Value relevance improves if the accruals quality is high, if earnings are persistent and predictable, if the smoothness of earnings is low, if accounting earnings are timely, and/or if accounting is conservative under the income statement definition of conservatism.

The results showed that in general accounting quality is lower in the Czech Republic than in Sweden and that all attributes of accounting quality except the predictability of earnings perform worse in Czech financial statements. This supports the findings of the first study. The results showed more specifically that Czech earnings became more persistent and less smoothed over time; however, accruals quality decreased over time and earnings became less predictable, less conservative and less timely. In other words, most attributes of accounting quality did not improve over time. Hence, the change in these attributes cannot explain the changes in the value relevance of accounting information in the Czech Republic between 1994 and 2001.

¹⁷ The report also includes a third market-based attribute of accounting quality - the value relevance of accounting information studied in part one. This is due to the fact that the reports were published/presented independently of each other.

¹⁸ Under the balance sheet definition, though, conservatism is bad since it enables managers to create hidden reserves and adjust earnings thereby.

Part two, Chapter 2 - The Complementary Role of Regulation and Compliance in Achieving Accounting Quality: The Case of the Czech Republic

The purpose of the third study is to evaluate the mandatory disclosure quality in the Czech Republic.

Given that there are differences in accounting quality between the Czech Republic and Sweden, the first objective is to investigate to what extent these differences can be explained by the accounting regulation and/or by the level of compliance with the regulation.

The second objective of the study is to investigate the characteristics of companies that influence their propensity to comply or not to comply with the accounting regulation.

Disclosure quality presumably affects the value relevance of accounting numbers. If investors are well informed about the accounting policy choices of a company, they can better understand the underlying accounting numbers. If they do not receive sufficient information, they might either use the accounting numbers at face value or they may simply mistrust the accounting numbers and use other information. Disclosure quality comprises both the quality of the accounting regulation (mandatory disclosure requirements) and the actual level of disclosed information by the companies (compliance with the mandatory requirements)¹⁹.

Mandatory disclosure requirements define information which companies have to disclose in their financial statements. Mandatory disclosures can be general (for example, disclosures of accounting policies and asset valuation methods) or more specific (for example, specification of non-recurring items or segment information). The mandatory disclosure requirements are crucial from a broader perspective because they might increase the credibility of the institutional environment of a country.

¹⁹ The actual disclosure of companies might include also voluntary disclosure beyond the mandatory requirements, this is not, however, the purpose of this study.

Presumably, company disclosures should be fully in line with the mandatory disclosure requirements. However, companies might have incentives to hide or manipulate information. In the absence of efficient control mechanisms, companies might be inclined not to reveal unfavorable information. If efficient control mechanisms exist, such behavior should be prohibitively expensive.

The issue of efficient control mechanisms is particularly important in a transition economy where a lack of legal control and enforcement mechanisms may be expected. Inefficient enforcement mechanisms were identified as a problem throughout the transition process in all European transition countries (Transition report, 1997). The centrally planned economies were secretive societies and companies in transition had to learn why and how to provide information to investors. The secretiveness and unwillingness to provide information might have affected the compliance with the mandatory disclosure requirements in transition economies.

The mandatory disclosure requirements are studied by a disclosure index based on 27 accounting items divided into three areas – entity characteristics, accounting measurement principles and forecast relevant information. The mandatory disclosure index is coded for both countries and compared to the International Accounting Standards (2001). Compliance with the mandatory requirements is measured as the actual amount of disclosures of companies as compared to the mandatory disclosure requirements in the country.

High quality mandatory requirements and high compliance with the accounting regulation should supposedly increase the value relevance of accounting numbers. This association is tested in a regression of the value relevance of accounting information, the level of mandatory disclosure requirements and the level of compliance. The compliance level index is divided in the regression tests into two parts - valuation relevant items (accounting measurement principles and forecast relevant information) and entity characteristics. Valuation relevant items are expected to contribute more to the value relevance than entity characteristics. Finally, significant key characteristics that influence the companies' willingness to comply with the accounting regulation are identified.

The results showed that both the mandatory disclosure requirements and compliance level were inferior in the Czech Republic as compared to

Swedish mandatory disclosure requirements throughout the whole period – the mandatory disclosure score was 36 for the benchmark IAS (2001), 12 and 21 for the Czech Republic (1994 and 2001 respectively) and 27 and 32 for Sweden (1994 and 2001 respectively). The Czech companies complied by 41.7% with the mandatory requirements in 1994 and by 71.4% in 2001. Swedish companies complied by 70.4% in 1994 and by 81.3% in 2001.

The regression results showed that higher mandatory disclosure requirements in a transition country lead to an increase in the value relevance of accounting numbers, while somewhat surprisingly higher level of compliance leads to a decrease in the value relevance. The mandatory disclosure requirements seem to improve the credibility of the country in the eyes of investors and thus decrease the level of risk the investors perceive. A higher compliance level in the transition economy, however, leads to an opposite effect. One reason for this might be that better compliance makes it easier to distinguish between companies with good versus poor accounting quality. If the underlying accounting quality is poor, investors will look for other information sources and the value relevance of the accounting numbers might decrease.

Finally, the results showed that size, type of auditor and type of ownership affect the disclosure level and compliance level of companies in a transition economy. Large companies that employ Big Four auditing companies disclose more accounting information, while state-owned companies²⁰ disclose less accounting information. State-owned companies also tend to comply less with the accounting regulation.

²⁰ A state-owned company is defined as a company where the state is the largest but not necessarily the only shareholder.

Part two, Chapter 3 - Voluntary Disclosures in a Transition Economy: The Case of the Czech Republic

The purpose of the fourth study is to investigate the content, extent and significance of voluntary disclosure in the Czech Republic and more precisely:

The first objective is to investigate what information companies choose to voluntarily disclose in the Czech Republic in comparison to companies in Sweden.

The second objective is to investigate the role of voluntary disclosure in the Czech Republic.

The third objective is to investigate the characteristics of companies that provide voluntary disclosure in the Czech Republic.

Countries with good accounting regulation presumably have a comparative advantage since they constitute a more credible and less risky investment environment. Companies operating in countries with poor accounting regulation experience an information disadvantage if they base their published financial statements solely on mandatory disclosure and accounting rules. However, companies in such countries can choose to disclose additional information voluntarily²¹.

Voluntary disclosures decrease the information asymmetry between company managements and outside investors. Investors may better understand the financial statements and be able to make better predictions for the future which positively affects the market value of the company and the liquidity of its shares (Francis, Nanda and Olsson, 2008, Leuz and Verecchia, 2000). The managers provide additional voluntary information if they believe that it affects positively the market value of their company (Skogsvik, 1998).

Since voluntary disclosures are provided beyond the limitations of accounting regulation, its amount and character is virtually unrestricted. For

²¹ Value relevance may be high though mandatory disclosure is low.

the purpose of this dissertation, voluntary disclosures are divided into a matrix across two dimensions:

- The first distinction is made between voluntary disclosures provided beyond the domestic GAAP but within IAS 2001 and other voluntary disclosure. The idea is that neither Czech nor Swedish GAAP fully complied with IAS 2001 thus leaving space for companies to voluntarily disclose information required by IAS but not the domestic accounting regulation. Other voluntary disclosure is all information neither regulated in the domestic GAAP nor in IAS 2001. It might be assumed that companies should be more inclined to provide voluntary information according to IAS since IAS constitutes a benchmark of a good accounting practice.
- The second distinction is made between voluntary disclosure of such information that is directly related to accounting numbers in the financial statements and other types of voluntary disclosure. The first type of disclosures provides further explanation and clarification of the accounting numbers in the financial statements. The second type provides further information about the company, its management and its future. The idea behind the distinction is that voluntary disclosures directly related to the accounting numbers presumably should increase their value relevance more than the second type.

It might be expected that companies in a transition economy would provide more voluntary disclosures according to IAS and more disclosures directly related to the accounting numbers in order to compensate for low mandatory disclosure requirements. However, the previous study showed that the level of compliance with the mandatory requirements is lower in the Czech Republic, which would on the contrary make the voluntary disclosures less probable.

The amount of voluntary disclosures is compared between the two countries and over time. The contribution of voluntary disclosures to the value relevance of the accounting information is tested in regression tests. Finally, the characteristics that influence companies' willingness to provide voluntary disclosures are tested in a regression analysis.

The results showed that voluntary disclosure in general is low in the Czech Republic, even though it increases over time. Czech companies provided only 16.7% of available voluntary disclosures according to IAS in 1994 and

33.3% in 2001, and 22.4% of other voluntary disclosures in 1994 and 37.1% in 2001. Swedish companies provided 22.2% of available voluntary disclosures according to IAS in 1994 and 25.0% in 2001, and 50.0% of other voluntary disclosures in 1994 and 56.1% in 2001. It seems that Czech companies do not make use of voluntary disclosure benefits, particularly as to the voluntary disclosure according to IAS. The results also showed that the Czech companies prefer to provide voluntary disclosures not directly related to accounting numbers while Swedish companies provided more voluntary disclosures directly related to accounting numbers.

Voluntary disclosures apparently contribute to the value relevance of financial statements information; however, there are differences as to the type of voluntary disclosures. Voluntary disclosures according to IAS are more strongly associated with the value relevance of accounting numbers (R^2 of 4.5% for the Czech sample and 13.7% for the total sample) than other voluntary disclosure (R^2 of 2.3% for the Czech sample and 8.0% for the total sample).

Voluntary disclosures according to IAS of items directly related to accounting numbers, and other voluntary disclosures not directly related to accounting numbers decrease the value relevance which may suggest that these disclosures substitute to a certain extent the information in the financial statements (for example additionally disclosed current value of a building might be used rather than the book value presented in the balance sheet). It might though also be that investors use more complex valuation models when more information is provided and the price estimated with a valuation model based on accounting earnings and book value of equity is too naïve (the value relevance measure is the difference between the observed and the estimated price of the company).

Voluntary disclosure according to IAS not related directly to accounting numbers, and other voluntary disclosure related directly related to accounting numbers tend to increase the value relevance of the available accounting numbers. The results should though be interpreted with cautiousness due to the relatively low levels of the statistical association.

Voluntary disclosures are provided by companies that to a higher extent comply with the regulation and by companies employing Big Four auditors. Companies with concentrated ownership provide the least voluntary disclosures. The results also indicate that voluntary disclosures increase with higher mandatory disclosure requirements. This contradicts the idea that

voluntary disclosures in a transition economy might compensate for inferior accounting regulation. It rather seems that the overall information environment plays an important role and that companies in transition economies might not fully realize the potential benefits of voluntary disclosures.

Conclusions, contributions and further research

The contributions of the dissertation are several. From an empirical perspective, it offers a comprehensive picture of accounting and disclosure quality in the Czech Republic. Previous studies on transition economies focus primarily on the association between market returns and accounting earnings. The results of the returns regressions in this dissertation are in line with Jindrichovska (2001, 2005)²². However, this dissertation takes a more holistic position and accounting quality is studied in terms of several accounting quality attributes. Furthermore, disclosure quality is investigated in terms of mandatory disclosure requirements and compliance level, and voluntary disclosure in several dimensions²³. The dissertation investigates the accounting and disclosure quality development over time to an extent not found in previous literature on transition economies.

From a methodological perspective, the first study tests the validity of value relevance tests by using them in an environment where the outcome of these tests might be predicted with a relatively high certainty. The second study tests other attributes of accounting quality and the methodology of their measurement. The third study distinguishes between two components of disclosure quality - mandatory disclosure requirements and compliance level. This distinction is particularly important for transition countries which may experience problems with control and enforcement mechanisms. The last study distinguishes between several components of voluntary disclosure and categorizes them into four groups. The categorization depends on whether the disclosure relates directly to the accounting numbers in the

²² Czech accounting earnings are value relevant; that is they have information content in the terminology of Jindrichovska (2001). Czech earnings are not conservative which is in line with both Jindrichovska (2005) and Martikainen and Tilli (2007).

²³ The results of study four provide evidence on a negative association between concentrated ownership and voluntary disclosure which is in line with Makhija and Patton (2004) who report similar findings for the Czech Republic.

financial statements. It also depends on whether the voluntary disclosure is an attempt to approach a higher quality accounting regulation or whether it stretches beyond the limits of any existing accounting system.

Some of the results suggest that further research could be made into issues of accounting and disclosure quality, not only in transition economies but in general. From a methodological perspective, the accounting quality attributes appear not to be consistent with each other and they are difficult to interpret. The appropriateness of certain accounting quality metrics can be questioned (for example measures of conservatism) and certain accounting quality attributes must be more properly elaborated (for example the contribution of smoothness of earnings to value relevance is unclear). In other words, measures and attributes of accounting quality which could better explain the changes in the value relevance of accounting numbers should be further developed. Also, the disclosure quality methodology can be more elaborated in terms of linking disclosure indices to theoretical valuation models. The suggested distinction between the different categories of disclosure could be tested in other countries in order to validate the categorization. Also, the effect of disclosure quality on value relevance could be further tested and alternative tests developed.

From an empirical perspective, it would be interesting to further map the development of accounting and disclosure quality in the Czech Republic, particularly with respect to the introduction of the IFRS in 2005. The first question would be whether the implementation of IFRS improved the accounting and disclosure quality in the Czech Republic. Previous research has shown that the institutional environment plays an important role in conjunction with the accounting regulation (Ball, Robin and Wu, 2003, Ding et al., 2008). Another question would be whether certain doubtful practices – for example the treatment of non-recurring items - persist in Czech accounting after 2001 (respectively 2005). A third question would be whether the accruals quality further deteriorates after 2001 and whether this is related to earnings management in the Czech companies.

Since 2001, more than half of the Czech companies included in the sample have been de-listed and the Prague Stock Exchange is still very illiquid as compared to stock exchanges in other transition economies²⁴. The effect of

²⁴ This brings about doubts as to whether the transition of the economy was completed by 2001 as suggested. Since all major institutional changes were

disclosure quality on the liquidity of shares thus might become interesting. An important issue to study is also the corporate governance pattern and how the privatization method which was applied in the Czech Republic affected accounting and disclosure quality²⁵. Last but not least, the accounting and disclosure quality could be studied in more transition economies in order to verify the assumption that the results provided in this dissertation are representative for other transition economies.

The Czech Republic entered the transition path in 1989 and in 1993 trading at the Prague Stock Exchange started. Market economy conditions, new types of investors and the new stock exchange required new accounting regulation, new enforcement and control mechanisms and a changed behavior of the companies. During the transition period, accounting regulation improved through amendments of the accounting act and issuance of new accounting standards. The Stock Exchange Committee was established in order to increase the control of financial reporting. The Czech economy became more internationalized both through foreign direct investments and larger export activities. The overall change of the society influenced the business climate and lead to changed attitudes of company managers to financial reporting. Domestic investors became more sophisticated and learned to understand and interpret the financial statements information. These changes influenced the development of the accounting and disclosure quality and these improved substantially by 2001.

There are lessons to be learned from the dissertation. If accounting information is to be value relevant, regulators must develop a high quality accounting environment including high quality recognition and measurement principles, high quality mandatory disclosure requirements and high quality control and enforcement mechanisms. Regulators must also be aware of how their actions influence the behavior of companies. The Czech accounting environment improved in all three dimensions. The improvement increased the companies awareness of the importance of financial reporting and lead to improvements in the value relevance of accounting information.

Another lesson can be learned by company managers. High accounting quality and disclosure quality decrease investment risks and have in general

completed according to the EBRD, the problems seem to be attributed to potential inefficiencies of the new market economy.

²⁵ The voucher privatization resulted in weak ownership and corporate governance problems which might have affected the quality of financial information.

a positive effect for the company. In situations when the accounting regulation is insufficient, companies can compensate these inefficiencies by voluntarily provided information. Although the Czech companies improved their financial reporting throughout the transition period, they did not take advantage of full compliance with the regulation or voluntary disclosure in 2001. Improvements in this regard would in general have affected the value relevance of the accounting information positively.

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PART ONE





The Value Relevance of Accounting Information in a Transition Economy: The Case of the Czech Republic

Abstract

The purpose of the paper is to test empirically the quality of financial accounting information in the Czech Republic in terms of value relevance. Value relevance is measured by the explanatory power of linear regression tests (price regression, returns regression and logarithmic regression) and by returns that can be earned on a hedge portfolio based on a pre-knowledge of accounting information. The study investigates the value relevance of Czech accounting numbers for the period 1994-2001 and compares it to the value relevance of Swedish accounting numbers. The results show that the value relevance of Czech accounting information is lower than the value relevance of Swedish accounting information throughout the period but it increases over time (8.8% compared to 27.5% in price regression, 2.7% compared to 5.7% in returns regression and 63.7% compared to 88.5% in logarithmic regression for the period 1994-1997, and 14.4% compared to 15.2% in price regression, 12.1% compared to 5.0% in returns regression and 72.9% compared to 75.3% in logarithmic regression for the period 1998-2001). The abnormal returns that can be earned with perfect pre-knowledge of accounting earnings are -8.3% for the Czech sample and 22.1% for the Swedish sample in 1994-1997 and 22.1% for the Czech sample and 41.0% for the Swedish sample in 1998-2001. The results show the superiority of the hedge portfolio methodology in situations when the capital market efficiency might be questioned. The factors which influence the development of value relevance in a transition economy are the development of accounting regulation, control mechanisms, business climate change, internationalization and business cycle, economic development and industry structure.

Keywords: value relevance, accounting quality, transition economy



1. Introduction

In 1989, many countries embarked on a path of political reform and transition from a centrally planned economy to a market economy. Vast potential markets are now open to investors from all around the world. High quality financial accounting information is crucial for well-functioning and credible financial markets and has important implications for the financing of companies. In a transition economy, financial capital is scarce and attracting financial capital to companies is therefore crucial for the economic growth of the country. Thus, high quality accounting information and an efficient accounting environment are major issues in the transition process.

This study investigates the development of financial accounting information quality in one of the transition countries, namely the Czech Republic. The country experienced an abrupt political change in 1989, which was followed by the transition from a centrally planned economy to a market economy in the 1990s. In contrast to the centrally planned economy, the market economy allows, under certain conditions, the free trade of goods and services based on the interaction of supply and demand. In turn, the interaction of supply and demand is expected to improve the allocation of resources. The allocation of resources takes place in marketplaces for company shares, that is, in capital markets. Raising capital in the stock market is a new approach to financing the activities of firms in transition countries. In a centrally planned economy, resource allocation used to be based on other factors than economic efficiency. In a market economy, by providing market-based signals, capital markets assist in allocating funds to the most efficient and productive enterprises. A well-functioning stock market is, in turn, a necessary condition for the economic growth of a country.

Investments are associated with certain risks. These risks are associated with potential structural, political and economic problems as well as informational problems arising from the difficulty of obtaining relevant and reliable information. Information flows are necessary to enhance investors' trust and confidence in companies and countries and thus their willingness to invest. The information environment includes financial accounting information and since this information was not needed in centrally planned economies, transition countries had to adopt a completely new set of accounting principles and mechanisms for their enforcement. Hence, these countries constitute a unique case of accounting development from scratch.

Transition economies are often – and quite rightly – classified as emerging markets. There is, however, a significant difference between transition economies and other emerging markets. A transition country is one that switches from a centrally planned economy to an open market economy. The transition is based on a major political change that quickly brings about changes in the institutional structure and character of the country, and on the change in ownership of production resources. An emerging market does not necessarily imply such changes and might develop without any abrupt changes in its political and institutional structure. The main issues investigated in this study, however, are relevant to any emerging market.

The Czech Republic has been chosen as the case country for several reasons. First, it is a transition country that with its geographic position in central Europe and proximity to the European market is interesting for European investors. The Czech Republic was a candidate country for the European Union throughout the 1990s and became a full member of the Union in May 2004. In addition, in its transition process, the country could resume its historical democratic tradition and reassert the cultural and social values it shares with continental Europe. Second, in contrast to, for example, Poland and Hungary, there was no private ownership of enterprises at all in the Czech Republic when the transition period began, which makes it a unique case. Third, its transition from a centrally planned to a market economy has been one of the fastest and most successful transitions among the former centrally planned countries. Finally, the Czech Republic has decided to develop its own generally accepted accounting principles and not to adopt international accounting standards or any other already existing accounting system.

1.1. Purpose, limitations and assumptions

The purpose of this study is to test empirically the quality of financial accounting information in the Czech Republic in terms of its value relevance.

The first objective is to investigate whether financial accounting information in the Czech Republic is value relevant and whether it is more or less value relevant than in a well-developed market economy.

The second objective is to investigate whether the value relevance of Czech financial accounting information has changed over time and to identify factors that could explain any changes that may have occurred.

The first question, thus, is whether or not the Czech financial accounting information is value relevant. It can be hypothesised that the value relevance of financial accounting information is lower in a transition country than in well-developed market economies with well-functioning control mechanisms and accounting regulations. In other words, the value relevance of Czech accounting information is assumed to be lower than in the benchmark country.

Value relevance is defined as a statistical association between the market value of the firm and the financial accounting numbers. If the statistical association is high, the accounting numbers are considered to be value relevant while if the association is low, the accounting information is less value relevant. The statistical association between market indicators of the company value and accounting numbers is measured by the explanatory power of linear regression tests and by returns that can be earned on a hedge portfolio based on a pre-knowledge of accounting information. The present study concentrates on two summary accounting measures: accounting earnings as the bottom line of the income statement and the book value of equity as the bottom line of the balance sheet¹. This approach to the measurement of value relevance relates to the association studies research tradition². Reactions to the announcement of accounting information are not the object of interest. Further, as the purpose of the study is not to investigate the value relevance of different individual accounting (or non-accounting) measures, the significance of individual accounting variables is a minor issue.

The chosen value relevance research design assumes market efficiency in that the market price is assumed to be an indicator of the intrinsic value of the company. The present study does not test for the market efficiency as such but the inferences and conclusions drawn from the tests depend on whether or not the market is efficient.

¹ For design of the tests, see section 6.

² See section 2.

The study investigates the value relevance of Czech accounting information for the period 1994-2001. The period starts with the first entire accounting year at the Prague Stock Exchange, which was 1994³ and ends with the last year in which financial statements were prepared in accordance with the Accounting Act of 1991.

In this study, Sweden serves as a benchmark for a well-developed market economy as it meets the four main benchmark criteria: it is a member of the European Union, has a similar-sized population (assuming similar economic resources and growth potential), reasonably well-developed efficient capital markets and well-developed accounting principles. In addition, it belongs to the continental accounting tradition which was also a desirable criterion.

Both Czech accounting and Swedish accounting have been historically influenced by the German tradition. Mueller (1967) classified Swedish accounting as being macroeconomic. This means that financial accounting correlates closely with national economic policies and is related to legislation and tax. Mueller groups Sweden with France and Germany. Nobes (1983) develops Mueller's environmental classification and groups Sweden into the macro-uniform accounting systems to which also France and Germany belong⁴. Gray (1988) classifies countries based on Hofstede's analysis of cultural differences and concludes that Sweden has less in common with Germany and France than previously suggested. The accounting trend to move from the continental tradition continued in the 1990s, when international accounting standards started to be introduced into Swedish accounting. The Czech accounting system could not be classified at the time of Mueller's and Nobes' study. Historically, however, the Czech Republic belongs to the German tradition⁵ and the new accounting system was developed in the 1990s with substantial support from France. Consequently, the Czech and Swedish accounting regimes are historically related to the same sources.

Finally, both the Czech Republic and Sweden were chosen for this study due to the availability of empirical data to the author. The focus of the study is on Czech financial accounting information; Sweden is only referred to when

³ Trading at the Prague Stock Exchange started in April 1993.

⁴ Sweden is further sub-grouped as a government driven accounting system and Germany and France as legislation and tax driven accounting systems.

⁵ See section 3.2.1.

necessary for comparison and for explaining the differences between the two countries.

As regards the second objective, that is, the issue of whether the value relevance has changed over time, it has been confirmed in the value relevance literature⁶ that value relevance of accounting information does, in fact, change over time. The factors enhancing value relevance are often identified as better accounting regulations and better control mechanisms as a result of increased awareness among producers, users and accounting standard setters. As a factor decreasing value relevance, the change in the character and structure of companies is often mentioned.

In a transition economy, the value relevance change should be positive, i.e. the value relevance of accounting information should increase over time, because the transition to a market economy should include institutional changes that promote higher quality of accounting information. Thus the hypothesis is that value relevance of financial accounting information has increased over time in the Czech Republic as a result of improved accounting regulation and progress in the transition to a market economy.

For this purpose, the research period is divided into two sub-periods: 1994-1997 and 1998-2001, and the change in explanatory power of the two periods is compared. Several factors that might influence a potential change in value relevance are identified and discussed.

1.2. Contribution of the study

The present study contributes to the research in two ways. First, it applies value relevance tests to a new set of accounting data and thereby broadens the perspective of international comparative studies. It studies the accounting regulation in the Czech Republic in a quantitative way with methods not previously used for evaluating the quality of Czech accounting.

The case of the Czech Republic is an interesting example of the possible development of accounting regulation and accounting environment in a transition economy. The study gives an insight into some of the major issues connected to the transition process in the field of accounting. It also

⁶ See section 2.

highlights the importance of the institutional factors that influence the development of financial accounting information.

The results of the study may also have implications for investors (foreign as well as domestic), standard setters and preparers of financial reports in the Czech Republic. Financial accounting information has been recognised as being of fundamental importance for capital markets and for economic growth. Thus, insights into the factors that influence the value relevance of accounting information are of interest to all countries and in particular to countries with emerging capital markets.

1.3. Quality, usefulness and value relevance

Decisions on whether or not to invest are made on the basis of a complex set of information, part of which is financial accounting information. The accounting environment has generally been considered inefficient in transition countries. An unsatisfactory state of financial statements, poor measurement techniques and non-existent control and implementation have been often identified⁷ and investors often complain about receiving “unreliable” information. The purpose of the study is to confirm or refute these claims.

Accounting has developed as a tool for decision-making for different groups of business stakeholders and financial accounting information is one set of information they use in the decision-making process. The information must be perceived as relevant and reliable if it is to be useful. The better the information, the better and faster investors can make their predictions, revise their expectations and evaluate their portfolio alternatives. Creditors also benefit from better information decreasing the risks of credit defaults. If decisions for both investors and creditors are less risky, this should benefit companies because it would decrease the cost of capital and possibly increase the availability of financial capital in society. Efficient accounting regulation that takes into consideration the quality of accounting information is therefore an important issue in a broader perspective. However, an empirical evaluation of the social usefulness of accounting information is a difficult task and is not the purpose of this study.

⁷ Patton & Zelenka (1997), Transition Report EBRD (1995) and Bailey (1995).

The quality of accounting information is measured by the concept of usefulness. Useful information is information that is relevant for decision-making; in other words, it makes a difference in the decision-making process. Useful information also has to be reliable in order to decrease insecurity in decision-making. It has to be timely so that it can influence the decision-making process in time. Historically, the reliability concept has primarily protected creditors. The perspective of accounting objective has gradually turned to another user group, the investors. Investors' decisions are of a different character. They use the information to determine the price of the shares they buy or sell and thus are interested in information that reveals the economic substance of the company's transaction that can be used in forecasting the future. In the present study, the quality of financial accounting information is investigated from the perspective of investors.

Investors allocate their financial resources based on their beliefs about the future, their preferences and the information available to them. They use company financial reports in their analysis and decision-making process. If accounting principles and methods generate a good description of the firm's value and value creation, a close correspondence between accounting equity and the stock market value of the firm can be found⁸. In such a case, accounting information is value relevant for the users. However, accounting principles and rules have historically often developed as normative rules and compromises among the different user groups of accounting information instead of being supported by theoretical concepts and economic theory. Therefore, different accounting regulations are probably value relevant to varying degrees.

The value relevance of financial accounting information is interpreted in this study as the association between the market value of the company and the publicly available financial accounting information. The degree of association depends on the measurement and recognition issues invoked by the fact that accounting is based on a number of fundamental accounting concepts that enhance conservatism and may conflict with the true description of economic reality. The degree of association is also influenced by factors external to accounting that relate to the legal, economic and social environment of society.

The market value of the company is derived from a broad information set of which accounting information is only a part. Prices may contain information

⁸ Runsten (1998), p. 5.

which is not included in accounting numbers and if this information constitutes an important part of the price, the accounting information itself becomes less relevant. However, if the accounting numbers map the relevant attributes of the economic events, the association is high. A high degree of association between accounting and market numbers means a high value relevance of accounting information, which is one of the primary prerequisites of high quality financial accounting information.

This view assumes that enhancing value relevance is desirable. However, as Ely & Waymire (1999) state, achieving high value relevance of financial accounting information can be problematic because:

- information relevance is a complex, multidimensional attribute and perhaps no consensus on specific methods can be reached,
- the relevance of accounting data may be influenced by changes in the economic environment beyond the standard setters' control, and
- standard-setting is a political process in which a number of trade-offs have to be made.

The problem of achieving high quality or high value relevance of accounting information has two implications. First, the question is to what extent value relevance is desirable. The second question is to what extent it is possible to achieve. Frankel & Lee (1998) state that while regulators are interested in the value relevance of numbers produced by different accounting systems, global investors are primarily interested in predicting returns.

Holthausen & Watts (2000) question the main assumption in the value relevance studies, namely that the primary purpose of financial reporting is to provide information to investors for use in assessing the value of the firm for investment decision purposes⁹. In their view, standard setters consider users other than equity investors and uses other than the valuation of equity securities. Holthausen & Watts also state that, for example, FASB is interested in individual investors rather than investors in the aggregate as represented by the stock market¹⁰ since it has concerns about unequal access to information and different costs of information acquisition. They argue that the value relevance research would be more useful if it could explain when the valuation input is likely to be operating without interference from other

⁹ Holthausen & Watts (2000), p. 15.

¹⁰ Holthausen & Watts (2000), p. 22.

factors and when it is likely to be affected by these factors. The other factors are institutional factors; that is, factors that actually influence the standard-setting process as well as the implementation of accounting standards.

This criticism of value relevance studies, however, does not deny the importance of value relevance as such. Rather, it discusses the perspective of the research and is possibly calling for value relevance research either on behalf of other user groups or aggregate investor groups. Nevertheless, companies raise a substantial amount of capital from investors. In transition economies this type of capital is still scarce and further capital funding is necessary. Investors are an important group of financial information users and their perception of financial information quality has a broader impact on society. This gives legitimacy to the investor-oriented value relevance research.

The crucial issue is thus not whether or not to study value relevance but how to measure the level of value relevance. Basically, two perspectives might be distinguished: the signalling perspective and the measurement perspective. The signalling perspective means identifying whether or not the announcement of new accounting information causes a reaction. If it does, the information is relevant. This perspective is adopted in event studies; an early example is the study by Beaver in 1968.

The second perspective is the measurement perspective adopted by association studies. These studies measure the explicit relationship between the market indicators of the value of a company and the accounting measures. Both the existence and the degree of value relevance can be measured. If there exists a statistical association between the accounting measures and the market values and/or the accounting measures are significant, then the accounting information is value relevant. The measurement perspective is the approach used by most value relevance researchers referred to in this study (e.g. Easton & Harris (1991), Penman (1998), Alford et al. (1993), Francis & Schipper (1999)).

All research approaches assume market efficiency. If investors trade in an efficient market, they can rely on prices reflecting a rich set of the total mix of information, including financial statement information. If the market is semi-efficient, all publicly available information is incorporated into the prices. We can assume that the observed market value corresponds at every point in time to the intrinsic value of the firm. If, on the other hand, the market is inefficient, the observed market values may deviate from the

intrinsic value and the effect of the changes in accounting policies might be questioned. The assumption of market efficiency is crucial for the interpretation of associations between market values and accounting numbers. Inferences can be drawn on the association and its power if the market is efficient, but not if the market is inefficient. Recently market efficiency has been questioned in a number of studies.¹¹

The value relevance of accounting information was recognised as an important issue several decades ago. Most of the early studies were based on US data and found that an association between market values and accounting measures does, in fact, exist and that financial accounting information is value relevant. A frequently investigated question has been whether the value relevance of accounting information has increased since the standard setters, stock exchanges and other user groups started to request more accounting information, more frequent accounting information and more timely accounting information. The research results are ambiguous. Collins, Maydew & Weiss (1997) conclude that this is the case. The combined relevance of earnings and book values has slightly increased over the past forty years. These results are confirmed by Francis & Schipper (1999). Both studies also conclude that the relevance of income statement items has decreased while the relevance of balance sheet items has increased. On the other hand, Lev & Zarowin (1999) show that the usefulness of earnings, cash flows and book values has actually been deteriorating over the past 20 years despite the efforts of standard setters to improve the quality and timeliness of financial accounting information.

With the globalisation of the world economy in the 1990s the comparison of different national generally accepted accounting principles has become important. When investors have the choice of investing in different markets, they use information from different accounting environments. The national generally accepted accounting principles differ as to the degree of recognition of different economic transactions and in valuation and measurement methods. Moreover, countries differ in the way they implement and enforce the accounting rules.

Comparative value relevance studies appear to have contributed positively to the knowledge of individual national accounting jurisdictions and practices. Harris, Lang & Möller (1994) compare the value relevance of accounting measures in the U.S. and Germany and find German accounting earnings

¹¹ For further discussion, see Beaver (2002).

less relevant than U.S. earnings. Joos & Lang (1994) investigate the effects of the implementation of European Union directives on the value relevance of financial accounting in EU member states. They find that the implementation of EU directives had no substantial effect on reducing accounting diversity in the EU. On the whole, the studies confirm an a priori hypothesis about Anglo-Saxon accounting being more value relevant and less conservative than continental accounting, although the results are not always so clear.

Several researchers have also realized that not only financial statements and financial accounting numbers but also other factors such as institutional environment are important for the value relevance of accounting information. These studies generate new research designs in the area of value relevance research. The study of Ball, Kothari & Robin (2000) introduces into the research design dividend laws, the distinction between code law and common law countries and litigation rules as institutional factors. Ali & Hwang (2000) explore relations between measures of value relevance of financial accounting information and country-specific factors such as bank orientation, private sector standard-setting, taxation, and the degree of audit.

The value relevance of financial accounting information in the transition economies is an unexplored area that this study attempts to examine. Financial reporting is a vital part of the infrastructure that supports the economic growth of each country. High quality accounting information is perceived as a prerequisite for decision-making. The decision of whether or not to invest in new companies, new markets or new countries depends to a great extent on the perception of risk. A high quality informational environment reduces risks for investors and increases their willingness to allocate resources in the countries where the information environment is superior. If investors perceive a company or a country as less risky, they expect a lower rate of return and financing becomes cheaper. A country with a superior accounting information environment can attract capital at lower cost. A superior information environment thus becomes a crucial factor in creating and sustaining investor confidence in a country. Investor confidence in a country and a country's credibility provide the impetus for well-functioning capital markets and, since an investment-saving gap exists in transition countries, this impetus is necessary for their economic development and growth and for a full transition to a market economy.

1.4. Structure of the study

The study is organised as follows. Chapter 2 discusses the findings of previous research. Chapter 3 deals with the institutional background of Czech accounting, describing the political and economic changes that occurred during the research period and then comparing Czech and Swedish generally accepted accounting principles. Chapter 4 defines the concept of information usefulness and value relevance and discusses factors influencing value relevance. Chapter 5 describes the underlying valuation model that serves as the basis of the empirical tests used in the study. Chapter 6 presents the research design and discusses the tests, the samples and statistical issues. Chapter 7 discusses the empirical results of the research and chapter 8 summarizes the results and offers suggestions for further research.

2. Previous empirical research

The issue of value relevance of accounting information is a major area in the capital market research which has expanded throughout the decades due to the increasing concern of both the standard setters and the users of financial accounting information for the qualitative characteristics of accounting information and its relevance for decision-making. Major issues in the value relevance research have been the existence and magnitude of the value relevance and its change over time, the question of value relevance of different accounting measures, and the comparison of value relevance of different accounting regimes. The chapter is organized as follows. The first part gives an account of the studies on value relevance and its changes over time. The second part deals with the international comparative studies that investigate differences between the accounting systems of different countries. A review of previous research, the studies and their results, is also summarized in appendix 1.

2.1. Value relevance studies – the existence and changes of value relevance

Researchers have for a long time been concerned with the quality of accounting information. The question of the value relevance of accounting information arises because of several factors. First, current accounting does not allow to recognise and to measure appropriately the economic assets, second, financial reporting is not timely and is pre-empted by other information sources and third, the perspective of financial statements is not focused on the future and therefore there exist other information sources that are superior to financial statements¹².

The question whether accounting information is value relevant; that is whether it affects decision making of the users of the information, has been of interest since the 1960s. The information content of accounting information has been documented in the early studies by Ball & Brown (1968), Beaver (1968) and Beaver, Lambert & Morse (1980). All the studies come to the conclusion that accounting information is informative and relevant to investors in their decisions. The early studies of 1960s and 1970s are mostly event studies, which study the value relevance from the signalling

¹² Francis & Schipper (1999).

perspective. The researcher examines changes in share prices around a specific event and investigates to what extent the event conveys new information to the market.

Following the critique of Lev (1989) on poor results of the earnings relevance research, the researchers started to seek for improvement in valuation techniques and accounting measurement methodologies. The emerging measurement perspective of value relevance studies has become the prevailing approach in the research area since the 1990s. The measurement perspective manifests in the association studies and examines the statistical association between financial accounting variables and share prices or returns. The methodological focus has thus changed in the value relevance research and so did the primary topic of interest. It had been earlier confirmed that accounting information is value relevant and thus in the 1990s, the question became rather which type of accounting information is value relevant and whether the value relevance changes over time.

One of the first association studies of the 1990s was Easton & Harris (1991). They study the value relevance of accounting earnings in the US in period 1969-1986. They investigate the association between the market returns (depend variable) and the levels of accounting earnings and the changes of accounting earnings (independent variables) and come to the conclusion that the level of current accounting earnings is significantly associated with returns. The changes in accounting earnings are on the contrary significant only in half of the cases.

Ely & Waymire (1999) investigate the value relevance of accounting earnings in the US market over 67 years. They use the same research design as Easton & Harris (1991) and study the association between market returns and earnings levels and earnings changes. They conclude that accounting earnings are value relevant in the U.S. market but their value relevance has not increased despite the effort of standard setters. They further investigate the association between market prices and earnings and book values of equity and conclude that the combined value relevance of earnings and book value has increased since 1970s probably as the consequence of the creation of FASB.

There is substantial evidence on the development of value relevance for the US market. The researchers have been concerned by two conflicting tendencies – the effort of standard setters to improve financial reporting which would increase value relevance of accounting information and the

concern that the accounting based on historical cost and prudence principles loses its value relevance due to the industry changes in the economy. The results of the research are ambiguous.

Collins, Maydew and Weiss (1997) investigate the value relevance of U.S. financial accounting in the past 40 years. They conclude that the combined relevance of earnings and book values of equity has increased in the last four decades. However, there is a shift between the individual accounting variables. The incremental value relevance of earnings has decreased while the incremental value relevance of book value has increased. According to the authors this is due to the increasing frequency and magnitude of one-time items, due to the increased frequency of negative earnings and due to the changes in average firm size and increasing intangible intensity over time.

Francis and Schipper (1999) investigate the change in the value relevance of accounting measures between years 1952-1994 in the US capital market. They measure value relevance as the total return that could be earned on a hedge portfolio based on the pre-knowledge of financial statement information. Furthermore, they measure value relevance based on the explanatory power of the association between the market price (dependent variable) and accounting earnings and book value of equity (independent variables). The results of the study show that the pre-knowledge of a ratio that consists of earnings levels, earnings changes and book value of equity is most relevant for the hedge portfolio investment strategy. The changes in cash on the other hand seem to be least relevant for the strategy. The linear regression tests confirm the findings of Collins, Maydew & Weiss, that is the combined value relevance of earnings and book value does not decline over time, however, the earnings relevance declines while the relevance of book value increases over time. Francis & Schipper finally test whether the changes in the value relevance of the individual accounting variables are attributable to the change in the business environment. They investigate the value relevance of the accounting numbers for a sample of high-tech companies and for a sample of low-tech companies. Their finding is that the changes in value relevance of the individual accounting variables are not due to the business changes.

Lev & Zarowin (1999) come to another conclusion. They state that usefulness of reported earnings, cash flows and book value of equity has been deteriorating over the past 20 years in spite of investors' increasing demand for relevant information and persistent regulator efforts to improve the quality and timeliness of financial information. The authors see the

reasons for this in the impact of changes in firms' operations and economic conditions that are not adequately reflected by the current reporting system. The main changes are those of increasing R&D expenditures, restructuring costs, intangible assets, innovative activities which distort the matching of costs with revenues and thus adversely affect the informativeness of financial information.

Brown, Lo & Lys (1999) claim that the test model of Collins, Maydew & Weiss (1997) and Francis & Schipper (1999) is misspecified since it does not take into account the scale effect¹³. The value relevance measure is the explanatory power (R^2) of a regression model in which market values are a dependent variable and accounting numbers are independent variables. Brown, Bo & Lys argue that holding value relevance constant, the R^2 of the estimated model will be higher in samples in which the cross-sectional distribution of the scale factor has a larger variance relative to its mean because the R^2 measures also the variation in initial conditions. The initial conditions are probable to be different because the firms that constitute the samples are of different size.

Thus, without controlling for scale effects, the explanatory power of the tests will be overestimated and wrong conclusions can be drawn. Brown, Lo & Lys control for the scale effect in two ways. First, they estimate proxies for the coefficient of variation of the scale factor and calculate differences in explanatory power across samples based on these coefficients. Second, they deflate the regressions used in Collins, Maydew & Weiss by a proxy for the scale factor. Their results show that the explanatory power of accounting variables (earnings and book value) has actually decreased over the period 1958-1996. The conclusion for further research may be that R^2 from levels regressions of market value, earnings and book values is a less reliable measure of value relevance and that it is difficult to compare R^2 across samples as long as the researcher does not control for scale.

¹³ The scale effect relates to the fact that there is a difference in the size of the regression variables between samples and over time.

2.2. International comparative value relevance studies

As has been shown, there is evidence of the change in value relevance of accounting measures over time. The studies reported in this section are based on American data which constitute a suitable research source due to its size. However, the globalisation processes of the 1990s brought about the necessity to investigate value relevance of different accounting regimes. This has been enabled by an easier global access to databases like Global Vantage. The international comparative studies on value relevance are a reference point to this study.

Alford et al. (1993) compare the information content - that is the value relevance - and timeliness of accounting earnings in seventeen countries. They measure value relevance in two ways. First, they use the hedge portfolio investment methodology. They create a hedge portfolio based on pre-knowledge of the change of accounting earnings and investigate whether abnormal returns can be earned on this portfolio. Second, they investigate the association between stock returns and the contemporaneous level of earnings and change in earnings. The test based on the hedge portfolio cumulative returns shows that all samples earn significantly positive returns, in other words that accounting earnings reflect value relevant information in all the sample countries. The association test shows a weaker returns and earnings association for some of the sample countries. The authors also investigate the effect of timeliness and frequency of financial reports suggesting that accounting information is relevant only if it is timely and frequent. They conclude that timeliness and frequency of information disclosure differs across countries and that the statutory requirements do not always translate into timely disclosure.

Joos and Lang (1994) examine the differences in accounting regimes of three countries of the European Union – UK, Germany and France. They also investigate what effect the implementation of the European Union directives had on the value relevance of accounting information in these countries. They use univariate analysis of return on equity, book-to-market ratio and earnings-price ratio, returns regression based on earnings levels and earnings changes, and price regression based on book value of equity and earnings. They find that there are differences among the countries as to the value relevance of accounting information and its conservatism. They also find that the directives did not increase value relevance of accounting information in any of the three countries. They hypothesise about possible reasons for the

differences that persist after the implementation of the directives. They identify taxes, discount rates, industry concentration and capital structure differences as major factors.

Harris, Lang & Möller (1994) compare the value relevance of accounting measures in the United States and Germany. They investigate the association between returns and earnings levels and earnings changes and association between the market price and earnings and book value of equity. They also investigate the conservatism of accounting numbers in the two countries based on the magnitude of the coefficients of the accounting variables. They hypothesise that conservative accounting should increase the multiple applied to the reported earnings and the book value of shareholder's equity, that means the coefficients on both earnings and book value should be larger, the higher level of conservatism. The results of the tests support the authors' hypotheses. German reported earnings have essentially the same degree of explanatory power as the US earnings over long windows; however, the coefficient estimates are higher, which would suggest a higher German conservatism. The book value seems to be less relevant in Germany than in the US, suggesting the conservatism of balance sheet. The explanatory power is lower for Germany than the US for the combined association of earnings and book value of equity.

The large majority of the studies on value relevance are conducted on data from well-developed countries. Noteworthy, therefore, is the first attempt to use the value relevance approach on Chinese market by Bao & Chow (1999). They examine the value relevance of accounting information of Chinese companies between 1992 and 1996 prepared according to the domestic standards respectively according to the international accounting standards. They report that both sets of financial accounting information are value relevant, although the financial statements prepared according to the international accounting standards have slightly higher explanatory power. They find further that the explanatory power of the accounting variables has increased over time. They also state that the book value lacks value relevance in 1992-1994 while it becomes significantly relevant from 1995 onwards¹⁴.

Jindrichovska (2001) studies the relationship between the accounting earnings and returns in the Czech Republic for the period 1993-1998. She tests the association between the market returns and earnings of one to four

¹⁴ This is explained by the high inflation rate prior to 1995.

leading periods. She concludes that for the Czech data there is a statistically significant relationship between the returns and earnings for length windows of one year and more. She also tests alternative association between the return and earnings changes and shows that the earnings changes are not value relevant in the Czech Republic.

Holthausen & Watts (2001) raised doubts about the relevance of the value relevance research. Indeed, the researchers have been for a long time aware of the fact that any conclusions on the value relevance of accounting information must be made with caution and that the association between prices and accounting variables is probably also influenced by other factors external to accounting environment. Attempts were made to explain the achieved research results by different external factors; however, these have been more than often identified ad hoc. The need for a systematic classification and testing of underlying external factors has appeared. However, the operationalisation and quantitative testing of these factors is not an easy task.

Ball, Kothari & Robins (2000) investigate how institutional differences among countries influence properties of their firms' reported earnings and thereby the value relevance of earnings. They compare the value relevance of earnings between code law countries and common law countries¹⁵ and conclude that the value relevance of accounting earnings is lower in code law countries than in common law countries. They state that income conservatism is higher in common law countries and is a function of the regulation of accounting standard setting and enforcement, litigation and private debt financing. They control for the difference in industry composition of the countries but find that the difference in value relevance of accounting information is independent of this factor; i.e. the differences in the industry composition do not explain the differences in the value relevance of accounting information.

¹⁵ Code law countries means countries that have accounting regimes based on the continental tradition. Accounting regulation tends to be detailed and comprehensive in code law countries, the influence of accounting profession and its participation on standard-setting is low, accounting tends to be uniform and secretive. Common law countries are the countries that base their accounting regimes on the Anglo-Saxon tradition. Accounting profession is well established, accounting is more flexible and transparent (Gray, 1997).

Ali & Hwang (2000) investigate the relationship between the value relevance of accounting information and several country specific factors. These are bank-versus market orientation of financial systems, the involvement of private sector bodies in standard setting, code law versus common law based accounting regimes, tax influence on financial accounting and finally, external auditing expenditures. The authors find that the value relevance is lower for the countries that have bank oriented financial systems, do not involve private-sector bodies in accounting standard setting, experience a strong relationship between tax and financial accounting, have relatively low expenditures on external auditing and belong to the code law accounting tradition. Finally, they state that it is not clear whether value relevance is accepted as the primary consideration in standard setting in all countries.

Ball, Robin and Wu (2003) investigate the interaction between the accounting standards and the incentives of the preparers' of the accounting information in four Asian countries. These countries have derived their accounting standards from common law sources that are usually experienced to be of high quality. However, the financial reporting in these countries shows low quality due to the institutional background that affects the preparation of the financial statements. The authors argue that preparer incentives depend on the interplay between the market and political forces. Market forces include the extent of the demand for high quality financial reporting such as the size of the capital market and the extent of public versus private contracting in the country. Political forces include the extent of involvement of governments in codifying and enforcing accounting standards, tax rules and efforts to reduce the volatility of the reported income. Based on the results showing a lower quality of accounting information than expected, the authors argue that it is misleading to classify countries and evaluate the value relevance of accounting information in terms of formal accounting standards without giving a substantial weight to the institutional influences on actual reporting incentives of the preparers.

2.3. Summary

The review of the previous research points at an extensive evidence of the value relevance of accounting information. It shows that substantial differences among the countries and accounting regimes exist. It reveals the fact that value relevance is a dynamic notion which is subject to changes in

time due to the actions of standard setters and due to the changes in the economic and social environment. The review shows a substantial shift in the research topic orientation from evaluating exclusively the existence of information content of accounting numbers towards investigating the interplay of accounting environment and the institutional and economic background of financial reporting.

3. Financial accounting in the Czech Republic and its institutional background

This chapter describes the accounting environment and its institutional background in the Czech Republic¹⁶. It is generally recognised that accounting systems are a product of the cultural, economic and political environment of every country. The Czech society has in recent years experienced a sudden change both in the political and economic spheres. This development completely changed institutional and economic structures and it is thus important to describe the changes in order to understand the Czech business environment and eventually the accounting regulation and practices.

First, the institutional background of the country is discussed and compared to the institutional environment in Sweden. Second, the development of the Czech accounting before 1989 is described followed by a section on the development of new market-oriented accounting after the political changes of 1989. Third, the state of accounting during the research period is reviewed and the basic differences between Czech and Swedish accounting principles are identified.

3.1. Institutional framework

Financial statements of companies are prepared according to the general accounting practices and principles of the respective country. When the reforms and transition to a market economy commenced in the Czech Republic in the early 1990s, a completely new set of accounting regulation was needed. During the previous forty years financial reporting was principally non-existent and accounting was more a statistical tool for comparing planned indicators to actual output rather than a tool for analysing the companies' performance. In order to understand the development and present state of accounting regulation in the Czech Republic, it is necessary to have a look at the process of transformation from a centrally-planned economy to a market economy, at the changes in institutional environment

¹⁶ Swedish institutional background is also investigated, though in a smaller span width.

and their implications for accounting. The following description of the institutional background extends from 1989 to 2001¹⁷.

Accounting practices are a product of the institutional environment of each country; that is of its historical, political and economic development. Institutional environment can be divided into the following five areas¹⁸:

- nature of enterprise ownership - with respect to transition countries, the main issue is the development of private ownership as opposed to previous state ownership. The consequent implications for accounting are the necessity of a complex accounting reform that would mirror the new ownership relations.
- legal system – new laws supporting the development and functioning of a market economy have to be introduced. These laws influence the institutional environment in business and financial sector. Laws regulating accounting are an integral part of the system.
- sources of finance - the privatisation of the economy is a crucial issue because different privatisation paths lead to different corporate governance patterns. Corporate governance patterns in turn are closely connected to accounting issues and more specifically to how accounting objectives are perceived.
- capital markets - accounting regulation and how companies are valued and analysed is of crucial importance to the functioning of capital markets and vice versa
- economic growth and development - capital markets development and legal reforms seem to be linked with the stage of the economic development and main macroeconomic variables should therefore be monitored.

3.1.1. Nature of the enterprise ownership

The basic shift during a transition period is the change in the nature of enterprise ownership. The conversion from a state to a private ownership is the most crucial factor in the transition towards a market economy. The direct implication for accounting is the fact that accounting serves

¹⁷ The political and economic changes prior to the research period are described because they constitute the foundation of the new market economy in the Czech Republic.

¹⁸ Hellström & Armstrong (1996).

completely different functions in a centrally planned economy and in a market economy. The following actions are necessary to support the change of enterprise ownership:

- establishment of property rights and commercial legislation to stimulate the growth of a market economy
- privatisation of state owned sector
- new institutional structure that supports market mechanisms

In 1989, the prevailing form of ownership in the Czech Republic was state ownership. The private sector was principally non-existent (disregarding co-operatives, which were also a form of collective ownership). The contribution of private enterprises to gross domestic product was only 3%. 99% of labour was employed in the state sector with only 1% of the population self-employed¹⁹. In 10 years, private ownership level increased substantially, being 70% in 1995, 75 % in 1997 and 80% in 1999²⁰. The share of private ownership in the country is at present comparable to other countries of the European Union.

Before 1989, the Czechoslovak economy was almost completely dominated by central planning, with little experience of markets and almost no legal institutional basis for a market economy. Economic activities were concentrated in large units owned by the state. Prices were almost completely controlled by the state. Czechoslovakia was more dependent on the socialist markets in its international business activities than any other former East European country because of its industrial structure. The closed character of the economy and the tradition of tight central planning was also reflected in the low number of joint ventures with foreign investors from Western countries.

In Sweden, on the other hand, private ownership is deeply rooted in the society and has never been set aside. The right to private ownership is one of the basic human rights included in the Swedish constitution. The state and collective ownership exists only in a small proportion. The state owns 60 companies which altogether employ about 200 000 people²¹. There are also a number of municipally owned companies mainly in the area of residential services, health care, education and social services. The state and other

¹⁹ Rondinelli (1994), p.2.

²⁰ EBRD Transition reports 1995, 1997 and 1999.

²¹ Regeringskansliet homepage.

collective ownership thus concentrates mostly in areas that are regarded as public services. With regard to the predominance of private ownership in the country, Swedish accounting has always served as a decision-making tool for private investors and other users groups and could develop gradually.

3.1.2. Legal changes

A prerequisite for privatisation and transition is institutional changes; that is a legislation of a suitable framework of institutional rules within which private enterprises can successfully operate, such as property rights, business law, corporate law, antitrust law and laws promoting the functioning of capital markets. These changes include also accounting regulation.

The legal tradition of the Czech Republic follows the continental tradition based on the Roman law²². The legal system of the inter-war period was based on the Austrian and German patterns²³, the influence of which was strengthened during the World War II. After the Communist party took over in 1948, the legal system deviated substantially from what is usual in a market economy. Therefore, after the political change of 1989 a new legal system had to be created. Since the old constitutional law did not include the right to private ownership, a new constitution had to be adopted as well as privatisation laws, allowing the transfer of the ownership from the state to private persons, and new commercial laws that would reflect the new economic reality.

The new constitutional law of April 1990 changed the economic structure of Czech society; it stated the right to private ownership. In January 1991, amendments were made to this law and on December 16, 1992 the new Constitution was endorsed in the country as a result of the division of former Czechoslovakia into two independent countries. The new Commercial Code (513/1991) governing business activities replaced many previous laws on economic conduct: the former Law on Joint-Stock Companies (1990), the Economic Code (1964) and parts of the Act on Economic Relations with Foreign Countries. The Commercial Code has been amended several times since 1991 as a result of new needs and many problems that appeared in the society. The latest amendment is from June 1, 1996.

²² Codified law as opposed to common law based on precedents.

²³ For example, the Czech commercial code was inspired by the German Handelsgesetz.

In 1990, a Law on Small-scale privatisation and a Law on Restitution were adopted which allowed the transfer of the ownership of small and medium sized enterprises. The Law on Large Privatisation was adopted in 1991, which enabled the privatisation of large companies. The Tax law was introduced in 1992 and played an important role for certain parts of the Accounting Act. The Bankruptcy law was adopted in 1991 but was not fully used until recently. Finally, the Law on Stock Exchange and the Law on Collective Investment Securities were adopted in 1992.

The majority of laws were adopted as early as 1991 or 1992 as a basis for the ongoing privatisation process. However, starting from scratch and under conditions of a market economy that still did not work; the legislators frequently omitted important issues, probably as a result of the quick development and due to the lack of experts. There have been many inconsistencies in the laws that have therefore been continuously amended.

The first post-communist Decree on Accounting was implemented in 1990. In 1991 a new Accounting Act was adopted as well as a new Law on Auditing. Both laws are described in more details in chapter 3.2.

Much effort has been devoted to the development of legislation, to numerous amendments and improvements of the existing laws. Little attention has been devoted to the actual implementation of the laws, their enforcement and control mechanisms that would secure that the laws are followed in practice. Therefore, although the legislation as such is comparable to the legislation in a market economy, the legal environment has substantial drawbacks²⁴.

3.1.3. Privatisation, corporate governance and sources of finance

The purpose of privatisation was to establish private ownership and to change the economic behaviour of enterprises. There were three types of privatisation:

- small privatisation which included sales mostly of stores, hotels, restaurants and other small businesses

²⁴ Bankruptcy law may serve as an example. The Czech Republic has been for a long time criticised for insufficient control of enforcement of this law, which though adopted in 1991, have had little effect in the economy. In 1992, only 350 companies went bankrupt, in 1993, 1098 companies went bankrupt and in 1994, 1816 companies (EBRD Transition report 1997).

- restitutions which means that property nationalised after 1948 was given back to the original owners
- large scale privatisation or mass privatisation of medium- and large-size companies

The present study concentrates on the companies traded at the Prague Stock Exchange; therefore, only large-scale privatisation is of concern. The main large privatisation method chosen in the Czech Republic was a voucher privatisation. As a secondary method, some enterprises were sold to outside owners by the state (the most famous example being the car producer Skoda sold to the Volkswagen Group). Being only a complementary and not so frequent method, direct sell-outs are not further described.

The voucher privatisation turned to be the dominant form of the transformation of property rights, accounting for 50,7% of the realised nominal stock value by the end of 1994 (compared to 7% direct sales to foreign outsiders)²⁵. The large-scale privatisation was regulated by the Large Privatisation Law 92/1991. First, state-owned enterprises had to be changed into joint-stock companies. A book value of the enterprise was calculated in order to determine the number and value of the shares. To value companies by standard pricing methods used in developed market economies was impossible, and accounting values did not say much about the real value of the property²⁶. Only in cases where a company was sold to foreign outsiders a market valuation was elaborated by foreign consulting groups. The new joint-stock companies were transferred to the National Property Fund and became a part of the voucher privatisation.

The voucher privatisation, also called a mass privatisation, would - it was hoped - lead to the creation of a corporate governance pattern based on a wide spread ownership, similar to that of the US and UK. It should further ensure equal rights for all citizens to become shareholders, which was politically desirable. Under this scheme, every adult had the right to purchase a “voucher booklet” worth 1000 investment points. The price for the book was 1000 Kcs (about 35 \$). The points could be used for purchasing shares in companies that were privatised.

²⁵ EBRD Transition Report 1995, p. 130.

²⁶ In reality, it has been noted that the actual market values of many companies that were transferred to the National Property Fund were later shown to be far below the book values.

All shares of the participating companies were given the nominal value of 1000 Kcs (35\$). The number of shares that each company issued was calculated as the company's book value of equity divided by the nominal value. The initial price in investment points for one share in any participating company was fixed at 33 1/3 points per share. Information on the companies was published, individual bids for shares were gathered and finally, a computer network tried to match the demand and supply for different shares. If the demand for shares in a company was lower than supply, the remaining unsold shares were offered at a lower price in the next round. If the demand for shares exceeded the supply by no more than 25% the authorities reduced bids from the investment privatisation funds. If the demand exceeded 25%, no bids were satisfied and the invested points were given back to the bidders. All shares in the company were offered at a higher price in the following round.

There were two privatisation waves (beginning 1992 and 1993 respectively) and each of them contained several bidding rounds. After two waves of the voucher privatisation the country had one of the highest shareholders ratios in the world (60%)²⁷. The number of people interested in obtaining the shares turned to be much larger than expected (8 millions instead of expected 3 millions). Thus, the wide dispersion of ownership could lead to weak corporate governance because the investors generally lacked knowledge and information necessary to provide directions and control of the companies.

However, 72% of all the vouchers were gradually entrusted by the individual investors to mutual investment privatisation funds (IPFs). Unlike Poland, the Czech IPFs were established by the private sector. The IPFs were organised as joint stock companies and were established by investment companies. There were no limitations of foreign capital to participate on the market²⁸ and state-owned companies yet not privatised like the big banks were also allowed setting up IPFs. Most of the largest IPFs were controlled by major banks and financial institutions like Česká spořitelna, Komerční banka, Česká pojišťovna etc. Of the 10 biggest IPFs, the only one that was not controlled by a financial institute was Harvard Capital and Consulting.²⁹

²⁷ Zelenka & Shinkman (1998), p. 3.

²⁸ However, the foreigners could not act as intermediaries in the voucher privatisation.

²⁹ Berg & Ram (1993), p. 18.

Totally there were 437 IPFs in Czechoslovakia, of which 265 in the Czech lands³⁰ in 1993.

The investment funds became major shareholders in many companies. After the first wave, the IPFs held more than 20% of the shares in 787 companies and more than 50% in 334 companies³¹. The IPFs activities were regulated by Act 248/1992 on collective investment but the rules had provided only weak control over their operations. Since 1992, the number of the funds has decreased because some of the investment funds ceased voluntarily their activities or bankrupted. There has also been a tendency towards mergers of the investment funds.

The third and fourth privatisation waves which began in 1995 were a process of capital concentration and consolidation controlled by privatisation funds. The vulnerable position of minority shareholders resulted in the fact that the concentration was often made at their expense³². The process of privatisation in the Czech Republic resulted in the predominance of private outside ownership where the main actors are the IPFs. There is a 15% ceiling³³ on any single IPF's ownership in the same company.

Privatisation led to the following types of ownership in the Czech Republic:³⁴

- State ownership with control exercised by insiders (enterprises that have not yet been privatised)
- Domestic outside ownership - by which domestic investors others than the state are meant
- Foreign investor ownership (to a small extent as a result of the complementary method of direct sell-outs).

As to the classification of the corporate governance pattern, the main distinction is made between a bank-oriented (insider) system and a market-oriented (outsider) system³⁵.

³⁰ The term "Czech lands" covers what at present is the Czech Republic.

³¹ Hansson (1996), p. 9.

³² In 1996, new amendments were made to Commercial Code to protect the minority shareholders' interests.

³³ Previously 20%.

³⁴ EBRD report 1995.

³⁵ For classification of corporate governance pattern, see Berglöf (1997).

A bank-oriented corporate governance pattern means that the companies are owned by few large shareholders³⁶. The shares of the companies are either not traded publicly or trading is rather low, especially as to the controlling blocks of shares. Thus countries with the insider system normally have less developed financial markets in particular for risk capital funds. There are few listed companies and the capital market is rather illiquid. Banks hold a higher share of total domestic financial assets in this system and lending activities of the banking sector are directed towards corporate financing. Firms in this system have a higher debt equity ratio and a more concentrated ownership of both debt and equity.

In a market-oriented system, the companies' shareholdings are more widely spread. The range of financial instruments is wider and the capital markets are well developed. Corporate governance relies on the possibility of selling the shares, on exit possibilities and on take-over threat. Banks primarily meet short-term financing needs of the corporate sector and are less important in the provision of long-term financing. The activities of institutional shareholders and banks are strictly regulated.

Shareholdings in the Czech Republic are rather concentrated. As will be shown below, the capital market is less developed, and rather illiquid. There are few listed companies and the sources of finance are more probable to come from bank loans. Take-overs are rare. Thus, the corporate governance pattern can be identified as bank-oriented, following in particular the German pattern. This is in contrast to the explicit wish of the privatisation designers who have chosen voucher privatisation in order to induce a wide spread ownership resulting in liquid and well-functioning capital markets.

In Sweden, most property has historically been in private hands. After the World War II, public sector started to expand and this process continued until the 1980s. In the 1990s, privatisation of formerly public sector organisations and services has been a general trend in Western Europe. Privatisation concerned areas where public sector has often taken a monopoly position or where public sector has been strongly prevalent and where deregulation process was going on. The deregulation process was aimed at opening up domestic markets to competition and at the progress of the Economic and Monetary Union inside the European Union, the member of which Sweden became in 1995. The Maastricht Treaty's convergence

³⁶ Either banks, other companies or individuals.

criteria have encouraged governments to sell state assets and stakes in industrial companies. In Sweden though, privatisation was of lesser importance than in some other European countries. Total privatisation receipts between 1990-1998 were only 2.56% of 1998's GDP³⁷. The major policy of privatisation began after 1991. 35 public owned enterprises were listed for sale according to a proposed bill on the privatisation of state-owned companies 1991/92. Throughout the 1990s, the privatisation process has been complemented by the process of corporatisation of state-owned enterprises. In welfare services such as health and social services, changes were taking place mainly as a consequence of the spread of outsourcing and competitive tendering procedures.

Sweden has had a bank-oriented (insider) financial system strongly influenced by German corporate law. During the 1980s Swedish financial markets grew rapidly due to the considerable deregulation in the country. Securities regulation has moved in the direction of the UK, however, ownership patterns remained concentrated and according to a number of corporate governance studies, the ownership concentration actually increased despite the relatively large and active stock market.³⁸ The structure of the Swedish ownership is as follows:

Character of ownership in Sweden

Ownership	Sweden
<i>Financial sector</i>	30%
- Insurance	14%
- investment funds	8%
<i>Non-financial sector</i>	70%
- foreign	32%
- public	8%

Size of ownership in Sweden

Share ownership	Percentage of total ownership
>50%	42%
30-50%	31%
10-30%	23%
<10%	4%

Source: Maher, M. & Andersson, T. (2000), Berglöf, E. (1997)

³⁷ European Industrial Relations Observatory Online, European Foundation database.

³⁸ Steil, B. (1996), p. 164 and Berglöf (1997), p. 156 .

Swedish companies are mostly owned by non-financial sector of which 8% is held by public sector. The pattern resembles the German ownership pattern and differs from the British pattern³⁹. Ownership by foreign investors is substantially higher in Sweden than in both Germany and the UK. Further, it can be seen that majority of all shares is in hands of controlling blockholders and small investors account only for 4% of all share ownership.

3.1.4. Capital markets

There are two competing trading systems in the Czech Republic: the traditional Prague Stock Exchange and the RM- System, an electronic over-the-counter trading system. The Prague Stock Exchange was established in November 1992 and trading started on April 6 1993. Table 1 compares the Prague Stock Exchange and Stockholm Stock Exchange.

