Erasmus University Rotterdam (EUR)
Erasmus School of Economics (ESE)
Department of Business Economics
Master Accounting, Auditing and Control (AAC)

The Effect of Accounting Conservatism on Value Relevance of Financial Statements

An empirical research to the relationship between two accounting phenomena

Master Thesis

Author: M.J.H. Wendt
Studentnumber : 187677
Supervisor: Prof. Dr. M.A. van Hoepen RA
Co-supervisor: Mr. E.A. de Knecht RA

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Abstract

In accounting literature/research conservative accounting is generally assumed to have a negative impact on information usefulness of financial statements. Yet, the assumed negative relation between accounting conservatism and information usefulness has not been substantiated by extensive empirical evidence.
For testing the legitimacy of the assumed relation this study conducts an empirical examination to the association between the two accounting phenomena in an European setting.

In a literature review the assumed relation is rationalized by a discussion of the characteristics of and the theoretic relation between the two accounting phenomena.
As to safeguard information usefulness of financial statements accounting standard-setters have imposed a set of qualitative requirements which accounting information should comply with. However, the qualitative requirements 'neutrality' and 'prudence' pursue conflicting interests and accordingly these two have to be balanced in one way or the other.
Accounting conservatism is a managerial approach in which the qualitative requirement of prudence is dominant to neutrality. At conservative accounting more strict rules are applied for the recognition of profits than for losses. The asymmetric timeliness of profits versus losses causes the understatement of net assets and accounting earnings. This deliberate undervaluation violates neutrality and information usefulness of financial statements.

The study empirically investigates the relation in three different settings (national, international and harmonization setting) for Germany, France and the UK over the period 1995-2007, using the Ohlson regression model to measure value relevance (proxy of information usefulness) and two regression models (AACF model and APE model) for assessing the degree of accounting conservatism.
Each setting investigates the probable influence of one of the following factors on the degree of accounting conservatism: industry conditions, accounting regimes and accounting harmonization. Empirical evidence show all factors to have significant impact on conservatism. As to eliminate possible distortion of test results all three factors have been controlled while examining the association between accounting conservatism and value relevance.

In contrast to general expectations results in all three settings do not show evidence of a negative relation between the two phenomena. Based on these empirical findings I draw the conclusion that accounting conservatism has no negative impact on value relevance of financial statements. However, it is rather premature to generally apply this conclusion as possibly limitations in the research setup may have produced inaccurate results. Accordingly, additional empirical research is required to confirm the conclusion of this study and to refine our understanding of the relationship.

Keywords: information usefulness, value relevance, accounting conservatism, conservative accounting, accounting harmonization, Ohlson regression model, asymmetric timeliness, earnings conservatism, balance sheet conservatism

Preface

In completion of the master's degree program Accounting, Auditing and Control (AA&C) at the Erasmus University Rotterdam students are assigned to write a thesis on a subject that is relevant to their program. Being one of these students I have conducted an empirical examination in the area of market-based accounting research. In this thesis I report on the methodology used for and the results found at this research.

Motivation of research subject
In academic year 2008/2009 I participated in the seminar Advanced Financial Accounting. This seminar is considered to be an introduction to the actual master's thesis as it teaches students how to conduct and report on an empirical research.
As part of the seminar we (a colleague student and I) have written two papers on the research topic: usefulness of financial statement information.
As particular subject of our investigation we studied the relation between the following two accounting phenomena:

- value relevance of financial statements,
- accounting conservatism.

In the two papers we discussed the theoretic probabilities and nature of the relationship; subsequently we initiated a methodology for empirically testing our theory. However, the scope of the seminar was limited and students were not assigned to actually perform their empirical researches.
As I had become more interested in our subject I decided to continue the empirical research as topic of the master's thesis.

Research subject
In accounting theory/literature value relevance of financial statements and accounting conservatism are generally assumed to be negatively related. However, this assumption is not substantiated by extensive empirical evidence from prior studies. Accordingly, the objective of investigation is to find empirical proof of the assumed negative relation between these two phenomena, that is: *value relevance of financial statements is negatively affected by accounting conservatism*.

Content
The thesis starts with a discussion of relevant accounting literature in order to enlighten the characteristics of each individual accounting phenomenon and to rationalize the assumed negative relationship between the two.
Subsequently, I will develop a methodology and construct an appropriate sample aimed at empirically examining the relationship.
At the end I shall present and discuss the empirical results and draw the conclusion with regard to the tenability of the assumed negative relation between value relevance and accounting conservatism.