The Prague Stock Exchange is relatively small. The number of listed companies was very high immediately after the first two privatisation waves, 1700 enterprises in total, but decreased substantially due to the 1996 reform of capital markets. The reason why the Prague Stock Exchange was so large was that all companies to be privatised through vouchers had to be listed at the stock exchange⁴⁰. In 1997, about 80% of these companies have been delisted, due to the poor liquidity and poor reporting standards. The decrease in the number of listed companies continues until present. Since 1999, the number of companies at the Prague Stock Exchange is smaller than at the Stockholm Stock Exchange. The trading volume is relatively smaller at the Prague Stock Exchange than in Stockholm. The low trading volume, small number of companies and the concentrated ownership structure set limits to the assumption of efficient markets.

³⁹ Ownership in Germany: financial sector 30% of which 12% insurance companies and 8% investment funds, non-financial sector 70% of which 9% foreign owners and 4% public sector. Ownership in the UK: financial sector 68% of which 50% insurance companies and 15% investment funds, non-financial sector 32% of which 9% foreign owners and 1% public sector (Source: Maher, M. & Andersson, T. (2000).

⁴⁰ Many shares in very small companies would not be listed under normal circumstance, i.e. if no voucher privatisation had taken place.

Table 1. Prague and Stockholm Stock Exchange (equities only)^{41, 42}

	1994	1995	1996	1997	1998	1999	2000	2001
<i>Prague Stock Exchange</i>								
No of listed companies	1 028	1 716	1 670	320	304	195	151	102
Capitalisation (bn CZK)	353.1	478.6	539.2	495.6	416.2	479.6	442.8	340.2
Capitalisation (bn \$)	12.3	18.1	19.8	15.4	12.9	14.8	11.4	8.9
Total turnover (bn CZK)	42.5	125.6	249.9	246.3	172.5	163.4	264.1	128.7
Total turnover (bn \$)	1.4	4.7	9.1	7.6	5.3	5.0	6.8	3.3
<i>Stockholm Stock Exchange</i>								
No of listed companies	228	223	229	261	276	300	311	305
Capitalisation (bn SEK)	976.2	1179	1687.7	2164	2413	3717	3583.4	2855.7
Capitalisation (bn \$)	126.6	165.1	251.9	283.6	303.5	450	390.8	276.7
Total turnover (bn SEK)	658	664	918	1 345	1 829	2 608	4 455	3 994
Total turnover (bn \$)	85.3	93	137	176.2	230	315.7	485.8	387

Source: Prague Stock Exchange Statistical Yearbook, www.pse.cz, Stockholm Stock Exchange, www.stockholmsborsen.se

The Czech Securities Commission supervising the functioning of the Czech capital markets was established on April 1, 1998 as a response to a number of severe drawbacks in the trading. These were in particular little experience with the functioning of capital markets, lack of professionalism of traders and brokers, imperfections in legislation, lack of clarity about prices reflecting market reality, a high systematic risk and a low level of information giving. The continuous decrease in the number of the listed

⁴¹ The numbers for both the Prague Stock Exchange and for the Stockholm Stock Exchange are given in both domestic currency and in USD which enables a comparison between the two stock exchanges. While the trading volume at the Stockholm Stock Exchange increased six times between 1994–2001 if given in SEK, it was only 4.5 times when given in USD. The respective numbers for the Prague Stock Exchange are 3 times (CZK) and 2.3 times (USD).

⁴² Czech and Swedish currencies are converted into U.S. dollars at the exchange rate that applied at the end of each year.

companies might be correlated to higher listing and reporting requirements set up by the Securities Commission. There is no equivalent counterpart of the Securities Commission in Sweden.

The trade at the Prague Stock Exchange is divided into main market, secondary market (including the new market) and free market⁴³. Disclosure requirements are the same for the main and secondary market - the only difference being that companies listed on the secondary market do not have to deliver the quarterly information. Requirements for the main market are⁴⁴:

- quarterly balance sheet and profit and loss statements delivered not later than one month after the end of the quarter,
- semi-annual balance sheet, profit and loss statement as well as enclosure, not later than three months after the end of the period,
- annual report directly after the shareholders' meeting,
- financial statements including cash flow and audit report not later than seven months after the end of the year,
- other information on the request of the Stock Exchange.

There are no information requirements for the free market.

The RM-System is an alternative trading system. The trade is conducted without any intermediaries. The RM-System has been the main forum for smaller investors. Most shares are traded in both the RM system and at the Prague Stock Exchange. The share prices have in general been lower in the RM-System than at the Prague Stock Exchange. Trading is also conducted to a large extent outside the both markets. The RM-System has no formal requirements on information from the companies.

The Stockholm Stock Exchange was established in 1863 and in 1993; it became the first profit-making stock exchange in the world⁴⁵. The exchange is divided into A-market and O-market. The obligation to provide information at Stockholm Stock Exchange is regulated by the Listing Agreement. The basic rule is the general clause which states that price-sensitive information must be provided to the market immediately via a press

⁴³ In May 2002, there were 5 companies listed on the main market, 46 on the secondary market and 43 on the free market, totalling to 94 securities (both equity and bonds).

⁴⁴ Prague Stock Exchange Regulations, Part III.

⁴⁵ Stockholm Stock Exchange homepage.

release. Price sensitive information is such that influences the valuation of the company's shares or alters the impression of the company created by previous information. Mandatory information requirements include:

- Unaudited annual earnings figures
- Interim reports
- Share issue resolutions, resolutions adopted by shareholders' meeting, forecast adjustments and changes of the board or managing director.

The reports must be released on a quarterly basis not later than two months from the expiry of the accounting period. The content of the unaudited annual earnings figures and interim reports is identical with exception of some additional information in the unaudited annual earnings figures. The following information must be included in all financial reports: summary of income statement in which the most recent quarter is reported separately, summary of balance sheet and summary of cash flow statement. Annual reports must be prepared in accordance with applicable law and regulation.

3.1.5. Economic growth and development

Economic growth and development is an important factor that influences the institutional environment and the functioning of institutions. The main variables usually identified in the literature are GDP growth, per capita income and inflation rate. The inflation rate is an important factor due to the historical cost principle, since comparisons of financial reports given in nominal currency are not meaningful for countries with high inflation. Per capita income serves as an indicator of wealth in a respective country. It has been suggested that in countries with a higher per capita income incentives to insider affairs, secrecy and lack of enforcement of laws are lower than in countries with a relatively low per capita income.⁴⁶ In countries with low per capita income, secrecy and lack of disclosure may have positive financial effects to certain groups. Transition countries lack sufficient investment savings. Therefore the variable of foreign direct investment (FDI) is an important one since countries with a better informational background have a comparative advantage in attracting foreign investors. The main macroeconomic indicators are summarised in table 2.

⁴⁶ Saudagaran & Diga (1997).

Table 2. Basic Czech and Swedish macroeconomic indicators⁴⁷

<i>Czech Republic</i>	1993	1994	1995	1996	1997
Growth real GDP (%)	0.1	2.2	5.9	4.8	-1.0
Inflation (%)	18.2	9.7	7.9	8.6	10.0
FDI (net inflow, mill \$)	563	749	2 526	1 276	1 275
GNI (in \$)	3 337	3 990	5 050	5 625	5 144
	1998	1999	2000	2001	
Growth real GDP (%)	-2.2	-0.2	2.0	3.1	
Inflation (%)	6.8	3.5	3.9	4.7	
FDI (net inflow, mill \$)	2 641	4912	6 000	n.a.	
GNI (in \$)	5 479	5 189	n.a.	5 260	
<i>Sweden</i>	1993	1994	1995	1996	1997
Growth real GDP (%)	-1.8	4.2	4.1	1.3	2.4
Inflation (%)	4.1	2.6	2.4	0.1	1.9
FDI (net inflow, mill \$)	n.a.	n.a.	n.a.	n.a.	n.a.
GNI (in \$)	22 053	23 579	27 223	29 656	27 024
	1998	1999	2000	2001	
Growth real GDP (%)	3.6	4.6	4.3	0.9	
Inflation (%)	-0.6	1.2	1.4	2.9	
FDI (net inflow, mill \$)	- 4 535	38 925	-1 753	5 186	
GNI (in \$)	27 081	27 397	25 790	26 750	

Sources: EBRD Transition Report 2000, Český statistický úřad, Statistiska Centralbyrån and Eurostat, World Bank

The former Czechoslovakia went through an economic recession in the period of 1990-1992, that is directly after the political changes of 1989. This period was followed by a growth in GDP in the Czech Republic in years 1993-1996. Political conflicts of 1997 as well as some negative consequences of the economic reforms brought about a new recession period 1997-1999. Many problems were caused by the weak corporate governance resulting from the mass voucher privatisation and leading to so called tunnelling. Tunnelling means a transfer of assets out of the privatised

⁴⁷ FDI = foreign direct investment, GNI = gross national income per capita.

companies, usually at the expense of minority shareholders. There were a number of different ways. Typically, the major shareholder founded another company⁴⁸ where the assets could be transferred in form of loans that were never paid back, in terms of higher charges for services etc. This phenomenon has been common among the banks; a well-known example was Ceska banka. Other examples were the steel company Poldi Kladno or the power plant manufacturer Skoda Plzen.

The legal environment did not protect minority shareholders for most of the 1990s and poor reinforcement of laws as well as a lack of control caused insufficient public information disclosure from the companies. This discouraged specifically foreign investors and made the Czech capital markets even more illiquid. Also, the largest five banks had not been privatised, which caused problems in the financial markets. It should be noted that many of the most important IPFs holding large shares in listed companies were established and run by these state-owned banks principally keeping many companies in the grasp of the state. The economic trend seems to be positive since year 2000.

Sweden experienced a recession both in the beginning and at the end of the research period, in years 1993 and 2001. Between these years, the growth in the Swedish economy was positive and slightly higher than in the Czech Republic. The gross national income per capita was seven times higher in 1993 and five times higher in 2001 in Sweden than in the Czech Republic. This is consistent with the World Bank's classification of countries according to income. The Czech Republic is classified as upper-middle-income economy while Sweden is classified as a high-income economy. This might have – as mentioned before – implications for financial information disclosure.

⁴⁸ It should be noted that according to the Czech GAAP, companies with different charters of accounts do not have to consolidate. Banks for example do not have to show investment funds in their accounts.

3.2. Development and present state of Czech financial accounting

This section first shortly describes accounting regulation in the Czech Republic between the wars and in the period of centrally planned economy, 1948-1989. Afterwards, accounting changes of the 1990s will be analysed and finally a comparison will be made between the Czech and Swedish generally accepted accounting principles.

3.2.1. Accounting before 1989

In pre-1938 Czechoslovakia, there was a complete accounting system that followed the same rules and development as Continental Europe. Schmalenbach's Kontenrahmen and his thoughts on accounting discipline were applied. The occupation period contributed to the wider use of the Kontenrahmen. Czech accounting until 1948 followed the German national economic tradition. Directly after 1948 - during extensive nationalisation - the existing systems were found to be well suited to the provision of information and control. They were merged step by step into a system of economic information embracing all organisations.

The period of 1953-65 was characterised by the application of a Soviet model in both economic planning system and in accounting. In 1966, system changes were intended to improve the production of enterprise level information which was in line with a more decentralised management approach associated with the wider political and economic reforms of the Prague Spring. A new socio-economic information system was introduced including accounting regulation. However, the main features of the socialist accounting remained the same.

Central to the concept of socialism was the principle of social ownership of the means of production.⁴⁹ The production and distribution of output were determined through the mechanism of the plan. Economic activities were not integrated through the market mechanism but through the state economic planning. The pricing mechanism was suspended because prices were controlled and fixed by the central authorities. Decisions were made on the basis of non-commercial criteria. The pursuit of profit was replaced by the quest for higher levels of output.

⁴⁹ Bailey (1988), p.1.

In a socialist economy, the state enterprise was not an autonomous entity. The director of each state enterprise was given instructions on the production programme to be fulfilled. He was allocated resources and required to use these to the best effect in the implementation of the production programme. The decisions were not about what to produce, but how to determine the best ways of converting specified material inputs into specified outputs with the given facilities and manpower. The economy was based on a soft budget constraint. Bank loans were written off eventually because liquidation was rare.

Since the enterprises were wholly the creation of central planners, they resembled a production unit rather than a business undertaking. The politburo decided on the division of the output between investment and consumption, the composition of the investment programme, innovation, rate and direction of industrial expansion. The national plan was drafted in terms of physical quantities of inputs and outputs. The directors of enterprises were not empowered with entrepreneurial responsibility. Monetary values provided only a common unit of aggregation, a check on internal consistency. They were needed for the compilation of cash, credit and investment financing plans.

The actual performance of state enterprises was revealed through a comparison of the planned indicators with the actual indicators. The residual figure of profit or loss that was calculated in the accounts was not more than a residual balancing amount emerging in the course of compiling the double entry accounting records and lacking any economic significance. Similarly, the item of capital shown on the balance sheet tended to become a balancing item.⁵⁰

The command model for the management of the national economy did not encourage the development of the information function of accounting and lead to the following decline in accounting⁵¹:

- the relatively low application of modern computing techniques
- the loosening of the links between financial accounting and analytical accounts

⁵⁰ Bailey (1995), p.598.

⁵¹ Bailey (1988), p.16.

- a decline in the prestige of accounting as an information source for management
- the absence of national economic accounting
- the imperfections of accounting theory and practice
- the under-appreciation of balance and valuation methods in macro-statistics and central planning.

The socialist central authorities used the accounting system as a means of maintaining control over the activities of state enterprises. Accounting as an instrument of control was incorporated into the centralised administrative system for overseeing all business activities in the country. The primary task of accounting became exercising the control over the fulfilment of the goals of the national economic plan. Another task was the safeguarding of socialist property entrusted to enterprises.

No financial statements and no commercial or financial analysis of profitability and financial position of enterprises existed. The analysis of performance of the state enterprise was directed to output, labour productivity and the utilisation of physical resources. Commercial considerations did not enter into the decision-making process. National charts of accounts existed and standard formats for the accounting procedures and rules for recording various kinds of transactions had to be strictly followed without any creativity and individual judgement in the enterprises. Some socialist accounting theoreticians supposed that accounting data would be superseded by statistical data related to identification and specification of basic needs. Accounting data relating to the activities of individual enterprises did not enter the public domain. The state was recognised as the primary user of the accounting system⁵². Accounting was completely a backward looking and not a forward looking tool.

The Czech balance sheet showed the types and utilisation of resources (actives) and the origin of these resources (passives) (see table 3). Terms like assets and equities were used. Assets were defined as material forms of existing means of production. Equities represented values advanced for definite purposes from various sources. From the legal point of view assets were values at the disposal of the enterprise and used in its operations

⁵² Probably also the only user.

whereas equities were values expressing the responsibility of the enterprise to the state.

Table 3. Balance sheet in the socialist Czechoslovakia

Active	Passive
1. Planned non-circulating assets	Capital Basic fund Turnover fund
2. Planned circulating assets	2. Bank credit for planned inventories
3. Liquids, debtors and other assets	3. Temporary bank credit and other creditors (trade creditors, manager's funds and similar items)

The results account⁵³ was used for comparison between the plan and the actual outcome. Revenues were divided into entrepreneurial (operating) and others. Expenses were divided into material, personnel and financial expenses. The main feature of the results account was, however, that it was principally based on cash flows. The residual item of profit and loss was used as the basis for adjustments of the plan for the coming period. The managers often preferred to show a loss rather than a profit in order to get more resources from the state or to decrease their plan indicators in the following year.

Table 4. Results account in the socialist Czechoslovakia

Expenses (Plan / Actual)	Revenues (Plan / Actual)
<i>Materials</i>	<i>Entrepreneurial</i>
Supplies	Services
Energy	Goods
Depreciation	
Maintenance	
Price, Variances	
<i>Labour</i>	<i>Changes in Stock</i>
Wages	Materials
Benefits	Goods
Travel	
Rents paid	
<i>Financial</i>	<i>Others</i>
Insurance	Sales of materials
Shortages	Interest received
Fines	Special
Fees	
<i>Profit</i>	<i>Loss</i>

⁵³ Results account is a direct translation from Czech and means income statement report.

It is evident that definitions of assets, liabilities, revenues and expenses and the functions of the balance sheet and the results account were completely different in the socialist economy. Besides, fundamental accounting concepts and principles were missing or not followed. This makes any comparison with accounting in a market economy impossible.

In the late 1980s the political and economic environment in Czechoslovakia began to change. Prior to 1987, joint ventures in the country were the result of co-operation with other Eastern-block countries. Since 1988, joint ventures with Western partners have come into existence. This brought about the necessity of some legislation changes. Uniform accounting rules were introduced in Law No 194/1988 and Law No 21/1971 on the uniform socio-economic information system. Enterprises with foreign participation were obliged to comply with the regulations governing the maintenance of records and the chart of accounts for profit-making organisations. In Czechoslovak enterprises, the balance sheet and income statements were approved by central authorities. Article 14 of Law 173/1988 embodied the duty of auditing the annual statements and economic activity of the enterprise with foreign capital participation by two auditors. The audit report was regulated by the Decree of the Federal Ministry of Finance No 63/1989. The position of auditing, however, remained vague.

3.2.2. Accounting after 1989

Socialist accounting was unable to meet needs of a market economy. Accounting reform was an inevitable part of institutional changes. The new accounting laws were to a large extent influenced by the European Union directives and by harmonisation efforts of the International Accounting Standard Committee.

In the period of transition, when central planning was abandoned, price mechanisms reactivated and market activities permitted, accounting reform was initiated by state authorities in order to introduce accounting regulation similar to the one of advanced market economies. In the first years, the market economy was underdeveloped and there has often been only a formal compliance with the requirements of the accounting legislation.

A primary attention in the accounting reform was paid to the technical preparation of the accounting records and much less consideration was given

to the compilation of the newly introduced financial statements. The public availability of financial statements received minimal consideration. There has been no attempt to introduce simplified financial reporting for unqualified shareholders.

In the process of creating a new accounting system, there were two opposite tendencies. On one hand, there were the requirements of potential and present international investors, that is the external pressure on the country to start an accounting reform. On the other hand, only a restricted amount of these requirements could be reasonably implemented given the knowledge, skills and general awareness of the change by the accounting personnel in enterprises.

In the initial years after 1989, the old accounting system of socialist Czechoslovakia was used. In 1990, a Decree of the Federal Ministry of Finance was published which mainly regulated the documents and details in the procedures of book keeping. This decree had already been initiated prior to 1989 and did not, therefore, bring about any substantial changes into the system.

3.2.2.1. Accounting Act

The legal framework of the new accounting system included a new Commercial Code, a new Accounting Act, new charts of accounts and a new Law on Auditing. The Accounting Act was adopted in 1991. The first technical part came into force in 1992 and the economic part on financial statements and consolidation was postponed until 1993 awaiting a new tax law. An earlier introduction of this part would have caused major inconsistencies between the new Accounting Act and the old Tax Law.

The Accounting Act comprises all legal and physical persons who are registered in the Commercial Register and who are an accounting entity. The act reinforces the duty to provide external information which is also stated in 35-38§§ of the Commercial Code. The main objective of the new act was to provide transparent data on companies comparable over time and in space, such data that are provided in market economies. Further, the act should help to adapt accounting to International Accounting Standards and European Union directives and to respect traditional accounting principles common in market economies.

The most important traditional accounting principles introduced as new into the law were the going concern, the principle of true and fair value⁵⁴, the historical cost, the consistency principle (inside and between periods as far as the depreciation and valuation methods concerned) and the concept of prudence. Other principles like the definition of entity, the realisation principle or the definition of period have already been followed in the earlier system.

For the first time after 40 years, the act stated requirements on financial statements, audit of accounts and public accountability. The financial statements consist of a balance sheet, an income statement and footnotes. The footnotes include a cash flow statement. The economic result is divided into operating, financial and extraordinary. The Ministry of Finance publishes decrees on the format of the balance sheet and the income statement.

The annual report must contain an abridged balance sheet, an income statement, full footnotes as required by the decree, an auditor's opinion on the financial statements, any other information relating to important matters and a commentary on the results and the future expected development of the accounting entity.

The Accounting Act was amended from January 1, 1998. The rules on financial statements, footnotes and annual reports were clarified. A greater stress was put on public disclosure of financial statements⁵⁵ and its availability to the public. The amended act should be more in line with the international accounting standards, which emphasise the perspective of external users. However, the amendment did not bring about any substantial change in accounting policies and methods, and neither did it solve controversial issues in Czech accounting like consolidation or leases.

The disappointment with the amendment started a process of appraisal of Czech accounting. The University of Economics in Prague has been working on a special comparative research project on International Accounting Standards versus Czech generally accepted accounting principles since 1997 that would lead to a development of a conceptual framework of Czech

⁵⁴ Note, however, that this concept although stated is misunderstood and interpreted solely as a compliance with law.

⁵⁵ See section 3.2.2.3.

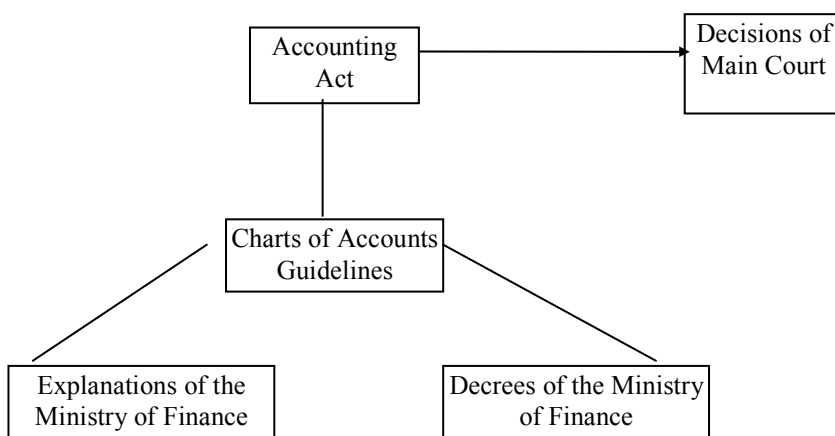
accounting. Another large project has been driven by the standard setter; that is the Ministry of Finance, resulting in a new Accounting Act adopted in the autumn 2001 and effective from January 2002. The new accounting act implements a new instrument in the Czech accounting environment - national accounting standards.

3.2.2.2. Regulatory System

The regulatory system of Czech accounting consists of⁵⁶:

- the Accounting Act which has the highest priority
- Charts of Accounts and Accounting Guidelines of the Ministry of Finance, which have the status of generally accepted accounting principles
- the Explanations of the Ministry of Finance, including the so called Decrees, which serve as guidance and are not binding

Figure 1. The structure of the Czech Accounting System



The standard setting body in the Czech Republic is the Ministry of Finance and the Chamber of Certified Auditors is an advisory body to the Ministry. There are five different charts of accounts depending on the type of business.

⁵⁶ Hellström & Armstrong (1996), p.28.

These charts give guidelines as to what should be included in each account, and are legally binding.

3.2.2.3. External Information

Initially, very little attention was devoted to the importance of external information disclosure. The Accounting Act did not specify where accounts should be filed. It was expected to be either at the Commercial Court or at the Chamber of Commerce. However, neither of these institutions wanted to administrate the files. Accounting entities obliged to audit are required to publish their balance sheet and income statement in “Obchodni vestnik” (Commercial Journal) within one month after the approval of the statements and they must also state where the annual report of the company is available. The accounting entities are obliged to hold their financial statements available and show them on request. In spite of this, financial accounting information has not been accessible to the public due to the reluctance of the companies to provide information to external users. In 1997, a National Information Centre was established where all financial statements would be filed and available to everybody. Another source of information has been information services of the Prague Stock Exchange.

3.2.2.4. The Law on Auditing

The Law on Auditing was passed in 1992. The law defines the nature of audit, requirements to qualify as an auditor, to whom audit should be submitted and the function of a Chamber of Auditors that has the responsibility for training, regulation and monitoring of the auditors. At the end of 1995, the Register of Auditors contained 161 audit firms and 1 007 individual audit practitioners⁵⁷. It is possible to distinguish five categories of auditors:

- the Big Six (nowadays Four)
- medium-sized overseas audit firms
- medium-sized Czech audit firms
- small Czech audit firms
- individual Czech auditors

⁵⁷ Sucher, Moizer & Zarova (1999), p. 503.

There have been claims that there are big differences between the audits carried out by the individual Czech auditors and the large foreign firms: *"Some auditors talk disparagingly of "coffee" or "lunchtime" auditors where the audit of a large enterprise is carried out in a few hours by an individual auditor"*⁵⁸

Professional audit environment contributes to a higher credibility of financial accounting information. A well developed accounting profession has a substantial impact on the accounting environment and the structure of accounting regulation. Therefore, the lack of auditing professionals and the low confidence in the professionalism of many Czech auditors has been perceived as a potential problem and a hinder for financial accounting credibility.

3.2.3. The main features of Czech and Swedish accounting

This section describes the main features of the Czech and Swedish generally accepted accounting principles. First, the general principles of Czech accounting are discussed, followed by a description of Czech balance sheet items and their valuation rules. Afterwards, Swedish accounting is presented and finally, the major differences between the Czech and Swedish GAAPs are identified.

3.2.3.1. Financial statements - general requirements

The Czech financial statements include two years' balance sheet, income statement, cash flow statement, and notes including accounting policies. All statements have a prescribed format. Accounting records must reflect legal form of a transaction even if the substance is different. True and fair override is not permitted. Completeness of information is required absolutely without consideration of materiality. The main convention is that of historical cost and revaluations are principally not permitted (with certain exceptions). The effects of changes in accounting policies are included in extraordinary items of the current period. Rules for exceptional and extraordinary items are rather generous which means that the classification of expenses and revenues as extraordinary is quite broad. There are a number of legal and hidden

⁵⁸ Sucher, Moizer & Zarova (1999), p. 504.

reserves that create accounting bias. These are due to the close connection of accounting with taxation. The Czech accounting regulation lacks an underlying conceptual framework. However, the basic principles of the international accounting standards conceptual framework are valid for Czech accounting regulation with more weight put on the concept of reliability rather than relevance.

As a result, a number of problems appear in the Czech accounting regulation:

- Prudent accounting increases conservatism bias.
- Compulsory compliance with law instead of substance over form increases deviations from the true and fair view.
- No definitions of assets, liabilities and equity exist.
- Series of basic terms are “defined” by a backward reference - by content list of accounting class that does not always reflect the economic reality⁵⁹.
- Some important accounting areas are vaguely - if at all – defined. Examples are intangible assets, group accounts, deferred taxes, leases and provisions.
- Public disclosure of financial information and access to financial statements is insufficient due to lack of enforcement and control mechanisms.
- Czech financial accounting is not investor and capital market oriented but is instead burdened with the problems of cash tax accounting.⁶⁰

Some of the above features of Czech accounting raise the question to what extent the Czech accounting information is relevant. The problems stated above would suggest a low degree of value relevance. On the other hand, the attitude towards external disclosure has been changing and a closer link to international accounting standards (including using financial statements prepared according to IAS) can be observed. Many of the major companies, particularly banks and companies with foreign shareholders have improved their financial statements and annual reports. An important factor in increasing the amount of external information and compliance to the law was the establishment of the Czech Securities Commission.

⁵⁹ Kral (2002), p.9.

⁶⁰ Kral (2002), p.9.

3.2.3.2. Balance sheet: recognition, measurement and clean surplus relation

This section describes basic Czech accounting rules from the balance sheet perspective. The idea behind this is the fact that if accounting could reflect the economic substance of transactions, book value of equity would equal market value of equity. Because of the basic accounting concepts and principles, however, this is not the case and accounting is more or less biased. Accounting information should represent the substance of transactions faithfully and be relatively free of error and bias. The basic prerequisite of representing the substance of a transaction is the recognition of an event. If a certain event is not recognised the information given in the financial statements cannot give a true and fair view of the company. Further, the outcome of an event is measured. This measurement and valuation practice may be more or less biased. The larger the measurement error, the larger the gap between the market value and book value would be. The gap in itself, however, does not necessarily mean that the accounting information is irrelevant. Finally, the valuation models used in this study assume clean surplus relation. Clean surplus relation means that change in book value of equity equals earnings minus net dividends, in other words, all events that affect book value of equity pass income statement with exception for dividends and capital contributions.

This section investigates, thus, three dimensions of accounting: recognition, measurement and the clean surplus relation. The first part of table 5a deals with basic accounting issues that are relatively uncontroversial, constitute the basis for balance sheets of almost all companies and are assumed to cause few differences on an international basis. The second part deals with more complex issues that have appeared in the latest decades due to the changes in the business environment. These issues are only partly - or not at all - covered by the Czech Accounting Act and decrees and lack consistent definitions and measurement methods. The third part deals with group accounting and consolidation which has been identified by most academics and practitioners as an extremely problematic area in the Czech Republic.

The table is organised as follows. The column “Item” states the accounting issue (balance sheet item). The column “Recognition” states whether the item is recognised or not (Yes/No). “Measurement” describes briefly the basic valuation and measurement method. In the case of the item not being recognised the cell is empty. “CSR” means clean surplus relation. The

column states whether or not the clean surplus relation holds (Yes/No). When the item is not recognised, the cell is empty.

Table 5a. Czech GAAP

<i>Item</i>	<i>Recognition</i>	<i>Measurement</i>	<i>CSR</i>
Basic items			
Cash	Yes	Nominal value, foreign currency at closing rate	Yes
Short-term assets	Yes	Acquisition cost plus transaction cost, foreign currency at closing rate	Yes
Accounts receivable	Yes	Nominal value, write-down if necessary (even if only expected)	Yes
Inventory	Yes	Lower of cost and net realisable value. FIFO or weighted average	Yes
Long-term contracts	Yes	Completed contract method	Yes
Property, plant & machinery	Yes	Historical cost, replacement cost in certain limited cases. Depreciation over useful economic life. Write-down if necessary. Revaluations not permitted.	Yes
Accounts payable	Yes	Nominal value, foreign currency at closing rate	Yes
Short- and long-term financial liabilities	Yes	Nominal value, foreign currency at closing rate	Yes
Short and long term operating liabilities	Yes	Nominal value, foreign currency at closing rate	Yes
Provisions	Yes	Record present obligations from past events. Legal provisions are set aside for future expenditure for repairs of property, plant and equipment. Provisions divided into tax deductible and others.	Yes
Purchase of own shares	Yes	Direct against equity	No
More complex issues			
Intangible assets – acquired	Yes	Capitalised, amortised over maximum 5 year (useful economic life). Revaluations not permitted.	Yes
- internally generated	Yes	Valued at the costs incurred or the replacement cost if lower, amortised over 5 years – impairment tests.	Yes
R&D	Yes	Capitalised, amortised over useful economic life	Yes
Start-up costs	Yes	Same rules as for other intangibles, required if value over 60 000 ⁶¹ CZK /previously 20 000/	Yes
Software	Yes	If costs higher than CZK 60 000	Yes
Investment	Yes	Long-term investments valued at amortised cost less impairment, current investments at lower of amortised cost and net realisable value. Unrealised losses go to income statement.	Yes
Leasing	No		
Derivatives and other instruments	No		
Deferred tax	Yes	Differences on amortisation and depreciation. Only voluntarily.	Yes
Provisions for pensions	No		
Convertibles	Yes	Recorded as a liability.	Yes

⁶¹ At present around 1700 \$.

Foreign currency translation	Yes	Monetary items at balance sheet rate, non-monetary at historical rate. Cash and short-term investments revaluated through income statement; differences on other monetary items deferred on separate accounts until realisation.	Yes/ no
Off-balance accounting	Yes	However, unclear guidance as to what should be disclosed off-balance	No
Group accounting			
Consolidation	Yes	Based on majority of shares or on either direct or indirect actual dominant influence. Exclusion of subsidiaries from consolidation common.	
Joint ventures	Yes	Equity method	
Purchase method	Yes	Assets and liabilities of acquired entity not fair valued. Subsequent revaluation permitted in the period of transaction.	
Pooling method	No		
Goodwill	Yes	Charge in income statement in the year of consolidation or capitalise and amortise over 0 – 20 years. Impairment tests.	Yes
Negative goodwill	Yes	Same treatment as above	Yes

Source. Ernst & Young, Selected basic differences with international accounting principles.

3.2.3.3. An overview of Swedish accounting

Historically, Swedish accounting was highly tax oriented and conservative. In the first half of the 20th century it was based on the Continental, German tradition and for a long time, until 1980s, the financial reporting had developed with little influence from the ongoing internationalisation and globalisation of business in general⁶². However, with the globalisation of capital markets, international influence became more significant. The large Swedish multinationals have experienced problems with the discrepancy between the national generally accepted accounting principles and the international accounting standards as well as the US GAAP. It has opened for the discussion of harmonizing the Swedish accounting.

⁶² The first Accounting Act to include valuation rules was the Act of 1929. At that time Company Act of 1910 was in force and a new Company Act was under preparation due to shortcomings in group accounting. The Act was introduced in 1944. At present the Company Act of 1975 is valid and forms the framework of Swedish accounting. Throughout the research period Accounting Act of 1976 was in force.

In 1989, Swedish Financial Accounting Standards Council, a standard setting body was established that set off to develop and issue recommendations on financial reporting of public companies, to a large extent based on the international accounting standards. As a consequence of Sweden's membership in the EEC and from 1995 in the European Union, the requirements of the European Fourth and Seventh Directives were introduced into the Swedish Annual Accounts Act of 1995. This amended Act was operative as of January 1, 1997. From its establishment in 1989 until 2001, the Swedish Financial Accounting Standards Council issued 29 standards, several of them in amended version. The list of the standards and dates of their validity is in appendix 2.

The sources of accounting standards in Sweden are primarily the Swedish Annual Accounts Act (1995), the Swedish Accounting Act (1976) and Financial Accounting Standards adopted by the Swedish Financial Accounting Council. Although standards issued by the Swedish Financial Accounting Standards Council are of great importance, generally accepted accounting principles in Sweden could be also described by reference to the accounting and reporting practice actually adopted by high quality public companies. Finally, Swedish tax legislation has had a significant impact on the preparation of the single-entity financial statements.

Under the Swedish Annual Accounts Act, limited companies are required to present an annual report containing a management report, an income statement for two years, a balance sheet for two years, a statement of changes in financial position, and notes to the accounts. A parent company should also prepare the same documents on consolidated basis. Companies listed on stock exchange also present a cash flow statement.

Table 5b describes the structure of the Swedish balance sheet in the same way as the Czech balance sheet is described in previous section.

Table 5b. Swedish GAAP

Item	Recogni- tion	Measurement	CSR
Basic items			
Cash	Yes	Nominal value, foreign currency at closing rate	Yes
Short-term assets	Yes	Nominal value, foreign currency at closing rate, fair value	Yes
Accounts receivable	Yes	Nominal value, write-down if necessary, fair value	Yes
Inventory	Yes	Lower of cost and net realisable value, FIFO, weighted average, fair value	Yes
Long-term contracts	Yes	Percentage of completion method	Yes
Property, plant & machinery	Yes	Historical cost. Depreciation according to useful economic life. Impairment. Revaluation permitted	Yes No
Accounts payable	Yes	Nominal value, foreign currency at closing rate	Yes
Short and long term financial liabilities	Yes	Nominal value, foreign currency at closing rate	Yes
Short and long term operating liabilities	Yes	Nominal value, foreign currency at closing rate	Yes
Provisions	Yes	Record provisions for present obligations from past events. General provisions not allowed.	Yes
Purchase of own shares	Yes	Direct against equity	No
More complex issues			
Intangible assets – acquired	Yes	Capitalized, amortised over 5 years or more. Revaluations not permitted. Impairment tests.	Yes
- internally generated R&D	No	Expensed as occur unless certain criteria fulfilled	
Start-up costs	No	Expensed as occur	
Software	No	Expense as occur	
Investment	Yes	Acquisition cost, impairment tests, current investments at lower of acquisition cost and net realisable value, unrealised gains and losses go to income statement	Yes
Leasing	Yes	Record financial lease as an asset and future rental payments as an obligation. Amortize.	Yes
Derivatives and other instruments	Yes	No standards. Treatment depends on the purpose of the financial instrument (trading – non-trading)	Yes/ No
Deferred tax	Yes	Recognition of deferred tax liabilities for all temporary differences. Deferred taxes follow the measurement of the underlying transactions.	Yes/ No
Provision for pensions	Yes	Pension contribution plans or pension benefit plans. Present value of future benefit obligations disclosed.	Yes
Convertibles	Yes	Record as a liability	
Foreign currency translation	Yes	Current/closing rate method or monetary- non-monetary method	No Yes
Off-balance accounting	Yes	Contingent liabilities, pledge, mortgage	No
Group accounting			
Consolidation	Yes	Based on voting control/actual dominant influence.	
Joint ventures	Yes	Equity method	
Purchase method	Yes	Assets and liabilities of acquired entity fair valued.	
Pooling method	Yes	Usage limited	
Goodwill	Yes	Capitalise, amortise over 5–20 years or longer, impairment tests	Yes
Negative goodwill	Yes	Same treatment as above	Yes

3.2.3.4. Comparison between the Czech and Swedish generally accepted accounting principles

In the following section, the Czech accounting principles will be compared to Swedish accounting principles. The main differences between the two accounting systems will be first described in text and summarised in table 6. The basic accounting issues do not cause any substantial discrepancies between the two national generally accepted accounting principles. The basic items of the balance sheet are recognised and measured in the Czech Republic in a way comparable to Swedish accounting principles. The treatment of the items is based on the prudence and historical cost principles. The clean surplus relation holds for all balance sheet items in the table.

The more complex issues bring about a number of differences. In the Czech Republic, the definitions of intangible assets are vague in both the Accounting Act and accounting decrees⁶³. Therefore the treatment is based primarily on the perception of accounting practice. In contradiction to Swedish accounting principles, Czech accounting does not recognise such transactions as leasing and financial instruments because of the priority of legal form over substance. This might suggest a decrease in the value relevance of accounting numbers.

Czech accounting recognises provisions for future repair expenditures which are not recognised in Sweden. Also start-up costs, software and internally generated intangibles are recognised in the Czech balance sheet. R & D expenditures are capitalised and amortised according to the Czech generally accepted accounting principles while in Sweden these are usually expensed directly.

Provisions for pensions are not disclosed because in practice Czech enterprises usually do not provide any pension benefits to their employees. Deferred tax disclosure is voluntary and deferred tax is treated as a short-term liability. Off-balance sheet accounting is poorly regulated. Overall, the realisation and prudence principles are applied in Czech accounting, that is unrealised expenses and losses are taken into the income statement while unrealised revenues and gains are postponed.

⁶³ For example goodwill is called a “correction item” in the Accounting Act and defined as the excess of price over the equity value. The economic substance of goodwill is not taken into account.

As to the most controversial accounting issue, i.e. group accounting, the main difference between the Czech and Swedish accounting principles is that assets and liabilities of the acquired entity are not fair valued under the purchase method in the Czech Republic.

Czech group accounting allows also many exceptions to consolidation obligation. Consolidation is not required:

- for partnerships
- if it is not material
- because of political instability
- if the costs exceed the benefits of consolidation
- if the subsidiary has a different chart of accounts
- if the subsidiary is under liquidation

Thus, principally no foreign subsidiaries are consolidated since they do not have the same chart of accounts. For this reason it has become increasingly popular to start special purpose entities in foreign countries like Russia, Ukraine, Poland, or the nearby Austria. Not surprisingly the consolidation exceptions increase the risk for tunnelling (i.e. transferring assets out of the companies).

Goodwill is classified as a correction item or a consolidation difference that might include even hidden reserves due to the acquisition. It is charged either directly through the income statement in the year of acquisition or capitalised. If it is capitalised, the amortisation period can vary up to 20 years. In Sweden, goodwill is not expensed directly but always capitalised.

Table 6 summarises the most important differences between the Czech and Swedish generally accepted accounting principles. The differences are concentrated mainly into a few areas. Nevertheless, the differences exist and might be a source of different degree of value relevance of financial information in the two countries.

Table 6. Main differences between the Czech and Swedish generally accepted accounting principles.

<i>Item</i>	<i>Czech GAAP</i>	<i>Swedish GAAP</i>
Intangible assets	Internally acquired intangibles often capitalised	Capitalisation of internally acquired intangibles not allowed
R&D	Capitalised	Mostly expensed
Long-term projects	Completed contract method	Percentage-of completion method
Leasing and financial instruments	Not recognised due to the requirement of priority of legal form over substance	Recognised
Provisions	Legal provisions common, for example for future repair expenditures	No legal or general provisions allowed. Provisions for pensions, deferred taxes and others exist.
Deferred tax	Voluntary	Compulsory
Group accounting	Many exceptions to consolidation requirement	More strict rules
Goodwill	Can be expensed directly or capitalised	Expensing prohibited, only capitalisation
Purchase method	Assets not valued at their fair value	Assets valued at their fair value
Substance versus legal form	Accounting should reflect legal form even if the substance is different.	Accounting must reflect the economic substance even if it is different from legal form.
Materiality	Completeness of information is required regardless of materiality.	The materiality of information should be considered.

3.3. Summary

This chapter has described the institutional background of Czech accounting. Several outstanding features of the development of the Czech society and of the Czech accounting should be emphasized. The driving force behind the accounting reform of the 1990s was a change in the political system of the Czech Republic and a transition from a centrally planned economy to a market economy. The nature of ownership changed from state ownership to private ownership. This has had a great influence on the objectives of financial accounting and created new user groups of accounting information.

The political shift brought about economic changes. The state has lost its function as an allocator of resources, and financial capital is raised in open capital markets. The corporate governance structure in Czech companies tends to incline towards large institutional shareholders and leads to rather illiquid capital markets

The objectives of accounting have changed as a consequence of the political and economic reforms in the society. Financial reporting did not exist before

1989. The new Accounting Act introduced financial reporting as a response to the changes in ownership. While the state, which was the only owner prior to 1989, did not need financial reporting as such, the new investors - present and potential - are dependent on accounting information as a source for their decision-making. Czech accounting is based on the tradition of codified law and is still to a large extent driven by tax legislation. The Czech accounting regulation during the 1990s should comply as much as possible with the European Union directives. The consecutive adjustments and the present development are inspired by International Accounting Standards⁶⁴.

A government body, the Ministry of Finance, regulates accounting. The enforcement of standards has proved to be a problem. Tax authorities are so far the most effective mechanism in the enforcement of accounting regulation. Since 1998, the Stock Exchange Commission monitors financial reporting of listed companies. The accounting profession is rather weak and its role in standard setting is formal.

The development of accounting during the transition in the Czech Republic is an example of a development from scratch. While accounting in Western countries has developed gradually adjusting to relatively small changes in both political and economic systems, accounting development in the Czech Republic was disrupted and replaced by a completely different system in the 1940s and again in the 1990s. The development of accounting was revolutionary rather than evolutionary.

⁶⁴ International Financial Reporting Standards.

4. Value relevance of accounting information

This chapter introduces the concept of value relevance of accounting information. The chapter starts with a discussion of the economic consequences of financial accounting information. Understanding the economic consequences is a prerequisite of understanding why the quality of accounting information is important and why the standard setters, the users and the producers of financial accounting information should strive for improving its quality. Afterwards, value relevance is defined and its measurement and interpretation discussed. In this part, the assumption of market efficiency is also considered. In the last section of the chapter, the main factors that affect value relevance are identified and investigated. It has been recognised in literature that studies which test the association between market values and accounting numbers reflect both the quality of accounting standards and the institutions of a country⁶⁵. Accounting regulation can thus hardly be evaluated without any reference to factors external to accounting regulation that have either a direct or an indirect affect on the value relevance of the accounting information.

4.1. Economic consequences of financial accounting information

Accounting is an information system that facilitates decision making and has economic consequences for the different user groups. Beaver (1998) states eight potential economic consequences of financial reporting:

- Financial reporting and access to financial information has effect on the distribution of wealth among individuals. The investors make their investment choices with help of information available to them.
- Since financial information determines the allocation of investors' resources, it has an effect on the aggregate level of risk and allocation of risk among individuals as well.
- With help of the information investors/individuals can decide whether to consume today or invest for the future and thus financial information affects the aggregate consumption and production.

⁶⁵ Holthausen (2003).

- Financial reporting affects the allocation of resources among firms as it affects the rate of capital.
- Financial reporting affects the use of resources devoted to the production, certification, dissemination, processing, analysis and interpretation of financial information.
- Financial reporting affects the use of resources in the development, compliance, enforcement and litigation of regulations.
- Financial reporting affects the use of resources in the private sector search for information.
- Financial reporting can affect management's action. The information could alter the incentives of management to undertake certain projects due to the problem of competitive disadvantage of disclosure.
- Thus principally, three important areas of economic consequences can be identified:
 - Valuation of the companies and pricing of their shares (decision makers are investors)
 - Credit and loan giving (decision makers are creditors)
 - Management, control and incentive systems (decision makers are the management)

The investors need information that enables them to make forecasts of the future of the company. Based on their forecasts, the investors allocate their capital resources and decide on pricing of the shares. The investor activities are connected with the risk that both the allocation of the resources to a specific company and the prices paid for the shares will be incorrect. Financial information can potentially be used to decrease this risk. The better the information, the lower risk the investors run for incorrect forecasts. A lower risk in turn brings about a lower cost of capital because the investors will require a lower compensation for their risk-taking. High-quality financial information promotes allocation of resources because the investors might be willing to allocate more capital with lower risk and better forecast indicators.

The creditors also benefit from a better information environment. Whether to give a loan to a company or not is connected to the risk that the company will fail and the loan will not be paid back. Such failure is of course costly for the creditor who requires a compensation for his/her risk in form of an interest on the loans. The higher the risk, the higher compensation the

creditor requires. Also, the requirements on collaterals will increase and bring about the question of asset valuation.

Third, efficient and relevant information is important for the management and the employees. The management has to be informed about the performance of the company in the past and about the resources available for future performance. The management must rely on that the information is correct and relevant for their decisions. Remuneration of employees and incentive programs might also be based on accounting information.

Decisions are made under uncertainty based on all available possible signals in the information set. The evaluation of alternative information systems and final allocation of resources depends on the following individual specific factors: the utility function, the initial wealth and the risk adversity of the decision maker, and a priori probability of each outcome. The probabilities of the individual outcomes are conditional. The assessment of the probability that a certain outcome will occur is conditioned on a certain a priori information set that creates expectations. The information set includes accounting information. When new information arrives, for example when financial statements are published, the probabilities are revised and the resources reallocated to better reflect the objectives of the decision makers.

The extent of the relative revision of the probabilities depends on the sensitivity to change (risk attitude of the decision maker) and the difference between the expected and the actual outcome. The difference between the expected and actual outcome will be the smaller, the better access to both public and private information about companies exists. The revision of expectations due to the arrival of new information helps to improve choices and decisions. If this is the case, the information is relevant.

Relevant accounting information improves the functioning of the market economy. High quality accounting information promotes a better allocation of resources. It also has a positive effect on the pricing of shares and results in higher prices. Finally, it affects volatility of the capital markets because the prices become more sensitive to accounting information and public announcement of financial information will lead to market reactions.

The higher level of investments and the higher market values of the companies promote economic growth in the society. Inferior accounting information environment results in an inefficient resource allocation and a negative affect on the economy. Superior accounting information in turn

means a more efficient resource allocation and a positive economic growth in the society. Therefore the quality of accounting information, that is its value relevance for decision making, is a major issue in any economy, and in transition economies where financial resources are scarce in particular.

4.2. Value relevance

In the previous section, it was determined that high quality information, i.e. high value relevance of accounting information, has positive economic consequences for the decision makers and for economic growth. The concept of value relevance is discussed in this section with the conceptual framework of the International Accounting Standards Committee as a starting point.

4.2.1. Value relevance according to the conceptual framework

According to the Framework for the Preparation of Financial Statements (IASB, 1989)⁶⁶ *“The objective of financial statements is to provide information about financial position, performance and changes in financial position of an enterprise that is useful to a wide range of users in making economic decisions.”* The framework states further that *“to be useful, information must be relevant ...”* and it is relevant *“when it influences the economic decisions of users by helping them evaluate past, present and future events ...”* Accounting information is often *“used as the basis for predicting future financial position and performance and other matters in which users are directly interested, such as dividend and wage payments, security price movements and the ability of the enterprise to meet the commitments as they fall due... The ability to make predictions from financial statements is enhanced, however, by the manner in which information on past transactions and events is displayed.”* Thus, the relevance of accounting information is a function of disclosure and measurement regulation and practices.

Information relevance is the capacity of information to make a difference in a decision. It should help users of accounting information to make predictions about the outcome of past, present and future events or to

⁶⁶ The 1989 version of IASB Conceptual Framework is quoted here because it is the version that has been in use during the period that this study investigates.

confirm or correct prior expectations⁶⁷. This is the meaning of the feedback value and the predictive value of information. If information possesses a predictive value, it provides data that permit the users to make predictions about future events. Feedback value allows the users to either confirm or correct earlier expectations.

Besides these two values information must be timely. Timeliness is the ability of financial statements to capture value-relevant events in the same time period as they are reflected in share returns. Non-timely information is not relevant because it cannot influence the decisions. The timeliness concept includes not only the speed at which financial reports are prepared but also the relative frequency of reporting intervals. To provide information on a timely basis may impair reliability in that “... *it may often be necessary to report before all aspects of transaction or other events are known ...*”

Reliability of information means that “...*the information is relatively free of error and bias and faithfully represents what it purports to represent...*” The representational faithfulness is defined as a correspondence or an agreement between a measure or a description and the phenomenon⁶⁸. The measurements also have to be verifiable and neutral in order to be reliable. “*Financial information is subject to some risk of being less than a faithful representation...*” due to “... *inherent difficulties in identifying the transactions...*” or “... *applying the measurement and presentation techniques...*”. This affects in turn the relevance of the financial accounting information.

The relevance of accounting information and its representational faithfulness are basis for information usefulness in decision making. However, historically, accounting in many countries has primarily protected the interests of creditors; it has been strongly linked to tax legislation and required strictly the reliance on legal form of the transactions. These factors influence the value relevance of financial accounting information negatively and are contradictory to the requirement of substance over form in the conceptual framework: “*The faithful representation implies that transactions and other events are accounted for and presented in accordance with their substance and economic reality and not merely their legal form.*” The investor orientation of the objectives of financial reporting introduces therefore new criteria on disclosure and measurement of accounting

⁶⁷ Hendriksen & Breda (1992), pp. 133-134.

⁶⁸ Hendriksen & Breda (1992), p. 138.

information in order to secure the relevance and true and fair view of accounting.

4.2.2. Definition of value relevance

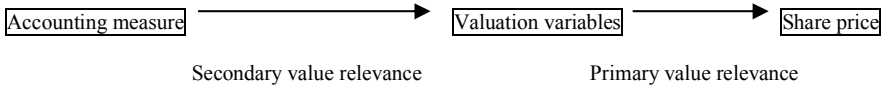
Value relevance is a complex and ambiguous concept. The four common interpretations of value relevance which are used in the value relevance research are summed up in Francis & Schipper (1999):

- The first interpretation is that financial statement information leads stock prices by capturing intrinsic share values toward which stock prices drift.
- The second interpretation is that financial information is value relevant if it contains the variables used in a valuation model or assists in predicting those variables.
- The third interpretation is that the value relevance is the ability of financial statement information to change the total mix of information in the marketplace (measured in terms of “news” and revision of investors’ expectations).
- The fourth interpretation is that the value relevance is the ability of financial statement information to capture or summarise information, regardless of source, that affects share values.

Skogsvik (2002) defines two types of value relevance – primary value relevance and secondary value relevance. Primary value relevance means that there is a statistical association between financial information and prices or returns and that the accounting based measures explain market prices in a good way, under the assumption that pricing reflects available information⁶⁹. Secondary value relevance means that accounting information makes it possible to predict parameters (variables) that are used in valuation models for determining the market value of the firms and for predicting failure companies. The two concepts of value relevance are exemplified in figure 2.

⁶⁹ Efficient markets assumption.

Figure 2. Primary and secondary value relevance (Skogsvik, 2002)

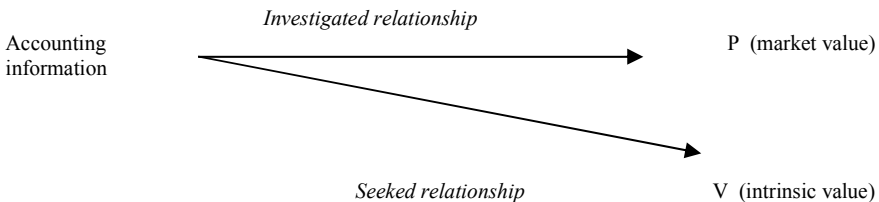


Note. Share price is assumed to approximate the intrinsic value of the firm.

The first and second definitions of Francis & Schipper relate to secondary value relevance while the third and fourth definitions relate to primary value relevance. Primary value relevance can be evaluated from two major perspectives. The first is the descriptive perspective that measures to which extent share prices react to accounting information announcement (Francis & Schipper interpretation number three). The second perspective is normative in that accounting information can be used for estimating the value of the share and therefore should be incorporated in the share prices⁷⁰ (Francis & Schipper interpretation number four).

This study tests primary value relevance (Francis & Schipper interpretation number four) under the assumption that the efficient market hypothesis is true and that the intrinsic value of a company can be approximated by the observable market value of the company. In such a case, the investigated relationship between the accounting information and market value is a good approximation of the relationship between the accounting information and the real intrinsic value of the company. It is the latter relationship that is essentially interesting. This is exemplified in figure 3.

Figure 3. Relationship between information, market and intrinsic value of a company.



Note. Share price is assumed to approximate the intrinsic value of the firm.

⁷⁰ Skogsvik (2002), p. 29.

4.2.3. Measurement of value relevance, its interpretation and efficient market hypothesis

Primary value relevance is measured either from a signalling perspective or from a measurement perspective. The signalling perspective means to study whether there is a reaction to the announcement of accounting information or not. If the market reacts to new information, then the information is relevant. This value relevance is usually named information content of accounting information. The signalling perspective relates to Francis & Schipper interpretation number three and is not adopted in this study.

The measurement perspective measures the explicit relationship between market indicators of the value of the company (either price or returns) and accounting measures and relates to Francis & Schipper interpretation number four. First, the existence of value relevance is measured; that is whether a statistical association between market values or returns and accounting measures exists or not. The association might be expressed as the explanatory power of a linear regression or as a significant coefficient of a certain accounting variable or as a combination of both. Accounting numbers are value relevant if the explanatory power is satisfactory and/or if the coefficient on one or more accounting variables is significant. Accounting information is value relevant when it is significantly associated with the values observed in the market. This study concentrates primarily on the explanatory power of linear regression as a measure of value relevance.

Second, the degree of value relevance may be measured; that is the size of a variable coefficient or the magnitude of the explanatory power of the regression. The higher the explanatory power, the larger proportion of the dependent market indicator of value can be explained by accounting information. This assumes a higher value relevance of the accounting measures.

A third approach is to investigate the value relevance of specific accounting measures using pre-knowledge of these measures in a hypothetical investment strategy. Thus, a hedge portfolio is created based on a pre-knowledge of a specific accounting variable. If the abnormal return to the hedge portfolio is positive, the accounting measure that has been used as a decision criterion is value relevant.

Both signalling perspective and measurement perspective assume efficient markets. If there is a high statistical association between market and accounting measures and the market is efficient, accounting measures are directly related to capital markets and they are value relevant. If there is a high statistical association between the market and accounting measures, but the market is not efficient, the issue becomes more complex. The high association indeed might indicate an underlying high value relevance of the accounting information. However, it may also mean that the market is fooled by the accounting information and is not able to interpret it. In such a case, the market value does not reflect correctly the intrinsic value and the accounting numbers do not tell us anything about the relationship. For example in a period of a stock bubble, high value relevance - that is the association between the market values and accounting numbers - is not desirable.

If there is a low statistical association between market and accounting measures and the market is efficient, accounting measures are not directly related to capital markets and they do not explain the prices of shares in a correct way. If the market is not efficient, value relevance indeed might be low but it may also mean that although the accounting numbers are value relevant, the market does not see it and decisions on pricing are done on other premises.

Thus, in an inefficient market we cannot draw any conclusions from the value relevance tests. The study assumes market efficiency in accordance with value relevance research tradition and the market efficiency is not tested. Instead, attention is devoted to another principal question, which is important for the Czech case and for the development of accounting information in transition economies; that is what factors influence the degree and development of value relevance in an economy and in a transition economy in particular. This is the topic of the next section.

4.3. Factors influencing value relevance

The value relevance of accounting information is not based solely on accounting regulation but is influenced by a number of factors at first sight external to the accounting environment. Ball et al (2003) state that the quality of financial reporting is determined ultimately by the underlying economic and political factors and not by accounting standards per se.

For the purpose of this study, five areas are defined as important for the value relevance of accounting. The five areas have been identified based on the observations of the development in the Czech Republic in the 1990s⁷¹ and based on previous literature⁷². The list could be extended by a number of further factors.⁷³ However, not all factors are significant for a transition economy in the same extent as for a market economy and therefore the list is limited to these five factors. The factors are discussed in detail and constitute basis for evaluation of the development of the value relevance of Czech accounting information.

The following five factors that influence the degree of and changes in value relevance are identified:

- development of accounting regulation
- regulation and control mechanisms
- business climate change
- internationalisation
- business cycle, economic development and industry structure

Accounting laws and regulations influence the value relevance of accounting measures and their quality is the primary prerequisite of the value relevance. Recognition, measurement and valuation principles determine whether the information in the balance sheet and the income statement can be used for decision making. If the information does not give a true view of the company's performance and its financial position, the company may follow the rules and still the information would not be useful. Recognition, measurement and valuation principles differ across countries and are subject to development. Therefore tracking the changes in accounting principles in a country is important for understanding their effect on the development of value relevance.

The transition of a centrally planned economy to a market economy means that accounting regulation has to be completely transformed in order to satisfy the requirements of the market economy. The accounting system in the beginning of the transition lacks value relevance because it is not based on the principles of a market economy. The implementation of a new

⁷¹ See section 3.

⁷² For more details, see Hellström & Armstrong (1996).

⁷³ As suggested in a number of previous studies. For more details, see section 2.

accounting regulation should thus have a positive effect on the value relevance of accounting information. It can be suggested that the accounting standard setters should strive towards continuous improvements of accounting standards and that the accounting profession should strive towards continuous improvements in accounting knowledge and consciousness⁷⁴. International harmonisation of accounting and international experience plays also an important role in the process.

However, accounting standards might be of a high quality and still, the value relevance of accounting information might be low. Even if the recognition, measurement and valuation principles give a satisfactory view of the company, they may not be followed. In other words, such regulation and control mechanisms must exist that secure that the companies follow the accounting regulation and reveal financial information to its external users. A good accounting regulation is thus a necessary but not sufficient condition for value relevant accounting information⁷⁵.

Control mechanisms were missing in the beginning of the transition period and have been inefficient in the process of transition. The importance of control and regulation was not fully understood and therefore, one would expect changes and improvements in control mechanisms during the transition process. Better control of companies' financial information and a better information disclosure suggests that value relevance of this information should increase.

The business environment under the centrally planned economy was secretive and closed. Public did not have any insight into the companies and economy. In the market economy, the companies must act in a different way. They are not anymore closed units managed by the state, but they need to open themselves to their surroundings– to their customers, suppliers, employees, creditors and investors. They have to compete with other

⁷⁴ As long as the benefits of providing information exceed the costs.

⁷⁵ Free market approach supporters argue that accounting regulation is unnecessary. They see accounting as an information industry that operates on the basis of demand and supply interaction. Under certain ideal conditions, accounting regulation indeed might be superfluous. In practice, though, such ideal conditions are difficult to fulfil. This study takes the regulatory approach position. Regulatory approach supporters argue that the market mechanisms are not able to achieve an agreement between the users and producers of accounting information and accounting must be therefore regulated. For further discussion, see Kam (1990).

companies. Information channels become a powerful tool in this competition. A company that is open to the public and provides the public with information will have a competitive advantage over a company that is secretive about its performance and financial position.

The managers of the companies should understand the importance of an open information disclosure. However, it would be unrealistic to expect that the managers who were used to completely different practice during the centrally planned economy would understand this immediately after the political and economic shift and start to act according to the rules of a market economy. Instead, the change towards openness takes time and requires that the managers experience the effects of their actions. This change is also connected to the overall changes in attitudes and atmosphere in the whole society. These attitudes include fundamental values like trust, confidence and responsibility of each individual. Changed attitudes towards less secrecy, greater openness and cooperation, better information disclosure and more trust in the society in general should promote higher value relevance of the information.

The countries entering the path of transition used to be rather closed societies and contacts with the market economies were sporadic and regulated. The transition has opened the countries to the rest of the world and new closer contacts with the market economies have been created. It has changed completely the prerequisites for the activities of the companies. The companies suddenly had to compete with the quality and prices of their products, services offered, financial solutions provided, and also with their reputation and credibility. In an environment like that, secretiveness has no place.

Internationalisation of the transition economy, either through foreign customers and suppliers or through foreign investors entering capital markets or foreign companies establishing themselves in the country, changes the informational environment. Entrance of the actors from well-functioning markets into the transition economy encourages domestic enterprises to be more responsive and accountable to a larger number of stakeholders. It has a positive effect on the change in business environment. Increased internationalisation and globalisation of business should have positive effects on value relevance of accounting information.

Previous research has shown that the value relevance of accounting information and its significance for pricing is associated to the business

cycle. Runsten (1998) finds for Sweden that the explanatory power of accounting measures is lower in periods of economic boom and higher in periods of economic recession⁷⁶. Value relevance of accounting information thus seems to be related to the fluctuations in the business cycle. Runsten suggests that the reason might be investors' behaviour. During the economic boom, investors value companies high irrespective of their actual performance and accounting measures, while in the periods of recession, the actual performance becomes important and investors' decisions are based on the fundamental analysis of accounting numbers. The expectation that the economic boom leads to a lower statistical association between market and accounting numbers and the economic recession leads to a higher statistical association is supposed to hold for transition economies, too.⁷⁷

The degree of value relevance is a function of all the above five factors. High quality of accounting regulation is necessary for high value relevance of accounting information but is not sufficient. The degree of value relevance is influenced by the interplay of all the five factors. It is not possible to separate the effect of the individual factors in the association tests as specified in the traditional value relevance research. It is however possible to indicate the effect that the individual factors have on value relevance, that is whether the factor increases or decreases the value relevance and under which conditions. It shows also that the development of high quality accounting standards is not the only concern in the transition economies and that for example a mere adoption of international accounting standards as such does not guarantee high quality of accounting information. The institutional and economic environment of the country is equally crucial.

4.4. Summary

In this chapter the concept of value relevance was discussed. It was determined that high quality accounting information has positive economic consequences for the decision makers and for the economic growth. Value relevance was defined within the conceptual framework of IASC. It was determined that value relevance as understood in this study is the ability of financial statement information to capture information that affects share

⁷⁶ Runsten (1998), p. 221.

⁷⁷ Note that this assumption holds for value relevance as defined in this study; that is a statistical association between market and accounting measures.

values. It is measured as an explicit relationship between market indicators of the value of the company and accounting measures. It was also stated that the value relevance does not solely depend on accounting regulation but is influenced by a number of external factors that constitute a broader accounting environment. Five institutional factors were identified for the purpose of this study – development of accounting regulation, control mechanisms, business climate change, internationalisation and business cycle, economic development and industry structure. The concept of value relevance, that is a relationship between market and accounting indicators of the value of the company, is based on an underlying equity valuation model. This model is developed in next chapter.

5. Theoretical model of accounting based valuation

Value relevance has been defined as the ability of accounting information to capture information that affects the value of the company. It measures the relationship between market indicators of the value of owners' equity and accounting numbers and is empirically tested as a statistical association between accounting numbers and the market the value of owners' equity. In this chapter, the linear valuation model is derived which links a residual income valuation model with empirical tests described in chapter 6. First, basic assumptions underlying the model are defined and afterwards, the valuation model is derived.

5.1. Assumptions of the valuation model

In economic theory, the value of an asset to its owner is equal to the present value of the expected future cash flows from the asset. The value of equity is equal to the expected future cash flows to the owners of equity. The expected future cash flows to the owners of equity are dividends. The value of equity is, thus, the present value of expected future dividends.

Assumption 1

$$P_t = \sum_{\tau=1}^{\infty} \frac{E_t[DIV_{t+\tau}]}{(1+r_e)^\tau} \quad (5.1.)$$

where P_t = the value of equity at date t , DIV_t = net dividends paid at date t (dividends minus capital contributions), r_e = required rate of return (flat term structure of interest rate is assumed), E_t = expected value operator, conditioned on the available information at time t .

Assumption 2

The second assumption concerns the change in the book value of regular owners' equity and the clean surplus relation. The clean surplus relation means that all changes in the book value of equity pass through the income statement with the exception of net dividends. In reality, dirty surplus

accounting can exist, for example foreign currency translation, some types of goodwill treatment or revaluations. The change in book value of equity according to the clean surplus relation can be expressed as follows.

$$BV_t = BV_{t-1} + X_t - DIV_t \quad (5.2.)$$

where BV_t = book value of equity at date t , X_t = accounting earnings at date t and DIV_t = net dividends paid at date t .

Assumption 3

Regular owners' equity accounting also implies the fact that dividends reduce book value of equity on one-to-one basis but they leave current earnings unaffected⁷⁸:

$$\frac{\partial BV_t}{\partial DIV_t} = -1 \quad \text{and} \quad \frac{\partial X_t}{\partial DIV_t} = 0$$

Assumption 4

The condition $E_t \frac{[P_{t+\tau}]}{(1+r_e)^\tau} \rightarrow 0$ as $\tau \rightarrow \infty$ must be satisfied in order to avoid infinite horizon value⁷⁹.

Further, define abnormal earnings as the total accounting earnings less normal earnings, which is book value of equity multiplied by the cost of capital:

$$X_t^a = X_t - r_e * BV_{t-1} \quad (5.3.)$$

If we combine assumptions 1 (present value of future expected dividends) and 2 (clean surplus relation), the value of the company can be written as⁸⁰:

⁷⁸ Ohlson (1995).

⁷⁹ Ohlson (1995).

⁸⁰ Dividends in the present value of expected dividends formula are substituted by: $DIV_t = X_t^a - BV_t + (1+r_e) * BV_{t-1}$. For derivation of the residual income model, see for example Peasnell (1982) and Ohlson (1995).

$$P_t = BV_t + \sum_{\tau=1}^{\infty} \frac{E_t[X_{t+\tau}^a]}{(1+r_e)^\tau} \quad (5.4.)$$

The abnormal earnings valuation model or residual income model (5.4.) states that the value of the company equals the book value of equity plus the present value of future abnormal earnings. The present value of future abnormal earnings captures future profitability of the company and reconciles the difference between the present market value of equity and the present book value of equity. In other words, abnormal earnings bear on the difference between the market value and book value of the firm which is the company's business goodwill of owners' equity⁸¹.

5.2. Linear valuation model

Ohlson (1995) extends the residual income model with a linear information dynamic model. The linear information dynamic model frames the stochastic time-series behaviour of abnormal earnings and specifies that expected abnormal earnings for date t+1 are linear to abnormal earnings at date t with a correction variable for other information not included in the earnings. The linear information dynamic model ensures that current or subsequent periods' earnings and book values will eventually include all value relevant events:

$$X_{t+1}^a = \omega X_t^a + V_t + \varepsilon_{1t+1} \quad (5.5.)$$

$$V_{t+1} = \gamma V_t + \varepsilon_{2t+1}$$

where parameters ω and γ are constrained to be non-negative and less than or equal to 1⁸², ε_1 and ε_2 = zero mean random disturbance terms, V_t = "other relevant information" not contained in the current period financial statements that summarises value relevant events which will have an impact on the financial statements in the future.

⁸¹ Skogsvik (1998), p. 371.

⁸² This constraint is valid for unbiased accounting.

Combining the present value of future expected dividends assumption (1), clean surplus relation (2) and the stochastic process of the linear information dynamic model (5.5.), a linear valuation model can be obtained⁸³:

$$P_t = BV_t + \alpha_1 X_t^a + \alpha_2 V_t \quad (5.6.)$$

where $\alpha_1 = \frac{\omega}{(1+r_e) - \omega}$ which is the multiplier on current residual income and

$\alpha_2 = \frac{(1+r_e)}{((1+r_e) - \omega)((1+r_e) - \gamma)}$ which is the multiplier on "other information".

The term $\alpha_1 X_t^a + \alpha_2 V_t$ is the present value of the abnormal earnings. The parameters α_1 and α_2 are constrained to $\alpha_1 \geq 0$ and $\alpha_2 > 0$.

The equation implies that the market value of equity is a linear function of i) book value of equity ii) the current profitability as measured by abnormal earnings, and iii) other information that adjust the value for future profitability. The parameters ω and γ act as persistence parameters. For $\omega > 0$, α_1 is positive. If ω is large, abnormal earnings persist for a greater number of years; if ω is small, abnormal earnings disappear quickly. When $\omega = 0$, expected future abnormal earnings $E_t[X_{t+\tau}^a]$ are independent of present abnormal earnings X_t^a and the future abnormal earnings become irrelevant for the present market value. P_t in such case, depends only on the book value of owners' equity.

It is, however, difficult to empirically separate the additional information from abnormal earnings and therefore the model is simplified by eliminating the other information variable V_t and the linear valuation model is as follows:

$$P_t = BV_t + \alpha_1 X_t^a \quad (5.7.)$$

where $\alpha_1 = \frac{\omega}{r_e - (\omega - 1)}$ ⁸⁴

⁸³ For derivation, see Ohlson (1995).

⁸⁴ The expression $\frac{\omega}{r_e - (\omega - 1)}$ is a simple transformation of $\frac{\omega}{(1+r_e) - \omega}$.

Abnormal earnings in equation (5.7.), however, cannot be found in the financial statements. Therefore it is desirable to write equation (5.7.) in terms of information that is actually available in the financial statements. The constrain $0 \leq \omega \leq 1$ ⁸⁵ and assumption 3 yield the following linear model:

$$P_t = BV_t + X_t^a \left(\frac{\omega}{r_e - (\omega - 1)} \right) = BV_t + [X_t - r_e * BV_{t-1}] * \left(\frac{\omega}{r_e - (\omega - 1)} \right) \quad (5.8.)$$

The first part of the second term is the abnormal earnings and the second part of the second term is the persistence factor α_1 . Introducing the clean surplus relation again, the equation can be further written as follows⁸⁶:

$$\begin{aligned} P_t &= BV_t + [X_t - r_e(BV_t - X_t + DIV_t)] * \left(\frac{\omega}{r_e - (\omega - 1)} \right) = \\ &= BV_t \left[1 - \frac{r_e \omega}{r_e - (\omega - 1)} \right] + X_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] * \left(\frac{\omega(1 + r_e)}{r_e \omega} \right) - DIV_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] \end{aligned} \quad (5.8.')$$

⁸⁵ Unbiased accounting.

⁸⁶ The derivation is:

$$\begin{aligned} P_t &= BV_t + [X_t - r_e(BV_t - X_t + DIV_t)] \left(\frac{\omega}{r_e - (\omega - 1)} \right) = \\ &= BV_t \left[1 - \frac{r_e \omega}{r_e - (\omega - 1)} \right] + X_t \left[\frac{\omega}{r_e - (\omega - 1)} + \frac{r_e \omega}{r_e - (\omega - 1)} \right] - DIV_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] = \\ &= BV_t \left[1 - \frac{r_e \omega}{r_e - (\omega - 1)} \right] + X_t \left[\frac{\omega(1 + r_e)}{r_e - (\omega - 1)} \right] - DIV_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] = \\ &= BV_t \left[1 - \frac{r_e \omega}{r_e - (\omega - 1)} \right] + X_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] \left(\frac{\omega(1 + r_e)}{r_e \omega} \right) - DIV_t \left[\frac{r_e \omega}{r_e - (\omega - 1)} \right] \end{aligned}$$

Substituting the persistence factor $\left[\frac{r_e \omega}{r_e - (\omega - 1)} \right]$ by a parameter k ; which $0 \leq k \leq 1$, the following equation is received:

$$P_t = BV_t(1-k) + X_t \left(\frac{1+r_e}{r_e} \right) k - DIV_t k = BV_t(1-k) + k \left[X_t \left(\frac{1+r_e}{r_e} \right) - DIV_t \right] \quad (5.9.)$$

Thus, the present value P_t is a weighted function of the book value of equity and capitalised earnings less dividends. The relative weight of the book value of equity and the earnings variables depends on the magnitude of ω , which is the persistence factor of abnormal earnings. The parameter k is large when ω is large. In such a case, the persistence in present abnormal earnings is high. Present abnormal earnings thus give a good prediction of future abnormal earnings and there is a larger weight on the earnings in the model because a larger portion of P_t relates to X_t . If ω is small, k is also small and the persistence in abnormal earnings is low. In such a case, the present abnormal earnings do not give a good prediction of the future abnormal earnings and more weight is given to book value in the model.

The parameter k can take any value between zero and one. In the extreme case, when $k=1$ (which means that the persistence factor ω is equal to one), the value of equity is a function of earnings and an earnings based valuation model is obtained:

$$P_t = X_t \left(\frac{1+r_e}{r_e} \right) - DIV_t \quad (5.10.)$$

In the opposite extreme case, let $k=0$ (which means that the persistence factor ω is equal to zero). Present market value of equity is then a function of the book value of equity and a net asset based valuation model is obtained:

$$P_t = BV_t \quad (5.11.)$$

In other words, in the first case, the present value of equity is determined only by earnings while in the second case the present value of equity is

determined solely by the book value of equity. In most cases, however, the parameter k takes other values than zero or one and the present market value of equity is a weighted function of both the book value of equity and earnings.

5.3. Returns model

The linear valuation model (5.9.) can be extended to a returns model. First, the condition $\omega = 0$ leads to the net asset based valuation model $P_t = BV_t$ (5.11.). Under the assumptions that $P_t - P_{t-1} = BV_t - BV_{t-1}$ and $BV_t - BV_{t-1} = X_t - DIV_t$, the equation can be written as $P_t - P_{t-1} = X_t - DIV_t$. Deflating by P_{t-1} and rearranging gives the following linear relationship between market returns and accounting earnings levels⁸⁷:

$$\frac{P_t + DIV_t - P_{t-1}}{P_{t-1}} = \frac{X_t}{P_{t-1}} \quad (5.12.)$$

Second, if $\omega = 1$, the value of equity is a multiple of earnings $P_t = \frac{1+r_e}{r_e} X_t - DIV_t$ (5.10). Conditioned on Miller-Modigliani dividend

irrelevance proposition this may be written as $P_t + DIV_t = \frac{1+r_e}{r_e} X_t$.

Assuming that $(P_t + DIV_t - P_{t-1} - DIV_{t-1}) = \frac{1+r_e}{r_e} * (X_t - X_{t-1})$ and

deflating by P_{t-1} gives the following linear relationship between market returns and accounting earnings changes:

$$\frac{P_t + DIV_t - P_{t-1} - DIV_{t-1}}{P_{t-1}} = \frac{1+r_e}{r_e} \left[\frac{X_t - X_{t-1}}{P_{t-1}} \right] \quad (5.13.)$$

⁸⁷ Given unbiased accounting and business goodwill returns being zero.

The net asset based valuation model and the earnings based valuation model hold only under specific extreme conditions when $\omega = 0$ and $\omega = 1$. Generally, ω takes value between zero and one and the market return becomes thus a weighted function of earnings levels and earnings changes. Assuming that $\text{Div}_{t-1} = 0$ ⁸⁸, the returns model is defined as follows:

$$\frac{P_t + \text{DIV}_t - P_{t-1}}{P_{t-1}} = k' \left(\frac{1 + r_e}{r_e} \right) * \left[\frac{X_t - X_{t-1}}{P_{t-1}} \right] + (1 - k') \frac{X_t}{P_{t-1}} \quad (5.14.)$$

5.4. Summary

This chapter derived the underlying valuation model and showed that the intrinsic value of the firm is a weighted function of accounting earnings and book value of equity or alternatively, a weighted function of earnings levels and earnings changes. The linear valuation model is a foundation of the linear regression tests discussed in the next chapter.

⁸⁸ Easton & Harris (1991), p. 22.

6. Research design

Value relevance is measured by the ability of financial statement information to capture or summarise information that affects market values and empirically by measuring the statistical association between market indicators of value and accounting numbers. An accounting variable is value relevant when it is significantly associated with market values⁸⁹. The valuation model of chapter 5 constitutes the basis of the linear regressions tests. These include price regression, scaled price regression, logarithmic regression and returns regression. Each regression is introduced in a separate section of this chapter (sections 6.2.-6.5.). Every section describes the statistical model, defines the variables used in the model and the hypotheses that the model tests. The second value relevance measurement approach is the hedge portfolio test⁹⁰ that investigates whether a hedge portfolio based on perfect pre-knowledge of accounting measures (earnings) can earn better than normal returns. If it earns better than normal returns, then the accounting measures (earnings) are value relevant. The chapter starts with a descriptive analysis of the samples and ends with a section on statistical issues that are connected with linear regression analysis.

6.1. Descriptive analysis of the samples

Empirical testing starts with a descriptive analysis of data. The analysis gives a feeling of the differences in the characteristics of companies in the Czech Republic and Sweden. It captures a number of accounting and market dimensions and is summarised in table 7.

The level of the key ratios is influenced by the performance and financial position of the firm as well as by the accounting principles and policies and factors external to accounting environment. Among others, fundamental economic differences in the countries as different expected growth rates, different discount rates, systematic differences in industry concentration and industry structure and differences in capital structure affect the level of the key ratios and the level of value relevance

⁸⁹ See section 4.

⁹⁰ In the spirit of Francis & Schipper (1999).

Table 7. Descriptive variables⁹¹

Structure of the balance sheet:

Total assets
Book value

Profitability measures:

Earnings
Return on equity
Return on assets
Cost of liabilities

Financial position:

Equity- asset ratio
Debt - equity ratio

Liquidity:

Working capital
Cash - sales ratio

Growth:

Change in sales
Change in total assets
Change in equity
Dividends/equity
New issue/ equity
Dividends/earnings

Market related measures:

Price
Price - earnings ratio
Market - to - book ratio

6.2. Price regression

The first test follows a standard approach to testing the empirical association between market value and accounting numbers. Price is seen as a function of book value of equity and earnings⁹². The test model is as follows:

$$P_{jt} = \alpha_0 + \alpha_1 X_{jt} + \alpha_2 BV_{jt} + \varepsilon_{jt} \quad (6.1.)$$

where P_{jt} = the total market value of firm j at time t , BV_{jt} = book value of owners' equity and X_{jt} = accounting earnings for firm j at time t .

Both the dependent and independent variables are calculated as total values, that is total market price, total accounting earnings and total book value of equity. The clean surplus relation does not hold on a per share basis when number of shares outstanding changes, therefore per share value is not considered⁹³. The total values work as long as issuing and buying shares are value irrelevant transactions in the sense of Miller-Modigliani and when generally accepted accounting principles measure capital contributions correctly. The Miller-Modigliani condition may be approximated in the real

⁹¹ For definitions of the key ratios, see appendix 7.

⁹² See section 5.

⁹³ Ohlson (2000), p. 6.

world. As to the accounting principles, these involve two issues – the pooling-of-interest accounting and accounting for dilutive securities. Pooling-of-interest method is forbidden according to the Czech GAAP while it is permitted according to the Swedish GAAP. However, the rules that permit pooling-of-interest method are very strict and therefore the method is considered to have a marginal effect on the variables used in the regression tests. As to dilutive securities, these should not be material in any of the countries. Preference shares do not exist in Czech companies and in Sweden, they do not affect the sample in a substantial way. Therefore, preference shares are included into the total number of shares.

Price is taken as of 31 March, alternatively three months after the end of the accounting year for companies that do not close their books in December, in order to ensure that the annual reports are publicly available and in accordance with practice in previous studies. Price and scaled regressions are run as a sensitivity test based on December and June prices. The sensitivity test controls whether it is reasonable to conduct the value relevance tests on March prices especially with respect to the Czech Republic where the dissemination of financial accounting information has been a problem. Results of the tests are presented in appendix 3. The results confirm that March prices are satisfactory and using prices of neither earlier nor later date substantially changes the comparison between the two countries and periods.

Earnings are calculated excluding extraordinary items adjusted for tax and are adjusted for allocations to untaxed reserves. Negative earnings are excluded⁹⁴. Book values are adjusted for untaxed reserves⁹⁵ and are limited to positive values only.

If accounting information is value relevant, there will be a significant association between the total market value and the accounting earnings and

⁹⁴ To exclude negative earnings from the linear regressions between market and accounting numbers is common practice which is based on the fact that the underlying linear dynamics model assumes that earnings are non-negative (see chapter 5). In practice it means of course that the samples for the different periods will differ as to the structure.

⁹⁵ Allocations to untaxed reserves are allowed in Sweden for tax purposes in single entities and therefore the untaxed reserves have to be adjusted for in order to get a better view of the company's equity and liabilities. 72% of untaxed reserves are added to equity and 28% are tax liabilities. Corresponding adjustments are made in the income statement.

the book value of equity; that is the independent variables will explain a large portion of the dependent market variable. The following hypotheses are tested:

Hypothesis number one is that the explanatory power of the regression is expected to be lower for the Czech Republic than for Sweden.

Hypothesis number two is that value relevance of accounting information has increased over time in the Czech Republic; that is the explanatory power will be higher for the period 1998-2001 than for the period 1994-1997.

The price regression as specified in (6.1.) is a levels model which brings about the problem of the scale effect. The fact that prices, book values and earnings differ substantially among the firms potentially causes heteroscedasticity and overestimates the explanatory power of the model. Brown, Bo & Lys (1999) argue that holding value relevance constant, the explanatory power of the model will be higher in samples in which the cross sectional distribution of scale factor has a larger variance relative to its mean. This does not, however, necessarily mean that the explanatory power for the two samples still cannot be compared⁹⁶ but it surely makes this type of regression less suitable. Heteroscedasticity tests will be made in order to explore whether the problem exists⁹⁷.

There are a number of approaches for coping with the scale effect problem. If we see scale as an omitted variable that influences the outcome of the tests, the price regression may be extended by another independent variable approximating the size of the company. In the context of mitigating coefficient bias, it is empirically preferable to include the size variable into the regression. However, when the coefficient bias is not the concern, but the effect of the scale on the explanatory power is to be eliminated, it is preferable to deflate the observable variables of the regression by a scale factor. This approach will better reflect the explanatory power of the underlying variables. The scaling approach is presented in section 6.3. Still,

⁹⁶ See appendix 4 on the significance of differences between R^2 s of the two samples.

⁹⁷ The results of the heteroscedasticity tests are presented in appendix 5.

another way of how to deal with the scale issue is to use a logarithmic model⁹⁸ (see part 6.4.).

6.3. Scaled regression

In order to avoid the statistical problems from 6.2, the price regression is scaled. There is no consensus in the literature as to which variable is the best approximation of size and which variable therefore should be used as a scale factor. The scale factors most commonly used in the research area are number of shares, sales, book value of equity and market value of owners' equity.

In this study, the whole equation is deflated by the book value of owners' equity for the prior period, BV_{t-1} . In that way, the independent variables will be easier to understand. The independent variable $\frac{X_{jt}}{BV_{jt-1}}$ is a measure of

return on equity. The second variable, $\frac{BV_{jt}}{BV_{jt-1}}$ reflects the change in the

book value (which in principle should be determined by the profitability of the firm and net dividends). The dependent variable is a kind of market-to-book ratio where the price is compared to the book value for the prior period. The market-to-book ratio shows the market's expectations of the firm's long term future profitability and depends on three factors – profitability, dividend payout policy and required rate of return which in turn are incorporated into the independent variables.

The second regression is thus as follows⁹⁹:

⁹⁸ Foster (1986) states that logarithmic transformation also reduces possible violations from normality and reduces possible positively skewed distribution.

⁹⁹ If we assume that $BV_{jt} = (1 + g) * BV_{jt-1}$, the regression may be re-written in the following way:

$$\frac{P_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt}}{BV_{jt-1}} + \varepsilon_{jt} \quad (6.2.)$$

It should be noted that the change in the book value of equity includes the earnings of the period. The earnings are a part of the first independent variable. Therefore there is a potential risk for multicollinearity between the two independent variables in (6.2.). For further discussion of this issue, see 6.8. and appendix 6.

6.4. Logarithmic regression

Another way to tackle the size problem is to use a logarithmic model:

$$\ln P_{jt} = \alpha_0 + \alpha_1 \ln X_{jt} + \alpha_2 \ln BV_{jt} \quad (6.3.)$$

A model of this kind hinges on the idea of a non-linear relationship between market variables and accounting variables. The underlying function for the logarithmic model is:

$$\hat{P}_{jt} = e^{\alpha_0} * X_{jt}^{\alpha_1} * BV_{jt}^{\alpha_2} \quad (6.4.)$$

In order to estimate the validity of this underlying model and to allow the comparability between the explanatory powers of the logarithmic regression and the other test regressions, a new price is estimated according to equation above. A new regression is tested to explore how much of the observed price is explained by a price calculated according to (6.4.):

$$\frac{P_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt-1} * (1 + g)}{BV_{jt-1}} =$$

$$\alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 (1 + g) = (\alpha_0 + \alpha_2) + \alpha_1 * ROE + \alpha_2 * g$$

where ROE = return on equity and g = growth in equity. Thus the market-to-book ratio is a function of profitability and growth of the company which is consistent with the formula (6.2.).

$$P_{jt} = \alpha_0 + \alpha_1 \hat{P}_{jt} \quad (6.5)$$

where P_{jt} = the total market value of the firm as observed in the market at time t and \hat{P}_{jt} = the total market value of the firm at the same point of time estimated by the non-linear relationship formula (6.4).

The association between the observed price and the estimated price should be high if the \hat{P}_{jt} is a good estimator of the price.

6.5. Returns tests

An alternative approach to study the association between market prices and accounting numbers is based on Easton & Harris (1991). This approach analyses the association between annual market returns, earnings levels and earnings changes as specified in section 5.3.

The returns model is as follows:

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt} - X_{jt-1}}{P_{jt-1}} + \varepsilon_{jt} \quad (6.6.)$$

The hypotheses for the returns regression are the same as for the previous regressions.

6.6. Hedge portfolio test

The value relevance of accounting measures is also tested by a hedge portfolio investment methodology. This methodology investigates whether a hypothetical investment strategy based on a perfect pre-knowledge of a specific accounting number can generate abnormal returns; i.e. whether the investor could have been able to earn extra money with such knowledge. In

this study, the value relevance of accounting earnings is tested. Thus, the investment strategy is based on the pre-knowledge of accounting earnings changes.

First, earnings based hedge portfolio is created. Firm specific return $\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}}$ is calculated for all firms¹⁰⁰. All companies in the total sample are ranked according to the change in accounting earnings $\frac{X_{jt} - X_{jt-1}}{P_{jt-1}}$ ¹⁰¹. A hedge portfolio is formed by going long in shares with the highest 40% of earnings changes and short in shares with the lowest 40% of earnings changes. Return is afterwards calculated for both the long position and short position as an average of returns for all companies included in the long respectively short position:

$$R_L = \sum_{j=1}^{N_L} \frac{R_j}{N_L} \quad \text{and} \quad R_S = \sum_{j=1}^{N_S} \frac{R_j}{N_S}$$

where R_j = return for an individual company calculated as $\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}}$
 and N_L and N_S = the number of companies in the long position respectively in the short position. Note that N_L and N_S are equal.

The hedge portfolio return is defined as the difference between the return on the long position and the return on the short position, that is the return that we can earn on the long position and the return that we loose on the short position:

$$R_H = R_L - R_S$$

If accounting earnings lack value relevance, i.e. if the pre-knowledge of earnings changes is irrelevant, the abnormal return on the hedge portfolio will be zero. If the return on the hedge portfolio is positive, accounting

¹⁰⁰ The return is measured over 15-month period ending on March 31 and is calculated on year basis, i.e. allowing re-investment every year.

¹⁰¹ The change in accounting earnings is calculated on year basis.

earnings can be assumed to be value relevant and abnormal returns can be earned on the hedge portfolio.

Second, a hedge portfolio based on a perfect pre-knowledge of returns is created. Return is calculated for all firms and all years in the same way as in the earnings based hedge portfolio but the companies are now ranked according to the level of returns. Long position is taken in shares with 40% of highest returns and short position is taken in shares with 40% of lowest returns. Average returns are calculated for the long and short positions and finally, return on the returns based hedge portfolio is calculated as the difference between the long and short position returns.

Afterwards, the return on earnings based hedge portfolio (EHR) is scaled by the return on returns based hedge (RHR). The ratio $\frac{EHR}{RHR}$ measures how much of the return earned based on a perfect pre-knowledge of returns can be explained by the return earned based on a perfect pre-knowledge of accounting earnings change. The higher the ratio is, the higher is the value relevance of accounting earnings changes.

The hypotheses for regression tests hold also for the hedge portfolio test. The value relevance of accounting information is expected to be lower in Czech accounting than in Swedish accounting (expressed as a lower return on the Czech hedge portfolio) and the value relevance increases in the second period in the Czech Republic (the return on hedge portfolio is higher for the second period).

6.7. Data and samples

The Czech data have been collected from the Cekia financial database Ariadna. Financial companies have been excluded from the sample because the structure and the accounting practices for these companies differ substantially from non-financial firms. The research period covers the years 1994-2001. Trading at the Prague Stock Exchange started in April 1993. Therefore the first year for which data is available for the whole year is 1994. Year 2001 is the last year when financial statements were prepared according to the Accounting Act 1991. The research period is divided into two equally long periods, 1994-1997 and 1998-2001. The reason for this is that the year 1997 may be seen as a milestone in several ways. First, there

was a political change due to preliminary elections. Second, the economy turned into an economic recession. Third, in this year many companies were de-listed from the Prague Stock Exchange and the Securities Commission was established in 1998, which created expectations of better control over the capital market and consequent improvements in the financial reporting environment. A comparison of the two periods is made in order to investigate the change in the value relevance over time. The Czech sample includes only those companies that have been listed at the Prague Stock Exchange during the whole research period. In total, the sample includes 65 companies.

The Swedish data have been collected from databases Finlis and Trust and include companies listed at the Stockholm Stock Exchange during the same time period, 1994-2001. For the case of the Swedish data, not only survivor companies but all companies were included. However, only companies for which data are available at least for two consecutive years are taken into the sample. This is due to the fact that some of the variables are based on accounting numbers and share prices for two years. The total Swedish sample includes 302 companies in the first research sub-period and 271 companies in the second sub-period.

6.8. Further considerations

Linear regression tests are based on several basic statistical assumptions¹⁰². In this section, consequences of a possibility that some of these assumptions does not hold are discussed as well as some other important statistical considerations.

Comparison of two different samples

The two country samples represent two populations with different characteristics. Therefore it might be questioned whether the explanatory power can be compared and whether any differences in R^2 are robust indicators of differences in the value relevance. It is not possible to compare R^2 as such. Instead, the residual variance is compared. The quotient of the mean squares of residuals for the two samples is F- distributed. Therefore,

¹⁰² See Gujarati (1995).

the quotient value is compared to F-value of respective degrees of freedom.

The test is double sided:

H₀: if the variance is similar, the quotient will be approximately 1

H₁: if the variance is not similar, the quotient will be higher or lower than 1

The decision rule is to reject H₀ if $\frac{V_1}{V_2} > 1 + \varepsilon$ or $\frac{V_1}{V_2} < 1 - \varepsilon$

where V₁ and V₂ are the mean squares of the residuals from the regression for sample 1 and 2 and n₁ – k₁ and n₂ – k₂ are degrees of freedom for sample 1 and 2.

If the null hypothesis cannot be rejected, then the variances are the same and both models explain the dependent variable equally well. The difference in explanatory power is random and not systematic. If the null hypothesis can be rejected at 5 – 10 % level then the independent variables in the models do not explain the dependent variable equally well, in other words one model explains the dependent variables better than the other model. This means that if the null hypothesis can be rejected, the difference between the explanatory powers of the regressions is significant and inferences about the value relevance of the samples can be made. The results of the significance tests of the R²s are presented in appendix 4.

Outliers

Both databases include some extreme cases of observations. Risk that these might distort the results of the total sample exists and therefore, the extreme cases must be excluded. There is no consensus as to the procedures of excluding outliers. In this study, the sample is adjusted first by eliminating observations that lie outside five standard deviations from the mean value of all the regression variables. The regression is run again and observations that lie outside three standard deviations from the new mean value of the variables are excluded. This procedure eliminates between 1 – 8% of the observations depending on the quality of data available for the respective country, year and type of test. The decline in number of observations for each sample, each period and each regression test is summarised in table 8.

The elimination of outliers in this way means that the composition of samples for each country will differ for different periods and different regression tests. In other words, a company that is in the sample for one

period may be excluded in another period because it might be an extreme observation in the particular period or year. In this way, the number of observations will differ across time for each sample. This should not, however, have any substantial effect for the inferences from the results, since the final number of observations excluded is relatively small compared to the total samples.

Table 8. Sample reduction from outlier elimination¹⁰³

	<i>Czech sample</i>		<i>Swedish sample</i>	
	<i>1994-1997</i>	<i>1998-2001</i>	<i>1994-1997</i>	<i>1998-2001</i>
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Price regression				
Total sample	215	272	685	464
Excluded observations outside 5 standard deviations	7 (3.2%)	8 (2.9%)	3 (0.4%)	5 (1.1%)
Excluded observations outside 3 standard deviations	8 (3.7%)	21 (7.7%)	8 (1.2%)	16 (3.4%)
Scaled regression				
Total sample	208	217	637	408
Excluded observations outside 5 standard deviations	5 (2.4%)	4 (1.8%)	12 (1.9%)	8 (2.0%)
Excluded observations outside 3 standard deviations	8 (3.8%)	15 (6.9%)	8 (1.3%)	18 (4.4%)
Logarithmic regression				
Total sample	215	272	684	464
Excluded observations outside 5 standard deviations	-	-	-	-
Excluded observations outside 3 standard deviations	11 (5.1%)	1 (0.4%)	4 (0.6%)	6 (1.3%)
Returns regression				
Total sample	173	196	574	383
Excluded observations outside 5 standard deviations	2 (1.2%)	3 (1.5%)	1 (0.2%)	4 (1.0%)
Excluded observations outside 3 standard deviations	8 (4.6%)	10 (5.1%)	15 (2.6%)	21 (5.5%)
Extended returns regression				
Total sample	170	208	590	293
Excluded observations outside 5 standard deviations	3 (1.8%)	4 (1.9%)	1 (0.2%)	2 (0.7%)
Excluded observations outside 3 standard deviations	12 (7.1%)	11 (5.3%)	18 (3.1%)	3 (1.0%)
Extended returns regression and changes in earnings				
Total sample	159	189	531	270
Excluded observations outside 5 standard deviations	3 (1.9%)	4 (2.2%)	1 (0.2%)	6 (2.2%)
Excluded observations outside 3 standard deviations	7 (4.4%)	9 (4.8%)	18 (3.4%)	17 (6.3%)

Note. Total sample means the total number of observations before the elimination of outliers.

¹⁰³ Extended returns regressions are an expansion of the returns regression (see section 7.5.).

Survivors

The Czech sample includes only companies that have been listed at the Prague Stock Exchange during the whole research period, in other words, only survivor companies. The Swedish sample includes all companies no matter whether they were listed at the stock exchange for the whole period or not. This might make the comparison between the two countries more complex. The Czech sample includes more stable companies that have survived throughout the whole period while the Swedish sample includes both companies that due to different reasons disappeared from the stock exchange and new companies that to a large extent appeared in the information technology, telecommunication, biotechnology and human capital intensive industries. For these companies the value relevance of accounting numbers has been questioned and a decrease in value relevance suggested.¹⁰⁴ Therefore, a control sample of survivor companies is tested for the Swedish case¹⁰⁵. This is done for the whole periods but not for individual years.

Linear regression assumptions

Linear regression tests and inferences made from the results are based on several basic assumptions. In the following section, departures from some of these assumptions are discussed. First, cross-sectional analysis runs a risk of heteroscedasticity problems. The presence of heteroscedasticity causes overestimation of the explanatory power R^2 and may lead to incorrect conclusions since the ordinary least square estimators are no longer efficient. In order to ensure the absence of heteroscedasticity, White's general heteroscedasticity test has been conducted¹⁰⁶. The results of the heteroscedasticity tests are presented in appendix 5 and show that the price regression suffers from severe heteroscedasticity problems, while the other linear regressions do not show any heteroscedasticity.

Further, potential presence of multicollinearity is investigated. If multicollinearity exists, standard errors of regression coefficients will be large and the coefficients will be indeterminate. The presence of multicollinearity is investigated by examining the variance-inflating factor,

¹⁰⁴Lev & Zarowin (1999) , p 383.

¹⁰⁵ For complete list of the survivor companies, see appendix 10.

¹⁰⁶ For the description of the test see Gujarati (1995), p 379 ff.

the condition index and the tolerance index tests. The results of the tests are presented in appendix 6. The logarithmic regression exhibits a strong multicollinearity while the other linear regressions do not.

6.9. Summary

This chapter described the research design of the present study. Empirical tests of value relevance consist of several linear regression tests and of hedge portfolio investment methodology. The linear regression tests include:

- Price regression (dependent variable = market value of equity, independent variables = book value of equity and accounting earnings)
- Scaled regression (dependent variable = market value of equity deflated by book value of equity of prior period, independent variables = return on equity and change in book value)
- Logarithmic regression (dependent variable = logarithm of market value of equity, independent variables = logarithms of book value of equity respectively earnings)
- Returns regression (dependent variable = market returns, independent variables = earnings levels and earnings changes)

The hedge portfolio investment methodology means that a hedge portfolio is created based on pre-knowledge of earnings changes and abnormal returns on the hedge portfolio are studied.

Linear regression tests rely on a number of basic statistical assumptions. Two of these have been discussed – heteroscedasticity and multicollinearity. Also, the method of outliers' elimination was described and the potential survivor bias explained. The following chapter summarises the results of the empirical tests for both research countries. Sensitivity tests of statistical issues are in the appendix.

7. Empirical results

This chapter presents the results of the research tests. The first section describes the Czech and the Swedish samples with help of accounting based and market based key ratios. The following sections present results of the individual linear regression tests and the results of the hedge portfolio test. Each section includes the description of the respective regression model, a summary table of the results and an explanation and comments of the results. The statistical tests related to the linear regression assumptions which are discussed in 6.8. are reported in appendices 4-6.

7.1. Description of the samples

The results of the descriptive analysis are in tables 9 and 10. The definitions of the variables are presented in appendix 7. The values in the tables are mean values of each variable¹⁰⁷. The samples for which the descriptive results are presented do not completely coincide with the samples in the regression tests. This is due to the fact that the method of outliers' elimination has been based on standard deviations of the means of the respective descriptive variable rather than for the means of dependent and independent variables assuming that it is more meaningful to eliminate outliers affecting each individual variable.

This also means that the key ratios presented in the tables are not completely consistent as the basic accounting relationships would suggest. Also, this means that the mean value of each variable for the whole sub-periods is not an arithmetic average of the four given values for the individual years. The outliers have a different weight depending on whether they are included in the individual years or in the whole period.

All numbers in the table are both in domestic currencies (CZK respectively SEK) and in US dollars for a better comparison between the two countries. The exchange rate is taken as at the end of each individual year. For the sub-

¹⁰⁷ The Finlis database has been transformed during the research period which disturbs the comparison between the periods. The number of available variables decreased and even if variables are specified they are not complete for all companies.

periods, the exchange rate is calculated as an average over the four years. Note, however, that the development of the variables over time in domestic currencies and in US dollars does not always coincide and in some years it is even contradictory. This is caused by the differences in exchange rates. Therefore the development over time in the countries is analysed based on the domestic currencies.

Table 9A.. Czech sample means (million CZK, US dollars in bracket)

Variable	1994	1995	1996	1997	1998	1999	2000	2001
Number of companies	64	65	65	64	65	65	65	65
Balance sheet								
Total assets	3 664 (128)	5 131 (194)	5 310 (195)	6 130 (191)	7 593 (235)	7 885 (243)	7 237 (186)	6 887 (180)
Book value	2 355 (82)	3 111 (118)	3 358 (124)	3 728 (116)	3 900 (121)	3 887 (120)	4 277 (110)	4 185 (110)
Profitability measures								
Earnings	120 (4)	82 (3)	93 (3)	111 (4)	136 (4)	159 (5)	209 (5)	209 (6)
Return on equity	5.7%	5.6%	4.0%	3.5%	4.6%	4.7%	6.6%	6.4%
Return on assets	9.6%	10.0%	8.2%	8.1%	15.9%	12.6%	11.2%	9.4%
Cost of liabilities	20.9%	23.4%	16.7%	13.7%	34.2%	28.1%	22.3%	15.3%
Financial position								
Equity-asset ratio	68.0%	65.6%	62.3%	57.2%	55.5%	53.4%	54.4%	57.2%
Debt-equity ratio	0.58	0.63	0.68	0.85	0.95	1.00	1.02	0.86
Growth								
Change in total assets	10.8%	12.4%	8.7%	14.4%	15.5%	2.6%	0.6%	1.9%
Change in equity	4.4%	8.3%	5.0%	3.0%	3.9%	1.6%	3.0%	4.0%
Dividends/Equity	0.9%	0.9%	0.82%	0.7%	1.0%	1.3%	1.2%	2.3%
New issue/equity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dividends/Earnings	12.2%	15.5%	12.4%	9.0%	15.3%	18.0%	11.1%	14.4%
Market related measures								
Price	1 718 (60)	2 191 (83)	2 807 (103)	2 794 (87)	2 807 (87)	2 794 (86)	1 793 (46)	2 330 (61)
Price-earnings ratio	9.75	11.58	20.50	17.56	15.02	9.43	10.59	10.21
Market-to-book ratio	0.98	0.54	0.67	0.72	0.72	0.54	0.69	0.60

Table 9.B. Swedish sample means (million SEK, US dollars in bracket)

Variable	1994	1995	1996	1997	1998	1999	2000	2001
Number of companies	202	219	208	247	264	282	270	177
Balance sheet								
Total assets	6 483 (842)	6 592 (929)	7 339 (1 095)	7 001 (921)	6 625 (828)	6 674 (804)	8 089 (879)	8 242 (800)
Book value	2 366 (307)	2 621 (369)	3 139 (469)	3 021 (398)	3 084 (386)	3 829 (461)	3 788 (412)	3 307 (321)
Profitability measures								
Earnings	258 (34)	414 (58)	387 (58)	395 (58)	356 (45)	269 (32)	160 (17)	143 (14)
Return on equity	15.7%	14.7%	9.8%	13.5%	10.2%	6.3%	4.3%	-2.3%
Return on assets	12.0%	11.8%	9.7%	6.3%	6.4%	3.5%	2.2%	-2.6%
Cost of liabilities	6.2%	4.4%	4.0%	3.9%	3.5%	3.4%	3.9%	3.7%
Financial position								
Equity-asset ratio	41.9%	42.4%	46.3%	45.8%	50.1%	50.9%	51.6%	52.8%
Debt-equity ratio	1.93	2.13	1.53	1.42	1.3	1.27	1.28	1.22
Growth								
Change in total assets	14.6%	10.7%	14.7%	20.7%	13.7%	7.9%	32.8%	-1.6%
Change in equity	32.1%	18.1%	29.1%	18.8%	14.9%	10.7%	31.7%	-0.7%
Dividends/Equity	3.0%	4.1%	4.8%	4.8%	4.7%	3.7%	3.0%	2.5%
New issue/equity	4.5%	3.6%	2.3%	7.2%	4.5%	9.9%	45.0%	0.0%
Dividends/Earnings	28.6%	30.7%	48.4%	45.0%	31.4%	31.7%	23.4%	16.4%
Market related measures								
Price	4 667 (606)	6 556 (923)	8 775 (1 310)	9 439 (1 242)	9 336 (1 167)	7 961 (959)	4 951 (538)	4 023 (391)
Price-earnings ratio	17.8	15.9	15.6	27.1	24.7	29.1	30.3	n.a.
Market-to-book ratio	1.7	1.95	2.64	3.1	2.9	4.44	1.93	1.92

Table 10. Czech and Swedish sample means for early and late transition period (million CZK/SEK, US dollars in bracket)

Variable	Czech Republic		Sweden	
	1994 - 1997	1998 - 2001	1994 - 1997	1998 - 2001
Number of companies	258	259	876	993
Balance sheet				
Total assets	5 503 (192)	7 403 (209)	6 862 (943)	7 568 (846)
Book value	2 769 (97)	4 064 (115)	2 799 (385)	3 521 (393)
Profitability measures				
Earnings	94 (3)	173 (5)	385 (53)	276 (31)
Return on equity	5.1%	6.0%	13.5%	8.3%
Return on assets	9.1%	12.6%	11.3%	3.8%
Cost of liabilities	17.6%	25.8%	4.7%	3.5%
Financial position				
Equity-asset ratio	63.6%	55.5%	44.1%	51.2%
Debt-equity ratio	0.70	0.94	1.85	1.29
Growth				
Change in total assets	12.1%	3.6%	16.7%	17.5%
Change in equity	6.0%	3.2%	26.3%	19.0%
Dividends/Equity	0.8%	1.2%	4.2%	3.6%
New issue/equity	0.0%	0.0%	5.2%	11.1%
Dividends/Earnings	14.4%	15.4%	38.9%	29.4%
Market related measures				
Price	2 375 (83)	2 377 (67)	7 548 (1 037)	5 901 (659)
Price-earnings ratio	20.10	11.99	20.3	27.5
Market- to- book ratio	0.74	0.57	2.35	2.67

7.1.1. Size and structure of the companies in the samples

Czech companies are on average substantially smaller than the Swedish companies. In the first period, total assets are approximately five times larger in the Swedish companies than in the Czech companies (comparison based on the US dollars). In the second period, they are four times smaller. Note that these numbers are not consistent with the growth in total assets in the table (the growth is higher for the Swedish sample than for the Czech one). This is because of two reasons. The first one is the outliers' elimination as described in 6.8. The second is the differences in the exchange rates of the currencies towards dollar.

Many of the companies listed at the Prague Stock Exchange are local suppliers of energy and municipal and health services. The Swedish sample

includes, on the other hand, many large multinational companies like Ericsson, Electrolux and Volvo. This can be expected to have implications for the growth potential (see 7.1.3).

There is also a difference in the composition of the two samples as to industry groups. A list of industry groups and number of companies belonging to each industry is presented in table 11¹⁰⁸. It confirms the fact that Czech companies are to a large extent local energy companies; they constitute 35% of all the companies listed in Prague. In Sweden, biotechnology, medicals and IT companies (companies with activities that cause more pronounced accounting measurement problems – R&D and human resources intensive companies) constitute between 19%-21% of the sample companies. These are non-existent at the Prague Stock Exchange.

Table 11. Industry groups in the Czech and Swedish sample

Industry	Czech Republic	Sweden period 1	Sweden period 2
Energy	23	4	3
Chemistry	4	2	2
Construction	5	8	6
Manufacturing	6	47	38
Mining & natural resources	5	7	7
Services	5	12	9
Telecommunication	2	9	15
Transportation	1	9	5
Consumer goods	8	33	23
Paper and forestry	1	7	8
Investment and holding		17	20
Real estate		10	8
Media		4	6
Consultancy		5	4
IT		27	30
Medicals and biotechnology		25	27
Others	12	78	60
Total	65	302	271

¹⁰⁸ For the complete list of the companies, see appendices 8 and 9.

7.1.2. Profitability

Czech companies have a rather low profitability in the first research period (ROE = 5.1%), improving slightly in the second period (ROE = 6.0%). The low growth and negative trends in the Czech economy in the years 1997-1999 did not substantially affect the profitability of the Czech firms. The major problem of the Czech companies seems to be the cost of liabilities which is very high and is an indication of the insecurity and risks in the companies as well as an indicator of the problems in the bank sector.¹⁰⁹ This means that although the return on assets is comparable to the Swedish return on assets, the return on equity is affected negatively by the high cost of liabilities and the Czech companies are not able to make use of the financial leverage.

In the first period Swedish firms were definitely more profitable in terms of return on equity. However, Sweden was hit by the economic recession around year 2000 much more than the Czech Republic. There are a number of reasons for that. First, the second half of the 1990s was a period of substantial economic boom in the area of information technology and telecommunications. This caused euphoria in capital markets and a market bubble which faulted in 2000. Second, the bubble and disappointment as to the possibilities of the new economy was a world wide trend which influenced Sweden more than the Czech Republic. Swedish companies have to a larger extent an international character and are export oriented. Also, the share of Swedish companies in the new economy is much larger than in the Czech Republic where only two telecommunication companies are listed at the Prague Stock Exchange. The character of these companies and the bubble especially might have a negative effect on the value relevance¹¹⁰.

Finally, the profitability of the Czech sample seems to be low over the whole research period, but rather stable over time. The profitability of the Swedish companies is more instable. The stability of the profitability measures in the Czech Republic might raise a question whether this really is a desirable feature or whether the stability might potentially show smoothing of income and other accounting practices that deteriorate the value relevance of accounting information. This is, however, beyond the scope of this study.

¹⁰⁹ The level of cost of liabilities is striking for the years 1998 and 1999 and it may be suspected that this is related to the bank scandals and bankruptcies that characterized that period.

¹¹⁰ Lev & Zarowin (1999).

7.1.3. Financial position, growth and payout policy

The Czech companies have in general a high equity-asset ratio, 63.6% for the first period and 55.5% for the second period. This seems to be a reasonable policy having in mind the high cost of liabilities. It also conforms to the fact that companies in bank-oriented markets usually have a higher level of equity-asset ratio. The difference between the two samples is more evident in the period 1994-1997 when the equity-asset ratio is higher almost by 20 percentage points for the Czech companies than for their Swedish counterparts.

The local orientation of the Czech companies allows only for a modest growth. Energy supply is a regulated industry, which sets further limitations on many of the companies listed at the Prague Stock Exchange. In general, the growth in assets of the Czech companies was 12.4% for the first period and 3.6% for the second period. Swedish companies seem to grow more. While in the Czech Republic equity has grown slower than total assets, which deteriorates the equity-asset ratio, in Sweden it has been the other way round. The growth in equity has been larger than the growth in assets which has improved the equity-asset ratio in the second period.

A deeper investigation of the growth in equity indicates that the clean surplus relation holds neither in the Czech Republic nor in Sweden. Under clean surplus relation the change in equity should be explained by return on equity, dividend/equity ratio and new issue/equity ratio. However, we can see that there is a discrepancy between the change in equity under clean surplus relation and the actual change in equity in the empirical samples. There are two possible explanations for that. The first explanation is that a certain discrepancy is caused by the method of eliminating outliers (see part 6.8.). The mean values of equity, the changes in equity and the variables that contribute to the change in equity are not calculated for exactly the same companies but may deviate slightly. The second reason is that clean surplus relation is actually violated in real life. For example, the change in equity includes the changes due to translation of foreign subsidiaries. This violation of clean surplus relation has an affect on accounting measurement bias. The discrepancy seems to be larger for the Swedish sample and especially in the first period. One of the reasons why dirty surplus accounting affects the Swedish sample more may be the fact that the consolidation of subsidiaries in foreign countries is more common in Sweden leading to the problems connected with foreign currency translations.

There is a large difference between the payout policies in the two countries. It is not common to pay dividends in the Czech Republic even though the trend seems to be changing. A closer look into the data material has shown that it is especially the small local companies mentioned above that principally never pay out dividends. Also, it does not seem to be common with new issues in the Czech Republic. The modest growth of the Czech companies and satisfactory profitability does not require any new issues. However, this might also be vice versa. The fact that little new capital is available limits the companies in their expansion and leads to only a modest growth. The direction of the cause and effect is not evaluated in this study.

7.1.4 Market-related measures

There seems to be higher expectations regarding long term future profitability in Sweden than in the Czech Republic as expressed in the market-to-book ratio. The higher market-to-book ratio in Sweden is influenced by three factors: higher profitability expectations for Sweden including large unrecorded intangible assets in Sweden, and overvalues in the Czech balance sheets. The average market-to-book ratio in the Czech Republic was slightly under one in the beginning of the period and it has continued to decrease. The book value of equity was to a great extent based on estimation from the time before listing at the Prague Stock Exchange. It is well known that the book value was often overvalued in the privatisation process and the market seems to have adjusted the prices. The low market-to-book ratio implies overvaluation of the assets of the Czech companies.

The price-earnings ratio for the first period is about the same for Czech and Swedish firms. It is higher for the Swedish firms in the second period, but a part of the explanation would probably be the extremely low profitability in Sweden at that time. The price-earnings ratio of the Czech companies decreases in the second period which expresses the doubts about their profitability potential in the long run - compare to the decrease in market-to-book ratio - combined with earnings growth.

7.2. Price regression

The first test is based on the standard approach for testing the association between market values and accounting numbers where price is seen as a function of book value of equity and earnings:

$$P_{jt} = \alpha_{ot} + \alpha_1 X_{jt} + \alpha_2 BV_{jt} + \varepsilon_{jt} \quad (6.1.)$$

The value relevance is evaluated by comparison of adjusted R²s of the individual regressions. Accounting information is perceived to be value relevant if there is an association as expressed by R². It is not a requirement that all independent variables must be significant even though these will also be discussed. The regression is tested only for the whole sub-periods and not for the individual years. This is because the price regression suffers from heteroscedasticity (see 6.2.). The results are summarised in table 12.

Table 12. Price regression results

$$P_{jt} = \alpha_{ot} + \alpha_1 X_{jt} + \alpha_2 BV_{jt} + \varepsilon_{jt}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R² values are reported.

Period	Czech Republic			
	n	Adj. R ²	α_1	α_2
1994 - 1997	200	25.5%	5.459***	0.243***
1998 - 2001	243	35.8%	4.290***	0.197***
Period	Sweden			
	n	Adj. R ²	α_1	α_2
1994 - 1997	674	73.9%	5.213***	1.496***
1998 - 2001	464	56.4%	4.922***	1.169***

As can be seen from the table, the R² for the Czech sample period 1994-1997 is 25.5%. For the years 1998-2001 R² is 35.8%. Both coefficient of earnings and book value of equity are significant at one percent significance level. The coefficient of earnings is 5.459 for the first period and 4.290 for the second period. The coefficient of book value of equity is 0.243 for the first period and 0.197 for the second period. For the Swedish sample period 1994-1997 the R² is 73.9% and for the period 1998-2001 the R² is 56.4%. Both coefficient of earnings and book value of equity are significant at one

percent level. The coefficient of earnings is 5.213 for the first period and 4.922 for the second period. The coefficient of book value of equity is 1.496 for the first period and 1.169 for the second period.

The results show that there is an association between the market price and accounting measures in the Czech Republic and thus, Czech financial accounting information is value relevant. However, the association is weaker than for the Swedish data which suggests that the value relevance of accounting information is lower in the Czech Republic than in Sweden. The results are consistent with previous studies. For Germany¹¹¹ the explanatory power has been estimated from 14% to 24% and for France 35% - 48%¹¹². The explanatory power for the Czech sample lies within these values.

The results further show that the explanatory power has increased for the second period in the Czech Republic. This would suggest an increase in value relevance of Czech accounting information over time. The value relevance of Swedish accounting information seems, on the other hand, to decrease.

7.3. Scaled regression

Next step is to evaluate the association between market value and accounting numbers by scaling the price regression (see part 6.3.):

$$\frac{P_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt}}{BV_{jt-1}} + \varepsilon_{jt} \quad (6.2.)$$

The value relevance is evaluated by comparison of adjusted R^2 s of the individual regressions. Accounting information is perceived to be value relevant if there is an association as expressed by R^2 . It is not a requirement that all independent variables must be significant even though these will also be discussed. Although the meaning of the variables has been discussed in section 6.3, the focus lies on the association between price and accounting earnings and book value of equity. The regression is tested for both sub-periods and for individual years. Further, tests are run for a sample

¹¹¹ The results for Germany and France in previous studies are referred to because Czech accounting has been influenced by these two accounting systems (section 3).

¹¹² For more details, see chapter 8.1.

consisting of Swedish survivor companies¹¹³. The results are presented in table 13.

As can be seen from the table, the R^2 for the Czech period 1994-1997 is 8.8%. For the years 1998-2001 the R^2 is 14.4%. The coefficient on earnings is significant for both periods at one percent level. The coefficient on book value is not significant for any of the research periods. The coefficient on earnings is 3.358 for the first period and 3.280 for the second period. The coefficient of book value is 0.190 for the first period and 0.167 for the second period. For the Swedish sample period 1994-1997 the R^2 is 27.5% and for the period 1998-2001 the R^2 is 15.2%. Both coefficient on earnings and book value are significant at one percent significance level. The coefficient of earnings is 7.091 for the first period and 10.245 for the second period. The coefficient of book value is 1.661 for the first period and 3.632 for the second period.

¹¹³ See section 6.8.

Table 13. Scaled regression results

$$\frac{P_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt}}{BV_{jt-1}} + \varepsilon_{jt}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R² values are reported.

	n	Adj. R ²	α ₁	α ₂
Czech Republic				
1994 - 1997	195	8.8%	3.358***	0.190
1998 - 2001	198	14.4%	3.280***	0.167
1994	42	34.8%	5.706***	-0.233
1995	50	6.4%	-0.132	2.670*
1996	49	6.2%	5.375**	-0.855
1997	49	-2.2%	-0.053	1.411
1998	48	15.2%	3.858***	-0.043
1999	43	15.3%	2.994**	0.987
2000	53	44.1%	4.626**	0.150
2001	58	1.1%	1.482	0.070
Sweden total sample				
1994 - 1997	617	27.5%	7.091***	1.661***
1998 - 2001	374	15.2%	10.245***	3.632***
1994	152	34.3%	4.060***	0.611**
1995	152	25.2%	5.028***	0.868
1996	156	60.4%	14.82***	2.562***
1997	157	19.0%	7.826***	1.874**
1998	105	30.7%	13.948***	1.853**
1999	106	10.8%	8.019	7.915**
2000	90	5.3%	1.803	2.168**
2001	66	42.2%	11.574***	1.389*
Sweden survivors				
1994 - 1997	237	26.0%	8.094***	1.012
1998 - 2001	177	22.9%	6.920***	5.805***

The results of the scaled regression are consistent with the results of the price regression. The results show that there is an association between the market price and accounting measures in the Czech Republic and Czech accounting information can be perceived as value relevant. Also, the explanatory power of the scaled regression is lower for the Czech data than for the Swedish data and the value relevance of Czech accounting information seems to be lower than the value relevance of Swedish accounting information. However, it must be noted that the degree of explanatory power becomes close between the two samples in the second

period. The difference is still significant¹¹⁴. There are few previous value relevance studies that use a scaled regression. Ali & Hwang (2000) estimate the explanatory power for Germany to 12.7% and for Sweden to 3.2%¹¹⁵. The Czech and German results again show a certain consistency with each other.

The results further show that the explanatory power of Czech accounting measures is higher for the second period than for the first period which would suggest a certain improvement in the value relevance of Czech accounting information. The value relevance of Swedish accounting information seems to decrease.

At this point, three comments have to be made. First, although value relevance is investigated purely by the R^2 measure (no matter which accounting variable or variables contribute to this), it is also interesting to comment the importance of the individual accounting measures. The surprising outcome of the regression is the fact that book value of equity (or change in the book value of equity) is not significantly associated to price in the Czech sample. The explanation to this may be the “ad hoc” book values of equity set in the privatisation process and the following consistent overvaluation of the assets of the Czech companies. Apparently, the market does not experience the information in the Czech balance sheet as relevant as information in the income statement.

Second, the results for the individual years are rather unstable and insignificant particularly for the Czech data. Evidently, in the case of the Czech Republic the number of observations in the individual years is close to the limit which makes results volatile and statistical inferences hardly meaningful.

Third, the value relevance has decreased for the Swedish sample in the second period and accounting earnings have become insignificant in 1999 and 2000. A possible explanation might be the stock market bubble in Sweden around the year 2000 which set accounting numbers and their importance for pricing aside. If the pricing becomes irrational, accounting numbers and fundamental analysis lose their importance. Year 2001 shows

¹¹⁴ See appendix 4.

¹¹⁵ Note, however, that the regression in Ali & Hwang is scaled by BV_t and not by BV_{t-1} . Therefore, the scaled independent variables differ in Ali & Hwang and this study and the coefficients on the variables are not completely comparable.

again significant results. It seems that the market turns back to the basics and to fundamental analysis based on accounting numbers.

A test for a control group of survivors has been run because it is assumed that the survivor group consists of more stable companies that might be effected less by the events around 2000 than the rest of the stock market. This group shows a greater stability than the total Swedish sample and the drop in explanatory power for the survivor group is not that dramatic as for the total Swedish sample. Indeed, the survivor group consists of companies less influenced by the bubble¹¹⁶.

7.4. Logarithmic regression

As the third step, the association between market prices and accounting earnings and book value of equity is tested by a logarithmic model as follows (see chapter 6.4.):

$$\ln P_{jt} = \alpha_0 + \alpha_1 \ln X_{jt} + \alpha_2 \ln BV_{jt} \quad (6.3.)$$

The value relevance is again evaluated by comparison of adjusted R²s of the individual regressions. Accounting information is perceived to be value relevant if there is an association as expressed by R². The focus lies on the association between price and accounting earnings and book value of equity and not on the explanation of the coefficients. The regression is tested for both sub-periods and for individual years. The results are presented in table 14.

¹¹⁶ For the list of the survivor companies, see appendix 10.

Table 14. Results of the logarithmic model¹¹⁷

$$\ln P_{jt} = \alpha_0 + \alpha_1 \ln X_{jt} + \alpha_2 \ln BV_{jt}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	n	Adj.R ²	α_1	α_2
Czech Republic				
1994 - 1997	204	63.7%	0.491***	0.665***
1998 - 2001	271	72.9%	0.502***	0.577***
1994	53	68.5%	0.573***	0.397***
1995	53	61.8%	0.510***	0.624***
1996	52	64.9%	0.490***	0.660***
1997	53	75.9%	0.460***	0.772***
1998	51	71.2%	0.394***	0.820***
1999	48	74.8%	0.609***	0.600***
2000	57	79.1%	0.069***	0.259**
2001	61	67.4%	0.382***	0.642***
Sweden total sample				
1994 - 1997	680	88.5%	0.304***	0.643***
1998 - 2001	464	75.3%	0.244***	0.620***
1994	163	93.4%	0.316***	0.677***
1995	161	89.9%	0.345***	0.635***
1996	164	91.9%	0.388***	0.547***
1997	185	86.7%	0.302***	0.606***
1998	137	83.3%	0.360***	0.545***
1999	132	55.5%	0.152	0.540***
2000	106	76.6%	0.088	0.786***
2001	72	87.8%	0.251***	0.719***
Sweden survivors				
1994 - 1997	255	91.2%	0.336***	0.622***
1998 - 2001	194	76.7%	0.153**	0.826***

As can be seen from the table, the logarithmic test shows surprisingly robust results -overall the R^2 is high compared to the previous tests. The R^2 for the Czech sample period 1994-1997 is 63.7%. For the years 1998-2001 the R^2 is 72.9%. Both coefficients on earnings and book value are significant at one percent level. The coefficient on earnings is 0.491 for the first period and 0.502 for the second period. The coefficient on book value is 0.665 for the first period and 0.577 for the second period. For the Swedish sample period

¹¹⁷ Generally, the number of observations is higher for the logarithmic regression because the problem of outliers becomes smaller.

1994-1997 the R^2 is 88.5% and for the period 1998-2001 R^2 is 75.3%. The coefficients on both earnings and book value are significant at one percent level. The coefficient of earnings is 0.304 for the first period and 0.244 for the second period. The coefficient of book value is 0.643 for the first period and 0.620 for the second period.

The results show that there is a high association between the market price and accounting measures in the Czech Republic and it is consistent with the hypothesis that the Czech accounting information is value relevant. This is a result consistent with the two previous tests - price regression and scaled regression. However, the results of the logarithmic test cannot confirm the hypothesis that the value relevance is lower in the Czech Republic than in Sweden for the second period. The difference in R^2 s of the Czech and the Swedish sample is significant for the first research period, which suggests lower value relevance in the Czech Republic. In the second period, the difference between the R^2 s is not significant¹¹⁸ and therefore we cannot make any conclusions as to the level of value relevance in comparison of the two countries.

The results of the logarithmic regression are consistent with the hypothesis that the explanatory power of Czech accounting numbers have increased in the second period and thus value relevance of Czech accounting information has improved. The results also confirm the results of the previous regressions as to the decrease in value relevance of Swedish accounting information.

A couple of interesting observations have been made. First, the weight in the logarithmic model switches from earnings to book value as compared to the two previous tests where the weight was larger for the earnings¹¹⁹. Second, the disturbance of years 1999 and 2000 in Sweden can be clearly identified in that the coefficient of earnings becomes insignificant for these two years and price becomes a function of book value only. Third, the price regression (6.1.) and scaled regression (6.2.) relied on the underlying assumption of a linear relationship between price and accounting numbers (see the linear

¹¹⁸ See appendix 4.

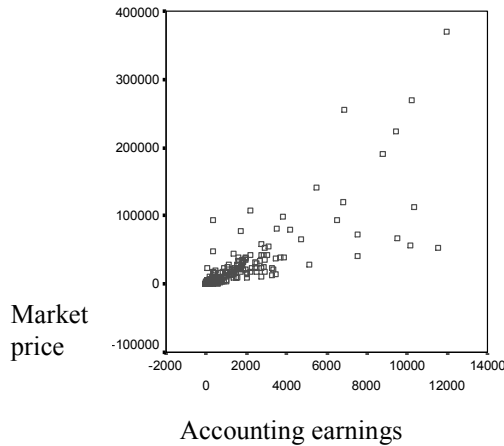
¹¹⁹ It has been suggested in the research that the value relevance of earnings, that is income statement summary item, decreases and the value relevance of book value of equity; that is balance sheet summary item increases (see for example Francis & Schipper, 1999). The result of the logarithmic regression might be another indication of this tendency.

valuation model in chapter 5). However, the logarithmic model hinges on the idea that the underlying relationship is non-linear:

$$P_{jt} = e^{\alpha_0} * X_{jt}^{\alpha_1} * BV_{jt}^{\alpha_2} \quad (6.4.)$$

The following graphs are scatter plots showing the relationship between price and book value respectively price and earnings for the Swedish sample 1994-1997¹²⁰. It is worth to notice that the relationship indeed seems to be slightly non-linear¹²¹.

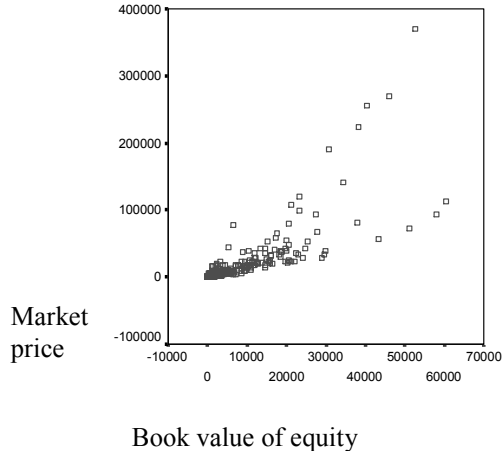
Figure 4. Relationship between market price and accounting earnings



¹²⁰ This sample is chosen because it has the largest number of observations.

¹²¹ Foster suggests a possibility of nonlinear relationship between earnings and sales due to economies of scale (Foster, 1986, p. 97). It cannot be excluded that some similar relationship exists between market value and earnings and book value of equity.

Figure 5. Relationship between market price and book value of equity



The following figures show graphically the strong linear relationship between the logarithms of price and earnings and book value respectively.

Figure 6. Relationship between $\ln(\text{price}) = \text{LNPT}$ and $\ln(\text{earnings}) = \text{LNXT}$.

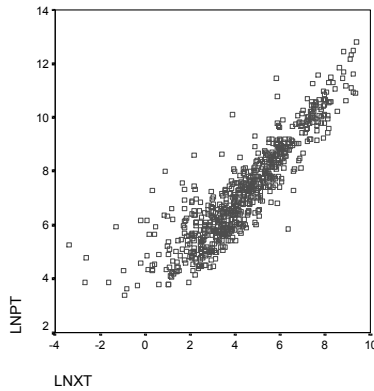
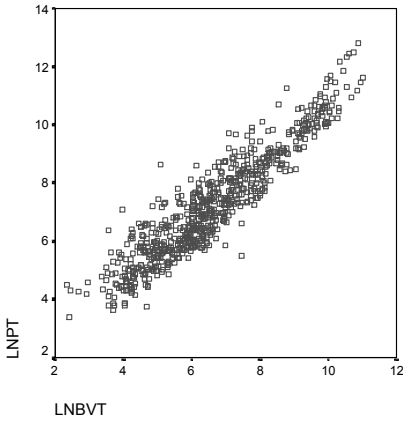


Figure 7. Relationship between $\ln(\text{price}) = \text{LNPT}$ and $\ln(\text{book value of equity}) = \text{LNBVT}$



The logarithmic test has not been used in previous studies. In order to see whether the achieved coefficients may be used for estimating new prices, new values of P_t according to the non-linear equation (6.4.) are calculated. A new regression is run which shows whether the newly estimated price is a good indicator of the observed price:

$$P_{jt} = \alpha_0 + \alpha_1 \hat{P}_{jt} \quad (6.5.)$$

If the estimated price explains the observed prices well, the results of the logarithmic regression cannot be rejected. The results of the estimated price regression are presented in table 15 and graphically in figure 8.

Table 15. The estimated price regression

$$P_{jt} = \alpha_0 + \alpha_1 \hat{P}_{jt}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level

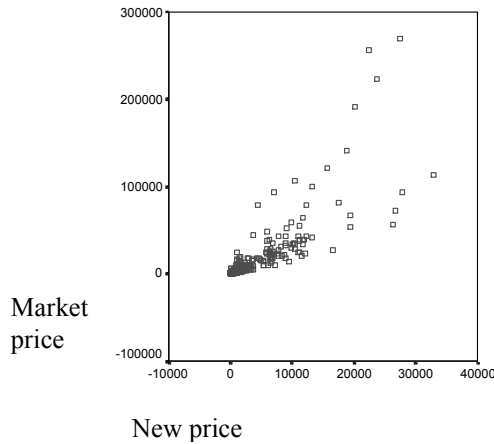
	n	Adj.R ²
Czech Republic		
1994 - 1997	204	30.9%
1998 - 2001	271	43.0%
Sweden total sample		
1994 - 1997	680	69.4 %
1998 - 2001	447	66 .0%
Sweden survivors		
1994 - 1997	255	77.9%
1998 - 2001	194	55.7%

First, the results suggest that the new price estimated according to the non-linear model is a good estimator of the observed price and it explains a substantial part of the original price. In other words, the price estimated by means of accounting numbers that enter the logarithmic regression is a reasonable indicator of the observed price. Accounting numbers are value relevant.

Second, the results of the estimated price regression are consistent with the results of the previous tests. The explanatory power of the regression for the Czech data is lower than for the Swedish data. The explanatory power increases in the second period for the Czech data suggesting an increase in value relevance of Czech accounting information. It also shows a decrease in the explanatory power in the second period for the Swedish data. The survivor group exhibits higher explanatory power in the first period. However, in the second period, the explanatory power for the survivor group is lower than for the total sample which is not consistent with previous findings. Another different result is the fact that the estimated price regression shows a lower explanatory power for the Czech sample even in the second period as compared to the logarithmic regression results; that is for the period where the comparison of the Czech and Swedish samples is somewhat ambiguous. This is, however, consistent with the results of price and scaled regression tests. There also seems to be a larger deviation between the market price and new price, the larger the company, as can be

seen from figure 8. It is not though the purpose of this study to develop further tests of scale problems. The tests of the logarithmic model have been a detour in this study and the focus turns in the next section back to basic questions that the study aims to answer.

Figure 8. Relationship between the observed price and the new price estimated by the non-linear function (Swedish sample period 1994-1997).



7.5. Returns regression

In this section, the association between the market and accounting values is tested by the returns regression as specified in 6.5.:

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt} - X_{jt-1}}{P_{jt-1}} \quad (6.6.)$$

The value relevance is evaluated in the same way as in previous tests. The regression is tested for both sub-periods and for individual years. The results are summarised in table 16.

As can be seen from the table, the R^2 for the Czech sample period 1994-1997 is 2.7%. For the years 1998-2001 the R^2 is 12.1%. The coefficient of earnings levels is significant at five percent level for the first period and at one percent level for the second period. The coefficient is 1.317 respectively 1.609. The coefficient of earnings changes is insignificant for both periods and is -0.945 for the first period and 0.023 for the second period. For the Swedish sample period 1994-1997 the R^2 is 5.7% and for the years 1998-2001 the R^2 is 5.0%. The coefficient of earnings levels is significant for both periods at one percent level and is 2.261 respectively 3.258. The coefficient of earnings changes is insignificant for both periods and is -0.387 respectively -0.041.

Table 16. Results of the returns model

$$\frac{P_{jt} + DIV_{jt} - P_{j,t-1}}{P_{j,t-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{j,t-1}} + \alpha_2 \frac{X_{jt} - X_{j,t-1}}{P_{j,t-1}}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level

	n	Adj. R ²	α_1	α_2
Czech Republic				
1994 - 1997	163	2.7%	1.317**	-0.945
1998 - 2001	183	12.1%	1.609***	0.023
1994	4	n.a.	n.a.	n.a.
1995	51	-3.8%	-0.169	0.299
1996	48	-3.4%	0.247	-1.064
1997	42	3.5%	1.195*	-0.901
1998	46	10.8%	1.404***	0.009
1999	41	41.7%	3.623***	-1.830**
2000	42	13.1%	1.535***	0.989*
2001	52	16.8%	1.744***	-0.498
Sweden total sample				
1994 - 1997	559	5.7%	2.261***	-0.387
1998 - 2001	358	5.0%	3.258***	-0.041
1994	162	15.5%	1.561***	0.182
1995	170	4.6%	0.753*	0.585
1996	175	14.5%	2.639***	0.245
1997	206	8.9%	2.144***	-0.260
1998	101	9.2%	3.331***	-0.123
1999	99	3.3%	6.774 **	-3.701
2000	80	11.0%	3.365***	-1.964**
2001	61	18.2%	3.948***	0.205
Sweden survivors				
1994 - 1997	235	2.6%	1.784***	-0.632
1998 - 2001	178	5.7%	2.335***	-0.949*

The results show that there is an association between market values and accounting earnings in the Czech Republic, even though the association is weaker in the returns regression than in previous regressions. The Czech accounting information can thus be perceived as value relevant. However, the comparison between the countries is contradictory to the previous findings. In the first period, the Czech sample shows lower explanatory power. In the second period, the explanatory power for the Czech sample is substantially higher than for the Swedish sample suggesting that the value relevance of Czech accounting earnings is higher than the value relevance of Swedish accounting earnings. In previous studies, the explanatory power for Germany has been estimated between 4.8% to 19.0%, for France from 14.0% to 28.0% and for Sweden 0 – 2.7%¹²². The results of this study are in line with the results of the previous research.

The results show that the explanatory power has increased for the Czech sample in the second period which means that the value relevance seems to improve. The value relevance of Swedish accounting earnings seems to decrease in the second period.

Here again several comments have to be made. First, consistent with prior research, the earnings changes are found to be insignificant for most of the regression tests. Earnings changes seem not to be value relevant; it is the actual level of earnings that matters. The negative coefficient of the earnings changes suggests, assuming random walk in earnings, that the market can see whether the change is transitory and that the earnings will revert to a normal level in the next accounting period.

Second, the explanatory power of the returns regression is generally low¹²³. Although the returns approach is common in the research area, it does not seem to add additional value to this study due to its low R²s and unstable results. Note for example that the returns test could not be run for 1994 in the Czech sample and shows no association at all in the two following years.

Third, any conclusion pointing at a higher value relevance of accounting information in the Czech Republic based on this test should be drawn carefully. The low results for the Swedish sample are influenced by the insignificance of accounting earnings in years 1999 and 2000 (see the results

¹²² For further details, see section 8.1.

¹²³ See discussion in Lev (1989).

of the scaled and logarithmic regressions in 7.3. and 7.4.) which will affect the returns regression based only on accounting earnings.

The returns regression for the survivor group shows on the contrary that the value relevance of accounting earnings has increased in the second period for more stable companies in Sweden (although it still does not reach the Czech level)¹²⁴. The results of the returns regression are thus ambiguous.

It is often argued that due to the lag between market returns that incorporate economic events and accounting earnings that rely on accounting principles for recognition and measurement, not only first period earnings are informative, but also earnings of future periods¹²⁵. Therefore, earnings for period t+1 are added¹²⁶ and the following association will be tested¹²⁷:

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt+1}}{P_{jt-1}} \quad (7.1.)$$

It should be noted that the earnings changes are excluded in this regression because the results show that these are generally insignificant. A complete model is tested in (7.2.) including present earnings, next period earnings and changes in earnings:

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt+1}}{P_{jt-1}} + \alpha_3 \frac{X_{jt} - X_{jt-1}}{P_{t-1}} \quad (7.2)$$

The results of the regression tests (7.1.) and (7.2.) are summarised in tables 17 and 18.

¹²⁴ The lower explanatory power for the survivor group in the first period is slightly astonishing. One explanation might be that survivor companies are those companies that are most frequently followed by analysts and current earnings are therefore less relevant when becoming public. However, a deeper investigation into Swedish companies is not the objective of the present study.

¹²⁵ Warfield & Wild (1992), Hällefors, H (2004).

¹²⁶ Hällefors (2004) shows for Swedish data that earnings for the next period, earnings t+1, are most significant for market returns. Therefore, including next period earnings seems to be sufficient for the purpose of this study and no further earnings for more distant future periods are included.

¹²⁷ Note that changes in earnings are not included into this regression.

Table 17. The extended returns regression results¹²⁸

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt+1}}{P_{jt-1}}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level

	n	Adj. R ²	α_1	α_2
Czech Republic				
1994 - 1997	159	1.4%	0.831*	0.179
1998 - 2001	193	11.0%	0.941***	0.678***
Sweden total sample				
1994 - 1997	571	10.5%	1.495***	1.256***
1998 - 2001	339	6.9%	2.634***	0.947*
Sweden survivors				
1994 - 1997	219	4.7%	0.415	1.388***
1998 - 2001	203	7.8%	1.487***	0.680

The R² for the Czech period 1994-1997 is 1.4% and for the Czech period 1998-2001 R² is 11.0%. The coefficient of the current earnings is significant at ten percent level for the first period and at one percent level for the second period. The coefficient is 0.831 for the first period and 0.941 for the second period. The next period earnings are not significant for the first period but they are significant at one percent level for the second period. The coefficient for the next period earnings is 0.179 for the first period and 0.678 for the second period. The R² for the Swedish sample period 1994-1997 is 10.5% and for the period 1998-2001 R² is 6.9%. Current earnings are significant at one percent level in both periods and next period earnings are significant at one percent level in the first period and significant at ten percent level in the second period. The coefficient of the current earnings is 1.495 for the first period and 2.634 for the second period. The coefficient of next period earnings is 1.256 for the first period and 0.947 for the second period.

The extended returns regression is consistent with the results of the returns regression presented in table 16. The explanatory power of the Czech data is

¹²⁸ The number of observations differs in table 16 and 17 because negative earnings are excluded. In the first case, last year's negative earnings are excluded while in the second case next period negative earnings are excluded.

lower than of the Swedish data in the first period but it is higher in the second period. The explanatory power increases in the second period for the Czech data while it decreases for the Swedish data in the same period.

An interesting observation is the lower explanatory power of the survivor group than of the total Swedish sample in the first period as well as the insignificance of current earnings in the survivor sample. The insignificance of current earnings might be explained by the fact that survivor companies are mostly those companies that are frequently followed by analysts and for such companies, next period earnings are more important than current earnings¹²⁹.

Finally, it might be noted that in the Swedish case the addition of next period earnings increases the explanatory power – as expected - suggesting that current returns are associated to both current and future earnings. However, this does not seem to be true for the Czech sample. The reasons for this are not evident.

The results of the extended returns regression which includes earnings changes principally confirm the results of the original returns regression and the extended returns regression¹³⁰.

¹²⁹ Hällefors (2004).

¹³⁰ The higher level of explanatory power in the extended returns regression including earnings changes is again surprising. However, this test includes only companies for which both current earnings, past earnings and next period earnings are non-negative and it might be argued that the sample for this test probably includes more stable companies than the samples used in the two other returns regressions leading to a higher value relevance of accounting earnings.

Table 18. The extended returns regression results (including earnings changes)

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt+1}}{P_{jt-1}} + \alpha_3 \frac{X_{jt} - X_{jt-1}}{P_{jt-1}}$$

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level

	n	Adj. R ²	α_1	α_2	α_3
Czech Republic					
1994 - 1997	149	2.4%	1.283*	0.152	-1.081
1998 - 2001	176	13.3%	1.343***	0.616**	0.013
Sweden total sample					
1994 - 1997	512	9.4%	1.417***	1.428***	-0.268
1998 - 2001	247	12.2%	1.130	2.717***	0.081
Sweden survivors					
1994 - 1997	200	4.4%	0.759	1.403**	-0.385
1998 - 2001	147	7.9%	3.171***	0.210	-0.828

7.6. Hedge portfolio test

The last type of tests of value relevance of the Czech accounting information is the hedge portfolio investment methodology. A hedge portfolio is created based on the pre-knowledge of the magnitude of earnings changes¹³¹. If the hedge portfolio exhibits positive returns, the accounting earnings information is value relevant. If it does not exhibit positive returns, the accounting information is not value relevant. Next, a returns based hedge portfolio is created and a proportion EHR/RHR is calculated which measures how much of the return based hedge portfolio return can be explained by the earnings based hedge portfolio return. Table 19 presents yearly mean returns of the total sample portfolio for the two countries.

¹³¹ See section 6.6.

Table 19. Total sample average returns

Year	Czech Republic		Sweden	
	n		n	
1994	27	10.3 %	137	19.3 %
1995	30	2.1 %	173	16.1 %
1996	64	29.8 %	178	70.8 %
1997	64	- 10.4 %	187	29.8 %
1998	64	5.9%	162	18.7 %
1999	62	31.7%	160	73.9 %
2000	65	24.5 %	135	4.7 %
2001	64	18.5 %	129	2.7 %

There is a substantial difference between the individual years. The average returns on the total sample portfolio are low in the Czech Republic for the first period but they increase in 1999-2001, which might be a positive sign of a higher confidence in the Czech market. Notable is the negative returns in the year 1997. As mentioned before, 1997 was a turbulent year of large political and economic problems that apparently transformed into a downfall in the capital markets. The returns of the Swedish market portfolio are generally higher with the exception of years 2000 and 2001 when the returns decreased substantially due to the economic recession.

Table 20 summarises the results of the earnings based hedge portfolio test. The returns for the long position and the returns for the short position are presented (R_L and R_S) and the total return on the hedge portfolio is calculated.

Table 20. The results of the hedge portfolio test.

$$R_L = \sum_{j=1}^{N_L} \frac{R_j}{N_L} \text{ and } R_S = \sum_{j=1}^{N_S} \frac{R_j}{N_S} \text{ where } R_j = \frac{P_t + DIV_t - P_{t-1}}{P_{t-1}}$$

Hedge portfolio return $R_H = R_L - R_S$

	Czech Republic		Sweden	
	n	Return	n	Return
1994 - 1997				
R_L	74	3.0%	270	45.2 %
R_S	74	11.4 %	270	23.1 %
Hedge portfolio return		- 8.4 %		22.1 %
1998 - 2001				
R_L	102	36.2 %	234	47.5 %
R_S	102	14.1 %	234	6.5 %
Hedge portfolio return		22.1 %		41.0 %

If the knowledge of the change in accounting earnings did not add any value, the return on long and short position respectively would not differ and the hedge portfolio return would be zero. However, as can be seen in three cases out of four the return on the hedge portfolio is higher than zero; that is knowing which companies perform best and which companies perform worst, we can identify a strategy that pays off. The hedge portfolio for the second Czech period earns 22.1%, the Swedish portfolio earns 22.1% in the first period and 41.0% in the second period.

The hedge portfolio return for the Czech data in the years 1994-1997 is puzzling. However, accounting earnings have turned out to be a weak indicator of market values in the returns regressions for the first Czech period, which also seems to make it difficult to evaluate the period with the hedge portfolio investment method. The result indicates that investing in companies with highest earnings changes rather than with lowest earnings changes actually has a negative effect.

It can be stated that the results are consistent with the results of the linear regression tests. Accounting earnings seem to yield higher returns for the Swedish sample than for the Czech sample. Czech accounting earnings seem to be less relevant than Swedish earnings in both periods.

The results also show an improvement in the value relevance of accounting earnings for the second period in the Czech Republic. While the investment strategy does not work in the first period (-8.4%), the hedge portfolio return is positive in the second period (22.1%).

For the Swedish sample, the hedge portfolio test shows an increase in accounting earnings value relevance which is not in line with the findings of linear regression tests even though the decrease in the value relevance of accounting earnings as shown by returns regression is not really significantly high and for the survivor group, the value relevance actually increases even in the linear returns regression. Francis & Schipper (1999)¹³² argue that the hedge portfolio tests control for the volatility of market returns over time. If the amount of value relevant accounting information is constant over time but the volatility of market returns increases because of reasons external to accounting information, linear regression tests will show a decrease in explanatory power over time because a greater proportion of variability in the dependent variable will be explained by other information than

¹³² Francis & Schipper (1999), p. 321.

accounting information. Indeed, as suggested before, the market volatility might have increased in the second Swedish period and external non-accounting factors like the market bubble might have affected market returns and values leading to a lower explanatory power of the linear regressions.

Table 21 presents the proportion EHR/RHR which measures how much of the total returns hedge portfolio return can be earned by the pre-knowledge of earnings changes¹³³. If the proportion is large, there is a high association between market returns and accounting earnings and if it is low, earnings seem to be less relevant.

Table 21. Earnings based hedge portfolio returns scaled by returns based hedge portfolio returns.

	Czech Republic	Sweden
	<i>Proportion EHR / RHR</i>	<i>Proportion EHR / RHR</i>
1994 - 1997	-7.2%	19.3%
1998 - 2001	18.6%	29.1%

Note. EHR = earnings based hedge portfolio return, RHR = returns based hedge portfolio return

As stated earlier, it is difficult to draw any conclusions from the results for the first Czech period. In the second period, 18.6% of the Czech total returns are earned thanks to the pre-knowledge of accounting earnings changes. For Sweden, the proportion is 19.3% for the first period and 29.1% for the second period. These results are consistent with the findings of previous tests. The proportion of returns explained by earnings changes is larger in Sweden suggesting a higher value relevance in Sweden and lower value relevance in the Czech Republic. The value relevance of Czech earnings, however, increases in the second period. Contrary to the linear regression tests results, the value relevance of accounting earnings in Sweden seems to increase in the second period if measured by the hedge portfolio test.

The results of this study are comparable to previous findings. Alford et al (1993) show a return on the earnings based hedge portfolio of 15.2% for Sweden, 20.6 % for Germany and 36.7 % for France. The proportion of total returns explained by the pre-knowledge of earnings changes is in the Alford

¹³³ See section 6.6.

et al. (1993) 31% for Sweden, 39% for Germany and 52% for France which is somewhat higher than in the present study. Francis & Schipper (1999) present a return on earnings based hedge portfolio of 19.6% for the United States and the proportion of the total return explained by earnings change is 59%.

7.7. Summary

In this chapter, the results of the individual tests were presented. The results are consistent with the two hypotheses that were presented in 6.2. First, Czech accounting information is indeed value relevant; that is a statistical association between the market and accounting measures exists. However, Czech accounting information seems to be less value relevant than Swedish accounting information through the whole research period and particularly in the first sub-period. All tests with the exception of the returns regression support this finding. Second, the results are consistent with the hypothesis that the value relevance of Czech accounting information should increase over time. All research tests support this finding. The results also show that the value relevance of Swedish accounting information, on the contrary, has decreased in the second sub-period due to the turbulence in economy around the millennium shift.

8. Summary and concluding remarks

This chapter looks at the first research question in this study, namely whether or not accounting information in the Czech Republic is value relevant, and whether Czech accounting information is more or less value relevant than in the benchmark country, Sweden. The results of this study are also compared to the results documented in previous research. Next, the second research question is discussed, namely whether or not the value relevance of the Czech accounting information changes over time. In chapter 4.3 several factors were identified that affect the value relevance of accounting information. These are discussed in section 8.3 against the background of the empirical results of the study and developments in the Czech Republic as outlined in chapter 3. Finally, suggestions for further research are presented.

8.1. Czech financial accounting information – value relevant or not?

The first purpose of the study was to investigate whether an association exists between market measures and accounting measures of the value of owners' equity in the Czech Republic. Value relevance was measured in two ways. First, it was measured by the explanatory power of linear regressions with market value as a dependent variable and accounting measures as independent variables. The accounting measures were the bottom line items of the income statement and balance sheet, that is, the earnings and the book value of equity. The second value relevance measure was the return that can be earned on a hedge portfolio based on pre-knowledge of accounting earnings changes and the proportion of the total perfect foresight returns explained by the return on the earnings based hedge portfolio. The results of the empirical tests are summarised in table 22.

Table 22. Summary of the empirical results¹³⁴

<i>Regression test</i>	<i>Czech Republic 1994-1997</i>	<i>Czech Republic 1998-2001</i>	<i>Sweden 1994-1997</i>	<i>Sweden 1998-2001</i>
	R^2	R^2	R^2	R^2
<i>Price regression</i>	25.5%	35.8%	73.9%	56.4%
<i>Scaled regression</i>	8.8%	14.4%	27.5%	15.2%
<i>Logarithmic regression</i>	63.7%	72.9%	88.5%	75.3%
<i>Estimated price regression</i>	30.9%	43.0%	69.4%	66.0%
<i>Returns regression</i>	2.7%	12.1%	5.7%	5.0%
<i>Extended returns regression</i>	1.4%	11.0%	10.5%	6.9%
<i>Extended returns regression including earnings changes</i>	2.4%	13.3%	9.4%	12.2%
	<i>Return</i>	<i>Return</i>	<i>Return</i>	<i>Return</i>
<i>Hedge portfolio test</i>	-8.4%	22.1%	22.1%	41.0%
	<i>Proportion</i>	<i>Proportion</i>	<i>Proportion</i>	<i>Proportion</i>
<i>Hedge portfolio test</i>	-7.2%	18.6%	19.3%	29.1%

Note. $Proportion = \frac{EHR}{RHR}$, where *EHR* is earnings based hedge portfolio return and *RHR* is returns based hedge portfolio return. The extended returns regression includes level of current earnings and level of next period earnings.

The explanatory power of the linear regression tests and the hedge portfolio test shows that an association exists between market values and accounting numbers in the Czech Republic and suggests that Czech accounting information is value relevant. The results for the first period show that the explanatory power of Czech accounting numbers is substantially lower than the explanatory power of Swedish accounting numbers. This is consistent with the hypothesis that the value relevance of accounting information during the transition in the Czech Republic is lower than in a well-developed market economy, in this case, Sweden.

The results for the second period show a similar pattern although they are not unambiguous. The results of the price and scaled regressions show, in fact, that the value relevance of Czech accounting is lower also in the second research period. However, the returns regression results point to a higher

¹³⁴ For price regression see 6.2, for scaled regression see 6.3, for logarithmic regression see 6.4, for returns regressions see 6.5 and for the hedge portfolio test see 6.6.

degree of association between earnings and returns in the Czech Republic than in Sweden. On the other hand, the hedge portfolio test results show that the value relevance of accounting earnings is higher for Sweden also in the second period. It has been argued earlier that the hedge portfolio methodology offers a better control for volatility of the market returns¹³⁵. The increased volatility of market returns in the second period in Sweden might be a factor external to the accounting environment that has had a negative effect on the association between market and accounting numbers and decrease the explanatory power of the linear regressions for the Swedish sample. The results of the hedge portfolio approach are not affected by such external factors in the same way. Therefore, it may be suggested that the value relevance of Czech accounting numbers is lower also in the second period, 1998-2001. A more detailed view on the incremental value relevance of earnings and book value of equity would be interesting. It seems that the value relevance of earnings does in fact decrease in Sweden while it increases in the Czech Republic, and this might affect the results of the returns regression. Once book value of equity is added, however, the higher value relevance of Swedish accounting numbers can hardly be questioned. This is consistent with the finding that the value relevance of the book value of equity in the Czech Republic is rather low¹³⁶.

Also, the logarithmic regression results point to the fact that the association between market and accounting numbers for the Czech data could be on the same level as for the Swedish data, which would suggest no substantial difference in value relevance in the two accounting environments. However, the results of the estimated price regression correct the finding of the logarithmic regression. The estimated price regression shows a lower explanatory power for the Czech accounting data than for the Swedish accounting data confirming, thus, the findings of the other tests.

The empirical results can be summarised as follows:

The results are consistent with the hypothesis that an association exists between market and accounting numbers, which suggests that Czech financial accounting information is value relevant.

¹³⁵ Section 7.6.

¹³⁶ Value relevance of book value of equity is discussed in section 7.3.

The results also show that the association between market and accounting numbers in the Czech Republic is lower than in Sweden, suggesting that the value relevance of Czech accounting information is lower than the value relevance of Swedish accounting information.

The Czech sample consisted only of survivor companies while the Swedish sample included both survivor and non-survivor companies. Sensitivity tests were run for a group of Swedish survivor companies. The results, summarised in table 23, are consistent with the results in table 22. It was assumed that the results would be more stable for the survivor group than for the total sample. Indeed, the association between market and accounting numbers is larger for the survivor group than for the total sample, with the exception of the returns regression results in the first period (the small difference in the result of the scaled regression in the first period might be due to the treatment of outliers; for further details see 6.8). There may be several reasons why the results of the returns regressions do not behave as expected. One reason is that the explanatory power of the returns regressions is generally rather low, and any conclusions from the returns regressions should thus be drawn with caution. Other reasons might be worth investigating in a study that concentrates on Swedish accounting information only, but they are not the subject of this study.

The results of the survivor group tests support the hypothesis that the association between market and accounting numbers is stronger in Sweden than in the Czech Republic.

Table 23. Comparison of the total Swedish sample and the survivor group.

<i>Regression test</i>	<i>Total sample 1994-1997</i>	<i>Total sample 1998-2001</i>	<i>Survivors 1994-1997</i>	<i>Survivors 1998-2001</i>
	R^2	R^2	R^2	R^2
<i>Scaled regression</i>	27.5%	15.2%	26.0%	22.9%
<i>Logarithmic regression</i>	88.5%	75.3%	91.2%	76.7%
<i>The estimated price regression</i>	69.4%	66.0%	77.9%	55.7%
<i>Returns regression</i>	5.7%	5.0%	2.6%	5.7%
<i>Extended returns regression</i>	10.5%	6.9%	4.7%	7.8%
<i>Extended returns regression including earnings changes</i>	9.4%	12.2%	4.4%	7.9%

Finally, some comments are needed on the different regression designs. It should be pointed out that the research design chosen is not the only possible approach for estimating the association between market values and accounting numbers¹³⁷. The price regression results are presented to support the comparability of the results of this study with previous research, but it should be borne in mind that the regression is affected by scale related problems and the R^2 s are thus overestimated.

The scaled regression is a way of dealing with the statistical problem of scale effects. The R^2 s are substantially lower than for the price regression because the scaled regression does not overestimate the explanatory power in the same way. Even though the R^2 s are relatively lower, the results are significant and provide a sufficient basis for evaluating value relevance.

The logarithmic regression approach has not been used before in value relevance research. The results of the logarithmic regression are robust and stable. However, the interpretation of the relationships between market and accounting numbers becomes more complex. The underlying valuation model no longer appears to be linear; the logarithmic regression assumes a non-linear underlying valuation model¹³⁸. The implications of the non-linear relationship between market and accounting numbers - although interesting and challenging - are not the subject of the present study.

Probably the most common approach to the statistical association between market values and accounting numbers in value relevance research is the returns regression. The returns regression results of this study are in line with the results of previous studies. The explanatory power of the returns regression is rather low compared with the other linear regressions, and the results are more unstable. These results largely contradict the results of the other linear regressions. The question is whether the results are actually contradictory or whether certain circumstances make the results ambiguous. It has been shown that earnings were irrelevant in 1999 and 2000, which influences the returns regression in a substantial way; general inferences, therefore, should be made from tests other than the returns regression. The other test results, in fact, are consistent with each other.

The last approach for testing the value relevance of accounting information is the hedge portfolio methodology. The earnings based hedge portfolio tests

¹³⁷ See section 4.2.

¹³⁸ See section 6.4.

confirm the results of all the linear regressions with the exception of the returns regressions. The hedge portfolio tests seem to be especially suitable for periods of increased market volatility¹³⁹ and the results should therefore be more reliable than the results of the linear regressions in the period of stock market turbulence.

Also, it was suggested in chapter 5 that the intrinsic value of a firm is a function of both earnings and book value. Therefore, inferences about possible value relevance should preferably be made from tests containing both earnings and book value. Since both the hedge portfolio test and the linear regressions that explicitly include earnings and book value point in the same direction (that is, towards lower value relevance of Czech accounting information in both the first and the second periods), the contradictory results of the returns regression should be considered to be of minor importance.

The present study investigates the association between market and accounting numbers as the explanatory power of the linear regressions. It is not the aim of the study to examine the signs or magnitudes of the coefficients of the individual independent variables. Nevertheless, table 24 summarises the coefficients of the independent accounting variables in the different regression tests in order to indicate which variables contribute significantly to the explanatory power.

Table 24. Significance of accounting variables

*** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level

<i>Variable</i>	<i>Czech Republic 1994-1997</i>	<i>Czech Republic 1998-2001</i>	<i>Sweden 1994-1997</i>	<i>Sweden 1998-2001</i>
<i>Earnings</i>	Yes***	Yes***	Yes***	Yes***
<i>Book value of equity</i>	Yes***	Yes***	Yes***	Yes***
<i>Scaled earnings</i>	Yes***	Yes***	Yes***	Yes***
<i>Scaled book value of equity</i>	Insignificant	Insignificant	Yes***	Yes***
<i>Logarithm of earnings</i>	Yes***	Yes***	Yes***	Yes***
<i>Logarithm of book value</i>	Yes***	Yes***	Yes***	Yes***
<i>Earnings levels</i>	Yes**	Yes***	Yes***	Yes***
<i>Earnings changes</i>	Insignificant	Insignificant	Insignificant	Insignificant
<i>Current earnings</i>	Yes*	Yes***	Yes**	Yes***
<i>Next period earnings</i>	Insignificant	Yes***	Yes***	Yes*
<i>Hedge portfolio Earnings based</i>	Not value relevant	Value relevant	Value relevant	Value relevant

¹³⁹ For more details, see section 7.6.

Most of the independent variables are significant for both samples and both periods. There are three exceptions – the change in book value of equity in the scaled regression for the Czech Republic, the earnings changes in the returns regression, and the earnings measure in the first Czech period. Earnings changes are insignificant both for the Czech and Swedish sample throughout the whole research period. This is consistent with the results of previous studies in which earnings changes coefficients are ambiguous and often insignificant. The insignificance of the change in the book value of equity in the Czech Republic can be explained by the ad hoc book values set up during the privatisation process (for more details, see section 7.3). The change in book value of equity cannot be compared with results of other studies since it has not been used in a similar way. The weak value relevance of accounting earnings in the first Czech period is in line with the low explanatory power of the returns regression for the same period. The next period earnings do not seem to play an important role in the first Czech period either. It can be suggested that one of the reasons that contributed to the weak relevance of both current earnings and next period earnings might be insufficient experience and knowledge and little interest on the part of financial analysts in the Czech capital market.

Next, the results of this study are put into the context of the previous value relevance research. Table 25 summarises the findings of previous studies and compares them with those of the present study. It should be noted, however, that this table only includes results of international comparative studies that include Sweden, Germany or France. This is because these results refer to the countries of interest; Sweden is the benchmark country for the Czech results, and Germany and France are interesting because of the influences of these two countries on the development of Czech accounting¹⁴⁰. Thus, most studies that have been performed on US data are not presented in this section because of their irrelevance to the Czech case.

A comparison of the studies can be only approximate because the research design of empirical tests varies in the individual studies. Thus, for example, window length differs in the returns regressions. Harris, Möller & Lang (1994) and Joos & Lang (1994) use 18-month returns while Ali & Hwang (2000), Alford et al (1993) and this study use 15-month returns in the hedge portfolio approach and 12-month returns in the price regressions. In addition, the research samples include different time periods, and the data are extracted from different database sources. Furthermore, it is not always clear

¹⁴⁰ See section 3.2.

how the accounting and market variables are calculated. For example, not all the studies state at what point in time the price is measured, whether the earnings and book values are adjusted and if so, what adjustments have been made. Ali & Hwang (2000), for example, explicitly state that they do not adjust for Swedish untaxed reserves and allocations to untaxed reserves. Finally, the studies adjust for the outliers in different ways, which might also influence the outcome of the tests.

The most commonly used value relevance test is the returns regression, which is used in all the studies¹⁴¹. Price regression tests were used in the early studies at the beginning of the 1990s but seem to have given way to other types of tests, which is in line with the fact that price regression is not statistically suitable for testing. Only one study uses a scaled regression test, but it does not specify the scaled regression the way this study does¹⁴². None of the previous studies uses the logarithmic regression design.

¹⁴¹ For discussion on the relevance of accounting earnings, see Lev (1989).

¹⁴² The scaled regression of Ali & Hwang (2000) is

$$\frac{P_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 \frac{1}{BV_{jt}} + \alpha_2 \frac{X_{jt}}{BV_{jt}} \quad \text{compared to this study's}$$

$$\frac{P_{jt}}{BV_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{BV_{jt-1}} + \alpha_2 \frac{BV_{jt}}{BV_{jt-1}} + \varepsilon_{jt} \quad (\text{note that the formulas are written using the terms of this study}).$$

Table 25. Results of previous studies – price regression, scaled regression, logarithmic regression, returns regression and hedge portfolio test

A coefficient marked # means that it is not significant at 10 percent level. The Joos & Lang study presents results for two sub-periods, and consequently two sets of results are presented (for details, see chapter 2). This is also the case for the present study (see chapter 1.1). $Proportion = \frac{EHR}{RHR}$, where EHR is the earnings based hedge portfolio returns and RHR is the returns based hedge portfolio returns.

Study	Period	Country	R²	Earnings	Book value
<i>Price regression</i>					
<i>Harris, Lang, Möller (1994)</i>	1982-1990	Germany	14%	1.61	0.81
<i>Joos&Lang (1994)</i>	1982-1990	France	35%	3.15	0.78
			48%	2.0	1.17
		Germany	21%	1.64	1.19
			24%	4.53	0.89
<i>Hellström (2004)</i>	1994-2001	Czech	25.5%	5.459	0.243
		Republic	35.8%	4.290	0.197
		Sweden	73.9%	5.213	1.496
			56.4%	4.922	1.169
<i>Scaled regression</i>					
<i>Ali & Hwang (2000)</i>	1986-1995	Germany	12.7%	n.a.	n.a.
		Sweden	3.2%	n.a.	n.a.
<i>Hellström (2004)</i>	1994-2001	Czech	8.8%	3.358	0.190#
		Republic	14.4%	3.280	0.167#
		Sweden	27.5%	7.091	1.661
			15.2%	10.245	3.632
<i>Logarithmic regression</i>					
<i>Hellström (2004)</i>	1994-2001	Czech	63.7%	0.491	0.665
		Republic	72.9%	0.502	0.577
		Sweden	88.5%	0.304	0.643
			75.3%	0.244	0.620

Table 25 continued

<i>Returns regression</i>				<i>Earnings levels</i>	<i>Earnings changes</i>
<i>Harris, Lang, Möller (1994)</i>	1982-1991	Germany	7%	1,28	0,23#
<i>Ali & Hwang (2000)</i>	1986-1995	Sweden		n.a.	n.a.
		Germany	0.01%	n.a.	n.a.
<i>Alford et al. (1993)</i>	1982-1990	Germany	4.8%	1.95	0.14#
		Sweden	2.7%	0.22#	0.56
<i>Joos & Lang (1994)</i>	1982-1990	Germany	13%	0.82	0.67
			19%	6.14	-0.26
		France	14%	0.71	0.7
			28%	3.36	0.3
<i>Ball et al. (2000)</i>	1985-1995	Germany	4.7%	0.71	0.13#
		France	13.7%	1.28	0.46
<i>Hellström (2004)</i>	1994-2001	Czech Republic	2.7%	1.317	-0.945#
			12.1%	1.609	0.023#
		Sweden	5.7%	2.261	-0.387#
			5.0%	3.258	-0.041#
<i>Extended returns regression</i>			R^2	<i>Current earnings</i>	<i>Next period earnings</i>
<i>Hällefors (2004)</i>	1967-1998	Sweden	16.8%	0.680	0.936
<i>Jindrichovska (2001)</i>	1993-1998	Czech Republic	5.8%	0.562	-
<i>Hellström (2004)</i>	1994-2001	Czech Republic	1.4%	0.831	0.179#
			11.0%	0.941	0.678
		Sweden	10.5%	1.495	1.256
			6.9%	2.634	0.947
<i>Hedge portfolio test</i>				<i>Hedge portfolio returns</i>	<i>Proportion</i>
<i>Alford et al. (1993)</i>	1982-1990	Germany		20.6%	39%
		Sweden		15.2%	31%
<i>Hellström (2004)</i>	1994-2001	Czech Republic		-8.4%	-7.2%
				22.1%	18.6%
		Sweden		22.1%	19.3%
				41.0%	29.1%

Generally, both the magnitude of the R^2 s and the coefficients of the independent variables of this study are in line with previous results. The Czech results seem to be closest to the results for Germany and somewhat lower than the results for France. The price regression shows an explanatory power for Germany between 14-24% and for the Czech Republic 25-35%. The French explanatory power is 35-48%. The scaled regression has an explanatory power of 12.7% for Germany in Ali & Hwang and 8.8-12.1% for the Czech Republic in this study. The returns regression shows explanatory power of 4.8-7% for Germany¹⁴³ and 2.7-12.1% for the Czech Republic.

It should be borne in mind, of course, that the German and French results are for a period preceding the research period of this study. Nevertheless, the comparison might be of interest because Czech accounting has been influenced by both German and French accounting when it was being developed at the beginning of the 1990s, and it is reasonable to assume that the underlying German and French models were those actually used prior to the research period.

The explanatory power of Swedish data is generally higher in this study than in the studies in table 25. The Ali & Hwang (2000) results might, however, be questionable because they are based on unadjusted data; therefore, it is not surprising that their association between market and accounting numbers is so low. The scaled regression results are 3.2% in Ali & Hwang while this study shows an explanatory power of 15.2-27.5%. The returns regression does not show any association between returns and earnings in Ali & Hwang (2000), and Alford et al (1993) account for R^2 of 2.7%. This study shows an explanatory power of 5-5.7%. The hedge portfolio return for Sweden is 15.2% in Alford et al (1993) and 22-41% in this study. The proportion of return explained by earnings is somewhat higher in Alford et al (1993), 31%, compared to this study's 19-29%.

The coefficients of the independent variables in this study also seem to be in line with previous research. Earnings changes are insignificant in several studies while the rest of the accounting variables are significantly associated with market values.

¹⁴³ The Joos & Lang (1994) explanatory power of 13-19% for Germany and 14-28% for France seems to be rather high compared with other studies.

The degree of the value relevance of accounting information appears to be lower in the Czech Republic than in Sweden, Germany and France. This should be a principal concern for the Czech accounting standard setters, control bodies and for actors in the Czech capital markets. However, it should be remembered that Czech accounting regulation was developed from a scratch and neither companies nor investors had any previous experience of either the pricing of shares or accounting information disclosure. In the light of this, the lower value relevance is not surprising. Adaptation to the new market environment and conditions takes time. Therefore, the change in the value relevance of accounting information over time is an important issue for the Czech transition period, and is discussed in the next section.

8.2. Value relevance change over time

The second purpose of the study was to investigate whether any changes have occurred in the value relevance of Czech accounting information. For this purpose, the research period has been divided into two equally long sub-periods: 1994-1997 and 1998-2001¹⁴⁴. The results of the tests for the two sub-periods are compared in table 26.

¹⁴⁴ For a discussion on the division of the period, see section 1.1.

Table 26. Time comparison of the Czech data

Returns regression 1 = Returns regression

Returns regression 2 = Extended returns regression

Returns regression 3 = Extended returns regression including earnings changes

Proportion = $\frac{EHR}{RHR}$, where EHR is earnings based hedge portfolio return and RHR is

returns based hedge portfolio return

	Price regression	Scaled regression	Logarithmic regression	Estimated regression	price
	R ²	R ²	R ²	R ²	
1994-1997	25.5%	8.8%	63.7%	30.9%	
1998-2001	35.8%	14.4%	72.9%	43.0%	
	Returns regression 1	Returns regression 2	Returns regression 3	Hedge portfolio	
	R ²	R ²	R ²	Return / proportion	
1994-1997	2.7%	1.4%	2.4%	-8.4% / -7.2%	
1998-2001	12.1%	11.0%	13.3%	22.1% / 18.6%	

It is clear from this table that all the tests reveal higher explanatory power of accounting numbers in the second sub-period. The value relevance of Czech accounting information increased substantially in the second period. As shown in section 8.1, the degree of the Czech value relevance in the second period is comparable to that in countries with well-developed and functioning market economies even though it still does not reach the level of value relevance in Sweden, which was the benchmark country in this study. The empirical results point to the following finding:

The results are consistent with the hypothesis that the value relevance of Czech accounting information changes over time and specifically that the value relevance of Czech accounting information increases over time.

An improvement in the significance of Czech accounting earnings is also apparent in that the hedge portfolio investment strategy based on earnings changes earns extraordinary returns in the second period, and in that the next period earnings seem to play a more important role in the capital markets. The change in book value of equity is still insignificant in the second period. The results for the coefficient significance are summarised in table 27.

Table 27. Significance of the accounting variables

*** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level

	Earnings	Book value of equity	Scaled earnings	Scaled book value of equity	Logarithm of earnings	Logarithm of book value
1994-1997	Yes***	Yes***	Yes***	Insignificant	Yes***	Yes***
1998-2001	Yes***	Yes***	Yes***	Insignificant	Yes***	Yes***
	Earnings levels	Earnings changes	Current earnings	Next period's earnings	Hedge portfolio	
1994-1997	Yes**	Insignificant	Yes*	Insignificant	Not value relevant	
1998-2001	Yes***	Insignificant	Yes***	Yes***	Value relevant	

The results of the study show that the value relevance of Czech financial accounting information has increased over the eight years that the research period comprises. In other words, it has taken 5 - 8 years to reach a level of value relevance comparable to the value relevance of accounting information in the market economies. The increase in value relevance of Czech accounting information is, without doubt, good news. It shows that the overall economic and legal climate of the country is changing and adapting to the rules of market economy and moving closer to the standard in other European countries.

The positive change in the value relevance of accounting information increases the credibility of Czech companies and the Czech capital market in the eyes of foreign investors and should have a positive effect on their willingness to invest in and trade with the country. The importance of its entry into the European Union should also be recognised. It has been important for the Czech Republic to adjust its legal environment and adapt its business culture to the requirements of the European Union. The Union sets requirements for a number of economic indicators that would be hard to fulfil without prospering companies that can raise their capital under favourable conditions in the financial markets.

The value relevance of accounting information, however, is not based only on accounting laws and practice, but is influenced by a number of factors that are external to the accounting environment. Five external factors have

been found important for an economy in transition¹⁴⁵. These are discussed in the next section.

8.3. Factors influencing the development of value relevance

The results have shown that the value relevance of financial accounting information in the Czech Republic has increased over a relatively short time. Starting from zero, it has more or less reached the Swedish level after five years. Five factors have been identified that contribute to this positive change. These are:

- development of accounting regulation
- regulation and control mechanisms
- business climate change
- internationalisation
- business cycle, economic development and industry structure

The potential contribution of each factor is discussed in this section.

Accounting laws and regulations are a primary prerequisite of the value relevance of accounting information. It has been argued that the implementation of a new accounting regulation should have a positive effect on value relevance and increase it. Prior to 1993, there was no accounting regulation that could satisfy the needs of a market economy. The first Czech Accounting Act was adopted in 1991 but not fully implemented until 1993. The final year in which financial statements were prepared in accordance with this Act was 2001. The Accounting Act was amended in 1997 especially in the area of group accounting. The Ministry of Finance, which is the standard setting body in the Czech Republic, has continuously published new decrees on accounting aimed at improving the accounting environment and information.

The importance of external influences needs to be stressed. First, there is the enormous involvement of the academic public in the issue of the harmonisation of Czech accounting with international practices. Second, foreign auditors and accountants have made an important contribution by

¹⁴⁵ Section 4.3.

working for the acceptance of International Accounting Standards as a way of harmonising accounting. Third, entry into the European Union meant that Czech legislation had to be adapted to EU legislation. However, while this was seen as the ultimate objective of Czech accounting legislation, at the end of the research period the accounting public acknowledged that other efforts were necessary to bring about improvements to the country's accounting principles and methods.

The amendment of the Accounting Act in 1997 has brought about a number of changes in accounting practices. One of the areas that underwent a substantial change was group accounting and consolidation practices. The improvement of consolidation practices is undoubtedly the one accounting change that contributed most to the increase in value relevance. This is consistent with the findings of Harris, Möller & Lang (1994) that the value relevance of accounting information increases with the degree of consolidation¹⁴⁶.

Amendments and improvements to accounting regulation, increased professionalism and knowledge in the accounting profession and foreign influences on accounting support the finding that the value relevance of Czech accounting information increased in the second research period.

As can be seen, the accounting regulation improved during the eight-year research period, which is reflected in the increase in the value relevance of accounting information. However, accounting regulation alone is not the only source of value relevance and high quality accounting standards by themselves do not guarantee high quality financial reporting. Even if accounting standards are of high quality, this does not necessarily ensure a high degree of association between accounting numbers and market prices. As long as accounting rules are not followed or understood and as long as market imperfections exist, the association between accounting and market numbers will be weak.

What is needed, therefore, is regulation and control mechanisms that ensure that rules are followed and that correct information is disclosed. In the early years, following the opening of the Prague Stock Exchange, the capital markets suffered from a number of problems that were caused by the lack of knowledge and experience and also by the lack of efficient control systems. Trading in shares of listed companies took place outside the stock exchange,

¹⁴⁶ Harris, Möller & Lang (1994), p. 202.

prices and private deals were concluded outside the stock exchange and often in a way that treated other interests - particularly minority shareholders - unfairly. The problem of disadvantaged minority shareholders was recognised in 1997 and was one of the motives for the amendment of the Accounting Act and Commercial Code.

The efficiency of the capital markets was also distorted by the large number of companies that were never traded. In 1998, the Stock Exchange Commission was established to supervise the stock exchange. At the same time, the many companies that were not traded were de-listed from the stock exchange. The Stock Exchange Commission set strict requirements for listed companies regarding their reporting duties and a code of conduct which further decrease the number of companies listed at the Prague Stock Exchange. But this has also resulted in a better functioning of the stock exchange and better information and communication between companies and users of accounting information.

In the same year, the National Centre was established in order to fulfil the requirements for publicly available financial company information. Companies had previously had an obligation to file their annual reports and make them available, but this obligation was not followed and it was virtually impossible for minority shareholders and potential investors to acquaint themselves with financial statements. It must be noted, however, that more and more companies have recently begun to disclose information voluntarily and provide their financial statements and annual reports to the public.¹⁴⁷

The better control of companies' financial information and more information disclosure suggests that the value relevance of this information should increase. Indeed, in the first research period, the regulation and control mechanisms seemed to be underdeveloped and insufficient while the great improvements to these occurred in the period 1997-1998, right at the beginning of the second research period. This should have a positive effect on the increase in value relevance between 1998 and 2001.

It has been stated that a company that is open and clear in its communication with its external partners will have a competitive advantage over a secretive company in attracting new capital and raising the capital at low cost. Czech companies were secretive in their actions and with information at the

¹⁴⁷ Here the importance of internet-based company pages should be noted.

beginning of the transition period, which was the heritage of the previous regime. The centrally planned economy was characterised by this attitude of secrecy, which has been very difficult to change. It was not sufficient to legislate on compulsory information disclosure and public access to financial reports in the early 1990s. The legislation was ignored and in the early years it was practically impossible for an external party to obtain any financial information at all. This, of course, discourages investors. It has negative effects on pricing, resulting in both lower share prices and the total amount of capital invested.

However, by the end of 1990s, there had been a substantial change on the part of companies in their attitude to providing information. A substantial role was played in this process by educational institutions and by the further education of virtually all the players in the capital market and in companies. Also, educating a completely new generation of business people and managers has helped to change attitudes in the business sector. Contact with foreign countries and learning from foreign experiences have been important and indispensable aspects of the change process. It is evident that the secretive attitude of Czech society is slowly but surely being replaced with a more open attitude.

Foreign influences from market economies have been very important. Czech companies that for the previous forty years had exported to Eastern European markets now have substantial markets in Western countries. Everyday contact with market economies affects how they do business. Czech companies have to compete under conditions that are completely new to them. They have to compete not only on quality and prices of products, services and financial solutions provided, but also on their reputation and credibility. Transparent and accessible information has a positive effect on the value relevance of accounting.

Another important foreign influence is the result of the foreign companies establishing themselves in the Czech Republic and foreign investors investing in the Czech capital market. To these actors, the availability and relevance of financial information is even more important because of their limited knowledge of the Czech market.

The third set of foreign influences have been felt in the accounting profession, in the form of assistance in standard setting, the activities of international accounting firms and the experience gained by Czech accounting professionals from internships abroad.

Changes in the business climate and accepting and gaining foreign experience are long-term processes that took place throughout the research period and are, of course, still continuing. These factors support the increase in value relevance of financial accounting information.

Finally, it has been stated that the value relevance of accounting information is related to fluctuations in the business cycle. The association between market and accounting numbers weakens during periods of economic boom, and increases in periods of economic recession. The Czech Republic experienced an upturn in the economy in 1994-1996 with a positive economic growth and increased inflow of foreign direct investment. In 1997, the trend turned and the country experienced several tough years of political, economic and structural problems. Towards the end of the second period, signs of a slow recovery could be seen. The turbulence surrounding the Czech banking system, however, has left its mark on the country. Thus the first research period seems to have been a period of accelerated growth and economic changes in the Czech Republic, while economic development was negative in the first two years and only modest in the last two years of the second research period. This supports the lower value relevance of accounting information in the first period and higher value relevance in the second period.

The degree of value relevance is a function of all the above five factors. It is not possible to separate the effect of the individual factors within the scope of this study. The results of the tests show, however, that the direction of value relevance change is consistent with the expectations based on the factors.

During first research period, 1994-1997, the market economy was relatively new, the accounting profession and regulation under development, control mechanisms insufficient and business climate secretive. Contacts with foreign environment were beginning to be established. It was also a time of accelerated economic development. All these factors support the finding that the value relevance of this period was low. Information disclosure was insufficient in the first period and it had a negative effect on the pricing of companies. The weak association between market and accounting numbers suggests that pricing was done on the basis of other premises than a fundamental analysis of accounting information. However, to what extent this was due to the poor quality of accounting standards and regulation or due to the other factors is difficult to conclude.

In the second research period 1998-2001, the country experienced an improvement in virtually all the five factors considered to influence value relevance. Accounting standards and regulation improved and more efficient control mechanisms were established which had a positive effect on the capital market. Czech managers also started to demonstrate a change in their attitude and became more positive towards providing access to information. This might be partly explained as a result of the Stock Exchange Commission requirements, but the positive will of the managers should not be underestimated. This is especially true of the largest companies and companies with foreign participation. There is an apparent relation between the size of the company and the quality of information disclosure in the Czech Republic. The largest companies disclose more information than necessary; they reconcile their statements according to international standards and they introduce new accounting issues in their accounting. The largest companies are also the companies that are followed by foreign investors.

These changes support the evidence of an increase in the value relevance of Czech accounting information in the second period. There is indeed a higher association between market prices and accounting measures in this period although the pricing of the companies remains low (price-earnings ratio is 20 for the first period and 14 for the second period; the market-to-book ratio lies under 1 in both periods and actually decreases slightly in the second period). This low pricing trend remains in spite of the fact that the information environment seems to have improved. This is probably due to low expectations for the future and factors external to the accounting environment rather than to declining of the quality of accounting standards.

8.4. Concluding remarks and future research

The following may be learned from the results of the study. The quality of accounting information – as expressed by value relevance – is a complex and ambiguous issue. High quality accounting information can hardly be achieved overnight. Just as institutional, economic and social changes take time in the transition from a centrally planned economy to a market economy, changes in the quality of accounting information and financial reporting also take time. The Czech experience shows, however, that the change can occur relatively quickly, the value relevance of accounting

information growing to a level comparable to that of a market economy after 5-8 years of trading activity at the Prague Stock Exchange.

The financial accounting environment has major implications for the political, economic and social development of a country. To be able to establish a high-quality accounting environment and high value relevance of accounting information, however, a number of factors must interact in the same positive direction. In other words, it is not enough to adopt high quality accounting standards – whether domestic or international accounting standards – unless control mechanisms are functioning, society is open and able to compete internationally. Thus, the issue for accounting standard setters and accounting professionals in transition countries should not only be the question of accounting legislation and harmonisation, but perhaps more importantly an understanding of the interaction between the institutional factors and their importance for the value relevance of accounting information. The results of the study may also serve as an argument for a continuous transfer of knowledge of accounting into the practice, increased education for the accounting profession, cooperation between accounting academics and practitioners and finally, for the visualisation of accounting in society and explaining its importance for the functioning of capital markets and economic growth.

The Czech Republic is an example of a country in transition process. Its experience of developing a completely new accounting system cannot be transferred directly to any other country because every country has its own specific development and unique mixture of political, economic and social conditions. However, knowledge of the value relevance of Czech accounting and its development might contribute to a better understanding of both the notion of value relevance of accounting information and of the process of a transformation of accounting regulation and an accounting environment in a transition economy.

The study leaves many areas of interest open to further research. First, the study can be extended by investigating the development of the value relevance of accounting information in other transition countries and emerging capital markets adding to our accumulated knowledge of the value relevance issue. Second, an alternative methodology could be developed to investigate the quality of accounting information in the Czech Republic and/or in other transition countries, including case studies of financial accounting of individual companies or investigating the value relevance of companies not listed on the stock exchange. Finally, future research should

examine institutional factors that may influence the value relevance of accounting information in a transition economy and operationalise these for statistical testing. It is the author's firm opinion that this last issue is a particularly important research question that has implications for transition or developed market economies alike, due to its extensive political, economic and social consequences.

Appendix supplement

Appendix 1. Previous research

Appendix 2. Notes on Swedish accounting

Appendix 3. Test of different dates for prices

Appendix 4. Comparing the significance of the R^2 s for two different samples

Appendix 5. Heteroscedasticity tests

Appendix 6. Multicollinearity

Appendix 7. Definitions of key ratios from tables 9 and 10

Appendix 8. List of the Czech companies

Appendix 9. List of the Swedish companies

Appendix 10. Survivors

Appendix 11. Notation for the basic test variables

Appendix 1. Previous research

This appendix summarizes the previous value relevance studies (for more details see chapter 2). The studies are in chronological order. For each study, the name of the author/ authors is given, the year of publication, the title of the study and the journal where the study was published. Further, the topic; that is the research question of the study is stated and which method is used for answering the question. The sample gives data on country and/or period studied. Finally, the results are summarized. More details on results of the studies comparable to the present are given in chapter 8.1.

<i>Author(s)</i>	<i>Title</i>	<i>Journal</i>	<i>Research topic</i>	<i>Method</i>	<i>Sample</i>	<i>Results</i>
Easton & Harris (1991)	Earnings as explanatory variable for returns	Journal of Accounting Research	Value relevance of current accounting earnings	Association between returns and earnings levels and changes	1969-1986 US 20 188 firm-years	Current earnings are value relevant ($R^2 = 7,7\%$), both earnings levels and changes are significant
Alford et al. (1993)	The relative informativeness of accounting disclosure in different countries	Journal of Accounting Research	Information content and timeliness of accounting earnings	Hedge methodology Association between returns and earnings levels and changes	1983 -990 17 countries with at least 100 firm-years	Significant differences in value relevance and timeliness exist among the countries
Harris, Lang & Möller (1994)	The value relevance of German accounting measures	Journal of Accounting Research	Value relevance of accounting earnings in Germany and the US	Association between returns and earnings levels and changes, the association between market price and earnings and book value	1982-1991 230 firms for both countries	Explanatory power of earnings is comparable in the both countries, combined value relevance of earnings and book value is significantly higher for

Joos & Lang (1994)	The effects of accounting diversity: Evidence from the European Union	Journal of Accounting Research	Effects of different accounting measurement practices and effect of the implementation of the European Union directives	Univariate analysis of return on equity, earnings/price and book/market ratio	1982-1990 675 UK companies 172 German companies 228 French companies	The directives did not increase value relevance in any of the countries, significant differences in the reported profitability and multiples exist, but differences in value relevance among the countries not significant, German accounting most conservative
Collins, Maydew & Weiss (1997)	Changes in the value relevance of earnings and book values over the past forty years	Journal of Accounting and Economics	Changes in value relevance of earnings and book value over time	Association between market price and earnings and book value	1953-1993 US 115 154 firm-years	Combined value relevance of earnings and book value increase, earnings relevance decrease, book value relevance increases (average $R^2 = 53,6\%$)
Frankel & Lee (1998)	Accounting valuation, market expectation, and cross-sectional stock returns	Journal of Accounting and Economics	Value relevance of firm estimated residual income model	Association between the market price, accounting earnings, book value and value estimated by residual income model	20 countries 1987-1994 12 883 US & 12 026 foreign firm-years	Value estimated by residual income model explains more of market prices than earnings and book value
Francis & Schipper (1999)	Have financial statements lost their relevance?	Journal of Accounting Research	Change of value relevance accounting information over time	Hedge methodology Association between market values and accounting measures	1952-1994 US from 393 to 4831 firms per year	Increased combined relevance of earnings and book value, decline in earnings value relevance, increase in

Lev & Zarowin (1999)	The boundaries of financial reporting and how to extend them	Journal of Accounting Research	Value relevance of earnings, book value and cash flow, change in value relevance due to changes in firms' operations	Association between returns and levels and changes in flows and accruals, association between market price and earnings and book value	1978-1996 US 3 689 to 6 593 firms per year	book value relevance (average $R^2=62\%$), Decline in value of both earnings, cash flows and combined earnings and book value, decline in value relevance of earnings is associated with increasing rate of business change and increasing R&D density
Brown, Lo & Lys (1999)	Use of R ² s in accounting research: measuring changes in value relevance over the last four decades	Journal of Accounting and Economics	Replication of Collins, Maydew & Weiss	Association between market price and earnings and book value adjusted for scale factor	1958-1996 US 112 134 firm-years	Explanatory power is decreasing over time, increase in the coefficient of variation of the scale factor
Bao & Chow (1999)	The usefulness of earnings and book value for equity valuation in emerging capital markets...The People's Republic of China	Journal of International Financial Management & Accounting	Value relevance of accounting information in China prepared according to domestic standards and according to international accounting standards	Association between market prices and earnings and book value	1992-1996 China	Chinese accounting information is value relevant, the more for financial statements prepared according to IAS (domestic $R^2 = 21,1\%$ and IAS $R^2 = 23,6\%$)
Ely & Waymire (1999)	Accounting standard-setting organisations and earnings evidence	Journal of Accounting Research	Relevance of accounting earnings as a	Association between market returns and earnings levels and	1929-1993 US 6 700 firm-	Increased value relevance of combined earnings and book

			function of changes in standard setting process	earnings association market price and earnings and book value	changes, between and value	years	value, value relevance of earnings did not increase ($R^2 = 18,47\%$ for the returns association and $R^2 = 44\%$ for the earnings-book value association)
Ball, Kothari & Robins (2000)	The effect of institutional factors on accounting earnings	Journal of Accounting and Economics	The effect of institutional factors on the value of accounting earnings	Association returns and earnings	between earnings and earnings	1985-1995 7 countries 40 359 firm-years	Code law countries exhibit lower value relevance of accounting earnings ($R^2 = 5,2\%$) than common law countries ($R^2 = 14,4\%$), common law countries show higher income statement conservatism
Ali & Hwang (2000)	Country-specific factors related to financial reporting and the value of accounting data	Journal of Accounting Research	Relations between measures of value relevance and country-specific factors	Association returns and levels and changes Hedge approach	between earnings and earnings portfolio	1986-1995 16 countries with at least 60 firm-year observations	Value relevance is lower in countries with bank-oriented financial systems, with no or little private sector bodies in standard setting, with code law accounting, tax rules influence on financial accounting and low external auditing
Jindrichovska (2001)	The relationship between accounting numbers and returns:	European Accounting Review	Value relevance of accounting earnings and the earnings,	Association returns, earnings,	between current future	1993-1998 63 companies	Both current earnings and future earnings are value relevant, earnings

<p>some empirical evidence from the emerging market of the Czech Republic</p>	<p>lag between the market returns and earnings</p>	<p>earnings and changes</p>	<p>changes are insignificant</p>
<p>Ball, Robin & Wu (2003)</p>	<p>Incentives of accounting in four East Asian countries</p>	<p>Journal of Accounting and Economics</p>	<p>1984-1996</p>
<p>versus properties of accounting income in four East Asian countries</p>	<p>Interaction between accounting standards and incentives of preparers of accounting information</p>	<p>Timeliness of economic income recognition and conservatism of income statement</p>	<p>four Asian countries 2726 firm-years</p>
<p>Substantial weight should be given to institutional influences on preparers' financial statements rather than formal accounting standards</p>			

Appendix 2. Notes on Swedish accounting

The Swedish standards in force during the period 1994-2001

The table summarizes the accounting standards published by the Swedish Financial Accounting Standards Council from its foundation until the end of the research period. The first column gives the serial number of the standard and the second column gives its name. The date of the original adoption is the year when the standard was adopted. Mostly, however, the standards were implemented into practice the following accounting year. Some of the early standards have been amended (fourth column).

<i>Standard</i>	<i>Title</i>	<i>Date of the original adoption</i>	<i>Amendment of the standard</i>
RR 1	Consolidated financial statements	1991	1996 and 2001
RR 2	Inventories	1992	
RR 3	Presentation of current assets and current liabilities	1992	Not in force
RR 4	Extraordinary items	1993	
RR 5	Changes in accounting methods	1993	
RR 6	Accounting for leases	1995	1999
RR 7	Cash flow statements	1998	
RR 8	The effects of changes in foreign exchange rates	1998	
RR 9	Income Taxes	1999	
RR 10	Construction contracts	1999	
RR 11	Revenues	1999	
RR 12	Tangible assets	1999	
RR 13	Associated companies	2000	
RR 14	Joint ventures	2000	
RR 15	Intangible assets	2000	
RR 16	Provisions and contingencies	2000	
RR 17	Write-downs	2000	
RR 18	Earnings per share	2000	
RR 19	Discontinuing operations	2000	
RR 20	Interim reports	2000	

Appendix 3. Test of different dates for prices

The dependent market value variable in linear regression tests is measured by total market value of the company on March 31st or three months after the end of the accounting year (variable P_t). This is a standard procedure in the capital market research. With respect to the fact that the financial accounting information dissemination might take place later than three months after the end of the accounting year in the Czech Republic (see chapter 3), a sensitivity tests are run to control whether the standard procedure can be used for evaluating the value relevance of the Czech accounting information. The sensitivity test is done for market value as of June 30th or six months after the end of the accounting year and for December 31st, or the last day of the accounting year. The results are presented in the tables below.

Sensitivity control based on the price regression. R^2 is reported for December, March and June market values

<i>Price</i>	<i>Czech Republic 1994-1997</i>	<i>Czech Republic 1998-2001</i>	<i>Sweden 1994-1997</i>	<i>Sweden 1998-2001</i>
<i>December</i>	22.5%	32.8%	69.8%	59.6%
<i>March</i>	25.5%	35.8%	73.9%	56.4%
<i>June</i>	13.4%	40.3%	79.4%	57.1%

Sensitivity control based on the scaled regression. R^2 is reported for December, March and June market values

<i>Price</i>	<i>Czech Republic 1994-1997</i>	<i>Czech Republic 1998-2001</i>	<i>Sweden 1994-1997</i>	<i>Sweden 1998-2001</i>
<i>December</i>	2.8%	14.5%	20.9%	13.1%
<i>March</i>	8.8%	14.4%	27.5%	15.2%
<i>June</i>	4.8%	15.2%	9.5%	12.9%

The tables show that in most cases March prices generate a higher explanatory power than December prices since the accounting information does not reach the market yet at the end of the accounting year. As to the June prices, these add to explanatory power in half of the cases but twice only marginally. It does not therefore seem that extending the window would improve the results of the tests. The results based on both December and June prices confirm the outcome of the tests based on the March prices.

Appendix 4. Comparing the significance of the R²s for two different samples

The test comparing the significance of the difference between the explanatory power of two samples of different size and composition is conducted according to the methodology described in chapter 6.8. The table below summarises the input for comparison, which is the mean square of residuals received in the regression tests and the number of degrees of freedom.

<i>Period 1994-1997</i>	<i>Mean square of residuals</i>	<i>Degrees of freedom</i>	<i>Period 1998-2001</i>	<i>Mean square of residuals</i>	<i>Degrees of freedom</i>
<i>Czech Republic</i>			<i>Czech Republic</i>		
Scaled regression	0.289	192	Scaled regression	0.198	198
Logarithmic regression	0.826	201	Logarithmic regression	0.844	268
Returns regression	0.204	158	Returns regression	0.208	223
<i>Sweden</i>			<i>Sweden</i>		
Scaled regression	4.828	614	Scaled regression	17.86	374
Logarithmic regression	0.377	677	Logarithmic regression	0.898	455
Returns regression	0.251	724	Returns regression	0.529	387

The following table summarises the results of the tests. MSR1/MSR2 is the division of mean squared residuals from sample one and sample two. The F-values are given for 1, 5 and 10 percent level for the respective degrees of freedom.

Period	MSR1/ MSR2	F-value 1%	F-value 5%	F-value 10%
1994-1997				
Scaled regression	16.7	1.28	1.19	1.14
Logarithmic regression	2.19	1.28	1.19	1.14
Returns regression	1.23	1.38	1.25	1.19
Period 1998-2001				
Scaled regression	90.2	1.39	1.26	1.20
Logarithmic regression	1.064	1.33	1.22	1.17
Returns regression	2.54	1.39	1.26	1.20

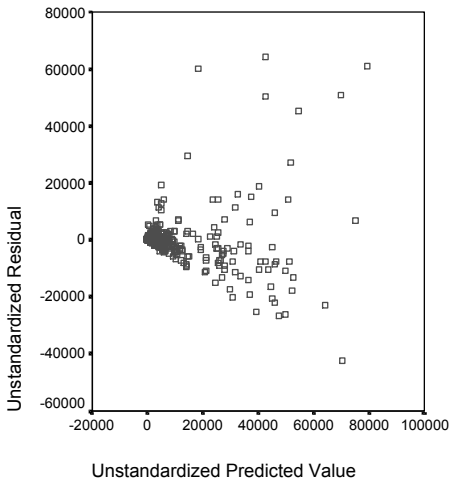
For the first period, all differences between the R^2 s are significant at five percent significance level. For the second period, the difference between the R^2 s of the scaled regression and the returns regression are significant while the difference between the R^2 s of the logarithmic regression is not significant at 10 percent level. The inferences about the value relevance and its comparison between the two countries can be derived from the tests which have a significant difference in the explanatory power. The comparison between the explanatory powers of the logarithmic regression for the second period should be made with caution.

Appendix 5. Heteroscedasticity tests

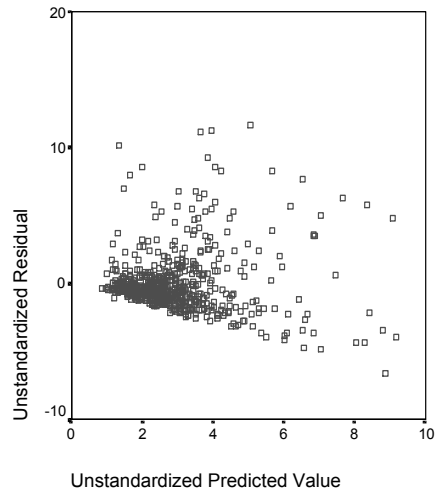
The tests for heteroscedasticity presented in this appendix are based on the Swedish sample for the first period of 1994-1997. Similar tests were run also for the Czech sample for both periods and for the second Swedish period. The test results show a similar pattern of heteroscedasticity as the example sample of Swedish data 1994-1997 but are not exhibited.

First, the graphical test is used plotting the unstandardized residuals towards unstandardized predicted value (Gujarati, p.369). The left graph shows the scatterplot for the price regression and the right graph shows the scatterplot for the scaled regression.

Scatterplot. Price regression



Scatterplot. Scaled regression



The scatterplot for the price regression exhibits a definite pattern of heteroscedasticity while the scatterplot for the scaled regression does not. This simple graphical test is confirmed by using the White's general heteroscedasticity test (Gujarati, p. 379). The test gives a value of 1.73 for the price regression, which is higher than the chi-statistics value at 10 percent level (1.61). This indicates the existence of heteroscedasticity. The same value for the scaled regression is 0.475 which is lower than the chi-statistics at 1 percent level (0.554). Thus, the scaled regression does not exhibit any heteroscedasticity. The same tests are run for the logarithmic regression. The White's heteroscedasticity test shows value of 0.255 which is lower than the chi-statistics at 0.5 percent level (0.4117). The logarithmic regression does not suffer from heteroscedasticity problems.

Appendix 6. Multicollinearity

The following table summarises values of tolerance index (TI), variance-inflating factor (VIF) and condition index (CI) for the individual regressions. Multicollinearity is strong if TI is close to zero, if VIF is larger than 10 and CI larger than 30. There is no multicollinearity if TI is close to one, VIF is close to zero and CI is smaller than 10.

<i>Country</i>	<i>Period</i>	<i>TI</i>	<i>VIF</i>	<i>CI</i>
<i>Scale regression</i>				
<i>Czech Republic</i>	1994 - 1997	0.845	1.184	35
	1998 - 2001	0.932	1.073	11
<i>Sweden</i>	1994 - 1997	0.510	1.960	4.113
	1998 - 2001	0.897	1.115	10
<i>Logarithmic regression</i>				
<i>Czech Republic</i>	1994 - 1997	0.474	2.108	37
	1998 - 2001	0.427	2.343	36
<i>Sweden</i>	1994 - 1997	0.216	4.619	17
	1998 - 2001	0.202	4.947	33
<i>Returns regression</i>				
<i>Czech Republic</i>	1994 - 1997	0.768	1.302	2.95
	1998 - 2001	0.859	1.164	2.465
<i>Sweden</i>	1994 - 1997	0.708	1.411	3.731
	1998 - 2001	0.694	1.442	3.366
<i>Extended returns regression</i>				
<i>Czech Republic</i>	1994 - 1997	0.560	1.786	4.119
	1998 - 2001	0.690	1.449	2.830
<i>Sweden</i>	1994 - 1997	0.953	1.049	3.199
	1998 - 2001	0.988	1.012	2.846

The tolerance index and VIF factor show that multicollinearity is small in the scale regression. There is a tendency to strong multicollinearity in the logarithmic regression. As a consequence of multicollinearity, the confidence intervals tend to be much wider and R^2 very high. Neither of the returns regressions exhibits a substantial multicollinearity.

Appendix 7. Definitions of key ratios from tables 9 and 10

Return on equity	=	$\frac{\text{Net earnings}_t}{\text{Equity}_{t-1}}$
Return on assets	=	$\frac{\text{Earnings before interest expense}_t}{\text{Total assets}_{t-1}}$
Cost of liabilities	=	$\frac{\text{Interest expenses}_t}{\text{Total liabilities}_{t-1}}$
Equity ratio	=	$\frac{\text{Equity}_t}{\text{Total assets}_t}$
Change in total assets	=	$\frac{\text{Total assets}_t - \text{Total assets}_{t-1}}{\text{Total assets}_{t-1}}$
Change in equity	=	$\frac{\text{Equity}_t - \text{Equity}_{t-1}}{\text{Equity}_{t-1}}$
Price - Earnings ratio	=	$\frac{\text{Price}_t}{\text{Earnings}_{t+1}}$
Market - to - book ratio	=	$\frac{\text{Price}_t}{\text{Equity}_t}$
Dividends / Equity	=	$\frac{\text{Dividends}_t}{\text{Equity}_{t-1}}$
New Issue / Equity	=	$\frac{\text{New issue}_t}{\text{Equity}_{t-1}}$
Dividends / Earnings	=	$\frac{\text{Dividends}_t}{\text{Earnings}_t}$

Appendix 8. List of Czech companies

Aliachem
Apollon
Ceska namorni plavba
Ceska zbrojovka
Ceske radiokomunikace
Ceskomor.doly
Cesky Telecom
CEZ
Energoaqua
Ispat
JC Energetika
JC Papirny Vetrni
JC Plynarenska
JM Energetika
JM Plynarenska
Kablo Elektro
Kotva
Lafarge Cement
Lazne Teplice
Lec.lazne Jachymov
Madeta
Meopta
Metalimex
Metrostav
NKT Cables
OKD
Paramo
Philip Morris
Plzenska Teplarna
Prazska energetika
Prazska plynarenska
Prazske skuzby
PVT
SC energetika
SC Plynarenska
Setuza
Severoceske doly
Slezan
SM Energetika
SM Plynarenska
SM Voda akanalizace
Sokolovska uhelna
Spolana
Spolek ch.huti
SSZ
STC Energeticka
STC Plynarenska
Stock Plzen
Skoda Praha
STI Holding
Tarmac severokamen
Tatra
Teplarna Pisek
Teplarna Usti n.l.
Teplarny Brno
Toma
Unipetrol
United Energy
VC Energetika
VC Plynarenska
Wienerberger
ZC Energetika
ZC Plynarenska
Zdas
ZS Brno

Appendix 9. List of Swedish companies

Period 1994 - 1997

ÖRESUND	DUROC	HAVSFRUN	LUNDINOI	ORREFORS
JNGPANNE	DIFFCHAM	HEBA	LUXONEN	ORTIVUS
ABB	DILIGENT	HEBI	MÅLDATA	OWELL
ACTIVE	DORO	HEMKÖP	M2	OXIGENE
AGA	ELANDERS	HEMSTADE	MANDATOR	PANDOX
ALLGON	ELDON	HENNES	MARIEBER	PARTNER
ARRAY	ELEKTA	HEXAGON	MARTINSS	PCEXPRES
ARTIMPLA	ELEKTRON	HILAB	MATCH	PEAB
ASG	ELUX	HL DISPL	MATTEUS	PEAK
ASSA	ENATOR	HUFVUDST	MAXIM	PERSTORP
ASSI	ENEA	IBS	MEDA	PHAR&UP
ASTRA	ENTRA	ICB	MEDITEAM	PHARMACI
ATLAS	ERICSSON	IFS	MEDIVIR	PIREN
ATLE	ESAB	IMG	MEGACON	PLATZER
AUREX	ESSELTE	INDUSTRI	MIDWAY	PLM
AUTOLIV	EUROPOLI	INTENTIA	MINIDOC	PRICER
AVESTA	EVIDENTI	INVESTOR	MODO	PRIFAST
B&N	EXPANDA	INVIK	MODUL1	PROACT
BEIJER	FABEGE	IRO	MONARK	PRODURA
BERGMAN	FAGERHUL	ITAB	MTG	PROFILGR
BIACORE	FAGERLID	J&W	MTVPROD	PRONYX
BILIA	FASTPART	JM	MULTIQ	PROTECT
BIOLIGHT	FEELGOOD	JOHNSONP	MUNKSJÖ	PROVENTU
BIOPHAUS	FINNVED	KABE	MUNTERS	PROVOBIS
BIORA	FIREFLY	KALMAR	N&T	QUALISYS
BONGS	FJÄLLRÄV	KANTHAL	N&TARGON	RÖRVIKSG
BORÅS-WÄ	FOLKEBOL	KAPN	N[CKEBRO	RÖRVIKTI
BPA	FORCENER	Karlsham	NAN	RATOS
BRIO	FORSHEDA	KAROLIN	NCC	REALIA
BT	FRISTADS	KINNEVIK	NEA	RESCO
BTL	FRONTEC	KLVERN	NEFAB	RIDDARHY
BULTEN	FRONTLIN	KLIPPAN	NETCOM	RIKSBYGG
BURE	FSPA	KM	NEWWAVE	ROTTNERO
CARDO	GAMBRO	KnowIt	NH	S[KI
CASTELLU	GANDALF	KONE	Nibe	S[LENSTJ
CELSIUS	GETINGE	KORSIND	NOBELBIO	SANDBLOM
CELTICA	GEVEKO	LAP POWE	NOLATO	SANDVIK

CFBERG	GORTHON	LATOURE	NORDIFA	SARDUS
CHERRY	GOTLAND	LIC CARE	NORDITUB	SAS
CLOETTA	GRÄNGES	LINDAB	NORRPORT	SCA
COLUMNNA	GRANINGE	LINDEX	NOVACAST	SCALA
CONCORDI	GRAPHIUM	LINJEBUS	NTL	SCANCEM
CONFIDEN	GULLSPJN	LINN@	OEM	SCANDIAC
CONNOVA	GUNNEBO	LJUNGBER	OM	SCANDIC
CONSILIU	HÖGAÄ[S	LODET	OMI	SCANIA
CUSTOS	HALDEX	LPI	OPTIMA	SCANMINI
DAHL	Handskma	LUNDBERG	OPTOSOF	SCRIBONA
D\IS	HASSELFO	LUNDGREN	ORIENT	SECO
SECURITA	SKF	STORHEDE	TAURUS	UNITTANK
SEGERSTR	SKOOGS	STRÅLFOR	TERRA	WALLENST
Semcon	SOFTRON	SWECO	TICKET	VBB
SENDIT	SOLITAIR	SVEDALA	TIVOX	VBG
SENEA	SPCS	SVEDBERG	TORNET	WEDINS
SIAB	SPECTRA	SWEDSPAN	TRELLEBG	VENCAP
SIFAB	SPENDRUP	SWEGON	TRICORON	VERIMATI
SIGMA	SPIRA	SWEPART	TRIO	WESTERGY
SINTER	SRAB	SVKOPPAR	TRUSTOR	WIHLBORG
SKJNE-GR	SSAB	SVOLDER	TRYCKIND	VLT
SKJNE-M\	STENA	SYDKRAFT	TURNIT	WMDATA
SKANSKA	STORA	SYNECTIC	TV4	VOLVO
				ZETECO

Period 1998 – 2001

ACAD.SE	BILL.SE	DECL.SE	FTEL.SE	INVK.SE
ACOM.SE	BINA.SE	DIAL.SE	GAMB.SE	ISOK.SE
ACSC.SE	BIOG.SE	DIAM.SE	GAND.SE	ITAB.SE
ACTI.SE	BIOL.SE	DICE.SE	GCEL.SE	JM.SE
ADDV.SE	BIOP.SE	DIFF.SE	GCOLU.SE	JW.SE
ADER.SE	BIOR.SE	DILI.SE	GETI.SE	KARO.SE
ADIA.SE	BIP.SE	DIOS.SE	GETU.SE	KIND.SE
AFFS.SE	BN.SE	DNG.SE	GIBE.SE	KINV.SE
AGA.SE	BONG.SE	DV.SE	GJP.SE	KIPL.SE
AHUS.SE	BPA.SE	EBP.SE	GRAN.SE	KLED.SE
ALLG.SE	BRG.SE	ECTA.SE	GRNG.SE	KLIP.SE
ANGP.SE	BRIO.SE	EFFN.SE	GSPC.SE	KM.SE
ARAC.SE	BRO.SE	EIAB.SE	GVKO.SE	KMT.SE
ARET.SE	BTI.SE	EKTA.SE	HAV.SE	KNOW.SE
ARK.SE	BTL.SE	ELDO.SE	HEBA.SE	KOIN.SE

ARKT.SE	BURE.SE	ELGR.SE	HEBI.SE	KTEL.SE
ARRA.SE	BWL.SE	ELUX.SE	HEMK.SE	LATO.SE
ARTI.SE	CAP.SE	ENAT.SE	HEXA.SE	LCT.SE
ASDO.SE	CAPO.SE	ENEA.SE	HL.SE	LDEX.SE
ASG.SE	CARD.SE	ENLI.SE	HLDX.SE	LEDS.SE
ASP.SE	CASH.SE	ENRO.SE	HM.SE	LIF.SE
ASSA.SE	CAST.SE	ENTR.SE	HMAK.SE	LILJ.SE
ASTR.SE	CCOR.SE	ERIC.SE	HOGA.SE	LJGR.SE
ATCO.SE	CELL.SE	EURO.SE	HOLM.SE	LOIL.SE
ATI.SE	CELT.SE	EXAV.SE	HUFV.SE	LPI.SE
ATLE.SE	CFA.SE	EXPA.SE	HUML.SE	LPOW.SE
AURX.SE	CHER.SE	FAG.SE	IAR.SE	LUND.SE
AVES.SE	CLAS.SE	FBI.SE	IBS.SE	M2S.SE
AXFO.SE	CONF.SE	FEEL.SE	ICB.SE	MART.SE
AXIS.SE	CONP.SE	FIRE.SE	ICON.SE	MEDA.SE
BALD.SE	CONS.SE	FIX.SE	ICTA.SE	MFAS.SE
BCOR.SE	CTT.SE	FOLK.SE	IMG.SE	MIDW.SE
BEIA.SE	CUST.SE	FORM.SE	INAC.SE	MIND.SE
BEIJ.SE	CYBE.SE	FRIL.SE	INDU.SE	MNW.SE
BELE.SE	DAHL.SE	FROY.SE	INFISE	MODO.SE
BERG.SE	DAYD.SE	FTEC.SE	INVE.SE	MTRS.SE
MUNK.SE	PACT.SE	RESC.SE	SHOT.SE	TPC.SE
NAN.SE	PAND.SE	RHYT.SE	SINT.SE	TPEP.SE
NCAS.SE	PARE.SE	RIND.SE	SKA.SE	TRAC.SE
NCC.SE	PART.SE	RKS.SE	SKF.SE	TREL.SE
NEA.SE	PBIO.SE	RROS.SE	SKIS.SE	TRIM.SE
NEF.SE	PBIO.SE	RSOF.SE	SLAB.SE	TRIO.SE
NETI.SE	PEAB.SE	RTIM.SE	SLT.SE	TRUS.SE
NETR.SE	PEAR.SE	SAAB.SE	SMAQ.SE	TURN.SE
NEWA.SE	PERS.SE	SAEK.SE	SODR.SE	TV4.SE
NEXU.SE	PHOT.SE	SAL.SE	SOF.SE	UNOB.SE
NILG.SE	PIRE.SE	SAND.SE	SOL.SE	UTFO.SE
NN.SE	PLAT.SE	SAPA.SE	SPEN.SE	WAFV.SE
NOBE.SE	POOL.SE	SAPE.SE	SRAB.SE	WALL.SE
NOCM.SE	PREC.SE	SARD.SE	SSAB.SE	VBG.SE
NOFA.SE	PREV.SE	SAS.SE	STEK.SE	WED.SE
NORP.SE	PRIC.SE	SASS.SE	STR.SE	WEST.SE
NTA.SE	PRIF.SE	SASS.SE	STRA.SE	WIHL.SE
NTEL.SE	PROB.SE	SCA.SE	SVDA.SE	VIKT.SE
NTUB.SE	PROE.SE	SCC.SE	SWEC.SE	VIT.SE

OBDU.SE	PROE.SE	SCMI.SE	SWMA.SE	VLT.SE
OBS.SE	PROF.SE	SCOR.SE	SVOL.SE	WM.SE
OEM.SE	PROT.SE	SCRI.SE	SYD.SE	VODK.SE
OM.SE	PRYX.SE	SCV.SE	SYRI.SE	VOLV.SE
OPCO.SE	PWT.SE	SECO.SE	TARG.SE	VPE.SE
OPCO.SE	PYRO.SE	SECT.SE	TAUR.SE	VPE.SE
OPT.SE	PYRO.SE	SECU.SE	TEL2.SE	WSON.SE
OPTB.SE	QMED.SE	SEGE.SE	TGNT.SE	XPON.SE
OPTI.SE	QMED.SE	SEMC.SE	THAL.SE	ZEBG.SE
ORES.SE	REAL.SE	SEND.SE	TICK.SE	ZETE.SE
ORTI.SE	RECU.SE	SENE.SE	TIVO.SE	ZIP.SE
		SGEN.SE	TLIA.SE	

Appendix 10. Survivors

ACTIVE	JM	TAURUS
ALLGON	KAROLIN	TIVOX
ASG	KINNEVIK	TRELLEBG
ASSA	KLIPPAN	TRICORON
ATLAS	LAP POWE	TURNIT
BEIJER	LATOUR	TV4
BERGMAN	MODO	WALLENST
BILIA	MUNKSJÖ	VBG
BRIO	NCC	WMDATA
BURE	NOBELBIO	VOLVO
CELTICA	OEM	ÖRESUND
CUSTOS	PEAB	ÅNGPANNEF.
ELECTROLUX	PRICER	
ENEA	PRIFAST	
ERICSSON	PROVOBIS	
ESSELTE	REALIA	
FAGERLID	ROTTNERO	
FJÄLLRÄVEN	SANDVIK	
GAMBRO	SCA	
GETINGE	SCRIBONA	
GEVEKO	SECO	
GRANINGE	SECURITA	
HÖGANÄS	SENEA	
HALDEX	SINTER	
HENNES	SKANSKA	
HEXAGON	SKF	
HL DISPL	SSAB	
HUFVUDST	STORA	
IBS	SWECO	
INDUSTRI	SVOLDER	
INVESTOR		
INVIK		

Appendix 11. Notation for the basic test variables

P_{jt} = total market value of firm j at time t (three months after the end of the accounting year)

X_{jt} = non-negative total accounting earnings for firm j at period t, adjusted for allocations to untaxed reserves and excluding extraordinary items adjusted for tax effect

BV_{jt} = total book value of owners' equity of firm j at time t, adjusted for untaxed reserves

DIV_{jt} = net dividends of firm j at period t, net dividends = dividends – capital contributions + repurchase of own shares

$$R_L = \sum_{j=1}^{N_L} \frac{R_j}{N_L}$$

$$R_S = \sum_{j=1}^{N_S} \frac{R_j}{N_S}$$

$$R_j = \frac{P_t + DIV_t - P_{t-1}}{P_{t-1}}$$

$$R_H = R_L - R_S$$

EHR = earnings based hedge portfolio return

RHR = returns based hedge portfolio return

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Databases:

Cekia database - CD-Rom version, contact Cekia a.s., Opletalova 5, 1100 Praha 1, Czech Republic, www.cekia.cz

Finlis database - contact SIX AB, Torsgatan 21, 112 90 Stockholm, Sweden, www.six.se

Trust database - online version, contact SIX AB

PART TWO



Chapter 1

Accounting Quality in a Transition Economy: Market- and Accounting-based Attributes of the Accounting Information in the Czech Republic

This study measures accounting quality in a transition economy (the Czech Republic) and a developed market economy (Sweden). Accounting quality is defined in terms of accruals quality, persistence of earnings, predictability of earnings, smoothness of earnings (accounting-based attributes) and value relevance, timeliness and conservatism (market-based attributes). Accounting quality is tested for the transition period 1994-2001. The results show that all attributes of accounting quality except for predictability were inferior in the Czech Republic both in the beginning and at the end of the transition period. Three attributes improved over time (persistence, smoothness and value relevance) and three attributes deteriorated (accruals quality, predictability and conservatism). The results of timeliness tests are inconclusive. The results indicate that improvements in Czech accounting relate to better financial information disclosure rather than improved recognition and measurement principles. The results also show that the attributes appear not to be consistent with each other and are difficult to interpret.

Keywords: attributes of accounting quality, transition economies



1. Introduction

The quality of accounting information matters. Higher accounting quality reduces information asymmetry between the company and its stakeholders and reduces risks connected with investments. Accounting quality is a complex concept. From a broader perspective, it relates to whether accounting satisfies the objective to describe the company's activities and financial position. It reflects how companies provide financial accounting information and whether this information is relevant and reliable as a basis for decision making by the users of the financial statements. This broad perspective is difficult if not impossible to investigate empirically. Instead, previous research has concentrated on individual aspects of accounting quality, let it be value relevance of accounting information (Alford, Jones, Leftwich and Zmijewski, 1993; Harris, Lang and Möller, 1994; Francis and Schipper, 1999), conservatism (Ball, Kothari and Robin, 2000; Bushman and Piotroski, 2005) or accruals quality (Dechow, 1995; Dechow and Dichev, 2002; Francis, LaFond, Olsson and Schipper, 2005). Francis, LaFond, Olsson and Schipper (2004) identify seven important characteristics of accounting information which contribute to higher or lower quality of accounting information: accruals quality, persistence of earnings, predictability of earnings, smoothness of earnings, timeliness, conservatism and value relevance.

This study extends part one and measures the accounting quality in the Czech Republic (a transition economy) and Sweden (a well-developed market economy) in terms of its attributes. The results in part one showed that the value relevance of the Czech accounting improved during the transition period. This study tries to find an answer to the question how other characteristics of accounting quality relate to the increase in the value relevance in the Czech Republic. The purpose of the study is as follows:

The general purpose of the second study is to assess accounting quality in the Czech Republic in terms of accounting- and market-based attributes.

The objective is to investigate whether accounting- and market-based attributes of accounting quality are consistent with the value relevance results in the first study.

Previous studies on accounting quality in transition economies are scarce. Jindrichovska (2001) concluded that there exists a statistically significant relationship between returns and earnings. Hellström (2006) showed that value relevance of accounting information increased during 1994-2001. Jindrichovska (2005) investigated conservatism of accounting information and did not find any significant support for its existence in the Czech Republic. Jermakowicz and Gornik-Tomaszewski (1998) investigated information content in earnings in Poland and Jarmalaite-Pritchard (2002) tested the association between accounting numbers and returns in the Baltic countries. Bagaeva, Kallunki and Silvola (2008) found that Russian listed companies report earnings of relatively good quality in terms of conservatism. Martikainen and Tilli (2007) investigated earnings conservatism in ten transition countries. It seems that previous studies mostly investigated the information content of earnings and earnings conservatism. However, Francis et al. (2004) found that accounting-based attributes of accounting quality (for example, accruals quality and smoothness of earnings) explain more of the variation in the ex ante estimates of cost of equity than market-based attributes (for example, value relevance of accounting numbers and conservatism). Therefore, this study extends the concept of accounting quality and tests a large variety of accounting quality attributes which have not been studied so far in any transition economy.

The Czech Republic is chosen as an example of a country in transition and Sweden is chosen as a benchmark of well-developed market economy (for more details on the choice of the representative countries, see part one). The research period is set to 1994-2001 in order to capture the whole transition period. 1994 was the first year of trading at the Prague Stock Exchange and in 2001, the transition period was completed (Fogelklou, 2003). The samples consist of companies listed on the Prague and Stockholm Stock Exchanges during this period.

The characteristics of accounting quality are divided into two groups: accounting- and market-based attributes. Accounting-based attributes are

influenced only by the quality of the recognition and measurement principles. If they are of high quality, the summary accounting numbers reflect the underlying economic reality no matter to what extent more information is disclosed in the notes or elsewhere. The accounting-based attributes are accruals quality, persistence of earnings, predictability of earnings and smoothness of earnings. Market-based attributes relate the accounting numbers to the market figures (prices and returns). These are influenced both by the quality of the recognition and measurement principles and by the quality and amount of disclosed information. Market-based attributes are value relevance of accounting numbers, timeliness and conservatism. Accounting quality is high if accruals are of good quality, if earnings are persistent, predictable and not smoothed, if accounting information is timely, value relevant and conservative.

In line with the results of study one, the first hypothesis is that the quality of accounting information is in general lower in the Czech Republic than in Sweden. The second hypothesis is that accounting quality improves as a result of progress in transition¹. The main findings of the present study are consistent with the first hypothesis. The results further show that the improvements in accounting quality in the Czech Republic are modest. The Czech earnings are more persistent and less smoothed at the end of the transition period and the accounting numbers are more relevant. However, accruals quality seems to deteriorate; earnings are less predictable, accounting numbers in general are less conservative and the level of timeliness is highly uncertain. These results indicate that the improvements in the value relevance probably relate to a better financial information disclosure rather than improved recognition and measurement principles.

The study makes several contributions to the current research. First, the overall concept of accounting quality has not previously been studied in transition economies. The study thus documents accounting quality in the Czech Republic in a more complete way. Second, it investigates accounting quality and its sources in a transition country in comparison to a well-developed market economy. Comparative studies between transition and market economies are believed to be missing so far. Third, it investigates changes in accounting quality over time. Previous studies on transition economies investigated aspects of accounting quality only at one point of

¹ Some evidence on the progress in transition is provided in part one. For more details, see Transition Reports (1994-2001).

time. Fourth, the study contributes to our knowledge of the methodology of accounting quality research, since it is applied in capital markets which differ from the capital markets of well-developed market economies.

The outline of the paper is as follows. In section 2, the Czech institutional environment is briefly described. In section 3, the concept of accounting quality is specified, attributes of accounting quality are discussed and their operationalisation is elaborated. Section 4 describes empirical data and research period. In section 5, empirical results are discussed and analysed. Section 6 summarizes the findings and conclusions.

2. Comparison of Czech and Swedish accounting

Both accounting-based and market-based attributes are influenced by the recognition and measurement principles. These principles differ in different accounting regimes. The overall accounting quality might thus be influenced by any differences in the generally accepted accounting principles. The major differences between the Czech and Swedish GAAPs are summarized in table 1.

Table 1. Main differences between Czech GAAP and Swedish GAAP (2001).

<i>Item</i>	<i>Czech GAAP</i>	<i>Swedish GAAP</i>
Intangible assets	Internally acquired intangibles often capitalized	Capitalization of internally acquired intangibles not allowed
R&D	Capitalized	Mostly expensed
Long-term projects	Completed contract method	Percentage-of completion method
Leasing and financial instruments	Not recognized due to the requirement of priority of legal form over substance	Recognized
Provisions	Legal provisions common, for example for future repair expenditures	No legal or general provisions allowed. Provisions for pensions, deferred taxes and other provisions exist.
Deferred tax	Voluntary	Compulsory
Group accounting	Many exceptions to the consolidation requirement	Stricter rules
Goodwill	Can be expensed directly or capitalized	Expensing prohibited, only capitalization
Purchase method	Assets not valued at their fair value	Assets valued at their fair value
Substance versus legal form	Accounting should reflect legal form even if the substance is different.	Accounting must reflect the economic substance even if it is different from legal form.
Materiality	Completeness of information is required regardless of materiality.	The materiality of information should be considered.

Source: Accounting Legislation (1995), Heurlin and Peterssohn (2003)

The table shows that there are substantial differences between Czech and Swedish accounting. The recognition and measurement rules for long-term projects, leasing, financial instruments, provisions and deferred taxes are in favor of higher accounting quality of Swedish accounting information. The trend in Swedish accounting towards substance over form can in general be assumed to promote accounting quality. Accounting reflects under such circumstances better the underlying economic events and provides more appropriate information about the company's activities.

The major problem in the Czech accounting is the consolidation rules which allow many exceptions to the consolidation requirements. Subsidiaries with different charts of accounts (for example foreign subsidiaries) do not have to be consolidated. The consolidation exceptions increase the risk of an expropriation of assets. Consolidated financial statements, however, increase value relevance (Harris et al., 1994). Therefore, the insufficient consolidation rules in the Czech Republic might have a negative effect on accounting quality as compared to the Swedish accounting principles. Even if financial statements are consolidated, many differences between the two countries persist, the main one being that assets and liabilities of the acquired

entity are not fairly valued using the purchase method according to the Czech GAAP.

Finally, substantial differences can also be found in the treatment of intangible assets. The Czech recognition principles open up for a potential manipulation of the financial statements by allowing choice between the capitalization versus expensing of the intangible assets.

3. Accounting quality and its attributes

High accounting quality brings about benefits for the company. Francis et al. (2005) showed that firms with lower accounting quality experience higher costs of capital of both debt and equity. The concept of accounting quality is, however, problematic and there is no clear definition. Accounting quality refers to accounting standards and their characteristics (i.e. how accounting captures relevant aspects of the firm and its activities); application of accounting standards by the companies (i.e. the extent to which firms and their managements take advantage of alternative accounting policies); disclosure requirements (accounting policy choices may be insufficiently understood if not properly disclosed); and investors' assessment of accounting information (Penman, 2001; Francis et al., 2004, 2005).

In an empirical research context, these aspects are too broad and difficult to operationalise. There is a vast literature on, for example, earnings manipulation or voluntary disclosure but many issues remain controversial. It is not clear for example what it means that accounting standards capture relevant aspects of the firm and its activities well. It is also difficult to unify the different concepts and measurement into one framework of accounting quality. The analysis of accounting quality in this study is based on the accounting quality attributes defined in Francis et al. (2004). Their accounting quality framework seems so far to be the most complex and complete measurement of accounting quality even though it is not exhaustive and though its individual components may need further elaboration. The framework measures the first two aspects of the broad

concept of the accounting quality, namely the quality of accounting standards and how companies apply them².

The attributes of accounting quality are divided into accounting-based and market-based. Accounting-based attributes are those characteristics of accounting numbers which are influenced only by the recognition and measurement principles. A high level of accounting-based attributes means that the accounting numbers reflect the underlying economic activities well, i.e. the recognition and measurement principles minimize the bias in accounting. The accounting-based attributes are accruals quality, persistence of earnings, predictability of earnings and smoothness of earnings. The measurement of these four concepts does not refer to any market values and excludes any affects of disclosure quality. It is based on the idea that the function of earnings is to allocate cash flows into the accounting periods using accruals.

However, another function of earnings is to reflect economic income as represented by market returns. Market returns are in turn influenced by both the underlying quality of the accounting numbers and the level of disclosed information. Three attributes of accounting quality are market-based which means that they relate the accounting numbers to the market numbers (returns and/or prices). These are the value relevance of accounting numbers, timeliness and conservatism. The quality of these attributes will be a joint function of the accounting recognition and measurement principles and the disclosure quality. If investors are not informed about the accounting numbers, they may fail to recognize whether the quality of these numbers is good or bad. In other words, if the accounting-based attributes are of high quality but investors do not know about it, their valuation may be low. Thus, the quality of market-based attributes is what ultimately matters since they capture the link between the accounting numbers and the investors' perception of the numbers.³

² It does not explicitly measure the disclosure requirements and the investors' assessment of accounting information. These two dimension are, however, implicitly included into the measurement of the market-based attributes of accounting quality.

³ Ultimately, accounting numbers are only as good as the information they provide to the users of the financial statements.

3.1. Accruals quality

The purpose of the income statement is to describe the performance of the firm in terms of revenues and expenses. The recognition and timing of revenues and expenses depends on accounting principles and influences the quality of accounting earnings. Revenues and expenses in an income statement consist of two parts – present cash flow components and accrual components. Penman (2001) argued that earnings which map more closely into cash flows are more desirable. Francis et al. (2005) also stated that earnings with larger cash components are of higher quality.

This would, at first sight, mean that large accruals are bad per se. The purpose of the accruals is, however, to provide an appropriate picture of the income generation in the company by matching revenues and expenses to the correct accounting period and the accruals can thus be seen as a true indicator of the company's performance. They will be negatively related to the present cash flows (the accruals will deviate from the cash flows) and positively related to the past and future cash flows (accruals and cash flows will reverse each other over time).

Accruals transforming the cash flows into revenues and expenses are a better measure of value generation than primitive cash flows. While cash flows are based on real activities, accruals allocation is a function of recognition and measurement principles. This means that the accruals can potentially be subject to manipulation⁴. Much previous research therefore assumes implicitly that all accruals are manipulated. However, two types of accruals may be distinguished – nondiscretionary and discretionary. Nondiscretionary accruals are related to the firm's operations and sales growth, thus have an informational value and are positively associated to earnings quality (high quality accruals). Discretionary accruals are accruals that potentially create noise in earnings, do not add any information to earnings, might be manipulated and thus decrease earnings quality (low quality accruals)⁵. It is therefore not just the size of accruals in itself but rather the character of

⁴ A comprehensive literature on for example meeting or beating the analysts' expectations provides much evidence on accruals manipulation.

⁵ However, this distinction is simplified. For example depreciation is a nondiscretionary accrual which relates to the investments necessary for the operations and the company's growth. It might be subject to measurement errors which will affect the earnings negatively. At this stage though, it is assumed that nondiscretionary accruals are not manipulated while discretionary accruals might be.

accruals that affects the accounting quality. In other words, earnings containing high quality accruals are preferable since they could be of higher quality than cash flows.

Dechow and Dichev (2002) developed a cash flow model for measuring the accruals quality which was also used in Francis et al. (2004, 2005). The cash flow model relates total accruals to cash flow from operations in three periods and thus tries to capture the cash component of the accruals:

$$\frac{TA_{jt}}{A_{jt-1}} = \alpha_0 + \alpha_1 \frac{CFO_{jt-1}}{A_{jt-1}} + \alpha_2 \frac{CFO_{jt}}{A_{jt-1}} + \alpha_3 \frac{CFO_{jt+1}}{A_{jt-1}} + \varepsilon_{jt} \quad (1)$$

where CFO_{jt} = net income before extraordinary items (X_{jt}) - TA_{jt}
 TA_{jt} = total accruals for firm j at time t
 A_{jt-1} = total assets for firm j at time $t-1$

and total accruals are estimated as

$$TA_{jt} = (\Delta CA_{jt} - \Delta CL_{jt} - \Delta Cash_{jt} + \Delta STD_{jt} - Depr_{jt})$$

where ΔCA_{jt} = change in current assets of firm j at time t
 ΔCL_{jt} = change in current liabilities of firm j at time t
 $\Delta Cash_{jt}$ = change in cash of firm j at time t
 ΔSTD_{jt} = change in debt included in current liabilities for firm j at time t
 $Depr_{jt}$ = depreciation and amortization expense for firm j at time t ⁶

Total accruals are a measure of all accruals no matter whether they are discretionary or not. Total accruals are equal to the change in the working capital plus depreciation, in other words the size of the accruals depends on the company's growth and asset valuation methods. Accruals can be seen as temporary adjustments of realized cash flows because all revenues and expenses ultimately become inflows and outflows of cash. Accruals are negatively related to current cash flows and positively related to past and future cash flows (Dechow and Dichev, 2002). The error term ε_{jt} in (1) captures the extent to which accruals do or do not map into cash flow and thus the standard deviation of residuals can be used as a measure of their quality. The larger the standard deviation of residuals, the poorer the

⁶ All items are calculated as total values in all tests.

accruals quality is and vice versa. The reason is that good accruals allocate revenues and expenses to correct periods and are related to cash flows in the previous and following years. If the standard deviation is small, it means that the matching of accruals and past/present and future cash flows is good (which can be assumed if accruals are related to the activities of the company). If the standard deviation is large, the accruals probably include items not related to the actual activities of the company and therefore do not relate to cash flows.

Robustness tests of the accruals quality have been made based on Dechow (1995) who measured the association between total accruals and operating activities of the firm:

$$\frac{TA_{jt}}{A_{jt-1}} = \alpha_0 \frac{1}{A_{jt-1}} + \alpha_1 \frac{(\Delta REV_{jt} - \Delta REC_{jt})}{A_{jt-1}} + \alpha_2 \frac{PPE_{jt}}{A_{jt-1}} + \varepsilon_{jt} \quad (1a)$$

where ΔREV_{jt} = change in revenue for firm j and time t
 ΔREC_{jt} = change in accounts receivable for firm j at time t
 PPE_{jt} = property, plant and equipment for firm j at time t

If assets are valued correctly, total accruals should be associated with the company's growth – that is the change in revenues (adjusted for receivables) and tangible assets needed for the operations. This test separates the nondiscretionary and discretionary accruals better than (1) since it relates total accruals to the company's activities. The more the total accruals can be explained by the company's growth, the more nondiscretionary accruals and the less discretionary accruals they include. If a large proportion of the total accruals is explained by nondiscretionary accruals, accruals quality will be good.

The accruals quality tests chosen in this study are two models among others frequently used in previous literature and methodological issues inherent in the tests might be discussed. However, it is not a purpose of this study to develop a new theoretical model of accruals quality testing.⁷

⁷ For example, a controversial issue might be the measurement of the nondiscretionary and discretionary accruals, the relationship between the growth and nondiscretionary accruals, the measurement of growth related to the accruals and the differences between the cash flow accruals quality model, modified Jones model and other accruals quality model.

Czech accounting provides many opportunities to create poor quality accruals. Two concrete examples of accounting methods that might affect the quality of accruals are legal provisions which do not relate to the activities of the companies but are rather an indirect tax relief, and inventory valuation (the inventory is often carried at a higher value in the balance sheet while the correct value is provided in a note). These accounting methods are often a result of the close link between Czech accounting and tax legislation.

The hypothesis is that accruals quality is lower in the Czech Republic than in Sweden. Assuming that both accounting standards setters and companies strive for better accounting during the transition period, the hypothesis is also that accruals quality has improved during the transition process.

3.2. Persistence and predictability

The recognition and timing of revenues and expenses influence the persistence and variability of earnings which in turn influences the predictability of earnings. Persistence of earnings captures recurring components of earnings. It is desirable since it makes forecasting of future performance of the firm easier. Recurring items are valuation-relevant while non-recurring items are not. In previous research, persistence of earnings has been measured as the slope coefficient in a regression of current earnings on lagged earnings (Lev, 1983; Francis et al., 2004):

$$\frac{X_{jt}}{A_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt-1}}{A_{jt-1}} + \tilde{v}_{jt} \quad (2)$$

where X_{jt} = net income before extraordinary items adjusted for taxes for firm j at time t
 A_{jt-1} = total assets for firm j at time t

If earnings are persistent and include only recurring items, the slope coefficient of the past earnings should equal one, if earnings are completely transitory, the slope coefficient should approach zero. Earnings with a higher portion of recurring items and few or no transitory items are perceived as being of higher quality.

In real life, completely persistent earnings or completely transitory earnings do not exist. The question is also to what extent items can be classified as recurring or non-recurring. The classification depends on the time perspective – in the long-run, only few items can be treated as non-recurring, however, in the short run, non-recurring items may be more numerous. Equation (2) tests the short run perspective. In the short run, a company may include non-recurring items in the income statement in order to manage the earnings⁸. Non-recurring items are for example restructuring charges, gains and losses on sales of fixed assets or effects of changes in accounting policies. Czech accounting provides a number of possibilities to accounting for non-recurring items. Restructuring costs are for example recognized more often than in Swedish companies.⁹ Therefore, there seems to be a larger transitory noise in the Czech accounting earnings and they should therefore be less persistent than Swedish earnings.

Equation (2) is used also for measuring predictability. Predictability has a positive impact on accounting quality since earnings which can be used for predictions of the company's future are of higher quality than earnings which cannot be used for prediction purposes. Predictability is measured as the size of the prediction error from the time-series earnings model (2) (Lipe, 1990; Francis et al., 2004):

$$\text{Predictability} = \sqrt{\sigma^2 \left(\hat{v}_{jt} \right)} \quad (3)$$

where \hat{v}_{jt} is the calculated v_{jt} from equation (2)

The larger the prediction error, the less predictable are the earnings and vice versa. The prediction error is estimated based on the regression used for estimating persistence of earnings and thus predictability and persistence of earnings are interconnected. Intuitively, higher persistence of earnings should lead to higher predictability of earnings since non-recurring items are more difficult to forecast. Therefore, the predictability of the Czech earnings should be lower than the predictability of Swedish earnings.

⁸ In the long run, this strategy should not pay off.

⁹ Observation based on the annual reports of the sample companies.

3.3. Smoothness

Smoothness of earnings is a complex issue and its effect on earnings quality depends on the source of smoothing. Ball et al. (2000) stated that code-law accounting gives managers considerably more possibilities for timing income recognition and income smoothing which decreases the earnings quality. The managers smooth the earnings for example by varying the application of accounting standards or by influencing operating financing and investment decisions; for example deferring discretionary expenditures. Code-law countries are also rarely known for fair value accounting trends. If fair value accounting is assumed to be more value relevant for investors, higher volatility would be a good attribute and smoothness would be a bad attribute. Francis et al. (2004) and Leuz, Nanda and Wysocki (2003) argued, on the other hand, that smoothness is desirable since managers use their private information and smooth transitory fluctuations. In such a way, they achieve a more representative and useful earnings number.

The measure of earnings smoothness is a measure of the volatility of earnings relative to a benchmark. Francis et al. (2004) and other studies use cash flow from operations as a benchmark:

$$Smoothness = \frac{\sigma\left(\frac{X_{jt}}{A_{jt-1}}\right)}{\sigma\left(\frac{CFO_{jt}}{A_{jt-1}}\right)} \quad (4)$$

where X_{jt} = net income before extraordinary items adjusted for taxes for firm j at time t

A_{jt-1} = total assets for firm j at time t

CFO_{jt} = net income before extraordinary items (X_{jt}) - TA_{jt}

High values of the ratio mean less earnings smoothing and low values mean more earnings smoothing. The question is whether cash flows are a good benchmark for the measurement of the smoothness of earnings. The

assumption behind the choice of the benchmark is that cash flows should be more stable than earnings because they are more difficult to manipulate¹⁰.

Czech accounting provides a number of possibilities to smooth the earnings. One example is the generous alternative treatments of intangible assets (capitalization versus expensing), another one is the usage of non-recurring items. A review of a number of Czech annual reports from the transition period revealed that practically all companies accounted for these items - both positive and negative - every year. This, combined with the observation of relatively stable earnings¹¹, leads to suspicion that non-recurring items are used in order to smooth the earnings. This is in line with the position of Ball et al. (2000).¹² The hypothesis is thus that Czech earnings are more smoothed than Swedish accounting earnings and this has a negative effect on the accounting quality.

3.4. Value relevance

Value relevant information is “used as the basis for predicting future financial position and performance and other matters in which users are directly interested” (IAS Framework for the preparation and presentation of financial statements, 2001). Value relevance is defined as the ability of financial statement information to capture or summarize information that affects share values and is tested as a statistical association between market prices and accounting numbers.

The value relevance was investigated in part one. For the purposes of this study, two value relevance tests are chosen: the logarithmic price regression

¹⁰ Note that the cash flow variable is calculated as earnings minus total accruals which means that the cash flows measurement excludes the potential manipulation that the total accruals might be subject to.

¹¹ See the descriptive results in part one.

¹² It is not consistent to believe that accruals would be manipulated but earnings would be smoothed in order to give a more representative view of a company's performance.

$$\ln P_{jt} = \alpha_0 + \alpha_1 \ln X_{jt} + \alpha_2 \ln BV_{jt} \quad (5)$$

where P_{jt} = total market value for firm j at time t

X_{jt} = net income before extraordinary items adjusted for taxes for firm j at time t

BV_{jt} = total book value of equity for firm j at time t

and returns regression:

$$\frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt}}{P_{jt-1}} + \alpha_2 \frac{X_{jt} - X_{jt-1}}{P_{jt-1}} \quad (6)$$

where P_{jt} = total market value for firm j at time t

DIV_{jt} = dividends for firm j at time t

X_{jt} = net income before extraordinary items adjusted for taxes for firm j at time t

X_{jt-1} = net income before extraordinary items adjusted for taxes for firm j at time t-1

If the statistical association between the market numbers and the accounting numbers in terms of explanatory power is large, the value relevance of the accounting numbers is high. The accounting numbers are value relevant if their coefficients are significant. Czech accounting principles seemed to be inferior to the Swedish accounting principles throughout the whole transition period and the value relevance should thus be lower in the Czech Republic.

3.5 Timeliness

Accounting information may be value relevant although it is not timely (Barth, Beaver and Landsman, 2001). This does not decrease the importance of value relevance but suggests that the concept of timeliness should be investigated as a separate attribute of accounting quality (timeliness is one of the characteristics of accounting defined in the IAS Conceptual Framework). Timeliness of accounting information includes both frequency of accounting information and the speed with which accounting information is published. The sooner the information reaches the market, the sooner it can be incorporated into the investors' valuation models. More timely information

increases the overall accounting quality. However, timeliness is not a straight-forward concept and different approaches to its measurement exist.

Alford et al. (1993) employed a hedge portfolio investment strategy and measured timeliness as the cumulative monthly abnormal returns. The proportion of the 15-month return of a hedge portfolio that was earned by the end of each month was compared to the total 15-month returns. The higher the proportion at the end of each month, the more timely accounting information can be assumed.

Others inferred timeliness from the way companies' accounting earnings incorporate their economic income over time. The difference between the accounting earnings and economic income is determined by the recognition principles. While economic income incorporates immediately changes in expectations about future cash flows, accounting earnings incorporate them gradually. Therefore, accounting income lags economic income. Warfield and Wild (1992) measured timeliness as an earnings response coefficient in a regression of market returns and present and future accounting earnings. Market returns can be seen as a proxy for the economic income and incorporate other information that is not captured in accounting earnings at the time being (but is incorporated later).

Bushman, Chen, Engel and Smith (2004) and Ball et al. (2000) measured timeliness as explanatory power of a reversed returns regression:

$$\frac{X_{jt}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} \quad (7)$$

where X_{jt} = net income before extraordinary items adjusted for taxes for firm j at time t

P_{jt} = market price for company j at time t

DIV_{jt} = dividends for company j at time t

The higher the explanatory power of equation (7) is, the more timely accounting earnings can be assumed to be since they capture a larger proportion of the economic events. The recognition principles applied in Czech accounting imply a slower incorporation of the economic events into the accounting earnings and thus decrease the timeliness of the information. An example may be the Czech principle of postponing all unrealized gains until they are realized. Warfield and Wild (1992) stated that the lag between

accounting and economic returns is particularly strong in industries with large fixed assets due to the historical cost principle. The Czech sample contains many capital intensive companies which might further decrease the timeliness.

Previous research (for example Ball et al., 2000) showed that the concept of timeliness as specified by equation (7) is closely related to the concept of conservatism since timeliness is higher for bad news companies (companies with losses) than for good news companies (companies with gains). This concept is discussed in the following section.

3.6. Conservatism

The concept of accounting conservatism is assumed to be important for the accounting quality. However, accounting conservatism is almost as complex a concept as accounting quality itself. Callen, Hope and Segal (2006) distinguished between differential timeliness (conditional conservatism) of income statement and unconditional conservatism as reflected by the market-to-book ratio (balance sheet conservatism). Depending on what is meant by the concept of conservatism, different research methods are used. Harris et al. (1994) defined conservatism as the magnitude of the coefficients on earnings and book value of equity in a price regression. They suggested that larger coefficients mean more conservative accounting. The same approach was used by Joos and Lang (1994). Gray and Radebaugh (1997) developed a conservatism index which measures the differences between two generally accepted accounting principles using a double set of financial statements. Penman and Zhang (2002) developed their own measure of conservatism which is based on LIFO reserves, estimated R&D assets and estimated advertising assets. Basu (1997) defined accounting as conservative if it recognizes losses faster than gains. This approach was used for example in Ball et al. (2000), Francis et al. (2004) and Bushman and Piotroski (2005).

Thus, depending on how the researcher defines accounting conservatism and which method is used, the results and statements on accounting conservatism might differ. For example, Ball et al. (2000) showed that U.S. earnings are more conservative compared to German accounting earnings and thus possess higher quality. On the other hand, Harris et al. (1994) concluded that German accounting earnings and book value of equity are more conservative and therefore are of poorer quality. Both approaches thus classify higher

quality for the U.S. accounting and lower quality for German accounting; however, they use conservatism as an argument in opposite directions. It seems therefore that the ambiguity of the concept has not been resolved.

A possible interpretation of these results is the fact that conservatism might be perceived both positively and negatively. A bad conservatism is such when companies adjust earnings and create hidden reserves. Therefore, in countries where possibilities of creating hidden reserves exist, balance sheets will appear more conservative. A good conservatism is when the companies do not anticipate any profits but anticipate all losses which tends to impose higher requirements on verification. In such a case bad news (losses) are recognized immediately while good news (gains) are not. The Basu (1997) conservatism concept measures this type of conservatism. The concept of conservatism tested in this study is in line with the Basu conservatism:

$$\frac{X_{jt}}{P_{jt-1}} = \alpha_0 + \alpha_1 D_{jt} + \beta_0 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} + \beta_1 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} * D_{jt} + \varepsilon_{jt} \quad (8)$$

where D_{jt} is a dummy variable and equals 1 if return < 0 and equals 0 if return > 0.

Regression (8) captures the distinction between the bad and good news¹³. The slope coefficient β_1 measures the difference in sensitivity of earnings to negative and positive returns, in other words whether bad news are incorporated more quickly than good news. β_1 should therefore be higher than β_0 if accounting is conservative and bad news indeed are incorporated more quickly. Basu (1997) further suggests a sensitivity conservatism index as follows:

$$Conservatism = -\frac{(\beta_0 + \beta_1)}{\beta_0}$$

where β_0 and β_1 are coefficients from the regression (8). The larger the value of the conservatism measure, the less conservative are the accounting earnings¹⁴. This is consistent with the previous claim that the higher the β_1

¹³ The distinction between the good news and bad news observations can be made already in regression (7) by running the regression separately for bad news and good news companies.

¹⁴ The value is larger with less conservative accounting since the conservatism index is negative.

(the slope of negative returns), the more conservative accounting methods are used. However, this conservatism measure seems to be rather sensitive to the absolute value of the coefficients, particularly the coefficient β_0 .

A higher level of conservatism can be suggested for the Czech Republic since no unrealized gains can be recognized (that is bad news are recognized immediately while good news are postponed).

4. Data and samples

The Czech data are collected from financial database Ariadna¹⁵. Financial companies are excluded from the sample because the structure and the accounting practices for these companies differ substantially from non-financial firms. The first whole year for which data is available is 1994. Year 2001 is the last year when financial statements were prepared in accordance with the Accounting Act from 1991. The research period is divided into two equally long periods, 1994-1997 and 1998-2001. A comparison of the two periods is made in order to investigate the change over time. The Czech sample includes only those companies that have been listed at the Prague Stock Exchange over the whole research period (totally 72 companies). The Swedish data are extracted from Finlis¹⁶, Trust and Datastream databases. In the Swedish sample, all companies (not only survivors) were included. The total Swedish sample includes 310 companies in the first research sub-period and 271 companies in the second sub-period.

The different treatment of the two samples needs to be taken into account due to a potential survivor bias. It can be assumed that a survivor company sample includes more stable companies which provide better accounting information. Therefore, a control sample of survivor companies has been tested for the Swedish case. The results (not reported here) are not significantly different from the results for the total sample. The samples have also been adjusted for outliers. First, observations that lie outside five standard deviations from the mean value of all the regression variables were eliminated, the regression was run again and observations that lie outside three standard deviations from the new mean have been excluded. This

¹⁵ Provided by Cekia, www.cekia.cz

¹⁶ Provided by SIX AB, www.six.se

procedure eliminated between 1-8% of the observations depending on the quality of data available for the respective country, year and type of test.

5. Empirical results

Appendix 1 provides descriptive results for the two samples. The Czech companies are in general smaller. Many of the companies listed at the Prague Stock Exchange are local suppliers of energy, municipal and health services. The Swedish sample includes many large multinational companies. Since it has been shown in prior literature that size is in general related to accounting quality, this also indicates that Swedish firms on average might have better accounting quality. The difference in size and orientation can also be expected to have implications for the growth potential of the companies. The local orientation of the Czech companies allows only a modest growth. Furthermore, energy supply is a regulated industry, which sets limitations on growth of many companies listed at the PSE (growth variables are included in the appendix). Czech companies seem to have low but stable profitability. Swedish firms are more profitable particularly in the first period. One potential reason of the low return on equity is the high cost of debt for the Czech companies.

There seems to be higher expectations on future profitability of Swedish companies as expressed in price-earnings ratios and market-to-book ratios. The higher market-to-book ratio in Sweden is influenced substantially by the industry structure due to high proportion of companies with large unrecorded assets. Large unrecorded assets and large intangible assets might affect accounting quality. The average market-to-book ratio in the Czech Republic is below one in both periods. The book value of equity was often set ad hoc in the privatisation process and did by no means correspond to the market value. The level of the ratio was also influenced by the Czech accounting measurement principles which allowed a relatively high valuation of assets.

5.1. Accruals quality

Table 2 summarizes the results of the accruals quality test. Accruals quality is measured by the standard deviation of residuals of regression (1) which relates total accruals to cash flows from operations from three periods – past, present and future. The larger the standard deviation is, the lower is the quality of accruals and earnings.

The coefficients of current cash flows are negative and coefficients of past and future cash flows are positive, that is accruals are negatively related to present cash flows and positively to past and future cash flows as predicted. All coefficients are significant with the exception of past cash flows in the first Czech period. The standard deviation of residuals – the measure of accruals quality – is higher for the Czech sample. Thus it seems that the accruals quality is lower in the Czech Republic than in Sweden in the first period. The standard deviation increased in both countries, it seems therefore that the accruals quality decreased over time. The decrease has been larger in Sweden than in the Czech Republic and the quality of accruals seems to be comparable in the two countries by 2001.

The reason for the decrease in accruals quality might be twofold – earnings management increased over time or the industry structure contributed to poorer accruals since the new economy (industries with a high share of intangible assets and/or unrecorded assets) makes it more difficult to make correct estimates of accruals. While the second explanation is plausible for the Swedish sample it is hardly probable for the Czech sample. The industry structure review in Appendix 1.B. reveals that such companies are scarce in the Czech Republic. Thus, although an improvement in the accounting quality would be expected during the transition period, it rather seems that earnings management increased in the Czech Republic.

Table 2. Accruals quality

$$\frac{TA_{jt}}{A_{jt-1}} = \alpha_0 + \alpha_1 \frac{CFO_{jt-1}}{A_{jt-1}} + \alpha_2 \frac{CFO_{jt}}{A_{jt-1}} + \alpha_3 \frac{CFO_{jt+1}}{A_{jt-1}} + \varepsilon_{jt}$$

where CFO_{jt} is net income before extraordinary items (X_{jt}) - TA_{jt} , TA_{jt} is total accruals for firm j at time t , A_{jt-1} is total assets for firm j at time $t-1$, total accruals are $TA_{jt} = (\Delta CA_{jt} - \Delta CL_{jt} - \Delta Cash_{jt} + \Delta STD_{jt} - Depr_{jt})$ where ΔCA_{jt} is change in current assets of firm j at time t , ΔCL_{jt} is change in current liabilities of firm j at time t , $\Delta Cash_{jt}$ is change in cash of firm j at time t , ΔSTD_{jt} is change in debt included in current liabilities for firm j at time t and $Depr_{jt}$ is depreciation and amortisation expense for firm j at time t

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	Czech Republic						Standard deviation of residuals
	n	Adj. R^2	α_0	α_1	α_2	α_3	
1994-1997	227	69.4%	-0.008	0.052	-0.762***	0.113***	0.04648
1998-2001	241	67.7%	-0.022***	0.222***	-0.757***	0.080***	0.05019
	Sweden						
	n	Adj. R^2	α_0	α_1	α_2	α_3	
1994-1997	227	41.0%	0.005*	0.114**	-0.553***	0.169***	0.03053
1998-2001	336	41.4%	-0.019***	0.208***	-0.454***	0.150***	0.04863

The results of the robustness test (not tabulated here) which used the Dechow (1995) model (1a) are consistent with the results of regression (1). They show higher accruals quality for the Swedish sample and a slight decrease of the accruals quality over time. In general, however, the test renders poorer results with lower explanatory powers and more insignificant coefficients as compared to results in table 2.

5.2. Persistence and predictability

Table 3 summarizes the results of the persistence and predictability tests. The results show that the slope coefficient increases for the Czech sample from 0.422 in the first period to 0.492 in the second period. The slope coefficient for the Swedish sample is higher, 0.776 for the first period and 0.931 for the second period. This would suggest that Swedish earnings were substantially more persistent than the Czech earnings and there seems to be more transitory noise in the Czech accounting earnings. In both countries, persistence increased over time which would suggest that the use of non-recurring items as a potential manipulation of earnings decreased.

The predictability results show that Czech earnings were more predictable than Swedish earnings. The predictability also decreased over time in both countries. These might seem to be somewhat puzzling results with respect to the fact that earnings persistence increases at the same time. The results, however, show that while the slope coefficient on past earnings increases over time (earnings include less nonrecurring items), the variation around the slope and the estimated errors for the observations increase (see Figure 1).

Robustness tests were conducted in order to see whether the results are sensitive to the choice of deflator (results not reported here). Book value of owners' equity, market value and sales were used as alternative deflators. The first two deflators showed similar results. However, deflating earnings with sales gave a slightly different picture. The slope coefficient increased for the Czech sample (the same result as in table 5), however, for the Swedish sample the slope coefficient decreased.¹⁷

¹⁷ The earnings deflated by the book value of equity and the market value of equity provide a certain returns measure while earnings deflated by sales provide a margin measure which does not take into account the capital turnover. Whether or not this might be a reason for the different results might be investigated in the future.

Table 3. Persistence

$$\frac{X_{jt}}{A_{jt-1}} = \alpha_0 + \alpha_1 \frac{X_{jt-1}}{A_{jt-1}} + \tilde{v}_{jt} \quad (2)$$

$$\text{Predictability} = \sqrt{\sigma^2(\hat{v}_{jt})} \quad (3)$$

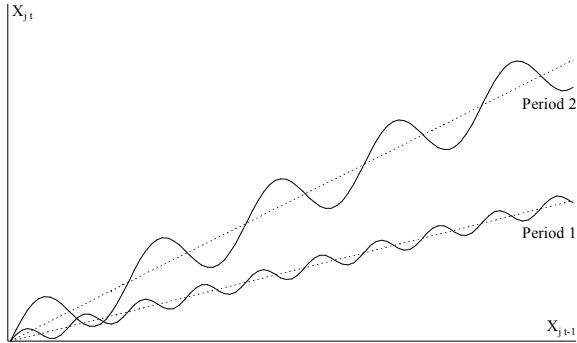
where X_{jt} is net income before extraordinary items adjusted for taxes for firm j at time t , A_{jt-1} are total assets for firm j at time t and \hat{v}_{jt} in equation (3) is the calculated v_{jt} from the equation (2)

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

Period		Czech Republic			
	n	Adj. R ²	α_0	α_1	
1994-1997	233	22.7%	0.026***	0.422***	
1998-2001	252	20.5%	0.022***	0.492***	
		Prediction error			
1994-1997	233	0.042			
1998-2001	252	0.061			
		Sweden			
Period	n	Adj. R ²	α_0	α_1	
1994-1997	789	36.3%	0.021***	0.776***	
1998-2001	866	28.1%	-0.046***	0.931***	
		Prediction error			
1994-1997	789	0.073			
1998-2001	866	0.373			

Figure 1. Persistence and predictability

The straight lines are slope coefficients for period 1994-1997 respectively 1998-2001. The curves oscillating around the slope lines should give an idea about how the variation (higher unpredictability) might look like.



5.3. Smoothness

The results of smoothness tests in table 4 show that Czech accounting earnings are more smoothed than Swedish earnings as predicted. Together with the results of accruals quality it seems that Czech companies to a larger extent use accruals for manipulating the earnings. The results also support the suspicion that non-recurring items are used by the Czech companies in order to smooth the accounting earnings. Volatility of the Czech earnings, however, increased over time which means that the Czech earnings are being less smoothed at the end of the transition period.

Table 4. Smoothness

$$\text{Smoothness} = \frac{\sigma\left(\frac{X_{jt}}{A_{jt-1}}\right)}{\sigma\left(\frac{CFO_{jt}}{A_{jt-1}}\right)} \quad (4)$$

where X_{jt} is net income before extraordinary items adjusted for taxes for firm j at time t , A_{jt-1} are total assets for firm j at time t and CFO_{jt} is net income before extraordinary items (X_{jt}) – total accruals (TA_{jt})

	<i>Czech Republic</i>		<i>Sweden</i>	
	n	Smoothness	n	Smoothness
1994-1997	237	0.504	285	0.725
1998-2001	246	0.623	482	0.964

5.4. Value relevance

The results of the value relevance tests in table 5 show that the value relevance of the Czech accounting information increased during the transition period (explanatory power increased from 63.7% to 72.9% in the price regression, and from 2.4% to 14.1% in the returns regression). In the beginning of the transition period, value relevance of the Czech accounting information is lower than the value relevance of the Swedish accounting information. However, it seems as if Czech accounting caught up and in the second period, returns regression actually exhibits higher value relevance for the Czech sample (14.1% for the Czech sample compared to 4.3% for the Swedish sample) and the price regression results are comparable.

Table 5. Value relevance

Price regression

$$\ln P_t = \alpha_0 + \alpha_1 \ln X_{jt} + \alpha_2 \ln BV_{jt}$$

Returns regression

$$\frac{P_{jt} + d_{jt} - P_{jt-1}}{P_{jt-1}} = \alpha_0 + \alpha_{1t} \frac{X_{jt}}{P_{jt-1}} + \alpha_{2t} \frac{X_{jt} - X_{jt-1}}{P_{jt-1}} + \varepsilon_{jt}$$

where P_{jt} is the total market value for firm j at time t , X_{jt} is net income before extraordinary items adjusted for taxes for firm j at time t , BV_{jt} is the total book value of equity for firm j at time t and DIV_{jt} are dividends for firm j at time t

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

Period	Czech Republic				Sweden			
	n	Adj.R ²	lnX _t	lnBV _t	n	R ²	lnX _t	lnBV _t
Price regression								
1994-1997	204	63.7%	0.491***	0.665***	680	88.5%	0.304***	0.643***
1998-2001	271	72.9%	0.502***	0.577***	447	73.8%	0.208***	0.636***
Returns regression								
	n	Adj. ²	levels	changes	n	R ²	levels	changes
1994-1997	161	2.4%	1.273**	-0.756	727	6.4%	1.608***	-0.329
1998-2001	226	14.1%	1.877***	-0.651**	347	4.3%	2.901***	1.199

The results from the value relevance tests, particularly the returns regression for the Swedish sample 1998-2001, seem to be influenced by the high market volatility around the millennium. Therefore, an alternative robustness test was conducted based on a hedge portfolio investment strategy which adjusts for market volatility (Francis and Schipper, 1999). A hedge portfolio was based on a pre-knowledge of earnings changes and abnormal returns that can be earned with this strategy have been measured. The results show that the abnormal return that could have been earned on the hedge portfolio was 22.1% for the Swedish sample 1994-1997 and 41.0% for 1998-2001. For the Czech sample, it was -8.4% and 22.1% respectively. These abnormal returns were then compared to returns that could have been earned on a perfect pre-knowledge of market returns. The results show that 19.3% respectively 29.1% of these market returns could have been explained by a pre-knowledge of earnings changes in Sweden (first and second period) while it was only -7.2% and 18.6% in the Czech Republic (for more details,

see appendix 2). In other words, adjusting for the market volatility, the results show higher value relevance of Swedish accounting earnings for the whole research period.

5.5. Timeliness

The timeliness test in equation (7) is run for the total samples and also separately for bad news companies and good news companies. The bad news sample includes observations with negative returns only, while good news sample includes observations with positive returns only. This test is related to the test of conservatism since it is assumed that if accounting is conservative, earnings are more timely for bad news companies than for good news companies.

Table 6 shows that Czech accounting earnings were less timely in the beginning of the transition period and more timely than Swedish earnings at the end of the period.¹⁸ However, if the regression is tested separately for the bad news and good news samples, the picture becomes different. It turns out that Swedish earnings are more timely for the bad news sample in both periods and that Czech earnings are more timely for the good news. Thus, the result for the total samples seems to be driven by the difference in the earnings of the good news companies.

The timeliness of earnings in bad news and good news companies, however, is of different quality. Timely earnings in the bad news companies mean that the companies recognize losses more quickly which can be perceived as positive. Timely earnings in the good news companies mean that the companies recognize gains more quickly which can be perceived as negative since it might lead to artificial increase in earnings. Thus, the concept of timeliness should either be modeled differently or the interpretation of the results should be linked to the concept of conservatism.

¹⁸ The factors that might influence these results might be the same factors as behind the results of returns regression in section 5.4. The market volatility and the great turbulence on the Swedish capital markets had a negative effect on the association between accounting and market numbers. Also, the industry composition of the samples might affect the results and differences.

Table 6. Timeliness

$$\frac{X_{jt}}{P_{jt-1}} = \alpha_0 + \alpha_1 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}}$$

where X_{jt} are the accounting earnings for company j at time t , P_{jt} is the market price for company j at time t and DIV_{jt} is the dividends for company j at time t
 *** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

<i>Period</i>	<i>Czech Republic</i>			
All observations	n	Adj.R ²	α_0	α_1
1994-1997	209	2.1%	0.063***	0.066**
1998-2001	243	12.6%	0.084***	0.209***
Bad news only				
1994-1997	112	3.9%	0.104***	0.157***
1998-2001	119	4.2%	0.118***	0.274***
Good news only				
1994-1997	92	-0.8%	0.108***	-0.024
1998-2001	123	16.2%	0.062***	0.257***
	Sweden			
All observations				
1994-1997	738	4.3%	0.054***	0.046***
1998-2001	592	3.7%	0.033***	0.057***
Bad news only				
1994-1997	232	11.9%	0.061***	0.113***
1998-2001	325	6.6%	0.057**	0.123***
Good news only				
1994-1997	481	0%	0.085***	0.003
1998-2001	270	2.9%	0.058**	-0.013***

5.6. Conservatism

Table 7 reports the results of the Basu's conservatism measure. If accounting is conservative, the coefficient on the negative returns (β_1) should be higher than the coefficient on total returns.

Table 7. Conservatism

$$\frac{X_{jt}}{P_{jt-1}} = \alpha_0 + \alpha_1 D_{jt} + \beta_0 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} + \beta_1 \frac{P_{jt} + DIV_{jt} - P_{jt-1}}{P_{jt-1}} * D_{jt} + \varepsilon_{jt}$$

where X_{jt} are the accounting earnings for company j at time t , P_{jt} is the market price for company j at time t , DIV_{jt} are the dividends for company j at time t and D_{jt} is 1 if return < 0 and equal to 0 otherwise

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

Period	Czech Republic					
	n	Adj.R ²	α_0	α_1	β_0	β_1
1994-1997	205	2.3%	0.110***	-0.006	-0.031	0.189**
1998-2001	240	11.4%	0.069*	0.020	0.228***	-0.026
Period	Sweden					
	n	Adj.R ²	α_0	α_1	β_0	β_1
1994-1997	738	7.2%	0.080***	-0.026***	0.004	0.092***
1998-2001	592	2.7%	0.051**	0.025	-0.031	0.276***

The results show that Czech accounting earnings are conservative in the first period but not in the second period. Swedish earnings are conservative in both periods and the degree of conservatism increases over time. It was stated previously that a conservatism measure $Conservatism = -\frac{(\beta_0 + \beta_1)}{\beta_0}$ can

be used which compares the level of coefficients on returns and negative returns. This measure appears to be highly sensitive to the absolute levels of the coefficients, particularly when coefficients are negative or close to 0. The conservatism measure was calculated for equation (8) but due to the low and/or negative coefficients, the ratio values were not suitable for analysis (results not reported here). The calculations, however, raised questions on the model structure. The first question is to what extent statistical models

based on returns – earnings relations are suitable for tests of turbulent periods (Sweden 1999-2001 and an early transition period in the Czech Republic). This issue was discussed in more detail in part one. The second issue is the complexity and ambiguity of the conservatism concept.

The regression of equation (8) tested conservatism of the income statement. However, as stated before, also the balance sheet might be conservative. In table 8, the market-to-book ratios are reported for the two countries and the two periods. The market-to-book ratio is influenced by the growth potential of the company and by the accounting measurement bias. While the Swedish market-to-book ratio is substantially above one and thus provides evidence of conservatism in accounting, the Czech market-to-book is below zero. The reasons are two - first, the initial estimation of the book value of equity in the privatization process and second, the lack of conservatism in the Czech accounting particularly in the second research period. If Czech accounting was conservative, the market-to-book ratio would have increased in the second period since the market and accounting numbers would adjust for the initial mismatch in the long run. Thus, Czech accounting seems to be less conservative even if balance sheet conservatism is considered.

Table 8. Market-to-book ratio

	<i>Czech Republic</i>		<i>Sweden</i>	
	<i>1994-1997</i>	<i>1998-2001</i>	<i>1994-1997</i>	<i>1998-2001</i>
Market- to- book ratio	0.74	0.57	2.35	2.67

6. Summary and conclusions

The study aimed at answering two questions. The first question was whether accounting quality in a transition economy (the Czech Republic) is comparable to accounting quality in a well-developed market economy (Sweden). The assumption was made that accounting quality is high when accruals quality is high, earnings are more persistent, more predictable and less smoothed, when value relevance of accounting numbers is high, accounting earnings are more timely and more conservative.

Table 9 summarizes the comparison between the two countries. Overall accounting quality is lower in the Czech Republic than in Sweden in both periods. The only attribute of higher quality in the Czech Republic is the

predictability of earnings which might but does not have to be related to the higher smoothness of the Czech earnings. The attribute of timeliness should be interpreted with caution since the results depend on whether the tests are performed for the total samples or whether the sample is divided into bad news and good news.

Table 9. Comparison of accounting quality between the Czech Republic and Sweden

H = higher quality of the attribute as compared to the other country, the (H) means that the results are ambiguous

	<i>1994-1997</i>		<i>1998-2001</i>	
	<i>Czech Republic</i>	<i>Sweden</i>	<i>Czech Republic</i>	<i>Sweden</i>
Accruals quality		H		H
Persistence		H		H
Predictability	H		H	
Smoothness		H		H
Value relevance		H		H
Timeliness		H	(H)	(H)
Conservatism		H		H

The second question was whether the accounting quality has improved over the transition period. Table 10 summarizes the results of the development of the accounting quality in the two countries. Czech earnings are more persistent and less smoothed in the second research period and accounting information is more value relevant and timely. At the same time accruals quality and predictability decrease. Czech accounting is also non-conservative.

Table 10. Comparison of accounting quality in the Czech Republic over time

H = higher quality of the attribute as compared between the two periods, the (H) means that the results may be interpreted in several ways

	<i>Czech Republic</i>		<i>Sweden</i>	
	<i>1994-1997</i>	<i>1998-2001</i>	<i>1994-1997</i>	<i>1998-2001</i>
Accruals quality	H		H	
Persistence		H		H
Predictability	H		H	
Smoothness		H		H
Value relevance		H	(H)	(H)
Timeliness		(H)	H	
Conservatism	H			(H)

Some final comments should be made. The quality of some attributes increased in the Czech Republic during the transition and the quality of other attributes deteriorated. The question arises how it is possible that the value relevance of accounting information increases even though accruals quality becomes worse, accounting is not conservative and the timeliness results suggest that earnings might be managed. One reason might be potential inefficiencies in the chosen methodologies. For example, the tests of timeliness and conservatism assume efficient capital markets (which might be questioned in a transition economy), the accruals quality tests were based on two models the validity of which has not been rejected but is still being discussed (Wysocki, 2007), and the Basu's conservatism test has been questioned in recent studies (Callen et al., 2006).

However, there is another potential explanation. The measures of accounting-based attributes are solely influenced by accounting recognition and measurement principles. The market-based attributes are influenced by both the accounting principles and by their disclosure. Accounting information is relevant to the investors if these are also informed about the underlying quality of the accounting numbers. In other words, value relevance in particular will be influenced by what information and how much information is disclosed about the financial statements. It might therefore be that the value relevance of accounting numbers increases because of increased accounting information disclosure rather than due to improved accounting principles. Indeed, the amendment to the Accounting Act in 1997 improved regulation as to the public availability of financial statements, and in 1998, the Securities Exchange Commission started to supervise the Prague Stock Exchange. Disclosure quality seems thus to be an inevitable part of the accounting quality and should be studied separately, particularly with respect to its contribution to the improvements in the value relevance of accounting information to the investors.

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Appendices

Appendix 1: Comparison of the Czech and Swedish samples

Appendix 2: The hedge portfolio test

Appendix 3: List of abbreviations

Appendix 1.A. Comparison of the Czech and Swedish samples (million CZK, USD in brackets)

<i>Variable</i>	<i>Czech Republic</i>		<i>Sweden</i>	
	<i>1994 - 1997</i>	<i>1998 - 2001</i>	<i>1994 - 1997</i>	<i>1998 - 2001</i>
<i>Number of observations</i>	258	259	876	993
<i>Structure of the balance sheet</i>				
Total assets	5 503 (1922)	7 403 (208.9)	6 862 (942.6)	7 568 (845.6)
Book value	2 769 (96.7)	4 064 (114.7)	2 799 (384.5)	3 521 (393.4)
<i>Profitability measures</i>				
Earnings	94 (3.3)	173 (4.9)	385 (52.9)	276 (30.8)
Return on equity	5.1%	6.0%	13.5%	8.3%
Return on assets	9.1%	12.6%	11.3%	3.8%
Cost of liabilities	17.6%	25.8%	4.7%	3.5%
<i>Financial position</i>				
Equity-asset ratio	63.6%	55.5%	44.1%	51.2%
Debt-equity ratio	0.7	0.94	1.85	1.29
<i>Growth</i>				
Change in total assets	12.4%	3.6%	16.7%	17.5%
Change in equity	6.0%	3.2%	26.3%	19.0%
Dividends/Equity	0.8%	1.2%	4.2%	3.6%
New issue/equity	0.0%	0.0%	5.2%	11.1%
Dividends/Earnings	14.4%	15.4%	38.9%	29.4%
<i>Market related measures</i>				
Price	2 375 (83.0)	2 377 (67.1)	7 548 (1 037)	5 901 (659.3)
Price-earnings ratio	20.10	11.99	20.30	27.50
Market- to- book ratio	0.74	0.57	2.35	2.67

Appendix 1.B. Industry groups in the Czech and Swedish sample

(Classification taken from the Prague and Stockholm Stock Exchanges)

Industry	Czech Republic	Sweden period 1	Sweden period 2
Energy	23	4	3
Chemistry	4	2	2
Construction	5	8	6
Manufacturing	6	47	38
Mining & natural resources	5	7	7
Services	5	12	9
Telecommunication	2	9	15
Transportation	1	9	5
Consumer goods	8	33	23
Paper and forestry	1	7	8
Investment and holding		17	20
Real estate		10	8
Media		4	6
Consultancy		5	4
IT		27	30
Medicals and biotechnology		25	27
Others	12	78	60
Total	65	302	271

Appendix 2 – Hedge portfolio test

The hedge portfolio investment methodology investigates whether a hypothetical investment strategy based on a perfect pre-knowledge of a specific accounting number can generate abnormal returns. First, earnings based hedge portfolio is created by going long in shares with the highest 40% of earnings changes and short in shares with the lowest 40% of earnings changes. The hedge portfolio return is defined as the difference between the return on the long position and the return on the short position. Second, a hedge portfolio based on a perfect pre-knowledge of returns is created by taking a long position in shares with 40% of highest returns and short position in shares with 40% of lowest returns. Return on the returns based hedge portfolio is calculated as the difference between the long and short position returns. Finally, the return on earnings based hedge portfolio (*EHR*) is scaled by the return on returns based hedge (*RHR*). This ratio measures how much of the return earned based on a perfect pre-knowledge of returns can be explained by the return earned based on a perfect pre-knowledge of accounting earnings change. The higher the ratio is, the higher is the value relevance of accounting earnings changes.

The hedge portfolio return.

	Czech Republic		Sweden	
	<i>n</i>	<i>Return</i>	<i>n</i>	<i>Return</i>
1994 - 1997				
R_L	74	3.0%	270	45.2 %
R_S	74	11.4 %	270	23.1 %
<i>Hedge portfolio return</i>		- 8.4 %		22.1 %
1998 - 2001				
R_L	102	36.2 %	234	47.5 %
R_S	102	14.1 %	234	6.5 %
<i>Hedge portfolio return</i>		22.1 %		41.1 %

The earnings based hedge portfolio returns scaled by returns based hedge portfolio returns.

	Czech Republic	Sweden
	<i>Proportion EHR / RHR</i>	<i>Proportion EHR / RHR</i>
1994 - 1997	-7.2%	19.3%
1998 - 2001	18.6%	29.1%

Note. EHR = earnings based hedge portfolio return, RHR = returns based hedge portfolio return

Appendix 3 – List of abbreviations

Abbreviations in the equations

A_{jt-1}	Total assets for firm j at time t-1
BV_{jt}	Book value of shareholders' equity for firm j at time t
CA_{jt}	Current assets for firm j at time t
CFO_{jt}	Cash flow from operations for firm j at time t (net income before extraordinary items – total accruals)
CL_{jt}	Current liabilities for firm j at time t
$Depr_{jt}$	Depreciation for firm j at time t
DIV_{jt}	Net dividends for firm j at time t
J_t	Firm j at time t
J_{t-1}	Firm j at time t-1
J_{t+1}	Firm j at time t+1
P_{jt}	Market value of equity for firm j at time t
PPE_{jt}	Property, plant and equipment for firm j at time t
REC_{jt}	Accounts receivable for firm j at time t
REV_{jt}	Revenues for firm j at time t
STD_{jt}	Short term debt for firm j at time t
TA_{jt}	Total accruals for firm j at time t
X_{jt}	Net income before extraordinary items adjusted for taxes for firm j at time t

Other abbreviations

EBRD	European Bank for Reconstruction and Development
EHR	Earnings-based hedge portfolio return
GAAP	Generally accepted accounting principles
IAS	International accounting standards
IASC	International accounting standards committee
H	Higher quality of an attribute
LIFO	Last in first out
R&D	Research and development
RHR	Returns-based hedge portfolio return



Chapter 2

The Complementary Role of Regulation and Compliance in Achieving Accounting Quality: The Case of the Czech Republic

The purpose of this study is to test disclosure quality in the Czech Republic in terms of mandatory disclosure requirements. The first objective is to investigate to what extent differences in the value relevance of Czech accounting numbers and Swedish accounting numbers can be explained by mandatory disclosure and/or by the level of compliance with the regulation. The second objective is to investigate the characteristics of companies that influence their propensity to comply or not to comply with the accounting regulation. The results show that mandatory disclosure requirements are inferior in the Czech Republic (mandatory disclosure score is 12 in 1994 and 21 in 2001 as compared to 27 respectively 32 in Sweden). Czech companies also do not fully comply with the regulation (the companies comply on average to 41.7% in 1994 and 71.4% in 2001 as compared to 70.4% respectively 81.3% in Sweden). Higher mandatory disclosure requirements increase the value relevance of accounting numbers, but the level of compliance decreases their value relevance since the users find out about the underlying (inferior) quality of accounting numbers and search for other information. Companies which comply most with regulation are large companies with Big Four auditors while state-owned companies in general comply least. The major contribution of the study to the disclosure research is the division of the mandatory disclosure level into the mandatory disclosure requirements and the level of compliance as an attempt to measure the functioning of control and enforcement mechanisms.

Keywords: disclosure quality, mandatory requirements, compliance level,
transition economies



1. Introduction

Disclosures of accounting information decrease the information asymmetry between investors and companies. Accounting numbers in the income statement and balance sheet are aggregate measures of the company's activities, while disclosures typically relate to a broader range of information. This additional information may be found in the notes to the accounts or elsewhere in the annual reports. If investors better understand the aggregate numbers in the accounts with the help of additional disclosed information, they can presumably make better pricing decisions. Thus disclosures can lead to a decrease in uncertainty in investors' decision-making, better allocation of capital resources and to a lower cost of capital for the companies.

In a completely free market environment, there would be no need for mandatory accounting rules and disclosure requirements since the market would itself manage the demand and supply of financial information (Kam, 1990). However, an efficient free market that would effectively govern the production of accounting information does not exist. Accounting standard-setters set such disclosure requirements of accounting policies and disclosure rules that decrease the information gap between the users of accounting information and its producers.

The importance of disclosure information has increased through the internationalization of capital markets. Countries which require better disclosure of accounting information would have a comparative advantage compared to countries with poor disclosure. Therefore, disclosure requirements may become a competitive tool on the capital market. Recent studies suggest that foreign investments flow more into countries with better disclosure regulations (Bradshaw, Bushee and Miller, 2004, Aggarwal, Klapper and Wysocki, 2005). Firms are penalized for poor quality financial reporting, but numerous factors such as corporate governance, voluntary disclosure choices and disclosure rules and regulations matter on both firm and country level.

Transition economies – economies which switched from being centrally planned to market economies – experienced a lack of capital and high costs of borrowing due to perceived high market risks. High disclosure quality could potentially decrease the market risk and attract foreign capital at a more reasonable cost.

Previous research suggested that the value relevance of accounting information improved in the Czech Republic over the transition period (see part one). The increase in value relevance may be due to improvements in accounting recognition and measurement principles and/or due to improvements in the level of disclosed information. Results in the previous study (chapter 1, part two) showed that the increase is hardly influenced by the improvements in the recognition and measurement principles since most of the accounting-based attributes of accounting quality do not improve. This study investigates whether the improvements in the value relevance might have depended on improvements in disclosure quality.

The purpose of the third study is to test disclosure quality in the Czech Republic in terms of mandatory disclosure requirements.

Given that there are differences in value relevance of accounting numbers between the Czech Republic and Sweden, the first objective is to investigate to what extent these differences can be explained by the accounting regulation and/or by the level of compliance with the regulation.

The second objective of the study is to investigate the characteristics of companies that influence the companies' propensity to comply or not to comply with the accounting regulation.

Disclosure quality is studied in two dimensions - mandatory disclosure required by the accounting regulation and the level of compliance with the regulation¹. If required mandatory disclosure is high and the companies comply with the regulation, the overall disclosure quality is also high. However, if there are well developed mandatory requirements of accounting information disclosure but the companies do not follow them, the information provided would be inferior. If companies follow required mandatory rules, but these are of inferior quality, the information disclosure will also be of low quality. Thus, both the mandatory disclosure

¹ Yet, another type of disclosure which might influence the overall accounting quality is additional information provided voluntarily by companies. Voluntary disclosure is investigated in chapter 3.

requirements and the actual disclosure practices of companies affect jointly the value relevance of accounting numbers.

The disclosure quality and its components, mandatory disclosure requirements and the level of compliance, are tested for two countries in this study. The Czech Republic is chosen as an example of a transition economy and Sweden is chosen as a benchmark of a well-developed market economy². The research period is years 1994 and 2001. 1994 was the first year of trading at the Prague Stock Exchange. 2001 is the year stated as the end of the transition process in the Czech society (Fogelklou, 2003).

The hypothesis is that the difference between the value relevance of accounting information in the Czech Republic and Sweden is influenced by both the level of mandatory disclosure requirements and the level of compliance with legislation. It might be expected that both the mandatory disclosure requirements and compliance level would be lower than in Sweden. It is further hypothesized that both higher level of mandatory disclosure and higher level of compliance have a positive effect on the value relevance of accounting information.

The first objective – to what extent differences in value relevance of accounting information can be explained by the mandatory disclosure requirements and/or by the level of compliance with the accounting regulation - is measured by a disclosure index based on a valuation framework. This index is coded for the required mandatory disclosure of the respective country. The mandatory disclosure index is then compared between the countries and over time and is benchmarked against the International Accounting Standards valid at 2001. The level of compliance is studied by comparing actual disclosures of companies to the mandatory disclosure requirements of the respective country. Finally, the association between the mandatory disclosure requirements, the compliance level and the value relevance of accounting information is tested.

The second objective of the study is to investigate the characteristics of companies which influence the companies' propensity to comply or not comply with the disclosure requirements in a transition economy. It would seem obvious that companies comply with the required disclosure because of two reasons. First, the required disclosure is mandatory and attempts to

² For more details on the choice of the representative countries, see part one.

disobey might be punished. Second, disclosure of information brings about positive affects for the company in terms of attracting capital at lower cost. However, results in part one suggested that information provided was insufficient in the transition period, the main reasons being lack of knowledge in the capital markets and unwillingness of companies to share information (related to the general secretiveness of the society). Thus, it is probable that not all companies in a transition economy fully comply with the regulation. The hypothesis is that the level of compliance depends on the size of the company, its ownership pattern and its credibility (Leuz and Verecchia, 2000; Gray, Leung and Morris, 2006).

The results suggest that mandatory disclosure requirements are lower in the Czech Republic than in Sweden throughout the whole period but they improve during the transition process. The mandatory disclosure score for the Czech Republic is 12 in 1994 and 21 in 2001, the respective score is 27 and 32 for Sweden. The level of compliance with the rules is lower for the Czech firms but also improves over the transition period. Czech companies comply with the regulation to 41.7% in 1994 and 71.4% in 2001. Swedish companies comply to 70.4% in 1994 and 81.3% in 2001.

Both mandatory disclosure requirements and the level of compliance contribute to the value relevance of accounting information. Value relevance of accounting numbers improves as the level of mandatory disclosure requirements increases in the Czech Republic. The level of compliance, however, decreases the value relevance. This suggests that the higher compliance level makes it possible for investors to better distinguish between good and bad information. The mandatory disclosure level thus has a positive effect on a country level (improving the information environment of the country and its credibility) but probably a negative effect on a company level (companies have to disclose information which seems to be of inferior quality).

Given that the level of compliance is inferior in the Czech Republic, the characteristics of the companies that do not comply with the regulation becomes important. The results show that the main factors which influence the companies' disclosure decisions are type of auditors, size of the company and type of the owner. Large companies with Big Four auditors in general disclose more information, while state-owned companies³ in general disclose less information.

³ Companies where state is the largest but not single owner.

The contributions of the study are multiple. First, the study tests both mandatory disclosure requirements and compliance level. Previous studies on disclosure quality tested either mandatory disclosure on a country level or the actual disclosure of the companies in the country, assuming that companies comply with the regulation. Second, the study uses a self-developed disclosure index which is based on a valuation framework and which captures valuation relevant disclosure items. Previous studies normally use larger disclosure indices and do not distinguish between valuation relevant and other accounting information. Third, the study tests disclosure quality in a unique accounting environment. Transition economies - where accounting had to be developed from the very beginning and where the effects of the improvements in both mandatory disclosure and actual disclosure should be larger - can be more suitable for disclosure quality research than well-developed market economies where the disclosure environment is already rich.

The outline of the paper is as follows. Section 2 deals with the concept of disclosure quality. The role of the mandatory disclosure requirements and the compliance level is specified. The disclosure index is described and explained in terms of the valuation framework. The association between value relevance and the disclosure level is discussed and finally, factors influencing the level of disclosure are identified. Section 3 describes the data and the sample. Empirical results are given and analyzed in section 4. Finally, section 5 contains concluding remarks.

2. Disclosure Quality

This section starts with the discussion of the role and importance of the disclosure of accounting information. Afterwards, the concept of disclosure quality used in this study is described and a disclosure index developed. Further, the association between value relevance of accounting information and disclosure quality is discussed and tests of the association developed. Finally, factors influencing the level of disclosure quality are identified.

2.1. Disclosure and its role

Accounting principles affect the way economic events and transactions are measured and disclosed. Using different accounting principles will lead to different financial results even if the underlying activities are the same. Disclosure of additional information to the financial statements reports helps investors to better understand the accounting numbers and thus increases the quality of these numbers. If relevant items are not disclosed properly, it affects the value of information to the investors and other interest groups negatively. The demand for proper disclosure thus arises from information asymmetries and agency conflicts between managers and outside investors. The lack of information negatively affects the efficient allocation of resources in the capital markets. Disclosure requirements by the standard-setters presumably reduce the information gap between uninformed and informed agents.

Investors need value relevant information; i.e. information which helps them to price shares based on valuation methods. Value relevance of accounting information to the investors is a joint function of accounting quality and disclosure quality⁴. If both accounting and disclosure quality are high, value relevance of the information to the investors should be high and vice versa. In cases when accounting quality is high (low) and disclosure quality is low (high), the final value relevance of the provided information is more complex.

If accounting quality is high and the disclosure quality is low, accounting numbers provide relevant information to the investors. However, investors might not recognize this because the amount of disclosed information is insufficient. Thus, the value relevance of accounting numbers might be high (if investors believe the numbers are correct) or low (if investors require more information which they do not get). On the other hand, if accounting quality is low and disclosure quality is high, it means that accounting

⁴ In chapter 1 accounting- and market-based attributes of accounting quality were tested. Accounting-based attributes were influenced only by recognition and measurement principles while market-based attributes were influenced by both the accounting principles and the amount of disclosed information. If the quality of both accounting- and market-based attributes increased, it suggested that accounting quality and disclosure quality increased. If, however, only market-based attributes improved but the accounting-based attributes did not, it could suggest that disclosure quality improves while accounting quality does not.

numbers do not provide relevant information to investors, but investors are informed about this⁵. In such a case, they either take the accounting numbers and disclosure at face value (which will increase the value relevance of accounting numbers) or they adjust them (which will decrease the value relevance of accounting numbers)⁶.

Previous research found that there is an association between accounting quality and disclosure quality (Francis, Nanda and Olsson, 2008). The level of disclosure matters to investors and if overall quality of accounting information is studied, disclosure quality cannot be neglected. The importance of disclosure quality to investors is theoretically derived in for example Skogsvik (1998). The investors need information which helps them predict future profitability of the company and accounting measurement bias. This information cannot be solely found in accounting numbers, but can be found in additional disclosed information.

Previous research is rich in documenting the effect of disclosure quality on particularly the cost of capital and the liquidity of the company's shares. Since a higher level of disclosure provides better information, the disclosure level decreases the risk connected with investment decisions. Capital allocation will be more efficient and higher disclosure will promote market liquidity. A positive effect of disclosure quality on the cost of capital, market liquidity and capital allocation is documented in for example Sengupta (1998), Leuz and Verecchia (2000), Botosan and Plumlee (2002) and Francis et al. (2008).

The country effect of disclosure quality is documented by Young and Guenther (2003) who found that countries where the financial accounting environment supports a higher level of disclosure are more likely to attract foreign capital. The level of disclosure can have an effect on the volatility of stock returns since investors can use richer information set (Welker, 1995, Bushee and Noe, 2000, and Botosan and Plumlee, 2002). Glaeser, Johnson and Shleifer (2001) compared the regulation of financial markets and their

⁵ Obviously, the quality (the content) of disclosed information is crucial, however, in agreement with previous research, disclosure quality is defined as the amount of disclosed information.

⁶ If value relevance is defined as the association between accounting numbers and market prices, then although accounting numbers might not correctly reflect the underlying economic reality, investors know how to adjust these numbers and the association may still exist.

development in Poland and the Czech Republic during the 1990s and found that strict enforcement of securities law and a highly motivated regulator were associated with a rapidly developing stock market. LaPorta, Lopez-de-Silanes and Shleifer (2006) showed that firms in countries with more extensive disclosure requirements, stronger securities regulation and stricter enforcement mechanisms had lower cost of capital. Chen, Chen and Wui (2003) showed on the other hand that strengthening investor protection and corporate governance was more important in reducing the cost of capital than firms' expanding their disclosures.

To disclose information is costly and therefore companies would disclose information because of two reasons. The first reason is the mandatory disclosure requirements, meaning that companies have to comply with accounting legislation. The second reason is the benefits of a high disclosure level. These benefits must be larger than the costs related to the disclosure; that is costs of gathering and processing the information and costs related to the potential comparative disadvantage of the disclosed information (for more discussion, see Healy and Palepu, 2001). Thus, what kind of information and how much information companies disclose would be related to certain characteristics of companies. Costs of gathering and processing the information might be high for small companies. Benefits of a high disclosure level might be too small for companies that do not need to attract capital, which might be due to the type of owner or due to low growth potential of the company. Companies that do not perform well might run a risk by revealing too much information about their poor performance while companies with good performance would signal their profitability.

Leuz and Verrecchia (2000) found that larger, leveraged and more profitable companies disclose more information. The character of the owner was studied by for example Healy, Hutton and Palepu (1999) and Bushee and Noe (2000), who found that institutional ownership increases disclosure. Gray et al. (2006) reported a strong negative association between state control and financial reporting quality in Chinese companies. This finding is supported by results of Bushman, Piotroski and Smith (2004) who also found that financial reporting quality is higher in economies with low state ownership. They also reported that the type of auditor is important for the disclosure level. This supports previous findings of Bushman and Smith (2003) and Healy and Palepu (2001). Young and Guenther (2003) stated in addition that the scope of operations influences the disclosure level and that multinational companies usually have a high disclosure level.

2.2. Mandatory disclosure and compliance level

Financial information is valuable if it improves the allocation of resources and decreases risks in the economy. The demand for the information can be satisfied in two ways: first, accounting standard-setters identify which accounting policies can improve social welfare, second, the provider (company) and the user of the information (investor) agree on a contract of information providing (Kam, 1990). In this way, contracts can be an alternative to public (regulatory) reporting. Contracting can generate sufficient information and reach an optimal equilibrium where benefits of financial information equal the costs of its providing. In such a case, mandatory disclosure would be unnecessary and would rather lead to overproduction of information at higher cost. However, the free market mechanism which relies on the demand and supply interaction cannot be applied to accounting information which has a character of public good. When the company provides information, it may become available to everyone. Not all users will thus be charged for the cost of information and the company may have little incentive to produce the information. In such a situation, mandatory regulation can force companies to produce the information. Also, since the company under a free market approach would have a monopoly on the information supply, it may charge a higher price. From the point of view of the society, therefore, mandatory regulation results in more information at a lower cost. Certain accounting regulation is further needed because it is uncertain whether the users will be able to agree on what information they need and the producers agree on what accounting procedures are suitable⁷.

Mandatory disclosure is defined in this study as the requirements explicitly stated in the accounting laws and accounting standards. The mandatory disclosure excludes any other compulsory requirements like for example stock exchange disclosure requirements. It can be assumed that the actual disclosures of companies should be at least as good as the mandatory disclosure requirements; that is companies should disclose all information as prescribed in the accounting regulation. However, companies might have incentives to hide or manipulate information. For example, an unprofitable company might prefer to avoid information that would reveal the problems of the company or a company with a strong majority owner might be unwilling to reveal too much information to minority shareholders. If there

⁷ Lev (1988), Kam (1990).

are well developed mandatory disclosure requirements but the companies do not follow them, the information provided will be inferior and will affect the overall disclosure quality negatively. Thus, not only a high quality accounting regulation is necessary but also high quality enforcement and control mechanisms. If these do not exist, the companies might have incentives to avoid disclosing information without punishment (other than the potential punishment of investors through a higher cost of capital). Whether companies follow the rules or not, that is what level of compliance can be expected in a country, depends on the institutional background of the country. The institutional background includes such factors as jurisdiction, business climate and discipline of the country and corporate governance issues.

Previous research on disclosure quality does not make a distinction between the mandatory disclosure requirements and the compliance level. The disclosure quality measured and tested is usually either mandatory disclosure only - that is a comparison among countries based on legislation - or the actual disclosure of companies, which usually includes both mandatory requirements and other information. In neither case the measured disclosure quality separates between the mandatory disclosure requirements and the compliance level. For example, mandatory disclosure requirements might be of superior quality but the investors do not get necessary information because the companies choose not to follow the rules. In such a case, using an actual disclosure index might lead to the conclusion that mandatory disclosure requirements are inferior which does not have to be the case.

2.3. Disclosure index

This section describes the structure of the disclosure index, its individual items and their coding. The discussion of the disclosure items should give an idea about why the respective item is important regarding the needs of the users of financial accounting information, particularly the needs of the investors.

2.3.1. The structure of the disclosure index

Disclosure indices in previous research are far from uniform. Some studies use a disclosure index based on financial analysts' evaluations of corporate disclosure practices (for example, Welker, 1995 and Sengupta, 1998), some use a disclosure index developed by big auditing firms (for example, Gray et al., 2006) and some use an index of cross-country accounting disclosure differences from the CIFAR (Centre for International Financial Analysis and Research; for example, Bushman et al., 2004). Some researchers develop their own disclosure index based on their theoretical perception of importance of specific accounting items (Ashbaugh and Pincus, 2001, Young and Guenther, 2003, Francis et al., 2008).

The different indices are not comparable particularly when it comes to the comparison between different countries. Auditing firms and different accounting associations map mandatory disclosure requirements and say little about how companies actually disclose information. The CIFAR index is very detailed and based on actual accounting disclosure of the companies. This says little about the mandatory disclosure in a country. The advantage of the indices that are developed by researchers is that they are coded consistently over the whole sample. However, they depend on the researcher's perception of the importance of disclosed items.

The size of the disclosure is another critical issue. Some disclosure indices – usually those developed by auditing firms and practitioners - include as many as several hundred accounting and non-accounting information items. Disclosure indices developed by researchers usually identify only crucial and material accounting items that make a difference, i.e. are relevant in decision making.

Finally, the disclosure indices are usually based on grading disclosure either as 1 if an item is disclosed or 0 if the item is not disclosed. However, not only disclosure matters but also the measurement principles being used. Therefore, disclosed items are sometimes weighted in the index considering the measurement principles and their importance for the decision making. Thus, a disclosure index might be a complex issue because the researcher has to consider what items are relevant and should be disclosed and into what extent.

This study uses a self-developed disclosure index. Skogsvik (1998) discusses the content of disclosure from a theoretical perspective of a valuation framework. Although the discussion concerns voluntary disclosure, the perspective might be applied to mandatory disclosure as well. The value of the owners' equity of a company is a function of the book value of shareholders' equity, forecasted future profitability of the company and the permanent accounting bias and thus, the investors must have relevant information about the book value of equity at present, about the future book return on equity and the accounting measurement bias of owners' equity at the horizon:

$$V_0 = BV_0 + \sum_{t=1}^T \frac{BV_{t-1} * (ROE_t - r_e)}{(1 + r_e)^t} + \frac{(V_T - BV_T)}{(1 + r_e)^T} \quad (1)$$

where V_0 is the value of the owners' equity at the valuation point of time, BV is the book value of shareholders' equity at certain point of time, r_e is the constant required rate of return, ROE is the accounting return on equity at certain period of time and $(V_T - BV_T)$ is the accounting measurement bias at horizon.

The disclosure index developed in this study identifies accounting information that helps investors to predict the future profitability of the company and its accounting measurement bias. The complete disclosure index is provided in table 1. As mandatory disclosure requirements differ across countries, a common benchmark is used for which items might be mandatory. The benchmark is the International Accounting Standards as applied in 2001. Thus, all items in the disclosure index are mandatory according to the IAS 2001 but not necessarily mandatory in the researched countries. Next, the three dimensions (subgroups) of the disclosure index and their link to the valuation model are discussed.

Table 1 Disclosure index

Entity characteristics

Stock price information
Multiple classes of shares
Subsidiaries information
Number of employees
Remuneration of directors and officers
Shares owned by directors and employees
Disclosure of related party transactions

Accounting measurement principles

Disclosure of accounting policies
Disclosure of notes to accounts
Disclosure of consolidated data required for all the firms
Disclosure of equity method for investments
Disclosure of the effect of a change in accounting policy
Disclosure of prior period adjustments
Disclosure of method of asset valuation
Disclosure of current value of land and buildings
Disclosure of the effect of foreign currency translation
Disclosure of contingencies if likely/probable
Disclosure of post balance sheet events
Statement of cash flows is required for all the listed firms
Disclosure of income taxes

Forecast relevant information

Disclosure of changes in shareholders' equity
Separate disclosure of unusual or extraordinary items⁸
Disclosure of segment information
Separate disclosure of costs for discontinued operations
Disclosure of appropriation of retained earnings
Disclosure of earnings per share
Dividends per share

The disclosure index contains 27 items⁹. The first group consists of seven items which concern company characteristics. These items do not influence the aggregate accounting numbers as such but are important for the credibility of the information. Two items are related to share information – information on multiple classes of shares and share price information (for example major owners, stock exchange listing, turnover, share price and its movements). Disclosure of remuneration of managers, bonus plans and other remuneration schemes and the shareholdings of the management in the company relate to corporate governance issues and provide information on

⁸ The term “extraordinary” is used in this study since it refers to accounting regulation between 1994-2001 when the term was still used.

⁹ Most of the items appear in previous disclosure quality studies (Young and Guenther, 2003; CIFAR, 1995; Ashbaugh and Pincus, 2001).

the managements' potential incentives to manipulate the accounting numbers. Disclosure of number of employees provides information on the size of the company and the size of its fixed costs. Disclosure of subsidiaries information and the disclosure of related party transactions set the company into the context of its business environment and increase the transparency of the company. Disclosure of related parties' transactions is important particularly in countries where consolidation rules are less strict. However, it adds information even if consolidated statements are prepared because information on related parties' transactions might include forward looking information like important agreements and orders between the related parties.

The second group consists of thirteen items which describe the applied accounting measurement principles. This disclosure helps investors to estimate the accounting measurement bias. The disclosure of notes to the financial reports primarily includes two types of information – the disclosure of accounting policies and additional information to income statement and balance sheet items. The disclosure of accounting policies does not change the earnings or book value of equity as such, but a specification of the valuation and recognition principles increases the understanding of these numbers. Asset valuation policies affect the conservatism of accounting numbers. Certain revenue recognition methods can affect the smoothing of earnings. Disclosure of accounting policies includes some items that are specified separately in the disclosure index (changes in accounting policies and prior adjustments, method of asset valuation, disclosure of income taxes, foreign currency translation and equity method).

Previous research showed that consolidated statements are more relevant than unconsolidated statements (Harris, Lang and Möller, 1994)). Disclosure of consolidated data should include method of consolidation, treatment of goodwill, translation of foreign subsidiaries and treatment of associated companies. Consolidated accounts should further include information on subsidiaries and the company's shareholdings.

The disclosure of changes in accounting policies and prior period adjustments are related to the comparability of the financial statements over time. Disclosure of the methods of asset valuation and disclosure of current value of land and buildings are crucial for understanding the balance sheet conservatism. Disclosure of income taxes particularly with regard to deferred taxes helps to estimate future cash flows. Disclosure of foreign

currency translation provides information on unrealized gains and losses which may in some jurisdictions be taken immediately into the income statement and in some jurisdictions be postponed until realized. Disclosure of contingencies helps investors to estimate the potential risks in future cash flows of the company. Disclosure of post balance events increases timeliness of the company information. Finally, disclosure of the cash flow helps to understand the character and size of the company's accruals.

The third group consists of seven items relating to forecast relevant information; i.e. information which may be used for the prediction of future net earnings. Disclosure of discontinued operations helps to understand the comparability of accounting numbers over time. Disclosure of extraordinary items differs substantially among countries. In some countries, extraordinary items are widely defined and used often for smoothing the ordinary earnings. In other countries, usage of extraordinary items is restricted and most events are treated as ordinary. Segment information is a decomposition of the aggregate numbers (sales, profits, assets). It helps investors to estimate the value drivers in the company and thus improve their forecasts on future performance of the company¹⁰. Segment information disclosure is a trade-off between the relevance of the information and the cost of a potential competitive disadvantage particularly for small firms. Large firms should have larger incentives to reveal segment information because their activities are more complex and more difficult to understand.

Disclosure of a statement of shareholders' equity provides information on changes in equity which are not included in the income statement. The disclosure of the appropriation of retained earnings gives an insight into the company's dividend policy and the growth in equity. Disclosure of earnings per share and dividends per share provide information on the earnings capability of the company and its dividend policy.

¹⁰ The positive effect of higher disclosure of segment information was documented by Piotroski (1999).

2.3.2. Coding of the index

Table 2 summarizes the coding of the disclosure index items. Some notes must be made at this point. As stated before, some researchers weight the items in the index, others do not. Previous research does not seem to give convincing evidence about the necessity of weighting. On the other hand, some items in the index are more complex than others. For example, there will be a difference in cases when extraordinary items are included in the income statement without further disclosure in the notes and when extraordinary items are clearly specified in notes¹¹. Furthermore, there will be a difference if an item is not disclosed at all, disclosed verbally or if the disclosure is quantified. In such cases a mere coding of disclosure existence or disclosure absence would not capture all dimensions. Thus, generally, coding of an item as either 0 or 1 is used in this study but in some specific complex cases three level coding is used (0, 1 and 2). Obviously, this creates a certain weighting based on the complexity of the items.

A second problem is the fact that it is difficult to analyze the absence of a disclosure of an item. If an item is not disclosed it may be because such an item does not exist or it may be because the company chooses not to disclose it. This study interprets the absence of any disclosure as if company chooses not to disclose (in other words, the items might but do not have to exist).

Third, disclosure of an item does not guarantee that the disclosed information is correct. This is particularly important for complex items like disclosure of accounting policies or disclosure of consolidated data. It is however impossible to separate any potential manipulation of this character. An indication of this problem could be if the disclosure level is high but the value relevance is low. Although the company discloses information, the market does not believe that the company accounts are correct.

¹¹ If extraordinary items are not specified, a potential earnings management might exist.

Table 2. Compulsory disclosure index

Disclosure index	Coding
Entity characteristics	
Share price information (SPI)	0 –if no disclosure 1 –if disclosure
Multiple classes of shares (MCS)	0 – if no disclosure 1 – if disclosure
Subsidiaries information (SBSI)	0 – if no disclosure 1 – if disclosure
Number of employees (NE)	0 – if no disclosure 1 – if disclosure
Remuneration of directors and officers (RM)	0 – if no disclosure 1 – if disclosure
Shares owned by directors & employees (SME)	0 – if no disclosure 1 – if disclosure
Disclosure of related party transactions (RP)	0 – if no disclosure 1 – if disclosure
Accounting measurement principles	
Disclosure of accounting policies* (AP)	0 – if no disclosure 1 – if partial disclosure 2 – if complete disclosure
Disclosure of notes to accounts (NA)	0 – if no disclosure 1 – if disclosure
Disclosure of consolidated data required for all the firms (CD)	0 – if no disclosure 1 – if consolidation but not clear rules 2 – if disclosure and clear rules
Disclosure of equity method for investments (EM)	0 – if no disclosure 1 – if disclosure
Disclosure of the effect of a change in accounting policy (CH)	0 – if no disclosure 1 – if disclosure
Disclosure of prior period adjustments (PA)	0 – if no disclosure 1 – if disclosed that adjustments have been made
Disclosure of method of asset valuation (VM)	0 – if no disclosure 1 – if disclosure
Disclosure of current value of land and buildings (CV)	0 – if no disclosure 1 – if disclosure
Disclosure of the effect of foreign currency translation (FC)	0 – if no disclosure 1 – if disclosure in notes 2 – if disclosure of exchange rate risks and policy
Disclosure of contingencies if likely/probable (CO)	0 – if no disclosure 1 – if disclosure at face 2 – if disclosure in notes
Disclosure of post balance sheet events (PB)	0 – if no disclosure 1 – if disclosure
Statement of cash flows is required for all the listed firms (CFS)	0 – if no disclosure 1 – if cash flow statement in notes 2 – if cash flow statement as a primary report
Disclosure of income taxes (IT)	0 – if no disclosure 1 – if disclosure of current tax and deferred tax 2 – if tax calculated for different segments and/or for different assets

Forecast relevant information	
Disclosure of changes in shareholders' equity (SE)	0 – if not disclosed 1 – if disclosed in notes 2 – if disclosed as a primary report
Separate disclosure of unusual or extraordinary items (XO)	0 – if no disclosure 1 – if disclosed at face 2 – if disclosed in notes
Disclosure of segment information (SI)	0 – if no disclosure 1 – if disclosure of some information 2 – if disclosure of complete information
Separate disclosure of costs for discontinued operations (DO)	0 – if no disclosure 1 – if disclosure
Disclosure of appropriation of retained earnings (RE)	0 – if no disclosure 1 – if disclosure
Disclosure of earnings per share (EPS)	0 – if no disclosure 1 – if disclosure
Dividends per share (DPS)	0 – if no disclosure 1 – if disclosure

* *The coding of the disclosure of accounting policies is described in appendix 1.*

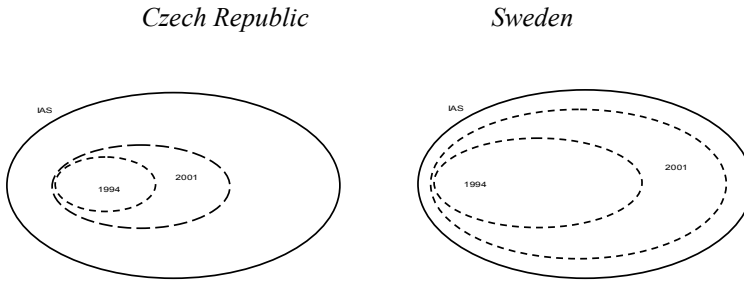
2.3.3. Measurement of mandatory disclosure and compliance level

The disclosure index in section 2.3.1 was created based on the disclosure requirements specified by International Accounting Standards in 2001. The mandatory accounting regulation in the individual countries differs from the IAS disclosure index; that is some of the items are not compulsory in one or the other country (see figure 1). Besides, the mandatory requirements might differ over time. Mandatory disclosure index is coded for both the Czech Republic and Sweden in 1994 and in 2001. The coding is based on primary sources - FARs samlingsvolym (1994 and 2001) and Accounting legislation in the Czech Republic (1995)¹² and secondary sources – European Accounting Guide (2001) and International Accounting Summaries – A Guide for Interpretation and Comparison (1993)¹³.

¹² Both the Swedish and Czech publication contains accounting laws and accounting standards.

¹³ A comparable accounting guide was not available for 1994.

Figure 1. The mandatory disclosure index

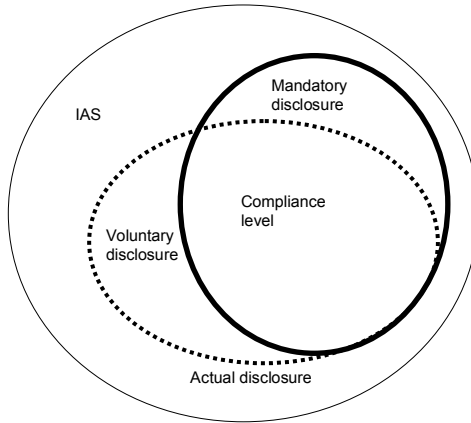


Note: The figures show the mandatory disclosure requirements set in the two countries. The total (external) set is the mandatory disclosure according to IAS (the full line). The dotted lines show the set of mandatory disclosure in each country in 1994 and 2001. Note that the Czech and Swedish sets are smaller than the IAS which has more comprehensive disclosure requirements. The sets are drawn based on hypotheses about higher disclosure quality in Sweden and improvements of disclosure quality over time.

The compliance level is measured as a proportion of the actual disclosures of companies to the mandatory disclosure requirements of the country. For this purpose, disclosure index is coded for sample of companies. The total disclosure score (TD) includes all items disclosed by the individual company and included in the mandatory disclosure index. This score measures how well the company discloses information according to IAS 2001¹⁴. This is not, however, the same as the compliance with the domestic rules (see figure 2). Therefore the compliance disclosure score (CL) is measured as a total score of those items that are required by the domestic mandatory disclosure rules. For example, if only 10 points out of the 36 points of IAS mandatory disclosure requirements are required in the country in the specific year, it is only those 10 points that can be at most coded for a company that completely complies with domestic legislation. If the company follows the rules completely, the compulsory disclosure score of the company would be the same as the mandatory disclosure score in the country.

¹⁴ Companies might disclose both items mandatory according to the domestic rules and additional items according to the IAS. The disclosure of additional information in concordance with the IAS would be voluntary disclosure.

Figure 2 . Total disclosure and compliance level



Note: The bold full line represents the mandatory disclosure requirements and the dotted line represents the total actual disclosure of the companies. The compliance level is the intersection between the actual disclosure of the companies and the mandatory requirements. If the companies fully complied with the accounting regulation, the mandatory disclosure circle would be fully covered by the actual disclosure circle. The disclosure which is beyond the mandatory requirements is voluntary. Note that the total disclosure and mandatory disclosure (full bold line and dotted line) are inside the IAS disclosure circle which is consistent with the higher IAS mandatory disclosure requirements.

2.4. Association between value relevance and disclosure quality

The first study in this dissertation showed that the value relevance of accounting information was lower in the Czech Republic than in Sweden and that the value relevance increased over time in the transition economy. The results in the second study suggested that the increase in the value relevance might be due to increased level of disclosure quality. Disclosure quality is a joint function of mandatory disclosure requirements and the level of compliance. Thus, the increase in value relevance should be affected jointly by the level of mandatory disclosure and the compliance level.

Transition economies had to develop a new set of laws and accounting standards that would reflect the needs of the market economy and capital markets. They also had to develop enforcement and control mechanisms that would ensure that the legislation is followed. Legislation was often perceived as sufficient in transition countries, but the countries were criticized for poor control mechanisms. This might suggest that the level of compliance should play an important role in the transition period.

The hypotheses are:

- *A higher level of mandatory disclosure has a positive effect on the value relevance of accounting information.*
- *A higher level of compliance with the mandatory rules has a positive effect on the value relevance of accounting information.*
- *The level of compliance is the leading improvement factor in the transition period.*

The above hypotheses are tested as an association between the value relevance of accounting information and the mandatory disclosure and compliance level. Value relevance is measured as the difference between the price which can be estimated based on the value relevance tests in the first study and the observed market price:

$$\frac{|\hat{P}_{jt} - P_{jt}|}{BV_{jt}} = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{jt} + \varepsilon_{jt} \quad (2)$$

\hat{P}_{jt} is the estimated price for company j at time t. P_{jt} is the observed price for company j at time t. The difference in estimated price and observed price is absolute since it does not matter whether the difference is positive or negative. The difference is deflated by BV_{jt} which is the book value of shareholders' equity of company j at time t. MD_{ct} is the mandatory disclosure score of country c at time t. CL_{jt} is the compliance level of company j at time t. The compliance level is expressed as disclosure score for company j divided by mandatory disclosure score for the country ($\frac{CL_{jt}}{MD_{ct}}$)¹⁵.

¹⁵ Robustness tests were made on compliance level expressed in disclosure score points and showed similar results.

The value relevance is high when the difference between the estimated price and observed price is small. The coefficients α_1 and α_2 should therefore be negative if higher levels of mandatory disclosure requirements and compliance increase the value relevance of the accounting numbers. The regression is first tested for the mandatory disclosure requirements and for the overall compliance level. However, it might be assumed that if a company complies with the disclosure of valuation relevant items, the value relevance of its accounting numbers will be affected more positively than if the company complied only with the other disclosure items (entity characteristics). Therefore, the compliance level score is divided into two categories. Category I is the valuation relevant information (accounting measurement principles and forecast relevant information) and Category II is the entity characteristics information.

The value relevance study (part one) used different approaches to measuring value relevance. The tests in this study are based on price estimated according to the logarithmic regression since the logarithmic test showed the highest explanatory power and the most stable results¹⁶:

$$\ln P_{jt} = \alpha_0 + \alpha_1 * \ln X_{jt} + \alpha_2 * \ln BV_{jt} \quad (3)$$

where P_{jt} is market price of shareholders' equity of company j at time t , X_{jt} is accounting earnings of company j at time t and BV_{jt} is book value of shareholders' equity of company j at time t .

The price estimation follows from the above regression:

$$\hat{P}_{jt} = e^{\alpha_0} * X_{jt}^{\alpha_1} * BV_{jt}^{\alpha_2} \quad (4)$$

The logarithmic function of value relevance was tested for two research periods, early transition (1994-1997) and late transition (1998-2001), as well as for every year. The year-based regression results in the value relevance tests were more volatile due to the lower number of observations particularly for the Czech sample. However, since the disclosure index is coded for two specific years, 1994 and 2001, it seems more appropriate to use the

¹⁶ Robustness tests were conducted based on the price regression coefficients. The results were in the same direction but were less significant.

respective year coefficients¹⁷. The coefficients used for calculations of estimated price are provided in Appendix 8.

2.5. Factors influencing the level of disclosure

Previous research on disclosure quality has found different types of characteristics that influence the amount of disclosed information (for more discussion, see Healy and Palepu, 2001). For the purposes of this study, the characteristics are grouped into three main areas:

- Listing and reporting (type of auditor, foreign listing, de-listing and IAS reporting)
- Ownership (ownership concentration and the type of the largest owner)
- Performance (profitability, size and leverage)

Listing and reporting choices affect the company's disclosure policy. There are higher disclosure requirements on listed companies than non-listed companies. The research sample includes only companies listed at the stock exchange in the research period. However, many of the Czech companies listed in 1994 and 2001 were de-listed after 2001 and therefore, the listed/de-listed factor might have a certain effect. Whether the effect of the listing on the quality of disclosed information should be positive or negative is difficult to predict. Companies might have been de-listed due to problems with their performance or their compliance with the stock exchange rules. It might, though, also be that successful and well-performing firms were subject to acquisitions.

Foreign listing should in general have a positive effect on the disclosure level. Companies in the transition economies – when listed abroad – usually must comply with stricter rules than the domestic regulation. They also need to attract foreign investors and must therefore adapt to their needs. Companies listed abroad usually report according to IAS or US GAAP. Choice of auditor is crucial because it signals the credibility of the company's financial information (Gray et al., 2006). Companies employing auditing firms with reputation are signaling high quality of their accounting

¹⁷ Robustness tests were made using the period coefficients. The results were weak and support the assumption of the appropriateness to use the year coefficients.

information. Big Four auditing firms have better international reputation than smaller local firms and it can be assumed that employing Big Four auditor increases the disclosure level.

A company with concentrated ownership does not have the same incentives to disclose information as a widely-held company as it may have other communication channels (Leuz and Verecchia, 2000). However, the type of owner also plays an important role. For example, when a company gets a strategic owner from a country where accounting rules are more developed it might be that the new owner actually increases the disclosure and accounting quality of the company (Gray et al., 2006). State ownership is substantial in a transition economy and seems to have a negative effect on disclosure level since the state is not interested in providing information to other minority shareholders (Gray et al., 2006). Institutional ownership increases the disclosure level (Healy et al., 1999, Bushee and Noe, 2000).

Finally, previous studies found that profitability is an important factor which affects the amount of disclosed information (for example, Leuz and Verecchia, 2000). The profitability is measured by return on equity¹⁸. More profitable firms disclose more information as they signal the credibility of their reported earnings in order to avoid undervaluation of their assets (Skogsvik, 1998; Gray et al., 2006). The performance dimension is further measured by size in terms of logarithm of total assets and leverage in terms of debt-equity ratio. Larger companies are more complex and need to disclose more information. Larger firms also have more resources for gathering and processing information and they more often employ Big Four auditing firms, report according to IAS and are listed abroad. Finally, more leveraged firms disclose more information because they need to attract new external capital. The coding of the individual factors is described in table 3. Also, the expected sign of the coefficient is stated.

¹⁸ Return on assets was also tested. The results were similar but weaker.

Table 3. Factors influencing disclosure level – measurement, definitions and expected sign of coefficient

Group	Factor	Measurement	Expected sign of coefficient
Listing and reporting	Foreign listing (ABR)	1 - if listed on foreign stock exchange 0 - otherwise	Positive
	De-listing (DEL)	1 - if still listed 0 - if de-listed	Positive/Negative
	Auditors (AUD)	1 - if Big Four 0 - if other auditor	Positive
	IAS or US GAAP (IAS)	1 - if IAS or US GAAP used 0 - otherwise	Positive
Ownership	Concentration of ownership (CONC)	Shareholdings of the largest shareholder in %	Negative
	Foreign investors (FI)	Shareholdings of foreign investors in %	Positive
	State ownership (STATE)	1 - if state ownership 0 - otherwise	Negative
	Institutional ownership (INST)	1 - if institutional ownership 0 - otherwise	Positive
Performance	Size (SIZE)	Logarithm of total assets	Positive
	Profitability (ROE)	Return on equity	Positive
	Leverage (D/E)	Debt-equity ratio	Positive

3. Data and sample

The basic sample consists of 25 Czech companies and 25 Swedish companies. All 72 Czech companies included in the Czech sample in the previous chapters were asked for providing annual reports, but only 25 annual reports were available for the beginning of the transition period. Most reports are from 1994, however, three reports are from 1995 and seven reports are from 1996. It was virtually impossible to collect annual reports from year 1994 for most Czech companies. Since many of the companies started their activities as late as 1994, it may be assumed that the annual report from 1995 (or 1996) to a satisfactory extent simulates the very beginning of the transition period. The 25 Swedish companies were chosen randomly from the total Swedish sample in the previous studies. The sample was held constant (the annual reports of the same companies were studied

for both 1994 and 2001) in order to exclude any potential differences in the sample structure¹⁹.

The sample was extended for the regression tests by the annual reports of 22 additional Czech companies for 2001 and includes 122 firm-year observations. This extension was made because the basic sample of Czech companies was too small for statistical tests. Appendix 2 provides the list of the sample companies and appendix 3 provides information on their basic characteristics.

The disclosure index was manually coded for the individual companies. The characteristics of the companies were gathered from the annual reports and from the homepages of Prague Stock Exchange and Stockholm Stock Exchange. Accounting data and price data were gathered from the Finlis²⁰ database (for the Swedish companies) and Ariadna²¹ database (for the Czech companies). Data on mandatory disclosure requirements were gathered from both primary sources and secondary sources (see section 2.3.3.).

4. Empirical results

In this section the results of the empirical tests are discussed and analyzed. The section starts with the descriptive results of mandatory disclosure requirements. Section 4.2. analyzes the descriptive results of the level of compliance. In section 4.3., the development of the disclosure quality is discussed. Section 4.4. reports the results of the tests of the association between the value relevance and disclosure quality. Finally, in section 4.5. factors influencing the disclosure quality are tested.

¹⁹ For example, type of industry may influence the disclosure and if the industry structure of the samples differs between the year, inferences about the changes in disclosure might be misleading.

²⁰ Provided by SIX AB, www.six.se

²¹ Provided by Cekia, www.cekia.cz

4.1. Mandatory disclosure requirements

Table 4 summarizes the mandatory disclosure requirement score for the Czech Republic and Sweden in years 1994 and 2001 and for the International Accounting Standards in 2001. The highest score that can be achieved is 36. The results show that Swedish GAAP scores 27 points in 1994 and 32 points in 2001. Czech GAAP scores 12 points in 1994 and 21 points in 2001. This means that there are items that must be disclosed if IAS is followed, but they are compulsory neither in the Czech Republic nor Sweden. The results further show that the level of mandatory disclosure is lower in the Czech Republic than in Sweden, particularly in 1994, which might have a negative effect on the value relevance of accounting information.

A general trend for improvements in disclosure level is evident in both countries. The Swedish GAAP approaches IAS by 2001 which is consistent with the objective of the Swedish Financial Accounting Standards Council to harmonize Swedish accounting with IAS. The Czech GAAP is insufficient in 1994 but the level of mandatory disclosure increased by 2001 although it did not reach the Swedish or IAS level (the Czech score for 2001 is lower than the Swedish score for 1994). A review of basic Czech and Swedish generally accepted accounting principles is given in appendix 4.

Forecast relevant information seems to be disclosed least, particularly in the Czech Republic. The disclosure increases slightly in the second period for both countries, but the Czech accounting legislation in 2001 still does not require disclosures of segment information, costs for discontinued operations, earnings per share and dividends per share; i.e. items which typically are viewed to be necessary for the prediction of future earnings. The disclosure of items affecting the accounting measurement principles is higher and improves over time. Disclosures of foreign currency translation and prior period adjustments are the only two items not required by the Czech GAAP in 2001, however, some other disclosures are not as extensive as in the IAS. In particular, consolidation rules are less strict, a cash flow statement is not required as a primary report, and income taxes are not specified exhaustively in the Czech GAAP.

Table 4. Mandatory disclosure index

	IAS 2001	Czech GAAP 1994	Czech GAAP 2001	Swedish GAAP 1994	Swedish GAAP 2001
Entity characteristics					
Share price information (SPI)	1	1	1	1	1
Multiple classes of shares (MCS)	1	0	0	1	1
Subsidiaries information (SBSI)	1	0	1	1	1
Number of employees (NE)	1	0	1	1	1
Remuneration of directors and management (RM)	1	0	1	1	1
Shares owned by directors and employees (SME)	1	1	1	1	1
Disclosure of related parties transactions (RP)	1	0	0	0	0
	(7)	(2)	(5)	(6)	(6)
Accounting measurement principles					
Disclosure of accounting policies (AP)	2	2	2	2	2
Disclosure of notes to accounts (NA)	1	1	1	1	1
Disclosure of consolidated data (CD)	2	1	1	2	2
Disclosure of equity method (EM)	1	0	1	1	1
Effects of change in accounting policies (CH)	1	1	1	1	1
Disclosure of prior period adjustments (PA)	1	0	0	1	1
Disclosure of valuation method (VM)	1	1	1	1	1
Disclosure of current value of building (CV)	1	0	1	0	0
Effect of foreign currency translation (FC)	2	0	0	1	2
Disclosure of contingencies (CO)	2	1	2	2	2
Disclosure of post balance sheet events (PB)	1	0	1	1	1
Disclosure of cash flow statement (CFS)	2	1	1	2	2
Disclosure of income tax (IT)	2	1	1	0	2
	(19)	(9)	(13)	(15)	(18)
Forecast relevant information					
Changes in shareholders' equity (SE)	2	0	1	1	1
Disclosure of extraordinary items (XO)	2	1	1	2	2
Disclosure of segment information (SI)	2	0	0	2	2
Disclosure of discontinued operations (DO)	1	0	0	0	1
Appropriation of retained earnings (RE)	1	0	1	1	1
Disclosure of earnings per share (EPS)	1	0	0	0	1
Disclosure of dividends per share (DPS)	1	0	0	0	0
	(10)	(1)	(3)	(6)	(8)
Total disclosure	36	12	21	27	32

Sources: Accounting legislation in the Czech Republic (1995), FARs samlingssvolym (1994 and 2001), European Accounting Guides (2001) and International Accounting Summaries – A Guide for Interpretation and Comparison (1993)

4.2. Compliance level

Tests of the compliance level are based on actual disclosure scores. Appendix 5 reports the actual disclosure scores for the individual sample companies. Table 5 reports the total disclosure score for the whole sample (TD). This score measures the average total disclosure of the Czech and Swedish companies as compared to IAS. If a company follows IAS 2001 completely, it can score a maximum of 36 points. None of the Czech or Swedish companies complied completely to IAS – neither in 1994 nor 2001. However, seven Czech companies disclosed more than required by the mandatory disclosure rules in 1994 (mandatory disclosure was 12), nine Czech companies in 2001 (mandatory disclosure was 21), two Swedish companies in 1994 (mandatory disclosure was 27) but no Swedish company in 2001 (mandatory disclosure was 32). The average total disclosure score in the Czech Republic is 9 in 1994 and 20 in 2001. In Sweden, the corresponding level is 21 points in 1994 and 27 points in 2001.

Table 5. Summary total disclosure level results

	Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
Max points	36	36	36	36
Average	9	20	21	27
Mandatory disclosure score	12	21	27	32

Table 6 summarizes the compliance level results. The average actual disclosure of mandatory requirements by companies is calculated and compared to the maximum mandatory disclosure score. First, the results show that Czech GAAP corresponds only to one third of compulsory IAS disclosure in the beginning of the transition period and slightly more than half at the end of the period. This means that almost half of the IAS compulsory disclosures are not covered by Czech GAAP. Swedish GAAP is substantially closer to the international standards both in 1994 and 2001 (75% and 88.9% respectively).

Second, Czech companies reported on average only 5 out of mandatory 12 items in 1994, that is only 41.7% of mandatory disclosures were fulfilled. In 2001, 15 items out of the mandatory 21 were disclosed (71.4%). For Sweden the respective numbers were 19 items out of possible 27 for year 1994

(70.4%) and 26 out of possible 32 for year 2001 (81.3%). If the average actual disclosure score of companies is lower than the maximum score in their home countries in a certain year, it means that some companies do not completely follow the domestic accounting rules. In 1994, more than half of the disclosure items were not disclosed properly in the Czech Republic, however, the situation improved substantially by 2001²². The fact that Swedish companies did not fully comply either might be the way coding has been done in the absence of disclosure (see section 2.3.).

Table 6. Summary disclosure level results

	<i>Czech Republic 1994</i>	<i>Czech Republic 2001</i>	<i>Sweden 1994</i>	<i>Sweden 2001</i>
Mandatory disclosure score	12	21	27	32
Percentage of IAS 2001	33.3%	58.3%	75%	88.9%
Average compliance disclosure	5	15	19	26
Percentage of compliance	41.7%	71.4%	70.4%	81.3%

Note: Mandatory disclosure score is the mandatory disclosure requirements score for the country and year. Percentage of IAS 2001 is calculated as Mandatory disclosure score/IAS disclosure score. Average compliance disclosure is the average actual disclosure score of companies. Percentage of compliance is average compliance disclosure/mandatory disclosure.

In summary, the mandatory disclosure requirements and compliance level were lower in the Czech Republic than in Sweden, both in 1994 and 2001. Both variables improved throughout the research period. Thus, the results correspond to the results in part one (value relevance is lower in the Czech Republic than in Sweden and it improves over time). In other words, there seems to be an association between the disclosure level (a joint function of mandatory disclosure requirements and compliance level) and the value relevance of accounting information.

²² Only one company complies completely with domestic legislation in the Czech Republic in both 1994 and 2001 and one company in Sweden in 1994 but no company in 2001 (see appendix 5).

4.3. Development of the disclosure quality

In section 2.3., the items included in the disclosure index were divided into three groups – entity characteristics, accounting measurement principles and forecast relevant information – since they might have different implications for the value relevance of accounting information (see section 2.3.1.). The accounting measurement principles and forecast relevant information directly affect the value relevance of accounting numbers while entity characteristics do not. It might thus be appropriate to find out which type of information companies choose to disclose more or less²³. The disclosure index is divided into two categories: valuation relevant items which affect directly the value relevance of the accounting numbers and entity characteristics items which do not directly affect the value relevance but affect the credibility of the provided information. The items are ranked in the categories according to the percentage of their total disclosure. The ranking is reported in table 7.

Table 7. Ranking of the disclosure items in percentage

Category I (Valuation relevant items): Disclosure of accounting policies (AP), Effects of change in accounting policies (CH), Disclosure of prior period adjustments (PA), Disclosure of notes to accounts (NA), Changes in shareholders' equity (SE), Disclosure of cash flow statement (CFS), Disclosure of consolidated data (CD), Disclosure of segment information (SI), Appropriation of retained earnings (RE), Disclosure of post balance sheet events (PB), Disclosure of valuation method (VM), Disclosure of current value of building (CV), Disclosure of equity method (EM), Disclosure of contingencies (CO), Disclosure of extraordinary items (XO), Disclosure of discontinued operations (DO), Effect of foreign currency translation (FC), Disclosure of income tax (IT), Disclosure of earnings per share (EPS), Disclosure of dividends per share (DPS),

Category II (Entity characteristics): Disclosure of related parties transactions (RP), Multiple classes of shares (MCS), Share price information (SPI), Subsidiaries information (SBSI), Number of employees (NE), Remuneration of directors and management (RM), Shares owned by directors and employees (SME)

²³ The comparison is based on total disclosure score.

Czech Republic 1994		Czech Republic 2001		Sweden 1994		Sweden 2001	
Category I (Valuation relevant items)							
(NA)	68.0%	(NA)	96.0%	(NA)	100.0%	(NA)	100.0%
(CFS)	66.0%	(VM)	96.0%	(CFS)	100.0%	(CFS)	100.0%
(VM)	64.0%	(CFS)	82.0%	(RE)	96.0%	(RE)	100.0%
(CH)	44.0%	(AP)	80.0%	(EPS)	92.0%	(CD)	100.0%
(XO)	36.0%	(PB)	72.0%	(CD)	90.0%	(CO)	96.0%
(AP)	34.0%	(CO)	62.0%	(CO)	84.0%	(VM)	96.0%
(RE)	32.0%	(SE)	56.0%	(DPS)	80.0%	(EPS)	96.0%
(PA)	24.0%	(SI)	52.0%	(AP)	58.0%	(DPS)	88.0%
(SI)	24.0%	(IT)	48.0%	(SE)	48.0%	(AP)	86.0%
(CO)	20.0%	(DPS)	48.0%	(VM)	44.0%	(SI)	78.0%
(PB)	16.0%	(CH)	44.0%	(SI)	42.0%	(CH)	76.0%
(SE)	12.0%	(PA)	44.0%	(EM)	36.0%	(XO)	66.0%
(CD)	10.0%	(EPS)	44.0%	(CH)	32.0%	(IT)	66.0%
(IT)	10.0%	(XO)	38.0%	(PA)	32.0%	(EM)	64.0%
(CV)	4.0%	(CD)	32.0%	(XO)	30.0%	(PA)	56.0%
(DO)	4.0%	(RE)	20.0%	(FC)	30.0%	(FC)	52.0%
(EPS)	4.0%	(EM)	16.0%	(PB)	20.0%	(SE)	50.0%
(DPS)	4.0%	(CV)	12.0%	(IT)	16.0%	(PB)	32.0%
(EM)	0.0%	(DO)	12.0%	(CV)	16.0%	(CV)	12.0%
(FC)	0.0%	(FC)	0.1%	(DO)	0.0%	(DO)	0.0%
<i>Average</i>	24%		48%		52%		71%
Category II (Entity characteristics)							
(NE)	76.0%	(NE)	96.0%	(NE)	100%	(NE)	100.0%
(SBSI)	56.0%	(RP)	96.0%	(RM)	96.0%	(RM)	100.0%
(MCS)	48.0%	(RM)	88.0%	(MCS)	96.0%	(MCS)	100.0%
(RM)	28.0%	(SBSI)	84.0%	(SME)	92.0%	(SME)	100.0%
(RP)	12.0%	(MCS)	80.0%	(SPI)	80.0%	(SBSI)	100.0%
(SPI)	8.0%	(SME)	64.0%	(SBSI)	76.0%	(SPI)	96.0%
(SME)	4.0%	(SPI)	48.0%	(RP)	0.0%	(RP)	4.0%
<i>Average</i>	33%		79%		77%		86%

First, the results show that in general both Czech and Swedish companies provide better information on entity characteristics than on items that affect value relevance directly. Valuation relevant items were on average disclosed to 24% in the Czech Republic in 1994 and entity characteristics to 33%. In 2001, the valuation relevant items were disclosed to 48% and entity characteristics to 79%. The pattern is similar in Sweden. One potential reason why companies disclose more entity characteristics items might be that these are relatively simple and easy to provide. They neither reveal too much information that the companies might perceive as sensitive.

Second, the level of disclosure of the individual items is in general lower in the Czech firms. The disclosure of both categories improves over time but the difference between the two countries remains quite large in 2001. The difference between the disclosures of entity characteristics is substantially smaller in 2001. The difference between disclosures of valuation relevant items suggests that the value relevance might be higher in Sweden in both 1994 and 2001.

Several observations can be made. A particular important difference between the Czech and the Swedish companies refers to the consolidation rules. Consolidation is followed to 90% (1994) and 100% (2001) in Sweden but only to 10% (1994) and 32% (2001) in the Czech Republic. Consolidation affects strongly the quality of accounting numbers and thus, lack of consolidated data would affect the value relevance of accounting information negatively. There are further differences in items which are crucial for the forecasts of future profitability of the company - the disclosure of segment information (disclosed to 24% and 52% respectively in the Czech Republic and 42% and 78% respectively in Sweden) – and for understanding the accounting measurement principles - the disclosure of foreign currency translation (not disclosed by the Czech companies at all and disclosed to 30% and 52% respectively by the Swedish companies) and disclosure of contingencies (20% and 62% respectively in the Czech Republic and 84% and 96% respectively in Sweden).

In summary, the results for the Czech companies are poor in both 1994 and 2001 as far as the disclosure of valuation relevant information is concerned. Most of the items are disclosed to less than 50% in both years. Obvious disclosures like the disclosure of notes to the accounts, the disclosure of basic valuation methods and the disclosure of accounting policies are insufficient in 1994. However, these three generally relevant items had

improved substantially by 2001. In 2001, all Czech companies except one disclose notes to accounts and the basic valuation methods used for the preparation of the financial statements.

In appendix 6, the individual items are ranked according to how many companies actually disclose the item. This gives additional information particularly for those items that are coded as 0,1 or 2. It might be that the company provides some information on the respective item although it does not completely fulfill the requirements²⁴.

Table 8 shows how the disclosure of individual items changed over time in both countries. The number is the difference in points for the individual items between 1994 and 2001. The greatest change in the Czech Republic refers to the disclosure of accounting policies. Since there was no change in mandatory disclosure requirements of accounting policies between 1994 and 2001, the improvement refers to companies increased awareness of the importance of this disclosure. The improvements in the statement of shareholders' equity and disclosure of contingencies relate to the change in mandatory disclosure requirements regarding these items (see table 4).

The disclosure of extraordinary items remains on a low level in the Czech Republic which might be one reason why accounting quality in general is lower in the Czech Republic throughout the whole period. It seems that while the Czech companies improve on average disclosure of most accounting items, they keep extraordinary items as a way to adjust earnings²⁵. In Sweden, the disclosure of income taxes improved most between 1994 and 2001. This is likely to be related to a new accounting standard. There is also an increase in disclosure of segment information and extraordinary items and in disclosure of accounting policies and valuation methods. There were no changes in the mandatory requirements regarding these items and the improvements cannot thus be related to a change in accounting standards²⁶.

²⁴ For example, disclosure of a cash flow statement scores only 82% in the Czech Republic in 2001 due to the distinction between cash flow statement as a primary report and cash flow statement in the notes, but all companies provide the cash flow statement in either form.

²⁵ Chapter one in part two shows that the smoothing of earnings persists throughout the whole research period thus giving support to this explanation.

²⁶ The improvement, however, is substantial from the user's perspective. For example, when regarding the disclosure of accounting policies and valuation of

The greatest difference in the disclosure of entity characteristics in the Czech Republic regards the disclosure of related parties transactions. It seems that this disclosure to a certain extent substitutes consolidation in the Czech Republic. Also, the disclosure of remuneration to management and management's shareholdings in the company improved substantially. These increased disclosures probably have a lot to do with the corporate governance problems in Czech companies and aim at increasing the transparency and the credibility of the company and its management.

Finally, the results in table 8 show the same pattern of improvements as the results reported in table 7. Czech companies seem to improve more information on entity characteristics, while Swedish companies improve more the disclosure of valuation relevant items. This should lead to continuing differences in the value relevance of accounting information in the two countries. This is the topic of the next section.

methods, the practice in Swedish companies switched from referring to accounting standards and legislation to explicitly describing the methods applied.

Table 8. Changes in the actual disclosure of items

Czech Republic				Sweden			
<i>Category I (Valuation relevant items)</i>		<i>Category II (Entity characteristics)</i>		<i>Category I (Valuation relevant items)</i>		<i>Category II (Entity characteristics)</i>	
(AP)	23	(RP)	21	(IT)	25	(SBSI)	6
(SE)	22	(RM)	15	(SI)	18	(SME)	2
(CO)	21	(SME)	15	(XO)	18	(SPI)	4
(IT)	19	(SPI)	10	(AP)	14	(RP)	1
(SI)	14	(MCS)	8	(VM)	13	(MCS)	1
(PB)	14	(SBSI)	7	(CH)	11	(RM)	1
(CD)	11	(NE)	5	(FC)	11	(NE)	0
(DPS)	11			(EM)	7		
(EPS)	10			(PA)	6		
(CFS)	8			(CO)	6		
(VM)	8			(CD)	5		
(NA)	7			(PB)	3		
(PA)	5			(DPS)	2		
(FC)	5			(SE)	1		
(EM)	4			(RE)	1		
(CV)	2			(EPS)	1		
(DO)	2			(NA)	0		
(XO)	1			(CFS)	0		
(CH)	0			(DO)	0		
Average change in disclosure	7.2		11.6		7.1		2.1

The items are ranked according to the change in the number of total points between year 1994 and 2001 (actual disclosure score 2001 – actual disclosure score 1994).

Category I (Valuation relevant items): Disclosure of accounting policies (AP), Effects of change in accounting policies (CH), Disclosure of prior period adjustments (PA), Disclosure of notes to accounts (NA), Changes in shareholders' equity (SE), Disclosure of cash flow statement (CFS), Disclosure of consolidated data (CD), Disclosure of segment information (SI), Appropriation of retained earnings (RE), Disclosure of post balance sheet events (PB), Disclosure of valuation method (VM), Disclosure of current value of building (CV), Disclosure of equity method (EM), Disclosure of contingencies (CO), Disclosure of extraordinary items (XO), Disclosure of discontinued operations (DO), Effect of foreign currency translation (FC), Disclosure of income tax (IT), Disclosure of earnings per share (EPS), Disclosure of dividends per share (DPS),

Category II (Entity characteristics): Disclosure of related parties transactions (RP), Multiple classes of shares (MCS), Share price information (SPI), Subsidiaries information (SBSI), Number of employees (NE), Remuneration of directors and management (RM), Shares owned by directors and employees (SME)

4.4. Association between value relevance and disclosure quality

In section 2.4., it was suggested that the level of disclosure quality affects the level of value relevance of accounting information. Previous results of disclosure quality tests indicate that there is an increase in disclosure quality in the Czech Republic. Whether there is an association between the disclosure quality and the value relevance of accounting information is tested in this section. The contribution of mandatory disclosure requirements and the level of compliance to the changes in value relevance is also tested. The results are reported in table 9.

Table 9. Results of the association between value relevance, mandatory disclosure requirements and compliance level

$$\left| \frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} \right| = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{jt} + \varepsilon_{jt} \quad \text{and} \quad \left| \frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} \right| = \beta_0 + \beta_1 * MD_{ct} + \beta_2 * CL_{CATIjt} + \beta_3 * CL_{CATIIjt} + \varepsilon_{jt}$$

\hat{P}_{jt} is the estimated price for company j at time t , P_{jt} is the observed price for company j at time t , BV_{jt} is the book value of shareholders' equity of company j at time t . MD_{ct} is mandatory disclosure score for country c at time t , CL_{jt} is total compliance level for company j at time t . The compliance level is measured as actual disclosure score of the company/mandatory disclosure requirements (stated in percentage²⁷). CL_{CATIjt} is the compliance level of the category I items (valuation relevant disclosure). $CL_{CATIIjt}$ is the compliance level of the category II items (entity characteristics disclosure).

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	No of observations	α_0	α_1	α_2		R^2
Total sample	104	0.164	0.006	0.212		1.2%
Czech sample	68	0.560***	-0,024**	0.353**		8.5%
		β_0	β_1	β_2	β_3	
Total sample	104	-0.011	0.002	-0.010**	0.035**	13.2%
Czech sample	68	0.001***	-0.004*	0.009	0.007	2.1%

The results show that both mandatory disclosure requirements and compliance level explain to certain extent the value relevance of accounting numbers. However, their role seems to differ for the two samples. For the Czech sample, the coefficient on the mandatory disclosure requirements is negative in both tests. This means that higher level of mandatory disclosure requirements increases the value relevance. In the total sample, the level of mandatory disclosure requirements does not seem to make any difference.

²⁷ Robustness test was made using the total score of compliance level. The results are in the same direction but slightly weaker.

The overall compliance level score is significantly positive for the Czech sample in the first test. Contrary to the hypothesis, value relevance decreases when companies comply more with the regulation. One reason might be that higher compliance makes it possible to distinguish between the good and bad companies. If a company, for example, reports high earnings but these are of low quality, the investors will recognize it with help of the disclosure and the difference between the estimated and observed price will increase (value relevance of the accounting numbers will decrease). Second reason might be that the accounting regulation as such is of lower quality which will be recognized by the market when more information is disclosed.

The results show that higher level of mandatory disclosure requirements is in general preferable in a transition period – no matter whether the accounting regulation as such is of lower quality or not. The mandatory disclosure requirements seem to improve the credibility of accounting information on a country level. Compliance with these mandatory requirements however has a different effect on the value relevance of accounting numbers of the individual companies depending on whether these are good or bad companies and depending on the quality of recognition and measurement principles.

The choice of items which the companies do or do not disclose might also have a signaling function. If a company for example systematically avoids disclosing valuation relevant items which help the investors to predict future profitability, it might be perceived as a negative signal and the market may assume that the company tries to hide certain information. The distinction between the valuation relevant items and entity characteristics in the second test, however, does not bring about any additional information. It does not seem that the investors understand or take into account the distinction between the valuation relevant items and other items in the transition economy.

However, in the total sample, the distinction between the valuation relevant and other items becomes important. The explanatory power increases from 1.2% to 13.2%. The disclosure of valuation relevant items increases the value relevance of accounting information and the disclosure of other information decreases it. Mandatory disclosure requirements are insignificant for the total sample.

The reasons for the different results are not obvious. One potential explanation is a substantial difference between the quality of accounting in the Czech Republic and Sweden. The level of mandatory disclosure requirements is important in the transition economy since it is in general substantially lower. It seems to lose its importance for the value relevance in a rich accounting environment. In other words, in a transition economy, the investors care about how much information is disclosed but in a well-developed market economy, the investors automatically assume a high quality of disclosure. Also, if mandatory disclosure requirements are of high quality, investors would care more about high compliance level of valuation relevant items which is also the case for the total sample. This would indicate that the total sample results might be driven by the Swedish sample.

The somewhat contradictory result might also depend on the structure of the test. First, the chosen measure of value relevance might not capture completely the underlying concept. Second, the intercept is significant in the Czech sample which means that the regression may lack some omitted variables. Under such circumstances, it is not quite clear whether the coefficients really have the correct sign. In other words, the value relevance as measured by the difference between estimated price and observed price is explained to a certain extent by mandatory disclosure and compliance level, but there are also other factors that contribute to the change in value relevance.

4.5. Factors influencing the compliance level

In this section, the company characteristics that might influence the actual disclosures of the companies are analyzed. Table 10 reports the summary descriptive statistics of the characteristics of the sample companies.

Table 10. Description of the total regression sample

	Total number of observations	122
Listing and reporting	Foreign listing (number of observations)	10
	De-listed companies (number of observations)	47
	Big Four auditors	92
	IAS/US GAAP reporting	16
Ownership	Ownership concentration (average percentage shareholding of the largest owner)	45.9%
	Foreign investors (number of observations with foreign participation)	58
	State ownership (number of observations where state is the largest shareholder)	29
	Institutional ownership (number of observations where institutions are the largest shareholder)	21
Performance	Return on equity (average)	9.5%
	Size (total assets in mill US\$)	848.9
	Debt-equity ratio	1.13

Foreign listing is rare for both Swedish and Czech companies (totally, 10 companies were listed abroad). Only one Swedish company has been de-listed since the research period, all other de-listed companies are Czech. 16 companies report IAS or US GAAP and they treat the IAS reporting differently. Particularly Swedish companies disclose financial statements according to the IAS in the notes. The Czech companies on the other hand state that they prepare main financial statements according to the IAS (followed in such cases by financial statements according to Czech GAAP). However, some companies explicitly say that they “*principally*” prepare the financial statements according to IAS but sometimes adjustments must be made so that these also comply with the Czech legislation²⁸. Most companies employ Big Four auditors and companies that do not employ them are usually Czech companies situated outside the capital city.

Both Czech and Swedish companies have relatively high concentrated ownerships (the largest owner holds on average 45.9% of the companies’ shares). Foreign investors own shareholdings in only 58 of the sample companies (note that the foreign ownership means only presence of foreign investors, not the size of their shareholdings). State ownership exists only in Czech companies while institutional ownership exists in both countries. Both state and institutional ownership are coded only if the state or the institution is the largest shareholder. The performance measures are in line with descriptive results in part one. Profitability is driven down particularly by the Czech companies.

²⁸ For example, ČEZ and Jihočeská energetika

The association between the company characteristics and disclosure level is tested as follows

$$DI_{jt} = \alpha_0 + \alpha_1 ABR_{jt} + \alpha_2 DEL_{jt} + \alpha_3 AUD_{jt} + \alpha_4 IAS_{jt} + \alpha_5 CONC_{jt} + \alpha_6 FI_{jt} + \alpha_7 STATE_{jt} + \alpha_8 INST_{jt} + \alpha_9 SIZE_{jt} + \alpha_{10} ROE_{jt} + \alpha_{11} D/E_{jt} \quad (5)$$

where *DI* is disclosure score (total disclosure score or compliance level score), *ABR* is foreign listing, *DEL* is de-listed company, *AUD* is type of auditor, *CONC* is ownership concentration, *FI* is foreign investors, *STATE* is state ownership, *INST* is institutional ownership. *SIZE* is logarithm of total assets, *ROE* is return on equity and *D/E* leverage. All variables are for company *j* at time *t*. The variables are coded as stated in table 3.

The regression is run for two disclosure scores - total disclosure and compliance level. The total disclosure includes all disclosed items that a particular company discloses no matter whether this is mandatory according to the domestic GAAP²⁹. The compliance level is the percentage to which each firm complies with the mandatory disclosure requirements in the country (company's compliance disclosure score/mandatory disclosure score)³⁰. The small number of observations might cause problems in regressions which include a larger number of variables. Therefore, a stepwise regression method was used. The stepwise regression method excludes insignificant and correlated variables until it reaches the optimal number of significant variables.

The results for both total disclosure and compliance level are summarized in table 11. In the total disclosure test, the results are similar for both the total and the Czech sample. The explanatory power is high (48.8% for the total sample and 45.5% for the Czech sample). There are three significant explanatory variables which all have the predicted sign – type of auditors (positive), state ownership (negative) and size (positive). The size of company and Big Four auditors increase the disclosure level of the company. State companies in general disclose less information.

²⁹ In other words, this score measures the company's disclosure in terms of the IAS disclosure index.

³⁰ Robustness tests were made using the total compliance disclosure score (as number of points achieved). The results were in the same direction but less significant.

Table 11. Total disclosure and factors of influence (significance level in the brackets)

$$DI_{jt} = \alpha_0 + \alpha_1 ABR_{jt} + \alpha_2 DEL_{jt} + \alpha_3 AUD_{jt} + \alpha_4 IAS_{jt} + \alpha_5 CONC_{jt} + \alpha_6 FI_{jt} + \alpha_7 STATE_{jt} + \alpha_8 INST_{jt} + \alpha_9 SIZE_{jt} + \alpha_{10} ROE_{jt} + \alpha_{11} D/E_{jt}$$

where *DI* is disclosure score (total disclosure score or compliance level score), *ABR* is foreign listing, *DEL* is de-listed company, *AUD* is type of auditor, *CONC* is ownership concentration, *FI* is foreign investors, *STATE* is state ownership, *INST* is institutional ownership. *SIZE* is logarithm of total assets, *ROE* is return on equity and *D/E* leverage. All variables are for company *j* at time *t*. The variables are coded as stated in table 3.

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

Panel A. Total disclosure

	Total sample		Czech sample	
	All variables	Stepwise	All variables	Stepwise
Intercept	2.895	1.166	1.903	-6.931
ABR	-3.096		4.912	
DEL	0.162		-1.046	
AUD	9.040***	8.730***	7.895***	8.666***
IAS	1.837		2.209	
CONC	-3.111		-8.176*	
FI	2.130		4.230	
STATE	-5.758***	-6.155***	-4.896**	-6.288***
INSTIT	2.022		-0.289	
SIZE	1.091**	1.180***	1.255	1.831**
ROE	-0.399		7.664	
D/E	-0.269		0.999	
R^2	47.5%	48.8%	45.1%	45.5%
Number of observations	94	94	53	53

Panel B. Compliance level

	Total sample		Czech sample	
	All variables	Stepwise	All variables	Stepwise
Intercept	0.194	0.475***	-0.029	-0.230
ABR	-0.167*		0.061	
DEL	-0.018		-0.030	
AUD	0.262***	0.259***	0.320***	0.301***
IAS	0.120***	0.120**	0.056	
CONC	0.000		-0.256	
FI	0.048		0.059	
STATE	-0.101**		-0.165**	-0.210***
INSTIT	0.122**	0.138***	0.092	
SIZE	0.028**	1,180***	0.055	0.069***
ROE	-0.170		0.403	
D/E	-0.120		0.009	
R ²	38.3%	36.6%	43.8%	45.7%
Number of observations	94	94	53	53

The results for the compliance level differ between the Czech and total samples. For the Czech sample, the explaining variables are the same as for total disclosure – that is type of auditor, state ownership and size. Large companies and companies employing the Big Four auditors are more inclined to comply with the regulation, while state owned companies are more inclined to disobey. For the total sample, the explaining variables are type of auditor, size of the company, institutional ownership and whether the company provides IAS or US reporting (all positive and increasing the value relevance).

It seems that the slightly different results for the total sample are driven by the Swedish sample. The difference in the ownership variable might be due to the fact that Swedish institutional owners play a more active role than their Czech counterparts. The weak ownership and lack of interest of Czech institutional owners during the transition period has been discussed in the first study. The difference in the IAS reporting variable might be due to the fact that IAS/US reporting is costly and if companies choose to provide it, they do not take the risk of losing potential benefits by disobeying the regulation. However, the IAS reporting in the Czech Republic often deviates from the IAS in order to comply with the Czech accounting legislation (particularly tax legislation) and this might decrease the significance of IAS in the Czech Republic.

In summary, the main driving factors which influence the disclosure choice of companies are similar in a transition economy and market economy. Large companies and companies which employ a credible auditor tend to disclose more information and comply to a higher extent to regulation. The fact that small companies do not disclose so much information may have two reasons, the first being relative simplicity of their business, the other being high costs for information providing including the choice of auditor³¹.

There is a difference in the results between the transition economy and market economy as far as ownership is concerned. First, state ownership does not exist in the Swedish sample. Second, the character of institutional owners differs between the countries. Third, the foreign ownership might have different impacts on accounting since foreign owners in the Czech Republic in general come from countries with better accounting regulation, while it does not have to be the case in Sweden³².

In the Czech Republic, the state ownership apparently decreases the amount of the information that a company provides to external users of the financial reports. It also affects negatively the compliance level. One can assume that as long as companies where state is the largest owner do not follow the rules it might be difficult to convince other companies to do so. The state owned companies should be a model for financial reporting of high quality particularly in countries and periods when domestic resources are scarce and new – often foreign – capital is needed. Thus, the state ownership contributes substantially to the fact that the value relevance in the Czech Republic is still lower in the country in 2001 than in Sweden.

5. Concluding remarks

In this study, disclosure quality in a transition economy (Czech Republic) was compared to disclosure quality in a market economy (Sweden). The main question was whether differences in accounting quality between the Czech Republic and Sweden as measured by value relevance of accounting information are associated with the amount of information which the

³¹ The correlation matrix in appendix 7 shows that the choice of the auditor is highly correlated to the size of the company.

³² Note, however, that the variable “foreign investors” is not significant in the regression.

companies disclose. The next question was to what extent the level of disclosure quality in these countries can be explained by the level of mandatory disclosure requirements and by the level of compliance with the rules. Finally, the main factors which influence the company's disclosure choice were identified.

The results of the study indicate that the mandatory disclosure requirements and the level of compliance with the rules was lower in the Czech Republic than in Sweden both in the beginning of the transition period (1994) and the end of the transition period (2001). They also show that both mandatory disclosure requirements and the compliance level improved over time.

The mandatory disclosure requirements affect the value relevance of Czech accounting information positively; that is more mandatory disclosure increases the value relevance. The level of compliance has, however, the opposite effect, suggesting that the more companies disclose according to the mandatory requirements, the more the users find out about the underlying (low) quality of the accounting numbers. The quality of the underlying accounting numbers was questioned in chapter 1 and thus, the results of this study seem to be consistent.

The results show that there might be a threshold level as to how much disclosure should be required. The study finds that there is a difference between large companies and small companies as to the level of disclosure which might depend on the complexity of operations as well as on the costs for gathering and reporting financial information. The type of auditors influences the level of disclosure provided by the companies. Employing Big Four auditing firms has a positive effect on the disclosure level. The third important factor which influences the amount of information disclosed is the type of owner. The results show that state owned companies have a poor disclosure quality and do not follow the accounting regulation as they should. This is a serious issue in a transition economy where the state ownership of companies still is substantial. This finding shows that the issue of good or bad financial information is an issue not only for the accounting standard setters and control mechanisms but it is an issue of a larger perspective related to corporate governance problems.

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Appendices

- Appendix 1: Coding of accounting policies
- Appendix 2: List of companies
- Appendix 3: Descriptive characteristics of the sample companies
- Appendix 4: Disclosure requirements - IAS, Czech GAAP and Swedish GAAP
- Appendix 5: Disclosure score summary for all sample companies
- Appendix 6: Disclosure of individual items – ranking according to the number of disclosing companies
- Appendix 7: Correlation matrices
- Appendix 8: Coefficients from the logarithmic regressions used for estimation of price
- Appendix 9: List of abbreviations

Appendix 1. Coding of the disclosure of accounting policies

Disclosure of accounting policies was coded separately. First, disclosure of the following items was coded (given 0 or 1):

- Valuation of intangible assets
- Valuation of tangible assets
- Methods of depreciation
- Valuation of inventory
- Valuation of accounts receivable
- Disclosure of accounts payable
- Accounting for income taxes
- Accounting for foreign currency translation
- Methods of consolidation

If the company disclosed more than 75% of these policies, it was assigned 2 points, if more than 50% it was assigned 1.5 point, if more than 25% it was assigned 1 point and zero point was assigned if otherwise.

The same procedure was repeated for the following items:

- Revenue recognition
- Accounting for leasing
- Translation of foreign subsidiaries
- Disclosure of equity method
- Valuation of financial assets
- Disclosure of R & D

Again, if the company disclosed more than 75% of these policies, it was assigned 2 points, if more than 50% it was assigned 1.5 point, if more than 25% it was assigned 1 point and zero point was assigned if otherwise.

Finally, an average was calculated from the points received for the first group and second group. The final score which entered the disclosure index (disclosure of accounting policies) was thus 0, 1 or 2.

En example, a company disclosed all items in the first groups and only one in the second group. It would get 2 points for the first group and 0 points for the second group, the average being 1 which would also be the company's disclosure score for accounting policies in the disclosure index. The reason why accounting policies are divided into two groups is that the first group includes the most common and basic accounting policies while the second group includes either more complex issues or more detailed disclosure.

Appendix 2. List of companies in alphabetical order and their number

	Czech Republic (1994-6 and 2001)	Sweden (1994 and 2001)	Additional companies (2001 only)
1	Aliachem	AssaAbloy	Energoaqua
2	Česká námořní plavba	Bilia	Jáchymov
3	Česká zbrojovka	Electrolux	Jihočeské papírny Větní
4	České radiokomunikace	Enea	Jihomoravská energetika
5	Český Telecom	Ericsson	Jihomoravská plynárenská
6	ČEZ	Esselte	NKT
7	Jihočeská energetika	Fjällräven	Nová hut'
8	Jihočeská plynárenská	Gambor	Philip Morris
9	Kablo Elektro	Graninge	Pražská plynárenská
10	Lázně Teplice	Haldex	Pražské služby
11	Metrostav	HL Display	PVT
12	Paramo	JM	Severočeská energetika
13	Pražská energetika	NobelBiocare	Severomoravská energetika
14	Setuza	OEM	Sokolovská uhelna
15	Severočeská plynárenská	PEAB	Spolana
16	Severočeské doly	Pricer	Spolek chemických hutí
17	Severomoravská plynárenská	Rottneros	Středočeská energetika
18	Severomoravské vody a kanalizace	SCA	Toma
19	Slezan	Scribona	Východočeská energetika
20	SSŽ	SECO	Západočeská energetika
21	Stock	Senea	Žďas
22	Tarmac	SKF	ŽS Brno
23	Unipetrol	Taurus	
24	Východočeská plynárenská	Tricorona	
25	Západočeská plynárenská	Ångpanneföreningen	

Appendix 3 – Descriptive characteristics of the sample companies

TD = Total disclosure score, CL = Compliance level score, ABR = listing abroad (1 if listed abroad, 0 otherwise), DEL = de-listed since 2001 (0 if de-listed, 1 otherwise), OWN = the type of the largest owner (S = state, F = foreign owner, I = institutional owner, D = domestic strategic owner) CONC = the shareholdings of the largest owner (in percentage), AUD = type of auditor (1 if Big Four auditor, 0 otherwise), IAS = IAS or U.S. GAAP reporting (1 if IAS/U.S. GAAP used, 0 otherwise), FI = the shareholding of foreign investors (percentage)

Czech Republic 1994									
Company	TD	CL	ABR	DEL	OWN	CONC	AUD	IAS	FI
1	14	7	0	0	D		1	0	
2	3	2	0	1	F	49%	0	0	Yes
3	12	9	0	1	I	12%	0	0	
4	8	8	0	0	S	69%	1	0	
5	16	11	0	1	S	70%	1	1	
6	15	10	0	1	S	71%	1	1	12%
7	5	1	0	0	S	81%	0	0	
8	5	3	0	0	S		0	0	
9	13	8	0	0	I	33%	0	0	
10	4	2	0	1	I	20%	0	0	
11	9	4	0	0	I	20%	0	0	
12	6	3	0	1	S	71%	1	0	
13	11	7	0	1	S		0	0	
14	5	2	0	1	n.a.		0	0	
15	3	2	0	0	n.a.		1	0	
16	15	8	0	0	S	46%	0	0	
17	12	6	0	1	S	47%	1	0	
18	14	6	0	0	n.a.		0	0	
19	9	5	0	1	n.a.		0	0	
20	18	12	0	0	F		1	0	Yes
21	2	1	0	0	n.a.		0	0	
22	6	5	0	0	F		1	0	Yes
23	11	5	0	1	n.a.		1	0	
24	5	3	0	1	S		1	0	
25	9	4	0	1	S	45%	1	0	

Czech Republic 2001

Company	TD	CL	ABR	DEL	OWN	CONC	AUD	IAS	FI
1	18	15	0	0	D	50%	1	0	1%
2	20	16	0	1	n.a.		0	0	
3	18	13		1	D	76%	1	0	
4	27	21	0	0	F	82%	1	1	83%
5	27	20	1	1	S	51%	1	1	7%
6	25	18	0	1	S	67%	1	1	11%
7	24	18	0	0	S	48%	1	0	13%
8	15	11	0	0	S	47%	0	0	Yes
9	12	10	0	0	F	21%	0	0	Yes
10	2	2	0	1	F	46%	0	0	46%
11	23	16	0	0	D	67%	1	1	13%
12	17	13	0	1	D	74%	0	0	
13	28	20	0	1	D	51%	1	1	
14	16	14	0	1	D	50%	0	0	
15	21	17	0	0	S	49%	1	0	45%
16	24	17	0	0	S	55%	1	1	
17	20	17	0	1	S	40%	1	0	
18	20	16	0	0	F	54%	1	0	98%
19	17	13	0	1	n.a.	n.a.	1	0	
20	20	17	0	0	D	92%	1	0	
21	22	17	0	0	F	93%	1	0	93%
22	20	16	0	0	F	88%	1	0	88%
23	22	17	0	1	n.a.	n.a.	1	0	
24	17	15	0	1	S	47%	1	0	Yes
25	20	14	0	1	S	46%	1	0	47%
26	20	17	0		I	39,0%	0	0	39,0%
27	23	17	0		S	48,0%	1	0	42,0%
28	21	17	0		S	48,7%	1	0	
29	26	20	0		D	67,0%	1	1	13,0%
30	20	17	0		I	53,7%	1	0	
31	2	2	0		S	49,0%	0	0	18,0%
32	18	14	0		D	15,0%	0	0	0,0%
33	21	18	0		S	58,0%	1	0	34,0%
34	23	17	0		S	48,0%	1	0	38,0%
35	27	22	0		S	49,0%	1	0	41,0%
36	21	16	0		D	71,5%	0	0	

37	21	19	0				0	0	
38	14	11	0	D		47,3%	0	0	
39	17	14	0	I		37,0%	0	0	28,0%
40	24	19	0	S		48,7%	1	0	22,0%
41	30	21	0	F		46,7%	1	1	50,0%
42	22	19	0	S		48,0%	1	1	45,0%
43	23	20	0	D		78,0%	1	0	6,0%
44	24	18	0	D		50,2%	1	0	
45	20	14	0	F		70,0%	1	0	70,0%
46	15	12	0	I		42,6%	0	0	
47	2	2	0	S		76,9%	0	0	15,7%

Sweden 1994

Company	TD	CL	ABR	DEL	OWN	CINC	AUD	IAS	FI
1	22	20	0	1	F	45%	1	0	
2	19	17	0	1	D	37%	1	0	20%
3	24	21	1	1	I	48%	1	1	47%
4	12	10	1	1	D	9%	1	0	
5	25	23	1	1	I	27%	1	1	47%
6	23	20	0	0	D	15%	1	0	12%
7	15	14	0	1	D		1	0	
8	24	22	0	0	I	36%	0	0	
9	17	14	0	0	D	25%	1	0	
10	24	22	0	1	D	56%	1	0	
11	20	18	0	1	D	68%	1	0	
12	23	19	0	1	D	74%	1	0	
13	18	17	0	1	D	74%	1	0	
14	19	17	0	1	D	38%	1	0	
15	21	19	0	1	D	59%	1	0	
16	20	19	0	1	D	41%	1	0	
17	19	17	0	1	D	21%	1	0	
18	28	24	1	1	I	24%	1	0	11%
19	19	17	0	1	D	52%	1	0	
20	27	24	0	1	D	90%	0	0	
21	21	19	0	0	D	26%	1	0	
22	31	27	1	1	I	26%	1	1	
23	11	11	0	0	D	31%	1	0	
24	16	15	0	1	D	32%	1	0	
25	23	20	0	1	D	53%	1	0	

Sweden 2001

Company	TD	CL	ABR	DEL	OWN	CONC	AUD	IAS	FI
1	29	28	0	1	F	25%	1	0	
2	25	23	0	1	D	40%	1	0	5%
3	30	29	1	1	I	22%	1	1	42%
4	29	28	0	1	I	5%	1	0	19%
5	31	31	1	1	I	39%	1	1	2%
6	26	26	0	0	I	30%	1	0	9%
7	26	26	0	1	D	74%	1	0	
8	31	31	0	0	I	26%	1	0	34%
9	30	29	0	0	D	23%	1	0	50%
10	21	20	0	1	D	11%	1	0	8%
11	25	24	0	1	D	61%	1	0	2%
12	30	28	0	1	I	20%	1	0	10%
13	27	26	0	1	D	13%	1	0	88%
14	29	28	0	1	D	33%	1	0	23%
15	30	29	0	1	D	22%	1	0	
16	30	30	0	1	D	9%	1	0	24%
17	25	24	0	1	D	25%	1	0	14%
18	30	29	1	1	I	29%	1	0	25%
19	30	29	0	1	I	28%	1	0	33%
20	28	27	0	1	D	90%	1	0	1%
21	19	18	0	0	D	40%	1	0	
22	28	28	1	1	D	25%	1	1	29%
23	19	19	0	0	D	33%	1	0	
24	23	22	0	1	D	37%	1	0	5%
25	26	24	0	1	D	48%	1	0	9%

Appendix 4. Mandatory disclosure requirements - IAS, Czech GAAP and Swedish GAAP

Disclosure index	IAS 2001	Czech GAAP 1994	Czech GAAP 2001	Swedish GAAP 1994	Swedish GAAP 2001
Disclosure of accounting policies	Yes	Yes	Yes	Yes	Yes
Disclosure of the effect of a change in accounting policy	Yes	Yes	Yes	Yes	Yes
Disclosure of prior period adjustments	Yes, adjust prior periods or income of current year	No	No	Not in accounting act, in standard as XO items	Yes
Disclosure of notes to accounts	Yes	Yes	Yes	Yes	Yes
Disclosure of changes in shareholders' equity	Yes	Note	Note	Note	Note
Statement of cash flows is required for all listed firms	Yes	Note	Note	Yes	Yes
Disclosure of consolidated data required for all firms	Yes. Assets and liabilities valued at fair value.	Yes but not sufficient	Yes, but exceptions to consolidation	Yes	Yes. Compliance with IAS.

	IAS 2001	Czech GAAP 1994	Czech GAAP 2001	Swedish GAAP 1994	Swedish GAAP 2001
Table continued of segment information	Name, country, number of votes, all significant industrial and geographic revenues, results and assets	No	Participation in group companies greater than 20%. Information on sales from geographical segments (domestic versus export).	Report operating income of different lines of business either in income statement or note.	Disclose sales, operating results, assets, capital investments and number of employees for each industry and geographic segment.
Disclosure of appropriation of retained earnings	Yes	No	Note	Yes	Yes
Disclosure of post balance sheet events	Yes	No	Yes	Yes	Yes
Disclosure of related party transactions	Yes, relationships, type of transactions, elements necessary for understanding.	No	Yes.	Parent and subsidiary should disclose the proportion of purchases and sales that relate to other group companies.	Parent and subsidiary should disclose the proportion of purchases and sales that relate to other group companies.
Disclosure of method of asset valuation	Yes	Yes	Yes	Yes	Yes
Disclosure of current value of land and buildings	Yes	Tax value only	Yes. For substantially higher values.	Tax value only	Tax value only
Disclosure of equity method for investments	Yes	No	Yes	Yes	Yes

	IAS 2001	Czech GAAP 1994	Czech GAAP 2001	Swedish GAAP 1994	Swedish GAAP 2001
Table continued	Yes	No	Yes, in notes only	Yes	Compliance with IAS
Disclosure of contingencies if likely/probable	No	Yes, but not disclosed in notes.	Yes.	Yes	Compliance with IAS
Separate disclosure of unusual or extraordinary items	No separate category is recognized, should be included in net income and specified separately	Yes	Yes.	Yes, separate disclosure of details is required in the notes.	Compliance with IAS
Separate disclosure of costs for discontinued operations	Yes	No	No	No	No
Disclosure of the effect of foreign currency translation	Yes	No	No	No	Compliance with IAS
Disclosure of income taxes	Yes	No	Yes, in notes.	No	Compliance with IAS
Disclosure of earnings per share	Yes	No	No	No	Compliance with IAS
Dividends per share	Yes	No	No	No	No
Share price information	Number of shares and par value	Yes	Number of shares and par value	Number of shares and face value	Number of shares and nominal value
Multiple classes of shares	Yes	No	No	Yes	Yes
Subsidiaries information	Yes	Yes	Yes	Yes	Yes

	IAS 2001	Czech GAAP 1994	Czech GAAP 2001	Swedish GAAP 1994	Swedish GAAP 2001
Table continued					
Number of employees	Yes	No	Yes	Yes	Yes
Remuneration of directors and officers	Yes	No	Yes	Yes	Yes
Shares owned by directors & employees	Yes	Yes	Yes	Yes	Yes

Appendix 5. Disclosure score summary for all companies

The scores represent the actual disclosure of companies. Total disclosure means disclosure score according to IAS. Compliance level means disclosure score according to the country's mandatory disclosure requirements.

Total disclosure				Compliance level			
Czech Republic		Sweden		Czech Republic		Sweden	
1994	2001	1994	2001	1994	2001	1994	2001
14	18	22	29	7	15	20	28
3	20	19	25	2	16	17	23
12	18	24	30	9	13	21	29
8	27	12	29	8	21	10	28
16	27	25	31	11	20	23	31
15	25	23	26	10	18	20	26
5	24	15	26	1	18	14	26
5	15	24	31	3	11	22	31
13	12	17	30	8	10	14	29
4	2	24	21	2	2	22	20
9	23	20	25	4	16	18	24
6	17	23	30	3	13	19	28
11	28	18	27	7	20	17	26
5	16	19	29	2	14	17	28
3	21	21	30	2	17	19	29
15	24	20	30	8	17	19	30
12	20	19	25	6	17	17	24
14	20	28	30	6	16	24	29
9	17	19	30	5	13	17	29
18	20	27	28	12	17	24	27
2	22	21	19	1	17	19	18
6	20	31	28	5	16	27	28
11	22	11	19	5	17	11	19
5	17	16	23	3	15	15	22
9	20	23	26	4	14	20	24
Average							
9	20	21	27	5	15	19	26
Max points	36	36	36	12	21	27	32

Appendix 6. Disclosure of individual items – ranking according to the number of disclosing companies

Czech Republic 1994		Czech Republic 2001		Sweden 1994		Sweden 2001	
Valuation relevant items							
(CFS)	18	(CFS)	25	(CFS)	25	(CFS)	25
(NA)	17	(NA)	24	(NA)	25	(NA)	25
(VM)	16	(VM)	24	(CD)	25	(CD)	25
(XO)	16	(AP)	24	(SE)	24	(SE)	25
(AP)	14	(SE)	22	(CO)	24	(CO)	25
(SI)	12	(CO)	21	(RE)	24	(RE)	25
(CH)	11	(SI)	19	(AP)	23	(AP)	25
(RE)	8	(PB)	18	(SI)	15	(SI)	24
(PA)	6	(IT)	16	(FC)	12	(VM)	24
(SE)	6	(XO)	14	(VM)	11	(FC)	19
(CO)	6	(CH)	11	(XO)	9	(CH)	19
(CD)	4	(PA)	11	(EM)	9	(IT)	18
(PB)	4	(CD)	11	(CH)	8	(XO)	17
(IT)	4	(RE)	5	(PA)	8	(EM)	16
(CV)	1	(FC)	5	(IT)	7	(PA)	14
(DO)	1	(EM)	4	(PB)	5	(PB)	8
(EM)	0	(CV)	3	(CV)	4	(CV)	3
(FC)	0	(DO)	3	(DO)	0	(DO)	0
Non-valuation relevant items							
(NE)	19	(NE)	24	(NE)	25	(NE)	25
(SBSI)	14	(RP)	24	(RM)	24	(RM)	25
(MCS)	12	(RM)	22	(MCS)	24	(MCS)	25
(RM)	7	SBSI)	21	(SME)	23	(SME)	25
(RP)	3	(MCS)	20	(EPS)	23	(SBSI)	25
(SPI)	2	SME)	16	(SPI)	20	(EPS)	24
(EPS)	1	(SPI)	12	(DPS)	20	(SPI)	24
(DPS)	1	(DPS)	12	(SBSI)	19	(DPS)	22
(SME)	1	(EPS)	11	(RP)	0	(RP)	1

Note: The numbers mean the number of companies that disclose the respective disclosure item

Appendix 7.a . Correlation matrix – Total disclosure score and factors influencing the propensity of companies to comply with the regulation (total sample)

Pearson Correlation	TD	ABR	DEL	CON	AUD	IAS	FI	STAT	INST	SIZE	ROE	D/E
TD	1.000	.269	.108	-.177	.553	.284	.201	-.306	.217	.330	.036	.250
ABR	.269	1.000	.256	-.256	.175	.451	.068	-.120	.466	.495	.029	.160
DEL	.108	.256	1.000	-.121	.103	.045	-.316	-.198	.070	.032	.022	.147
CONC	-.177	-.256	-.121	1.000	.006	.090	.128	.227	-.412	-.043	.092	-.148
AUD	.553	.175	.103	.006	1.000	.234	.191	.046	-.175	.186	.006	.199
IAS/US	.284	.451	.045	.090	.234	1.000	.162	.120	.142	.524	.013	.058
FI	.201	.068	-.316	.128	.191	.162	1.000	-.006	.053	.083	.018	-.132
STATE	-.306	-.120	-.198	.227	.046	.120	-.006	1.000	-.311	.191	-.025	-.242
INST	.217	.466	.070	-.412	-.175	.142	.053	-.311	1.000	.316	.009	.094
SIZE	.330	.495	.032	-.043	.186	.524	.083	.191	.316	1.000	.173	.344
ROE	.036	.029	.022	.092	.006	.013	.018	-.025	.009	.173	1.000	.066
D/E	.250	.160	.147	-.148	.199	.058	-.132	-.242	.094	.344	.066	1.000

7. b. Correlation matrix – Compliance level and factors influencing the propensity of companies to comply with regulation (total sample)

Pearson Correlation CL (%)	CL (%)	ABR	DEL	CONC	AUD	IAS	FI	STATE	INST	SIZE	ROE	D/E
1.000	.190	.002	-.054	.510	.362	.224	-.136	.201	.346	.025	.155	
.190	1.000	.256	-.256	.175	.451	.068	-.120	.466	.495	.029	.160	
.002	.256	1.000	-.121	.103	.045	-.316	-.198	.070	.032	.022	.147	
-.054	-.256	-.121	1.000	.006	.090	.128	.227	-.412	-.043	.092	-.148	
.510	.175	.103	.006	1.000	.234	.191	.046	-.175	.186	.006	.199	
.362	.451	.045	.090	.234	1.000	.162	.120	.142	.524	.013	.058	
.224	.068	-.316	.128	.191	.162	1.000	-.006	.053	.083	.018	-.132	
-.136	-.120	-.198	.227	.046	.120	-.006	1.000	-.311	.191	-.025	-.242	
.201	.466	.070	-.412	-.175	.142	.053	-.311	1.000	.316	.009	.094	
.346	.495	.032	-.043	.186	.524	.083	.191	.316	1.000	.173	.344	
.025	.029	.022	.092	.006	.013	.018	-.025	.009	.173	1.000	.066	
.155	.160	.147	-.148	.199	.058	-.132	-.242	.094	.344	.066	1.000	

Appendix 8. Coefficients used for estimation of price

The coefficients are based on value relevance test $\ln P_{jt} = \alpha_0 + \alpha_1 * \ln X_{jt} + \alpha_2 * \ln BV_{jt}$ where P_{jt} is the market price of shareholders' equity of company j at time t , X_{jt} is accounting earnings of company j at time t and BV_{jt} is the book value of shareholders' equity of company j at time t . The logarithmic regression was tested in the first study of this dissertation for two periods (1994-1997 and 1998-2001) and for individual years throughout the period 1994-2001. Period coefficients are thus estimated for the two stated periods while year specific coefficients are for year 1994 (beginning of the transition) and 2001 (the end of the transition period) only.

		Period coefficients			Year specific		
		α_0	α_1	α_2	α_0	α_1	α_2
Czech Republic	1994	-1.255	0.491	0.665	1.671	0.573	0.397
Czech Republic	2001	-0.149	0.502	0.577	-0.078	0.382	0.642
Sweden	1994	1.664	0.304	0.643	1.132	0.316	0.677
Sweden	2001	3.424	0.208	0.636	1.681	0.251	0.719

Source: "The Value Relevance of Accounting Information in a Transition Economy: The Case of the Czech Republic" (part one in this dissertation)

Appendix 9 – List of abbreviations

Abbreviations in the equations

BV_{jt}	Book value of shareholders' equity for firm j at time t
CL	Compliance level
CL_{CATH}	Compliance level – valuation relevant items
CL_{CATH}	Compliance level – entity characteristics
ct	Country c at time t
D/E_{jt}	Debt-equity ratio for firm j at time t
DI	Disclosure index
J_t	Firm j at time t
J_{t-1}	Firm j at time t-1
J_{t+1}	Firm j at time t+1
MD	Mandatory disclosure
P_{jt}	Market value of equity for firm j at time t
r_e	Required rate of return
ROE_{jt}	Return on equity for firm j at time t
T	Horizon
TD	Total disclosure
V_{jt}	Value of equity for firm j at time t

Other abbreviations

ABR	Foreign listing
AP	Disclosure of accounting policies
AUD	Type of auditor
CD	Disclosure of consolidated financial statements
CFS	Disclosure of cash flow statement
CH	Disclosure of the effect of a change in accounting policies
CIFAR	Center for international financial analysis and research
CO	Disclosure of contingencies
CONC	Ownership concentration
CV	Disclosure of current value
DEL	Companies de-listed from the stock exchange after 2001
DPS	Disclosure of dividends per share
DO	Disclosure of costs for discontinued operations
EM	Disclosure of equity method
EPS	Disclosure of earnings per share
FAR	Swedish accounting standard-setter (Föreningen auktoriserade revisorer)
FC	Disclosure of the effect of foreign currency translation
FI	Foreign investor
GAAP	Generally accepted accounting principles
IAS/U.S. GAAP	International accounting standards/ U.S. GAAP reporting
INST	Institutional ownership
IT	Disclosure of income taxes
MCS	Multiple classes of shares
NA	Disclosure of notes to accounts
NE	Number of employees
PA	Disclosure of prior period adjustments
PB	Disclosure of post balance sheet events
R&D	Research and development
RE	Disclosure of appropriation of retained earnings

RM	Remuneration of directors and officers
RP	Disclosure of related parties transactions
SBSI	Subsidiaries information
SE	Disclosure of changes in shareholders' equity
SI	Disclosure of segment information
SIZE	Size measured as logarithm of total assets
SME	Shares owned by directors and employees
SPI	Share price information
XO	Disclosure of extraordinary items
STATE	State ownership
VM	Disclosure of method of asset valuation

Chapter 3

Voluntary Disclosures in a Transition Economy: The Case of the Czech Republic

Abstract

The purpose of the study is to investigate the content, the extent and the significance of voluntary disclosures in a transition economy (the Czech Republic) in 1994 and 2001. Voluntary disclosures are divided into four sub-groups –voluntary disclosure beyond the domestic GAAP but within IAS, other voluntary disclosure, voluntary disclosure directly related to accounting numbers and voluntary disclosure not directly related to accounting numbers. The results show that the level of voluntary disclosure is low in the Czech Republic. Czech companies provide only 16.7% (1994) and 33.3% (2001) of available voluntary disclosures according to IAS and 22.4% (1994) and 36.1% (2001) of available other voluntary disclosures. They mostly provide disclosures which are not directly related to accounting numbers. Voluntary disclosures are associated with the value relevance of accounting information (R^2 4.5% for VD_{IAS} and R^2 2.3% for VD_{OTHER}). VD_{IAS} decreases the value relevance since it reveals alternative measurement of accounting numbers and these are substituted. It might also be that VD_{IAS} provides investors with more information which is used in valuation models more sophisticated than a model based on accounting earnings and book value of equity. VD_{OTHER} increases the value relevance. Overall disclosure quality which consists of mandatory disclosure requirements, compliance with accounting regulation and voluntary disclosures explains 14.4% of the value relevance.

Keywords: voluntary disclosure, disclosure quality, accounting regulation, transition economies



1. Introduction

Chapter 2 “The Complementary Role of Regulation and Compliance in Achieving Accounting Quality” showed that mandatory disclosure requirements were lower in the Czech Republic than in Sweden throughout the period 1994-2001. Therefore, there remained a large amount of information that was not regulated by the Czech legislation and that companies could disclose voluntarily. Voluntary disclosure can decrease the information gap between providers and users of financial information. The disclosure of additional information can decrease perceived risks related to investment decisions of the users. This in turn can have positive effects on the allocation of capital, increase in market liquidity and decrease in companies’ cost of capital (Diamond and Verrecchia, 1991; Leuz and Verrecchia, 2000; Petersen and Plenborg, 2006; Francis, Nanda and Olsson, 2008).

Presumably, companies should have incentives to provide information voluntarily due to these positive effects of voluntary disclosure. It might also be assumed that the demand for additional information would be particularly high in countries where mandatory disclosure requirements are low, which is the case of economies in transition¹. Companies in such countries might compensate for the insufficient accounting regulation by voluntarily provided information. However, chapter 2 showed that companies in the Czech Republic in general are less willing to reveal information and that there may therefore be doubts as to what extent transition companies actually use voluntary disclosure.

The purpose of the paper is as follows:

The purpose is to investigate the content, extent and significance of voluntary disclosure in the Czech Republic and in Sweden or more precisely:

The first objective is to investigate what information companies choose to voluntarily disclose in the Czech Republic in comparison to companies in Sweden.

¹ For definition of a transition economy, see part one.

The second objective is to investigate the role of voluntary disclosures in the Czech Republic.

The third objective is to investigate the characteristics of companies that provide voluntary disclosures in the Czech Republic.

The first objective is measured through a voluntary disclosure index. This index is self-developed and divided into two groups. The first group contains disclosure that is mandatory according to IAS 2001 but not according to the local GAAP. One can assume that this voluntary disclosure might be more relevant since companies would like to get closer to accounting standards generally perceived as superior². In other words, companies may try to compensate for a lower level of the accounting regulation in their home country and provide voluntarily information according to a higher quality regulation. The second group of items is disclosure which is regulated neither in local GAAP nor IAS 2001. The total voluntary disclosure studied thus consists of two indices:

- Voluntary disclosure beyond local GAAP but within IAS (VD_{IAS})
- Voluntary disclosure beyond both local GAAP and IAS (VD_{OTHER})

The disclosure indices are further divided into disclosure of items which do or do not relate to accounting numbers.

The second objective tests whether voluntary disclosure contributes to the value relevance of accounting information. Companies provide additional information if it brings about benefits. They would thus provide voluntary information if it makes the accounting numbers in the financial statements more relevant, reliable and credible for valuation purposes. The contribution is measured as the explanatory power of a linear regression where the value relevance of accounting information is a dependent variable and voluntary disclosure an independent variable. The dependent variable of value relevance is defined as the absolute difference between the price of a share estimated on the basis of accounting numbers in the financial statements, and the observed market price.

² IAS 2001 is used as a benchmark as in chapter 2.

The third objective tests if listing and reporting practice of the companies, their ownership structure and performance affect the amount of information which they provide voluntarily. The effect is measured as an explanatory power of a linear regression and significance of coefficients of the individual factors influencing the willingness of a company to provide additional voluntary disclosures.

The voluntary disclosure is investigated for the Czech Republic as an example of a transition economy and for Sweden being an example of a well-developed market economy. Two years are researched – 1994 which is the first year of trading at the Prague of Stock Exchange and 2001 when the transition period in the Czech Republic ends³.

The results with regard to the first objective show that the total extent of voluntary disclosures is lower in the Czech Republic than in Sweden in both 1994 and 2001, but the level of voluntary disclosures increases over time. Czech companies provide 16.7% (1994) and 33.3% (2001) of available voluntary disclosure according to IAS and 22.4% (1994) and 37.1% (2001) of other available voluntary disclosure. Swedish companies provide 22.2 % (1994) and 25.0% (2001) of voluntary disclosure according to IAS and 50.0% (1994) and 56.1% (2001) of other voluntary disclosure. This result is consistent for example with Salter (1998) who found a positive relation between corporate financial disclosure and economic sophistication and capital market development, and Ding, Hope and Schadewitz (2008) who documented a lower level of financial transparency in the Baltic countries as compared to Nordic countries.

The character of the provided voluntary disclosures is different in the two countries. Czech companies provide more non-financial information which does not directly relate to accounting numbers in the financial statements and disregard valuation relevant information while Swedish companies in general provide more valuation relevant information.

The results with regard to the second objective show that the level of voluntary disclosure is associated with the value relevance of accounting numbers but the character of the association depends on the type of voluntary disclosure. The explanatory power of the linear regression is between 2.3% - 13.7% for the different types of voluntary disclosures and

³ Arguments for choice of the countries and the research period are provided in part one.

different samples. Other voluntary disclosure which is directly related to accounting numbers makes the accounting numbers more credible and increases their value relevance. However, voluntary disclosure according to IAS which directly relates to accounting numbers decreases the value relevance of these numbers. One explanation is that the additional information tells investors that the accounting numbers would have been different if alternative accounting methods - according to a superior accounting regulation (IAS) – would have been applied. This might be particularly true in the Czech Republic since accounting quality seems to be lower throughout the whole period in the country⁴. Another explanation is that investors use more sophisticated valuation models with additional - more relevant information - and therefore, the observed prices would deviate more from the prices estimated with a valuation model based on two summary accounting numbers.

Overall disclosure quality, i.e. mandatory disclosure requirements, compliance with the accounting regulation and voluntary disclosures provided by the companies, explains 14.4% (Czech sample) and 26.1% (total sample) of the difference between the estimated and observed share price. While in the total sample, compliance with the accounting regulation and all VD_{IAS} contribute to the value relevance of accounting numbers (either increase or decrease it), it seems that in the Czech Republic only VD_{IAS} and VD_{OTHER} directly related to the accounting numbers contribute to the value relevance.

Finally, the results for the third objective show that companies which employ a Big Four auditor usually provide more voluntary disclosure while companies with concentrated ownership provide less voluntary disclosures in a transition economy. These results are consistent with previous studies (for example, Ding et al., 2008, and Chau and Gray, 2002).

This study contributes to previous research in several ways. The first contribution is empirical. The study investigates voluntary disclosures in a transition economy, i.e. an environment different from the rich information environment of well-developed market economies. So far, Chinese disclosure quality (Gray, Leung and Morris, 2006), financial transparency in the Baltic countries (Ding et al., 2008) and to a certain extent, voluntary

⁴ Results in part one and in chapter 1 and 2 in part two.

disclosure in the Czech Republic⁵ (Makhija and Patton, 2004) were studied. The results of this study are consistent with the Chinese and Baltic results and seem therefore to be general for transition economies.

The second contribution is methodological. First, the study makes a distinction between different categories of voluntary disclosures (voluntary disclosures according to IAS and other voluntary disclosures, voluntary disclosures which relate directly to accounting numbers and voluntary disclosures which do not relate directly to accounting numbers), a distinction based on assumption that different types of voluntary disclosures contribute differently to the value relevance of accounting numbers. Second, the study measures the effect of individual voluntary disclosure categories on the value relevance of accounting information. Neither the distinction into four categories of voluntary disclosures nor the measurement of their effect on value relevance is believed to be done before. The results of this study, however, show that the distinction into different types of voluntary disclosure increases the association between voluntary disclosure and value relevance of accounting information.

The outline of the study is as follows. In section 2, voluntary disclosure is discussed, the voluntary disclosure index is developed and research design is described. In section 3, data and samples are reviewed. Results are reported and analysed in section 4 and finally, some concluding remarks and summary are given in section 5.

2. Voluntary disclosure

This section discusses the concept of voluntary disclosure and reasons for providing additional information. Characteristics of companies which influence their willingness to voluntary disclosures are reviewed. The voluntary disclosure index and its coding are developed and finally, the research design is described.

⁵ Makhija et al. (2004) tested the relationship between institutional ownership and voluntary disclosure in the Czech Republic in 1993. They found that dispersed institutional ownership increases the amount of voluntary disclosures and concentrated institutional ownership decreases the amount of voluntary disclosure.

2.1. The significance of voluntary disclosure

Voluntary disclosure is information provided by company management which is not compulsory according to the accounting regulation in a respective country⁶. This disclosure may be financial and non-financial, quantitative and qualitative and more or less extensive.

The demand for voluntary disclosure arises due to information asymmetry - between companies and investors, or between different types of investors. In the absence of disclosure, investors experience uncertainty about firm value and potential risks of expropriation of the assets by the management. This leads to an increased cost of capital and decreases the value of the firm. If the management provides more disclosure, the uncertainty decreases and so does the cost of capital. Mandatory disclosure requirements mitigate to a certain extent the asymmetry between the companies and investors. If mandatory disclosure requirements are insufficient, the information asymmetry may be decreased by additional voluntary disclosure.

The information asymmetry between the different types of investors may lead to low liquidity of company's shares since the uninformed investors will be unwilling to trade under such circumstances. Voluntary disclosures help to decrease the information gap between the informed and uninformed investors and thus increase the liquidity of the company's shares.

If managers of "good" companies believe that the market value of their company would be higher if they disclosed private information than the market value in the absence of such a disclosure, they would provide additional voluntary disclosure (Skogsvik, 1998). Once the good companies disclose more information, the investors would adjust the price of their shares upwards. At the same time, the investors would realize that firms that do not disclose additional information are "bad" companies and would adjust their prices downwards. With a higher level of disclosure the investors can be more certain that prices are "correct" and allocate more capital efficiently⁷.

⁶ Accounting regulation is defined here as accounting laws and accounting standards. Other regulation, for example stock exchange requirements, is not included.

⁷ This holds under assumption that the "good" company also signals the credibility of the information (that is the investors can rely on the information). The choice of an auditor might be such a signal.

Good companies will thus have incentives to provide voluntary information. They may decide to voluntarily provide different types of information. First, companies may voluntarily disclose financial information required by foreign GAAPs, particularly if the domestic GAAP is perceived as insufficient. For example, a company in a transition economy may follow international accounting standards if it perceives the accounting regulation as insufficient. Second, companies may voluntarily disclose information beyond any accounting regulation (domestic, foreign or IFRS) if they believe that it can guide the investors in their pricing and investment decisions. Such information may include additional information on aggregate accounting numbers, which improves the investors' perception of accounting measurement bias in the company and help them to better forecast short - and long-term earnings potential of the company. Third, companies may voluntarily disclose non-financial information with the purpose to increase the credibility of the company and its management. Such information might be information on general characteristics of the company, industry-specific information or risk information.

It can be assumed that firms will provide additional information only if the benefits exceed the costs related to the voluntary disclosure. The benefits of voluntary disclosure are well documented in previous empirical research. Botosan (1997) studied the association between voluntary disclosure and cost of capital. She did not find any significant effect of voluntary disclosure on the cost of capital with the exception of firms with low analyst following. Sengupta (1998) documented an inverse relationship between disclosure and the cost of debt. Piotroski (1999) found that firms providing additional segmental disclosure have a contemporaneous increase in the market capitalization of earnings which is consistent with a lower cost of capital for the firm. Healy, Hutton and Palepu (1999) showed that firms with more voluntary disclosures experience significant increases in share prices which are not related to current earnings performance and increase in the companies' liquidity. Botosan and Plumlee (2002) reported that voluntary disclosures related to the annual report have a negative association with the cost of debt. Francis et al. (2008) found that voluntary disclosure decreases the company's cost of capital. However, when controlling for earnings quality, they no more find this effect.

Leuz and Verecchia (2000) stated that studies on the benefits of voluntary disclosure analyze data in already rich disclosure environment and thus the effects of additional voluntary disclosures are likely to be small. They suggested (as well as Core, 2001) that the effects of voluntary disclosures

should be studied in other information environments than in well-developed market economies. Transition economies provide such an environment. Mandatory disclosure requirements seem to be insufficient and thus, benefits of additional voluntary disclosure should be particularly valuable. Besides, domestic capital is scarce in these countries and foreign investors must be attracted. If companies provide only mandatory disclosure, the investors – usually used to a higher quality accounting environment - might perceive it as unsatisfactory information. The companies may therefore try to overcome the poor accounting regulation of its own country by providing voluntarily more information.

2.2. Factors influencing the likelihood of voluntary disclosure

Companies provide voluntary disclosures if the benefits are larger than the costs. While all companies are obliged to comply with the accounting regulation, voluntary disclosures are provided at the discretion of the management. Previous research showed that companies providing voluntary disclosures have specific characteristics⁸. The summary of the characteristics is given in table 1.

⁸ Generally, the characteristics of the companies should be similar to the characteristics investigated in chapter 2.

Table 1. Factors influencing the likelihood of voluntary disclosure⁹.

Group	Factor	Expected effect on voluntary disclosure	Documented by
Listing and reporting	Foreign listing	Increase/Decrease	Archambault and Archambault (2003)
	De-listing	Increase/Decrease	Gray, Leung, and Morris (2006)
	Auditors	Increase	Ding, Hope and Schadewitz (2008), Francis, Khurana and Pereira (2003)
	IAS or US GAAP	Increase	Ding, Hope and Schadewitz (2008)
Ownership	Concentration of ownership	Decrease	Chau and Gray (2002), LaPorta, Lopez-de-Silanes, Shleifer and Vishny (1999, 2002)
	Foreign investors	Increase	Gray, Leung, and Morris (2006)
	State ownership	Decrease	Gray, Leung, and Morris (2006)
	Institutional ownership	Increase	Healy, Hutton and Palepu (1999), Bushee and Noe (2000)
Performance	Size	Increase	Lang and Lundholm (1993), Hope (2003)
	Profitability	Increase	Leuz and Verecchia (2000)
	Leverage	Increase	Lang and Lundholm (1993) Ding, Hope and Schadewitz (2008) Khanna, Palepu and Srinivasan (2004)

Note: The listing and reporting factors are also discussed in terms of credibility in Core (2001) and Healy and Palepu (2001).

The effect of the first two factors on voluntary disclosure is unclear. Foreign listing might increase the need for voluntary disclosure if for example a company from a transition economy is listed on a stock exchange in a country where the general level of disclosure is very high. On the other hand, the foreign listing per se might be a positive signal about the company and additional voluntary disclosure is thus not needed¹⁰. De-listing might be related to performance or disclosure problems of the company or on the other hand, well-performing and high disclosure quality companies might be acquired and withdrawn from the stock exchange. Large¹¹, more leveraged

⁹ For details on coding, see chapter 2 part two.

¹⁰ It should be noted that the additional information is provided voluntarily beyond the domestic GAAP but it might be mandatory at the foreign stock exchange.

¹¹ Large companies usually have more widespread ownership, employ more Big Four auditors and provide IAS/US GAAP reporting.

and profitable¹² companies employing Big Four auditors, providing IAS or US GAAP reporting¹³ and having foreign or institutional owners might be assumed to provide more voluntary disclosures, while companies with concentrated ownership or state-ownership¹⁴ would probably provide less voluntary disclosures.¹⁵

2.3. Voluntary disclosure index

There are different ways to measure voluntary disclosure. Some researchers use AIMR¹⁶ index based on financial analysts' ranking of disclosure items (for example Lang and Lundholm, 1993, 1996, Healy et al., 1999). Other researchers use an index based on the actual disclosure of companies across the world provided by CIFAR¹⁷ (e.g. LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1998, Hope, 2003). Still, many researchers measure voluntary disclosure by self-constructed indices. A large number of previous studies used the Botosan (1997) voluntary disclosure index¹⁸. The index is based on recommendations from a number of American accounting organisations and identifies five categories of voluntary information: background information, summary of historical results, key non-financial statistics, projected information and management discussion and analysis. Each category includes a large number of individual components. These are weighted since the individual components contribute in different ways to investors' decision making. For example, quantitative data are assigned a higher weight than qualitative data and longer historical series are assigned higher weight than shorter historical series.

¹² Leveraged companies have a larger need for outside capital and profitable companies want to signal their good performance by providing more voluntary disclosure.

¹³ Companies which employ Big Four auditors and provide IAS/US reporting might want to signal their higher credibility.

¹⁴ Owners with large shareholdings are less inclined to share information with others and also have a possibility to acquire private information from the management in other ways, which also holds for the state as an owner.

¹⁵ The assumptions are based on the results of studies mentioned in table 1.

¹⁶ Association for Investment Management and Research

¹⁷ Centre for International Financial Analysis and Research

¹⁸ For example, recently Francis et al. (2008), Ding et al. (2008)

Some researchers derive their voluntary disclosure index from a more theoretical perspective. Skogsvik (1998) and Skogsvik and Gray (2004) identify individual disclosure components which are valuation-relevant; i.e. components which supposedly help investors to understand the conservative measurement bias in accounting numbers and to improve predictions of the company future. Gray and Skogsvik (2004) identify six areas of voluntary disclosure: competitive advantages, business growth, dividend policy, segmental information, earnings persistence and conservative cost-matching bias of expenses.

Previous research provides little guidance as to what voluntary disclosure index should be used. The fact that researchers have used different voluntary disclosure indices might have contributed to ambiguous research results, for example as to the effect of voluntary disclosure on cost of capital or the role of voluntary disclosure. A number of questions can be raised when creating a voluntary disclosure index.

First question is what items should be included into the voluntary disclosure index, i.e. its content and size. Numerous studies tried to quantify more than 100 different disclosure items. It is not certain that investors actually use as many items of voluntary disclosure in their decision making. Also, it is not sure whether all disclosed items are equally important and/or whether some of the items are not strongly correlated. Other studies – particularly those based on the theoretical perspective – use only a limited amount of items which they directly link to the investors' decision making (for example in a valuation context).

The second question is the coding of the items. It is not clear how to code the absence of a certain disclosure. The disclosure might be absent since the underlying event does not exist, it is not material (in which case the company follows IAS recommendation) or the underlying event exists, is material but the company chooses not to disclose it. Furthermore, only presence or absence of a disclosed item is measured, not the quality of the disclosure.

The third question is how to aggregate the index. If all items are of the same importance, they should be assigned the same weight. However, disclosure items are more or less complex and thus, certain weighting is appropriate. There is though no general guidance as to the weighting which in such a case depends on the researcher's perception of the individual items.

In this study, voluntary disclosure is defined as a piece of information included in the financial reports and not required by mandatory disclosure rules of the country in a specific year. This means that the voluntary disclosure index would differ for the Czech Republic and Sweden. Therefore, the voluntary disclosure index is measured in percentage (actual voluntary disclosure score of the company divided by available voluntary disclosure score in the country) rather than in absolute numbers.

Voluntary disclosure items are divided into two types. The first type is called voluntary disclosure coinciding with IAS (VD_{IAS}). The VD_{IAS} includes items which were required by IAS in 2001 but not by the local GAAPs. In table 2, it can be seen that the maximum VD_{IAS} score in the Czech Republic is 24¹⁹ for year 1994 and 15 for year 2001, while it is 9 and 4 points respectively for Sweden.

Table 2. VD_{IAS} - voluntary disclosure coinciding with IAS

	Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
Total required disclosure according to IAS 2001 (in points)	36	36	36	36
Domestic mandatory disclosure (in points)	12	21	27	32
Mandatory disclosure as % of IAS 2001	33.3%	58.3%	75%	88.9%
VD_{IAS}	24	15	9	4

Note: VD_{IAS} is disclosure mandatory according to IAS but voluntary according to the domestic GAAPs.

Table 2 shows that there is more space for voluntary disclosure in the Czech Republic. In a way, VD_{IAS} is a measurement of a company's willingness to comply with IAS. The VD_{IAS} is studied separately since the IAS requirements may be seen as a proxy for a superior set of disclosure rules and compliance with them can be perceived as particularly relevant.

The second set of voluntary disclosure is VD_{OTHER} - other voluntary disclosure required by neither domestic GAAP nor IAS. The VD_{OTHER} index combines Botosan (1997) and Skogsvik and Gray (2004) disclosure indices -

¹⁹ This is the difference between the mandatory IAS requirements of totally 36 minus the mandatory requirements in the Czech Republic 1994 of 12 (see chapter 2).

ten items of Botosan's twenty five items are included in the index²⁰ and five items are based on Skogsvik and Gray (2004). Nine new items are added by the author of this study. These items either substitute some items in the Botosan index or are perceived as important for transition countries²¹ (for more details on the structure of the VD_{OTHER} index, see appendix 5).

Even in this index, the total disclosure score will not be the same for the two countries. Certain items in the index have been compulsory in Sweden and are thus excluded from the Swedish voluntary disclosure score. The total maximum score of VD_{OTHER} is 47 points for the Czech Republic and 41 points for Sweden²². VD_{OTHER} is also measured in percentage rather than in absolute numbers in order to increase the comparability between the two countries. The index is divided into six areas which are described in more detail in table 3.B.

Both VD_{IAS} and VD_{OTHER} are further divided into two categories. The first category includes items which directly relate to the accounting numbers in financial statements (Category I). "Relate to" means that the disclosures provide further explanation to the numbers in the financial statements and their measurement. For example, segment reporting decomposes the aggregate sales number. The second category includes items which provide information about the company and its performance but which are not directly related to the accounting numbers in the financial statements (Category II). Projected information on sales, earnings, capital expenditure and cash flows does not explain sales, earnings, capital expenditures or cash flow numbers in the financial statements. Also, information about the owners and the company's management is not related to the accounting numbers directly.

Thus, in contrast to previous research, voluntary disclosures are divided into four groups in this study. First, a distinction is made between VD_{IAS} and VD_{OTHER}. Presumably VD_{IAS} provides more relevant information than

²⁰ Management discussion is coded as a single item in contrast to Botosan who codes separately 11 pieces of management disclosure items.

²¹ This applies particularly to the ownership and management structure. McKinsey & Company survey from 2002 showed that investors pay a premium of over 30% in Eastern Europe for firms with good corporate governance as compared to 12-14% in Western Europe (Ding et al., 2008).

²² The difference is due to three items of the index which were compulsory in Sweden at the given point of time (all three coded between 0-2).

VD_{OTHER}. Second, a distinction is made between items which directly relate to accounting numbers and items which do not. Items directly related to the accounting numbers in the financial statements can be expected to be more relevant as they directly affect the input variables in a valuation model. Table 3 summarizes the indices for VD_{IAS} (panel A) and VD_{OTHER} (panel B). The coding of VD_{IAS} items is described in detail in chapter 2 (and thus not repeated here) and the coding of VD_{OTHER} is reviewed in detail in table 3.B.

Table 3 A. Voluntary disclosure index - VD_{IAS}

		Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
VD_{IAS} – Category I – direct relation to accounting numbers	VD_{IAS} I				
Disclosure of prior period adjustments	(PA)	X	X		
Disclosure of post balance sheet events	(PB)	X			
Disclosure of current value of building	(CV)	X		X	X
Disclosure of equity method	(EM)	X			
Effect of foreign currency translation	(FC)	X	X		
Disclosure of income tax	(IT)			X	
Changes in shareholders' equity	(SE)	X			
Disclosure of segment information	(SI)	X	X		
Disclosure of discontinued operations	(DO)	X	X	X	
Appropriation of retained earnings	(RE)	X			
Disclosure of earnings per share	(EPS)	X	X	X	
Disclosure of dividends per share	(DPS)	X	X	X	X
VD_{IAS} – Category II – indirect relation to accounting numbers	VD_{IAS} II				
Multiple classes of shares	(MCS)	X	X		
Subsidiaries information	(SBSI)	X			
Number of employees	(NE)	X			
Remuneration of directors and management	(RM)	X			
Disclosure of related parties transactions	(RP)	X	X	X	X

Note: For coding of the individual items, see chapter 2 part two. X means that the item is voluntary in the country for the year and it can be included into the VD_{IAS}.

Table 3.B. Voluntary disclosure index - VD_{OTHER}

	Coding	Notes
<i>VD_{OTHER} – Category I – direct relation to accounting numbers</i>	VD_{OTHER} I	
Segmental information about sales, assets or operating profits	0 – if no disclosure 1 – if one disclosure 2 – if all disclosed	compulsory in Sweden both 1994 and 2001 not coded for the country
Information on transitory items	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	compulsory in Sweden both 1994 and 2001 not coded for the country
Historical results: information to calculate return on assets, profit margin, turnover of assets and return on equity	0 – if no disclosure 1 – if disclosure for 3-5 years 2 – if disclosure for > 6 years	
Capital expenditures (historical results)	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
R&D costs (historical results)	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
<i>VD_{OTHER} – Category II – indirect relation to accounting numbers</i>	VD_{OTHER} II	
Background/Competitive advantages		
Statement of corporate strategy and goals	0 – if no disclosure 1 – goals disclosed 2 – if strategy disclosed	
Competitive environment and barriers to entry discussed	0 – if no disclosure 1 – if disclosed verbally 2 – if quantified or detailed	
Management discussion and analysis: change in sales, CGS, gross profit, operating profit, net profit, inventory, A/R, capital expenditures or R&D, interest expense or income	0 – if no disclosure 1 – if partially specified 2 – if completely specified	Detailed coding of the management discussion is given in appendix 3
Management structure		
List of board members and their affiliation	0 – if no disclosure 1 – if names disclosed 2 – if all disclosure	
Qualifications of company directors (Education, experience, year joined)	0 – if no disclosure 1 – if names disclosed 2 – if additional information disclosed	
Performance related pay to managers	0 – if no disclosure 2 – if disclosed	
Projected information/Business growth and earnings persistence		
Cash flow forecast	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	

Capital expenditures and/or R&D forecast	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Sales forecast in monetary terms or units sold if prices are firm	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Management's short term forecast of net income, ROE, operating income or ROA/ROCE/RONA	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Long-term profitability (ROE or/and ROCE/RONA)	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Financial targets	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Specified goals for company dividends	0 – if no disclosure 1 – if qualitative disclosure 2 – if quantitative disclosure	
Ownership structure		
Major shareholder	0 – if no disclosure 2 – if disclosed	
Number of shares and voting rights	0 – if no disclosure 1 – if number disclosed 2 – if voting rights disclosed	compulsory in Sweden both in 1994 and 2001 not coded for the country
Stock exchange listing	0 – if no disclosure 1 – if disclosed	
Key non-financial statistics		
Order backlog	0 – if no disclosure 2 – if disclosed	
Market share	0 – if no disclosure 2 – if disclosed	
Export share	0 – if no disclosure 2 – if disclosed	

Category I in the VD_{OTHER} index is relatively small compared to category II. Segmental disclosure decomposes the sales number and provides information on the sources of earnings generation. Information on transitory items is crucial for the assessment of earnings persistence. If transitory items are not properly disclosed, a distinction cannot be made between recurring and non-recurring items and the risk of earnings management increases. The disclosures of segmental information and transitory items were compulsory in Sweden throughout the whole period. The disclosure of historical results helps to estimate the present potential of the company which future forecasts are based on.

Category II is larger and heterogeneous. The first three items disclose background information of the company. Disclosure of the corporate strategy and goals, competitive advantages and management's discussion

help investors to understand the future potential of the company, market conditions and value drivers in the company. It should be noted that the management's discussion was coded based on both the administration report and the letter of the managing director. The administration report is compulsory (however, may include information which is additional to the compulsory requirements) while the letter of the managing director is voluntary.

The management information disclosure provides information on the qualifications of the company's management (board members and the company directors), and their incentives to disclose or not to disclose certain information (incentives in form of performance related pay to managers).

The projected information provides guidance to the forecasts of the company's business growth and future profitability. Sales, cash flow and capital expenditure forecasts should be based on the management's perception of the company's potential development. Short-term and long-term forecasts of profitability and financial targets of the management can help the investors to predict the future profitability of the company and to understand the length of the time period before the company reaches steady state.

Previous literature provides evidence on the importance of the ownership structure for the amount and transparency of disclosed information (for example, Gray et al., 2006). The relevant information is in this respect the disclosure of voting rights and the major shareholder. It is also important to know where the company is listed, particularly if it is listed abroad. Finally, other key non-financial information includes order backlog, market share and export share which all add information that can be used in forecasting future sales and profitability.

In summary, voluntary disclosure items provide additional information for assessing the validity and reliability of accounting numbers and forecasting the future potential of the company (Category I) or affect the investors' perception of the credibility of the company and the mandatory information that it provides (Category II).

2.4. Research Design

The research design is divided into five parts. The first part is a descriptive analysis of voluntary disclosures. Each category of voluntary disclosures ($VD_{IAS\ I}$, $VD_{IAS\ II}$, $VD_{OTHER\ I}$ and $VD_{OTHER\ II}$) is coded for the sample companies in the two countries. The voluntary disclosures are compared between the countries and their development over time is described. The second part tests the association between voluntary disclosures and the value relevance of accounting information. The third part summarizes the effect of overall disclosure quality on the value relevance of accounting information. The fourth part investigates the relationship between voluntary disclosures, mandatory disclosure requirements and compliance levels. Finally, part five tests which factors influence the willingness of the companies to provide voluntary disclosures.

2.4.1. The association between voluntary disclosures and value relevance of accounting information

Voluntary disclosures can provide additional information on aggregated numbers of accounting earnings and the book value of equity. Valuation models like the residual income model are based on prediction of these two accounting numbers. If investors get better information about these numbers, they can presumably make better predictions and price the shares more correctly. According to signalling theory, it might be assumed that managers will voluntarily provide additional information if they believe that this will affect the share price positively. Therefore, voluntary disclosures should be associated with the value relevance.

The measure of value relevance in this study is defined as the difference between an estimated and the observed share price of a company. The estimated price is a price based on coefficient estimations of a logarithmic regression between market price, accounting earnings and book value of earnings equity²³:

²³ For more details, see part one.

$$\ln P_{jt} = \alpha_0 + \alpha_1 * \ln X_{jt} + \alpha_2 * \ln BV_{jt} \quad (1)$$

where P_{jt} is market price of shareholders' equity of company j at time t , X_{jt} is accounting earnings of company j at time t and BV_{jt} is book value of shareholders' equity of company j at time t .

The logarithmic regression is chosen since it provided most robust results in value relevance tests²⁴. The coefficients used for estimating the price are the yearly coefficients from 1994 and 2001²⁵.

The price is estimated as:

$$\hat{P}_{jt} = e^{\alpha_0} * X_{jt}^{\alpha_1} * BV_{jt}^{\alpha_2} \quad (2)$$

The measure of value relevance is $\frac{|\hat{P}_{jt} - P_{jt}|}{BV_{jt}}$. The difference between the estimated share price and the observed price is absolute since it is the magnitude of the difference which is important. If the difference is large between the estimated and the observed price, the value relevance is low. If the difference between the estimated and observed price is small, the accounting numbers presumably capture what the investors perceive as the value of the company in a reliable way.

Thus, a way to test whether voluntary disclosures have any effect on the value relevance of accounting earnings and the book value of owners' equity would be:

²⁴ Chapter 2 showed that estimating price by coefficients from price and returns regressions provides substantially weaker results; therefore, no further robustness tests were made.

²⁵ Robustness tests were made based on period coefficients (1994-1997 and 1998-2001); the results showed however that it is more appropriate to use the coefficients from the particular years.

$$\frac{|\hat{P}_{jt} - P_{jt}|}{BV_{jt}} = \alpha_0 + \alpha_1 * VD_{jt} + \varepsilon_{jt} \quad (3)$$

where \hat{P}_{jt} is estimated price for company j at time t , P_{jt} is observed price of company j at time t . BV_{jt} is book value of equity of company j at time t ²⁶. VD_{jt} is voluntary disclosure score for company j at time t .

The interpretation of the equation is as follows. Voluntary disclosures are relevant if there is a strong association between the value relevance and voluntary disclosures (measured by the explanatory power of the regression and the significance of the coefficient). If voluntary disclosures contribute to the value relevance of accounting numbers positively, the coefficient of the voluntary disclosures should be negative.

The regression is tested separately for the four sub-groups: VD_{IAS} I and VD_{IAS} II, and VD_{OTHER} I and VD_{OTHER} II since it is assumed that there might be differences for different types of voluntary disclosures. More specifically, voluntary disclosures which coincide with IAS might have a more explicit effect on the value relevance of the accounting numbers than other voluntary disclosures. Also, category I might be more relevant as these items are directly related to the accounting numbers included in the valuation models.

2.4.2. Disclosure quality – entire framework

Overall disclosure quality consists of mandatory disclosure requirements, level of compliance with mandatory requirements and additional voluntary information. If overall disclosure quality is high, it should presumably increase the value relevance of accounting information. This is tested as follows:

²⁶ Robustness tests were made based on price as a deflator. The results were similar to the results with book value of equity as a deflator and are therefore not reported.

$$\frac{|\hat{P}_{jt} - P_{jt}|}{BV_{jt}} = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{ijt} + \alpha_3 * CL_{IIijt} + \alpha_4 * VD_{IASijt} + \alpha_5 * VD_{IASIIijt} + \alpha_6 * VD_{OTHERijt} + \alpha_7 * VD_{OTHERIIijt} + \varepsilon_{jt} \quad (4)$$

where \hat{P}_{jt} is estimated price for company j at time t , P_{jt} is observed price of company j at time t . BV_{jt} is book value of equity of company j at time t , MD_{ct} is mandatory disclosure score for a country c at time t , CL_{ijt} is compliance level for a company j at time t (CL_{Iijt} is category I, CL_{IIijt} is category II). VD variables are for a company j at time t , VD_{IASijt} is VD_{IAS} Category I, $VD_{IASIIijt}$ is VD_{IAS} Category II, $VD_{OTHERijt}$ is VD_{OTHER} Category I and $VD_{OTHERIIijt}$ is VD_{OTHER} Category II.

The interpretation of equation (4) is following. Mandatory disclosure requirements are assumed to increase the value relevance of accounting numbers and the coefficient should be negative. Compliance level Category I (items directly related to accounting numbers in the financial statements) and compliance level Category II (items not directly related to the accounting numbers) are also assumed to increase value relevance and the coefficient should be negative. If voluntary disclosures are relevant for investors, the coefficient of the voluntary disclosure (both category I and II) would also be significant and negative. The predicted signs and significance should hold for both countries.

2.4.3. Voluntary disclosures, mandatory disclosure requirements and compliance levels

Overall disclosure quality consists of mandatory disclosure requirements, compliance levels and voluntary disclosures. If the level of mandatory disclosure requirements is high, the need for additional disclosure would be low (and vice versa) and there might therefore be an association between the level of mandatory requirements and voluntary disclosures. Companies that comply with the mandatory disclosure requirements might be assumed to provide additional information. Companies which do not comply with the regulation can hardly be expected to provide voluntary disclosures. Thus, there should also be an association between the compliance levels and voluntary disclosures; although this would be in the opposite direction (a higher level of compliance brings about a higher level of voluntary disclosures). This is tested in the following regression:

$$VD_{jt} = \alpha_0 + \alpha_1 MD_{ct} + \alpha_2 CL_{jt} \quad (5)$$

where VD_{jt} is voluntary disclosure score for a company j at time t , MD_{ct} is mandatory disclosure requirements for a country c at time t , and CL_{jt} is compliance level of a company j at time t . The regression is tested separately for VD_{IAS} and VD_{OTHER} ²⁷.

The coefficient on mandatory disclosure in (3) should be negative since higher mandatory disclosure requirements decrease the need for additional voluntary disclosure. The coefficient on compliance levels can be expected to be positive since companies which comply with the regulation assumedly provide more voluntary information.

2.4.4. Voluntary disclosure and the characteristics of firms

The company specific factors that might influence the amount of information which a company discloses voluntarily are can be tested as follows:

$$VD_{jt} = \alpha_0 + \alpha_1 ABR_{jt} + \alpha_2 DEL_{jt} + \alpha_3 AUD_{jt} + \alpha_4 IAS_{jt} + \alpha_5 CONC_{jt} + \alpha_6 STATE_{jt} + \alpha_7 INST_{jt} + \alpha_8 SIZE_{jt} + \alpha_9 ROE_{jt} + \alpha_{10} D/E_{jt} \quad (6)$$

where VD_{jt} is voluntary disclosure of a company j at time t . ABR is foreign listing, DEL is de-listing of the company, AUD is type of auditor, IAS is reporting according to IAS/US GAAP, $CONC$ is ownership concentration, $STATE$ is state ownership, $INST$ is institutional ownership, $SIZE$ is logarithm of total assets, ROE is profitability²⁸ and D/E is leverage (all variables for company j at time t).

The signs of the coefficients in equation (4) are summarised in table 4. They are based on the expected effect of the factors on voluntary disclosure as discussed in section 2.2.

²⁷ But not for the individual categories (I and II) since the focus is on the total amount of voluntary disclosure rather than different types of disclosure.

²⁸ ROA was also tested as a measure of profitability. The results were similar to the results with ROE.

Table 4. The predicted coefficient signs

Group	Factor	Predicted coefficient sign
Listing and reporting	Foreign listing (ABR)	+ / -
	De-listing	+ / -
	Auditors (AUD)	+
Ownership	IAS or US GAAP (IAS)	+
	Concentration of ownership	-
	State ownership	-
Performance	Institutional ownership	+
	Size	+
	Profitability	+
	Leverage	+

3. Sample and data

The sample consists of a total of 122 annual reports - 25 for Czech companies and 25 for Swedish companies in 1994 and 47 for Czech companies and 25 for Swedish companies in 2001. For the Czech Republic, all available annual reports for the listed companies were collected²⁹. For Sweden, the annual reports were chosen randomly from all listed companies. A list of companies and their main characteristics (type of owners, ownership concentration, type of auditors, whether the company is still listed, whether it is listed on foreign stock exchange and whether it provides IAS/ US GAAP) was provided in appendix 2 in the previous chapter of this dissertation.

The Czech and Swedish samples differ with regard to their industry composition, which might have a certain effect on the level of voluntary disclosure. The Czech sample consists mostly of energy companies (30%) and chemical industry (15%) while the Swedish sample consists mostly of consultancies, telecommunications, biotechnology and information technology (30%). Also, more than 30% of the Swedish companies are large multinationals. The Swedish sample thus includes companies which might be assumed to provide more voluntary disclosures due to their complexity and size (multinationals) and operating activities (companies in industries with relatively large intangible assets).

²⁹ All 72 listed companies were approached but only 25 reports could be provided for 1994. This creates a certain bias in the sample since it might be assumed that companies unwilling to provide annual reports are companies which in general provide less disclosure.

The items included in the VD_{IAS} and VD_{OTHER} were coded for the individual companies manually based on the annual reports, according to the description in section 2.3. The characteristics of the companies were gathered from the annual reports and from the homepages of the Prague Stock Exchange and the Stockholm Stock Exchange. Accounting data and price data were gathered from the Finlis³⁰ database (for the Swedish companies) and Ariadna³¹ database (for the Czech companies).

4. Empirical Results

This section analyses the empirical findings. In 4.1., the results of the coding of VD_{IAS} and VD_{OTHER} are reported. In 4.2., the results of the association test between value relevance of accounting numbers and voluntary disclosure are discussed. In 4.3., the association between value relevance and overall disclosure quality is analysed. Section 4.4. reports the results of the association between individual parts of the disclosure quality and finally, in 4.5., the factors which influence the willingness of the companies to provide voluntary disclosure are discussed.

4.1. Descriptive results

The descriptive results of the coding of the individual voluntary disclosure indices are divided into two parts. The VD_{IAS} and VD_{OTHER} are discussed separately in sections 4.1.1 and 4.1.2.

4.1.1. VD_{IAS}

The space for VD_{IAS} – that is additional voluntary disclosure according to IAS but beyond the domestic GAAP - was much larger for the Czech Republic than for Sweden (see section 2.3.). Since mandatory disclosure requirements were low in the Czech Republic during the transition period, it can be assumed that Czech companies would provide more VD_{IAS} than Swedish companies. The results are summarised in table 5. Although there is a broad range of additional VD_{IAS} available in the Czech Republic, the

³⁰ A database provided by company SIX AB, www.six.se

³¹ A database provided by company Cekia, www.cekia.cz

companies do not seem to use the opportunity to improve their disclosure by providing voluntarily additional information. The additional disclosure is only 16.7% of the available VD_{IAS} score in 1994 and 33.3% in 2001. The VD_{IAS} score available decreases over time as the Czech mandatory requirements improve, while the actual VD_{IAS} increases slightly. In 2001, the Czech companies provide more voluntary disclosure according to IAS in relative terms than the Swedish companies (33.3% compared to 25.0%). Although it might be good news for the Czech companies, it does not mean that the Swedish companies are worse. The space for VD_{IAS} is very small in Sweden and Swedish companies might perceive the mandatory disclosure requirements as sufficient.

Table 5. Actual VD_{IAS}

	Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
Total VD_{IAS}	24	15	9	4
Average VD_{IAS}	4	5	2	1
Average VD_{IAS} in %	16.7%	33.3%	22.2%	25.0%

Note: Total VD_{IAS} is the maximum number of points that can be obtained by companies beyond mandatory disclosure. Average VD_{IAS} is the actual voluntary disclosure according to the IAS and average VD_{IAS} in percentage is the actual voluntary disclosure according to the IAS compared to total VD_{IAS} available.

Table 6 summarises the most and the least disclosed VD_{IAS} items. In 1994, Czech companies disclosed mostly Category II items (items which do not directly relate to the accounting numbers in the financial statements), while in 2001, they disclosed mostly Category I items (items which directly relate to the accounting numbers in the financial statements). It seems that Czech companies started to realize the importance of disclosure directly related to accounting numbers for the pricing decisions of investors. A couple of individual items deserve more attention. Segment reporting (the only Category I item voluntarily disclosed throughout the whole period) seems to be an important voluntary disclosure item in the Czech Republic in line with the fact that it is compulsory both within IAS and in Sweden. Related parties transactions seem to gain a substantial importance in the Czech companies' reports by 2001 but are seldom disclosed in Sweden. This can be linked to the expropriation and fraud problems in the Czech Republic in the late 1990s which may have required more transparent information on the corporate governance issues.

Table 6. Most and least disclosed VD_{IAS} items in the Czech Republic

Czech Republic 1994	Czech Republic 2001
Most disclosed	
Number of employees (Cat II)	Segment information (Cat I)
Subsidiaries information (Cat II)	Related parties (Cat II)
Segment information (Cat I)	Multiple classes of shares (Cat II)
Multiple classes of shares (Cat II)	Dividends per share (Cat I)
Remuneration of management (Cat II)	Earnings per share (Cat I)
Least disclosed	
Foreign currency translation (Cat I)	Discontinued operations (Cat I)
Equity method ³² (Cat I)	Foreign currency translation (Cat I)

Note: Cat I are items directly related to accounting numbers in the financial statements. Cat II are items not directly related to numbers in the financial statements.

4.1.2. VD_{OTHER}

Table 7 shows that the level of VD_{OTHER} is substantially lower in the Czech companies. They disclose voluntarily only 22.4% of the possible VD_{OTHER} items in 1994 and 37.1% in 2001. Even though the disclosure improves over time, it still remains on a level substantially below the Swedish VD_{OTHER} ³³. There is a difference between the countries as to what information is provided. In the Czech Republic, companies provide Category II items (not directly related to the accounting numbers in the financial statements) more voluntarily than Category I items (related directly to the accounting numbers in the financial statements). Swedish companies on the contrary provide more Category I items than Category II items. This difference might affect the value relevance of accounting numbers since the Category I items probably have a larger impact on investors decisions as they relate to numbers used in the valuation models.

³²The equity method became compulsory in the Czech Republic in 2001.

³³ In fact, the level of other voluntary disclosure provided by the Czech companies is lower in 2001 than the Swedish level of VD_{OTHER} in 1994.

Table 7. Comparison of VD_{OTHER} between the Czech Republic and Sweden

	Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
Total VD_{OTHER} available	47	47	41	41
VD_{OTHER} actual	10.5	17.4	20.5	23
VD_{OTHER} in %	22.4%	37.1%	50.0%	56.1%
VD_{OTHER} Category I	15.6%	35.1%	53.3%	60.1%
VD_{OTHER} Category II	24.2%	37.7%	49.4%	55.5%

Note: Total VD_{OTHER} is the maximum points available in the country and year, VD_{OTHER} actual is the average score in the country and year, VD_{OTHER} in % is the actual disclosure score compared to total available disclosure. VD_{OTHER} Category I is items directly related to accounting numbers in the financial statements (in percentage of available VD_{OTHER} Category I score) and VD_{OTHER} Category II is items not directly related to accounting numbers in the financial statements directly (in percentage of available VD_{OTHER} Category II score).

Table 8 reports the ranking of the VD_{OTHER} items. The items are grouped according to their characteristics rather than their effect on the accounting numbers. The table shows that the ranking is similar in the two countries. Both Czech and Swedish companies provide disclosure of ownership structure, management structure and background information and seldom disclose projected information (management's forecasts on future profitability, cash flows, expenditures etc.). The Czech companies do not provide other financial information which is both forward-looking (financial targets) and backward-looking (historical results). Financial targets are almost non-existing for the Czech companies although they are an important part of company strategy and overall goals and a benchmark against which the historical performance can be compared.

Table 8. Ranking of the voluntary disclosure areas

Czech Republic				Sweden			
1994		2001		1994		2001	
Ownership structure	54.4%	Ownership structure	85.3%	Ownership structure	89.3%	Ownership structure	96.0%
Management structure	42.0%	Management structure	45.6%	Background information	62.7%	Management structure	78.7%
Background information	27.0%	Background information	38.2%	Management structure	61.3%	Background information	74.0%
Key non-financial statistics	13.3%	Financial information	28.8%	Financial information	57.2%	Financial information	64.4%
Projected information	10.7%	Projected information	27.3%	Key non-financial statistics	37.3%	Key non-financial statistics	32.3%
Financial information	10.4%	Key non-financial statistics	21.2%	Projected information	24.0%	Projected information	26.0%

Note: The percentage is the average actual VD_{OTHER} disclosure divided by the total VD_{OTHER} available for the group of items.

Ownership structure: Major shareholders, number of shares and voting rights, stock exchange listing

Management structure: List of board members and their affiliations, qualification of company directors, performance related pay to managers

Background information: Statement of corporate strategy and goals, competitive environment, segmental information, management discussion and analysis

Key non-financial statistics: Order backlog, market share, export share

Projected information: Cash flow forecast, capital expenditures and/or R&D forecast, sales forecast, management's short-term forecasts of profitability, forecasts of long-term profitability, information on transitory items

Financial information: Financial targets, specified goals for company dividends, historical results, capital expenditures (historical), R&D costs (historical)

Table 9 shows the differences in VD_{OTHER} between the countries (the difference is calculated as Swedish VD_{OTHER} in percentage minus Czech VD_{OTHER} in percentage for the specific group of items). The largest difference is in disclosure of financial information which is widely provided by Swedish companies, and substantially less by the Czech companies. Projected information is disclosed poorly in both countries and thus, the difference between the Czech and Swedish companies is the smallest one.

Table 9. The largest differences between the Czech and Swedish voluntary disclosure

<i>1994</i>	<i>Difference of</i>	<i>2001</i>	<i>Difference of</i>
Financial information	46.8%	Background information	35.8%
Background information	35.7%	Financial information	35.6%
Ownership structure	34.9%	Management structure	33.0%
Key non-financial statistics	24.0%	Key non-financial statistics	11.2%
Management structure	19.3%	Ownership structure	10.7%
Projected information	13.3%	Projected information	-1.3%

Note: The difference between the disclosure of the individual groups is calculated as Swedish VD_{OTHER} for the specific group of items in percentage minus Czech VD_{OTHER} for the specific group of items in percentage.

Finally, table 10 shows the development of VD_{OTHER} over time. Czech companies improved particularly information on the ownership structure. This might be a consequence of the corporate governance problems of the late 1990s which brought about pressure on Czech companies as to the disclosure of the ownership structure. The new Stock Exchange Committee established in 1998 played an important role in regulating more strictly this type of disclosure³⁴. Thus, this type of disclosure would not be completely voluntary for listed companies³⁵.

³⁴ Note that the stock exchange disclosure requirements are not included in the mandatory disclosure requirements.

³⁵ This might have an implication for the Swedish results. Swedish companies were obliged to comply with the stock exchange requirements throughout the whole research period.

Table 10. Changes in the disclosure of individual item areas

<i>Czech Republic</i>		<i>Sweden</i>	
Ownership structure	30.90%	Management structure	17.40%
Financial information	18.40%	Background information	11.30%
Projected information	16.60%	Financial information	7.20%
Background information	11.20%	Ownership structure	6.70%
Key non-financial statistics	7.90%	Projected information	2.00%
Management structure	3.60%	Key non-financial statistics	-5.00%

Note: The development is calculated as disclosure in 2001 – disclosure in 1994 (in percentage units).

4.2. The association between voluntary disclosures and value relevance

The regression tests of the association between value relevance and voluntary disclosure are reported in table 11. The hypothesis was that voluntary disclosure is associated with value relevance and that the coefficient for voluntary disclosure should be negative since voluntary disclosure contributes positively to the value relevance of accounting numbers. The regressions are run separately for VD_{IAS} and VD_{OTHER} .

The results show that voluntary disclosures (both VD_{IAS} and VD_{OTHER}) have some explanatory power for the value relevance for the total sample, but not for the Czech sample. The coefficients of voluntary disclosures are significant in the total sample, but they are positive which contradicts the predictions. It seems thus to be difficult to infer any conclusions for the two voluntary disclosure groups unless both groups are divided further into the two categories – Category I and Category II.

If VD_{IAS} and VD_{OTHER} are divided into two categories, the explanatory power increases for both the total sample and Czech sample. The explanatory power for the total sample is 13.7% for the VD_{IAS} and 8.0% for VD_{OTHER} . It is substantially lower for the Czech sample 4.5% (VD_{IAS}) respectively 2.3% (VD_{OTHER}). It seems that VD_{IAS} explains a larger portion of the value relevance than VD_{OTHER} . The coefficient for VD_{IAS} Category I is significant at 5% level for both samples while the coefficient for VD_{IAS} Category II is significant only for the total sample. The coefficient for Category II is

negative as predicted (that is increasing the value relevance of accounting numbers), but the coefficient for Category I is positive which contradicts the expectations (that is VD_{IAS} Category I decreases the value relevance of accounting numbers). VD_{OTHER} Category I coefficient is negative (significant at 10% level for both samples) and Category II coefficient is positive (significant only for the total sample).

The results can be summarized as follows. It seems that voluntary disclosures contribute more to the value relevance in Sweden since the total sample results are stronger. It is not difficult to believe that Swedish companies have more knowledge and experience with voluntary disclosures than their Czech counterparts³⁶, particularly in 1994, and that the willingness to provide voluntary disclosures might also be related to the compliance levels as suggested in section 2.4.3. The level of compliance is much higher in Sweden than in the Czech Republic (see chapter 2). Voluntary disclosures according to IAS seem to contribute more to the value relevance of accounting information than other voluntary disclosure.

Furthermore, it appears to be important to separate the two categories of voluntary disclosure (Category I and Category II) since the division increases the explanatory power. The signs for VD_{IAS} Cat II and VD_{OTHER} Cat I are negative (as predicted) but positive for VD_{IAS} Cat I and VD_{OTHER} Cat II. There are several potential explanations to this. First, the regression model may be misspecified, either the measure of the value relevance does not measure what it purports to, or the voluntary disclosure index does not measure voluntary disclosures properly. The measure of the value relevance depends on a linkage between prices and two accounting numbers (earnings and book value of owners' equity). It is likely that this linkage is too naïve to be able to detect how voluntary disclosure affects the value relevance.

³⁶ Ding et al. (2008) stated that holding other things constant, firms in richer countries disclose more information than in other countries.

Table 11. Association between value relevance and voluntary disclosure

$$\frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 * VD_{jt} + \varepsilon_{jt} \quad \text{and} \quad \frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} = \beta_0 + \beta_1 * VD_{CatIjt} + \beta_2 * VD_{CatIIjt} + \varepsilon_{jt}$$

Both regressions are tested for VD_{IAS} and VD_{OTHER} . \hat{P}_{jt} is estimated price for company j at time t , P_{jt} is observed price for company j at time t , BV_{jt} is book value of shareholders' equity of company j at time t . VD_{jt} is voluntary disclosure score for company j at time t (total voluntary disclosure, Category I and Category II disclosures respectively).

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

Panel A	No of obs.	α_0	α_1	β_0	β_1	β_2	R^2
VD_{IAS}							
Total sample	102	-0.041	0.002***				7.3%
Czech sample	70	0.002*	0.000				-
VD_{OTHER}							
Total sample	107	-0.193	0.009***				7.6%
Czech sample	70	0.002**	-0.000				0.1%
Panel B							
VD_{IAS} Cat I, II							
Total sample	102			0.035	0.003**	-0.030***	13.7%
Czech sample	68			0.000	0.000**	-0.006	4.5%
VD_{OTHER} Cat I, II							
Total sample	102			-0.028	-0.017*	0.009***	8.0%
Czech sample	68			0.000***	-0.005*	0.008	2.3%

The voluntary disclosure indices are a more complex issue. Category I items relate indeed to accounting numbers but they might relate in different ways. There are items which explain in more detail the aggregate numbers in the financial statements and this disclosure makes the accounting numbers more reliable. However, there might also be items that - when disclosed - tell the investors that the number in the financial statement is not correct with respect to the value of the company. A typical example would be any

disclosure of market value of assets. In general, it might be stated that disclosures which relate to the accounting measurement bias (in the valuation model) adjust the financial statements numbers.

The raised issue can be linked to what in the literature is sometimes defined as a substitutive and complementary function of voluntary disclosure in relation to the quality of accounting numbers (accounting quality defined here as the value relevance of accounting numbers). Empirical results show that the relationship between accounting quality and voluntary disclosure might be substitutive or complementary (Lang and Lundholm, 1993, Francis et al. 2008).

Voluntary disclosure has a substitutive role when it compensates for poor accounting quality. Poor accounting quality means that the accounting numbers do not properly reflect the economic substance of companies' activities. For example, if financial statements are prepared according to the historical cost principle in a country with high inflation, voluntary disclosure of financial numbers based on inflation accounting might reveal more relevant information. For a real estate company which accounts for real estate according to the historical cost principle but voluntarily provides information on the current value of the real estate, the value of the real estate in the balance sheet would be substituted by the current value in the voluntary disclosure.

Voluntary disclosure has a complementary role if companies want to signal a high quality of the accounting information. For example, if a company accounts for non-recurring items which reflect a real economic event, it has the motivation to reveal additional information on these items voluntarily. However, if non-recurring items are used for earnings management, the company has a motivation not to provide the information. The company will choose the amount of information to be disclosed based on its performance and the quality of its accounting numbers.

In terms of the regression tests, if additional disclosure substitutes the information contained in the accounting numbers in the financial statements, the sign of the coefficient is positive. The value relevance of the existing accounting numbers decreases. If additional information makes the accounting numbers more credible, investors rely more on the accounting numbers in the financial statements and this increases their value relevance. In this case, the sign of the coefficient is negative.

With this type of reasoning, the VD_{IAS} Cat I would have a substitutive role. VD_{OTHER} Cat I a complementary role, VD_{IAS} Cat II a complementary role and VD_{OTHER} Cat II a substitutive role. There is therefore weak evidence of the VD_{IAS} Cat I items not making accounting numbers more credible, but rather telling the investors that the accounting numbers should be adjusted. In other words, VD_{IAS} informs investors about alternative measurements based on superior accounting regulation. Since the alternative measurements might be more relevant, investors will substitute the information in the financial statements by this additional voluntary information. This should be particularly true for the companies in transition economies. Since the accounting regulation is inferior, the companies may provide additional information in order to explain the accounting policies and the fact that the accounting numbers do not reflect the economic reality well. This might increase the credibility in the managers, but it does not necessarily increase the value relevance of the accounting numbers as defined in this study. A similar reasoning may apply to VD_{OTHER} Category II. If the investors believe that the information provided by the management is correct they would adjust the accounting numbers and the difference between the estimated and observed price will be larger.

However, there is an additional caveat not dealt with so far. Previous research states that voluntary disclosures are provided when the quality of accounting information is inferior; in other words, the causality between the voluntary disclosures and accounting quality is the opposite than in the regression tests. Appendix 4 reports results of the reversed regression where voluntary disclosures are the dependent variable and the value relevance is the independent variable. The tests show that companies with low value relevance of accounting information indeed provide more VD_{IAS} Category I; that is substitute the low accounting quality by more voluntary disclosures according to IAS (the coefficient is positive). However, the tests of other groups of voluntary disclosures are ambiguous and cannot be interpreted. Thus, it might be that VD_{IAS} Category I is a very specific type of voluntary disclosures with a distinct function. It might also be that the present tests are not controlling for other potential sources of value relevance which might also affect the results.

4.3. The association between value relevance and overall disclosure quality

In this section, the association between the value relevance of accounting numbers and overall disclosure quality is assessed. The overall disclosure quality consists of mandatory disclosure requirements, the level of compliance with the mandatory requirements and voluntary disclosure of any additional information. The first regression tests the association between aggregated measures of the individual disclosure variables and the results are reported in table 12.

Table 12. The association between value relevance, mandatory disclosure, compliance level and voluntary disclosure

$$\left| \frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} \right| = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{jt} + \alpha_3 * VD_{jt} + \varepsilon_{jt}$$

where MD_{ct} is mandatory disclosure score for country c at time t , CL_{jt} is compliance level for company j at time t , VD_{jt} is voluntary disclosure for company j at time t
 *** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	No observations	α_0	α_1	α_2	α_3	R^2
Total sample	104	-0.078	0.008**	-0.001	0.002	8.2%
Czech sample	67	0.001***	-0.002**	0.003**	-0.000	7.1%

In the Czech Republic, value relevance is increased by higher mandatory disclosure requirements and decreased by higher compliance level. This is consistent with the results in chapter 2. Mandatory disclosure requirements increase the credibility of accounting numbers. Countries with higher mandatory disclosure requirements are perceived by investors as less risky. Higher compliance level, however, makes it easier to distinguish between companies with good and poor accounting quality. If the underlying accounting quality is poor, investors will use other information in their decisions and this will decrease the value relevance of accounting numbers in the financial statements. Voluntary disclosure does not seem to contribute to the value relevance.

In table 13, voluntary disclosure is divided into the subgroups. The first regression tests only Category I items and the second regression tests the entire disclosure quality framework. The results show that the explanatory power increases when all components of the overall disclosure quality are included (26.1% for the total sample and 14.4% for the Czech sample).

Table 13. The entire framework – the association between the value relevance of accounting information and overall disclosure quality

$$\frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{CATIjt} + \alpha_4 * VD_{IASCATIIjt} + \alpha_6 * VD_{OTHERCATIjt} + \varepsilon_{jt} \quad (I)$$

$$\frac{\hat{P}_{jt} - P_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 * MD_{ct} + \alpha_2 * CL_{CATIjt} + \alpha_3 * CL_{CATIIjt} + \alpha_4 * VD_{IASCATIIjt} + \alpha_5 * VD_{IASCATIIjt} + \alpha_6 * VD_{OTHERCATIjt} + \alpha_7 * VD_{OTHERCATIjt} + \varepsilon_{jt} \quad (II)$$

where MD_{ct} is mandatory disclosure for country c at time t , CL_{jt} is compliance level for company j at time t , VD_{jt} is total voluntary disclosure for company j at time t . $CAT I$ is category I (items directly related to accounting numbers), $CAT II$ is category II (items that do not directly relate to accounting numbers).

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	Regression I		Regression II	
	Total sample	Czech sample	Total sample	Czech sample
N	102	68	102	68
α_0	-0.258***	0.000	-0.022	0.001*
α_1	0.015***	-0.003	-0.002	-0.003
α_2	-0.008*	0.029**	-0.008*	0.001
α_3			0.041***	0.000*
α_4	0.050***	0.000**	0.037***	0.009*
α_5			-0.021**	-0.004
α_6	-0.007	-0.008***	-0.013	-0.009***
α_7			0.004	0.005
R^2	18.9%	13.6%	26.1%	14.4%

The results are different for the total sample and for the Czech sample. In the Czech sample, mandatory disclosure requirements appear to lose their importance when the entire disclosure framework is tested. The level of compliance remains significant when only Category I items are included, but compliance level Category I loses significance when the entire framework is tested. Thus, it seems that the only significant explanatory variables for the Czech sample are compliance level Cat II, VD_{IAS} Cat I and VD_{OTHER} Cat I.

This might suggest that mandatory disclosure requirements do not make any difference as long as the accounting regulation is perceived as weak and the companies compensate this by applying a superior accounting regulation (VD_{IAS}) and by using other additional information directly related to the accounting numbers. It also might suggest that disclosure of items directly related to accounting numbers according to IAS is more useful to investors than compliance with disclosure of similar items (i.e. directly related to accounting numbers) according to the Czech GAAP. The role of voluntary disclosure in the Czech Republic seems to be substantial.

The VD_{IAS} directly related to accounting numbers decreases the value relevance of these numbers. There are two possible explanations to this. First, it might be that VD_{IAS} is used as a substitute to the inferior quality of accounting numbers according to Czech GAAP. This is supported by other results, particularly the fact that the coefficient for the compliance level category I is positive for the Czech sample; i.e. the more the Czech companies comply with the legislation, the more investors try to adjust their valuation by other information presumably since they become aware of the poor accounting quality.

Second, the investors receive more information when companies disclose VD_{IAS} and can therefore use more sophisticated valuation models than a model based only on accounting earnings and book value of equity used for estimating the price. Value relevance as defined in this study declines.

VD_{OTHER} Category I items (directly related to accounting numbers in the financial statements), on contrary, increase the value relevance. Disclosure of segmental information, information on transitory items, historical results, and historical capital and R&D expenditures is useful to the investors. This is not surprising since this information makes forecasting more precise (for example, sales forecasts, persistence of earnings, investment portfolio) and enables to understand the financial performance of the company.

In the total sample, both categories of VD_{IAS} are significant while VD_{OTHER} is not significant at all. A potential explanation might be that the difference is due to the Swedish companies. It might be that a well-developed market economy like Sweden is already rich in information and thus, other voluntary disclosure does not have the same effect as in a transition economy. However, voluntary disclosures according IAS are perceived as important which may be due to the efforts of the Swedish accounting standard-setters, the presence of multinational companies or more diversified and international investors³⁷.

Finally, the results show that the additional voluntary disclosures Category II, both VD_{IAS} and VD_{OTHER} do not contribute to the change in value relevance of accounting numbers in the Czech Republic. This might be surprising considering the fact that the Category II includes disclosure of items that might increase the credibility of the company and the disclosure of projected information items like the management's predictions for the future. The reasons might be several, for example investors do not have enough knowledge to correctly interpret information of this kind. The investors might not rely on the information since they know that Czech companies in general provide accounting information of lower quality. Yet another explanation might be that the transition capital market is less efficient and does not incorporate all available information.

In summary, there seems to be a difference between the two samples and it might be speculated that the disclosure quality components contribute to the overall accounting quality in different ways in a transition and a market economy.

³⁷ The results might also be due to multicollinearity between the individual components of the overall disclosure quality, which can lead to overestimation of the explanatory power and insignificance of certain coefficients. Correlation matrix is provided in appendix 2. VD_{IAS} is not strongly correlated with the other components while VD_{OTHER} is correlated with particularly compliance level.

4.4. The association between the voluntary disclosure, mandatory requirements and compliance level

Given the importance of voluntary disclosures (particularly VD_{IAS} Cat I) for the value relevance of accounting numbers, the next issue is to test the factors that affect the voluntary disclosure level. The tests are divided into two parts – the first part analyses factors related to the accounting environment and the second part analyses characteristics of companies which influence their willingness to provide voluntary disclosures.

As stated previously in section 2.4.3., companies that comply more with the mandatory requirements might provide more voluntary disclosures while companies that disobey the legislation might be inclined to provide less voluntary disclosures. Companies in countries with low mandatory disclosure requirements can be expected to provide more voluntary disclosures that compensate for the inferior mandatory requirements. The evidence on the association between voluntary disclosures, mandatory disclosures and compliance level is provided in table 14.

Table 14. Association between voluntary disclosure, mandatory disclosure and compliance level

$$VD_{jt} = \alpha_0 + \alpha_1 MD_{ct} + \alpha_2 CL_{jt} + \varepsilon_{jt}$$

where VD_{jt} is voluntary disclosure (tested for both VD_{IAS} and VD_{OTHER}) for company j at time t , MD_{ct} is mandatory disclosure for country c at time t , and CL_{jt} is compliance level for company j at time t .

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	No of observations	α_0	α_1	α_2	R^2
VD_{IAS}					
Total sample	120	-4.548**	0.783***	10.897***	56.9%
Czech sample	72	-0.416	0.594***	8.879***	36.0%
VD_{OTHER}					
Total sample	120	-5.491	1.385***	0.223***	49.8%
Czech sample	72	1.567	1.038***	0.187***	31.6%

There is a strong positive association between the voluntary disclosures, mandatory disclosure requirements and the compliance levels in both samples. The results support the idea that companies which comply with accounting regulation are more inclined to provide voluntary disclosures. The results also show that higher mandatory disclosure requirements increase companies' willingness to provide additional voluntary disclosures. This seems to contradict the idea that Czech companies would provide more voluntary disclosures in order to compensate for the lower level of mandatory disclosure requirements (i.e. voluntary information is disclosed in absence of mandatory requirements). It might, though, be that higher level of mandatory disclosure reveals more about the underlying inferior accounting policies. More voluntary disclosures of alternative accounting methods are in such a case needed to provide more relevant information to the investors.

The regression in table 14 suffers from multicollinearity between mandatory disclosure requirements and compliance level (a correlation table is provided in appendix 2). Therefore, the association between the compliance level and VD_{IAS} is also tested by ranking the companies and grouping them according to their level of compliance³⁸. Companies are ranked into groups based on their compliance level. Afterwards, the average VD_{IAS} is calculated for each rank group. If the assumption of a positive association between voluntary disclosure and compliance level holds, the group with a higher compliance level should also provide more voluntary disclosures. The results in table 15 support this idea. Companies with higher compliance levels indeed disclose more VD_{IAS} in the Czech Republic. The difference for the Swedish sample is not significantly large.

³⁸ Ranking test is provided for the voluntary disclosure score VD_{IAS} .

Table 15. Association between compliance and voluntary disclosure VD_{IAS}

	Czech Republic 1994	Czech Republic 2001	Sweden 1994	Sweden 2001
	Average VD_{IAS} score	Average VD_{IAS} score	Average VD_{IAS} score	Average VD_{IAS} score
Companies with highest compliance	5.1 (12)	4.8 (23)	2.3 (12)	0.84 (12)
Companies with lowest compliance	2.9 (12)	2.9 (23)	1.5 (12)	0.84 (12)

Highest compliance companies are those which comply with at least half of mandatory disclosure (50%). Lowest compliance companies are those which do not reach the 50% level.

The average VD_{IAS} score is the average for all companies in the group.

The number in the brackets is the number of companies in each group. The groups are equal in size.

4.5. Characteristics influencing the willingness to voluntary disclosures

Table 16 shows that the characteristics of firms which influence their willingness to voluntary disclosures are similar to the characteristics which influence the level of compliance with the accounting regulation (chapter 2). The explanatory power is high for both the total sample and the Czech sample. The only variables significant for the Czech sample are type of auditor and ownership concentration. Czech companies which employ Big Four auditors provide more voluntary disclosures than other companies which relates to the credibility of these firms and the knowledge which they bring into the transition economy. Furthermore, Czech companies with high ownership concentration provide less voluntary disclosures than other companies. This is consistent with the hypothesis that strong owners with large concentrated shareholdings are not interested in providing additional information.

These two factors are significant in the total sample results as well. However, there are three additional factors in the total sample that seem to influence the level of voluntary disclosure. Companies listed abroad tend to

provide less voluntary disclosures than other companies. This can be explained by the fact that the foreign listing as such is a signal to the market about the potential of the company and additional voluntary disclosures are not necessary.

State-owned companies (companies where state is the largest shareholder) provide less voluntary disclosures than other companies, which is consistent with the findings that state-owned companies also comply less with the regulation. The question arises why this factor is not significant in the Czech sample. One suggestion would be that the ownership concentration variable incorporates the state ownership variable, since companies with highest concentration of ownership are in general companies owned by the state³⁹. Finally, large companies seem to provide more voluntary disclosures than small companies.

³⁹ However, correlation between the ownership concentration and state ownership is not high as can be seen in appendix 2.

Table 16. The association between the voluntary disclosure and the company characteristics

$$VD_{jt} = \alpha_0 + \alpha_1 ABR_{jt} + \alpha_2 DEL_{jt} + \alpha_3 AUD_{jt} + \alpha_4 IAS_{jt} + \alpha_5 CONC_{jt} + \alpha_6 STATE_{jt} + \alpha_7 INST_{jt} + \alpha_8 SIZE_{jt} + \alpha_9 ROE_{jt} + \alpha_{10} D/E_{jt}$$

where *VD* is voluntary disclosure, *ABR* is foreign listed (1 if listed abroad, 0 if not), *DEL* is de-listing (1 if still listed, 0 if de-listed after 2001), *AUD* is type of auditors (1 if Big Four auditor, 0 if other), *IAS* is IAS/U.S. GAAP reporting (1 if IAS/U.S. GAAP used, 0 otherwise), *CONC* is ownership concentration (shareholdings of the largest shareholder in %), *STATE* is state ownership (1 if largest shareholder is state, 0 otherwise), *INST* is institutional ownership (1 if institutional owner, 0 otherwise), *SIZE* is logarithm of total assets, *ROE* is return on equity and *D/E* is debt-equity ratio. All variables are measured for company *j* at time *t*.

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	Total sample		Czech sample	
	All variables	Stepwise	All variables	Stepwise
Number of observations	91	91	49	49
α_0	41.850***	39.806***	43.655***	36.979***
α_1 (ABR)	17.093**	-17.541**	-17.235	
α_2 (DEL)	0.010		-5.515	
α_3 (AUD)	17.082***	17.564***	15.452***	16.168***
α_4 (IAS)	-88.361*		-1.577	
α_5 (CONC)	-20.732**	-18.650***	-27.376**	-21.179**
α_6 (STATE)	-8.260**	-7.654**	-2.210	
α_7 (INST)	-6.756		-2.251	
α_8 (SIZE)	0.001***	0.003***	0.003	
α_9 (ROE)	0.053**		0.008	
α_{10} (D/E)	-0.143		0.062	
R^2	34.3%	34.7%	18.2%	25.7%

5. Concluding remarks

The study has investigated the content, extent and role of voluntary disclosures in the Czech Republic (transition economy) and Sweden (market economy). A voluntary disclosure index was divided into four sub-categories depending on whether the items directly relate to accounting numbers in the financial statements, and whether the disclosure is beyond the domestic GAAP but within IAS or beyond both domestic GAAP and IAS. The results show that the level of voluntary disclosures in the Czech Republic is substantially lower in the beginning of the transition period, that it improves over time but is still lower than in Sweden in 2001. Czech companies provide less voluntary disclosures which relate directly to the accounting numbers than Swedish companies.

It has been shown that voluntary disclosures are associated with the value relevance of accounting information. The type of association depends, however, on the type of the voluntary disclosure. Voluntary disclosure according to IAS which is directly related to accounting numbers seems to decrease the value relevance. Other voluntary disclosure which is directly related to accounting numbers seems to increase the value relevance. A possible explanation might be that voluntary disclosure according to IAS reveals alternative measurement of accounting numbers. Since alternative measurements are based on accounting standards perceived as superior, they substitute the accounting numbers from the financial statements in the valuation models. It might though also be that investors receive better and more extensive information with voluntary disclosures according to IAS and can thus use more sophisticated valuation models. In that case, their price will deviate from the price estimated in this study by a valuation model based on accounting earnings and book value only. Other voluntary disclosure seems on the other hand to increase the credibility and usefulness of accounting numbers in the financial statements.

The study further tests overall disclosure quality consisting of mandatory disclosure requirements, level of compliance with mandatory disclosure and voluntary disclosures. The results indicate that in the Czech Republic, mandatory disclosure loses its significance when companies comply more with legislation and additional information is voluntarily provided.

The amount of voluntary disclosures increases with the level of mandatory disclosure requirements and with the level of compliance (companies in a superior accounting environment provide more voluntary disclosures - although the benefits might be minor - and companies which comply more with the legislation disclose more voluntarily information). Certain company characteristics also increase the propensity to provide voluntary disclosure. In the Czech Republic, companies which employ Big Four auditing firm provide more voluntary disclosure and companies with larger ownership concentration provide less voluntary disclosure.

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Appendices

- Appendix 1: List of abbreviations and variables
- Appendix 2: Correlations matrix
- Appendix 3: Management discussion coding
- Appendix 4: Association between voluntary disclosure and value relevance of accounting numbers
- Appendix 5: The structure of the VD_{OTHER} disclosure index

Appendix 1. List of abbreviations and variables

Abbreviations in the equations

BV_{jt}	Book value of shareholders' equity for firm j at time t
CAT I	Disclosure items category I directly related to accounting numbers
CAT II	Disclosure items category II not directly related to accounting numbers
CL	Compliance level
CL_{CATI}	Compliance level – valuation relevant items
CL_{CATII}	Compliance level – entity characteristics
ct	Country c at time t
D/E_{jt}	Debt-equity ratio for firm j at time t
J_t	Firm j at time t
J_{t-1}	Firm j at time $t-1$
J_{t+1}	Firm j at time $t+1$
MD	Mandatory disclosure
P_{jt}	Market value of equity for firm j at time t
r_e	Required rate of return
ROE_{jt}	Return on equity for firm j at time t
X_{jt}	Net income before extraordinary items adjusted for taxes for firm j at time t
VD	Voluntary disclosure
VD_{IAS}	Voluntary disclosure according to the IAS
VD_{OTHER}	Other voluntary disclosure beyond the IAS
VD_{IASI}	Voluntary disclosure according to the IAS Category I directly related to accounting numbers
VD_{IASII}	Voluntary disclosure according to the IAS Category II indirectly related to accounting numbers
VD_{OTHERI}	Other voluntary disclosure beyond the IAS Category I directly related to accounting numbers
$VD_{OTHERII}$	Other voluntary disclosure beyond the IAS Category II indirectly related to accounting numbers

Other abbreviations

ABR	Foreign listing
AUD	Type of auditor
CONC	Ownership concentration
DEL	Companies de-listed from the stock exchange after 2001
GAAP	Generally accepted accounting principles
IAS/U.S. GAAP	International accounting standards/ U.S. GAAP reporting
IFRS	International financial reporting standards
INST	Institutional ownership
SIZE	Size measured as logarithm of total assets
STATE	State ownership

Appendix 2. Correlations matrix

Appendix 2 A. Correlations matrix of table 13 – correlations between the individual components of the overall disclosure framework (total sample)

Pearson Correlation	VR	MD	CL _I	CL _{II}	VD _{IAS I}	VD _{IAS II}	VD _{OTHER I}	VD _{OTHER II}
VR	1.000	.292	.137	.331	.193	-.320	.008	.261
MD	.292	1.000	.789	.897	-.300	-.360	.360	.584
CL _I	.137	.789	1.000	.799	-.127	-.64	.502	.607
CL _{II}	.331	.897	.799	1.000	-.163	-.150	.505	.641
VD _{IAS I}	.193	-.300	-.127	-.163	1.000	.104	.016	-.007
VD _{IAS II}	-.320	-.360	-.064	-.150	.104	1.000	.279	-.076
VD _{OTHER I}	.008	.360	.502	.505	.016	.279	1.000	.576
VD _{OTHER II}	.261	.584	.607	.641	-.007	-.076	.576	1.000

Appendix 2 B. Correlation matrix of table 14 – correlation between voluntary disclosure, mandatory disclosure and compliance level (total sample, VD_{OTHER})

Pearson Correlation	VD	MD	CL
VD	1.000	.662	.537
MD	.662	1.000	.460
CL	.537	.460	1.000

Appendix 2 C. Correlation matrix of table 16 – correlation between voluntary disclosure and individual factors influencing the propensity of companies to provide voluntary disclosure (total sample)

Pearson Correlation	VD	ABR	DEL	AUD	IAS	CONC	STATE	INST	SIZE	ROE	D/E
VD	1.000	.189	.145	.446	.065	-.284	-.235	.112	.307	-.049	.242
ABR	.189	1.000	.256	.170	.448	-.266	-.121	.482	.777	-.049	.160
DEL	.145	.256	1.000	.050	.037	-.152	-.237	.098	.184	.024	.138
AUD	.446	.170	.050	1.000	.228	-.035	.013	-.152	.146	.030	.192
IAS/US	.065	.448	.037	.228	1.000	.082	.125	.151	.584	.011	.057
CONC	-.284	-.266	-.152	-.035	.082	1.000	.221	-.419	-.159	.238	-.155
STATE	-.235	-.121	-.237	.013	.125	.221	1.000	-.306	-.049	.182	-.259
INST	.112	.482	.098	-.152	.151	-.419	-.306	1.000	.538	-.079	.113
SIZE	.307	.777	.184	.146	.584	-.159	-.049	.538	1.000	-.046	.243
ROE	-.049	-.049	.024	.030	.011	.238	.182	-.079	-.046	1.000	-.076
D/E	.242	.160	.138	.192	.057	-.155	-.259	.113	.243	-.076	1.000

Appendix 3 – Management discussion coding

Management discussion and analysis received 0 points if not properly disclosed, 1 if half specified and 2 if most analysis disclosed sufficiently. First, the following 9 sub-items of the management discussion were coded. Every item received one point which makes totally 9 points. The percentage of the actual disclosure of the items by every company was calculated as disclosed points/9. If the company disclosed 0 – 25% of the items, it received 0 points. If it disclosed 25 – 65 % it received 1 point and if it disclosed 65 – 100% it received 2 points.

Sub-items of management discussion and analysis

Change in sales
Operating profit
Cost of goods sold
Gross profit
Net profit
Inventory
Accounts receivable
Capital expenditures and R&D expenditures
Interest expenses or income

Appendix 4. Association between voluntary disclosure and value relevance of accounting numbers

$$VD_{jt} = \alpha_0 + \alpha_1 * \frac{|P_{jt} - \hat{P}_{jt}|}{BV_{jt}} + \varepsilon_{jt}$$

where VD_{jt} is voluntary disclosure for company j at time t , \hat{P}_{jt} is estimated price for company j at time t , BV_{jt} is book value of shareholders' equity of company j at time t , P_{jt} is observed price of company j at time t .

*** significance at 1 percent level, ** significance at 5 percent level, * significance at 10 percent level, overall, adjusted R^2 values are reported.

	Number of observations	α_0	α_1	R^2
VD_{IASI}				
Total sample	102	1.900***	0.193*	3.7%
Czech sample	68	1.745***	0.271**	7.3%
VD_{IASII}				
Total sample	102	1.729***	-0.320***	10.7%
Czech sample	68	2.187***	0.022	0.0%
VD_{OTHERI}				
Total sample	102	3.005***	0.008	0.0%
Czech sample	68	3.263***	-0.210*	4.4%
VD_{OTHERII}				
Total sample	102	13.817***	0.261***	6.8%
Czech sample	68	12.692***	-0.061	0.4%

Appendix 5. The structure of the VD_{OTHER} disclosure index

<p><i>VD_{OTHER} – Category I – direct relation to accounting numbers</i> Segmental information about sales, assets or operating profits</p> <p>Information on transitory items</p> <p>Historical results: information to calculate return on assets, profit margin, turnover of assets and return on equity</p> <p>Capital expenditures (historical results)</p> <p>R&D costs (historical results)</p>	<p>Skogsvik and Gray</p> <p>Skogsvik and Gray Botosan</p> <p>new</p> <p>new</p>	<p>Substitutes Botosan’s “principle products and markets”, segmental information is another way of how to describe the division of operations</p> <p>Shows company’s asset age structure and potential needs for future investments</p> <p>Substitutes Botosan’s “percentage in sales in products designed in the last five years”</p>
<p><i>VD_{OTHER} – Category II – indirect relation to accounting numbers</i> Background/Competitive advantages Statement of corporate strategy and goals Competitive environment and barriers to entry discussed Management discussion and analysis: change in sales, CGS, gross profit, operating profit, net profit, inventory, A/R, capital expenditures or R&D, interest expense or income</p>	<p>Botosan</p> <p>Botosan</p> <p>Botosan</p>	
<p>Management structure List of board members and their affiliation</p> <p>Qualifications of company directors (Education, experience, year joined) Performance related pay to managers</p>	<p>new</p> <p>Skogsvik and Gray new</p>	<p>Particularly important in the Czech Republic due to corporate governance and cross-holding problems, the item affects credibility of the financial information</p> <p>Financial incentives of the managers might potentially lead to earnings management, the item affects the credibility of financial information</p>
<p>Projected information/Business growth and earnings persistence Cash flow forecast Capital expenditures and/or R&D forecast Sales forecast in monetary terms or units sold if prices are firm Management’s short term forecast of net income, ROE, operating income or</p>	<p>Botosan</p> <p>Botosan</p> <p>Botosan</p> <p>Botosan and Skogsvik</p>	

ROA/ROCE/RONA Long-term profitability (ROE or/and ROCE/RONA) Financial targets	Gray Skogsvik and Gray new	Disclosure of the targets shows whether the financial goals are realistic. These can be compared to the management's forecasts and historical results may be evaluated with respect to the targets.
Specified goals for company dividends	Skogsvik and Gray	
Ownership structure		
Major shareholder	new	The type of shareholder affects disclosure quality as stated in 2.2. Disclosure of voting rights is important particularly for countries where difference between voting rights per share exists Presence on foreign capital markets has implications on what disclosure is required from the company
Number of shares and voting rights	new	
Stock exchange listing	new	
Key non-financial statistics		
Order backlog	Botosan	Export activities may affect the business risk of a company.
Market share	Botosan	
Export share	new	

Note: Botosan includes further following items: general description of the business, principle products and principle markets (background information); summary of sales and net income for most recent eight quarters (historical results); number of employees, average compensation per employee, percentage of sales in products designed in the last five years, units sold, unit selling price, growth in units sold (key non-financial statistics); forecasted market share (projected information); and change in selling and administrative expenses, change in market share (management discussion).





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