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Maurice Wendt
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Section 1 Introduction

1.1 Introduction

In today's world countries are exposed to and participate in the process of economic globalization. One of the many aspects of economic globalization is that investors (of both equity and debt capital) no longer operate on domestic markets only. Instead investors seek for profitable investments on global scale.
This change in focus has lead to an exponential increase in investment opportunities, which urges the need of investors for obtaining more useful information. Information is used to analyse and benchmark investment alternatives and then to make the economic decision what company to invest in.

Financial statements play an important role in providing useful information to investors. Accounting standard-setters acknowledge the information usefulness of financial statements to investors and have explicitly defined the objective of financial reporting in accordance to this role.
In its conceptual framework the International Accounting Standards Board (IASB) states that "the objective of financial statements is to provide information about the financial position, performance and changes in financial position of an entity that is useful to a wide range of users in making economic decisions".[1]
Like the IASB the US Financial Accounting Standards Board (FASB) phrases a similar definition of the objective of financial reporting stating that "financial reporting should provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions".[2]

Financial statements annually report on a company's year end financial position and its last year's financial performance.
As financial statements are reported only once a year these statements are obviously not the only source of information that investors use. Moreover, a considerable amount of the information provided by financial statements may be superseded at the time these statements are published.
Therefore investors will also take notice of more current information sources, like press releases, professional financial analyses, financial information from competitors, and so on, for taking investment decisions.
Nevertheless, financial statements are still considered to be an useful source of information to investors.

This study will focus on the information usefulness of financial statements. More specific, it will empirically examine the impact of a certain accounting phenomenon, namely accounting conservatism, on financial statements' information usefulness.

1.2 Information usefulness of financial statements

Once having acknowledged the role of financial statements in providing useful decision information to investors it is essential to guarantee the quality of financial statements' information.
For that accounting standard-setters have stated qualitative characteristics which are to preserve the information content of financial statements. Notwithstanding differences in definition and hierarchy, standard-setters have distinguished the following primary qualitative characteristics: understandability, relevance, reliability and comparability.

[1] IASCF, Framework for the Preparation and Presentation of Financial Statements, 2001, paragraph 12, p. 80.
[2] FASB, Statement of Financial Accounting Concepts No. 1 - Objectives of Financial Reporting by Business Enterprises, as issued 1978, paragraph 34, pp. 16-17.

Subsequently the IASB has elaborated the characteristics 'relevance' and 'reliability' as function of the following accounting qualities: materiality and faithful representation, substance over form, neutrality, prudence, and completeness respectively. [3]

However, despite these qualitative requirements there is no one single correct representation of a company's financial position and performance.
First, qualitative characteristics are a set of general principles and do not give concrete instructions on how to keep the accounts. As a result presentation of book value (balance sheet) and accounting income (profit and loss sheet) in the financial statements highly depends on the interpretation of these principles by the company as well as the interests of the company.
Second, some qualitative characteristics pursue opposite interests and therefore have to be balanced. Trade-off between these characteristics is the outcome of company's assessment and is inevitably open to criticism. On the method of balancing qualitative characteristics the IASB states “generally the aim is to achieve an appropriate balance among the characteristics in order to meet the objective of financial statements. The relative importance of the characteristics in different cases is a matter of professional judgement.” [4]

As becomes clear from this IASB statement financial accounting is not just a mechanical process of applying a set of accounting rules. Instead, professional judgement is a basic condition in financial accounting for achieving information useful financial statements.

Information usefulness and value relevance
As to assess the extent of information usefulness there is the following methodological issue that needs to be solved: how does one measure a rather abstract and immeasurable phenomenon like information usefulness?

Literature has produced different techniques to counter this methodological issue.
One of the techniques often used is value relevance. Value relevance is a capital market-based accounting method because it makes use of market share prices and returns as proxy of fair valuation of financial position and performance of the company.
The association between accounting values (as presented by financial statements) and the fair values (presented by share prices and returns) is referred to as value relevance of financial statements.
Value relevance is a proxy of information usefulness; the closer the association between accounting and market valuation the more value relevant accounting information is to investors, and consequently the higher information usefulness of the financial statements.

Value relevance is a useful concept to measure investors' appreciation of information usefulness and is often employed to assess the impact/relevance of a particular accounting phenomenon. Therefore I will deploy value relevance to measure information usefulness of financial statements.

1.3 Accounting conservatism

The requirement of professional judgement for achieving useful financial statements entails discretionary manoeuvrability in financial accounting to the management (management discretion).
This study centres on a particular managerial discretionary approach that puts the emphasis on the qualitative characteristic 'prudence'. In particular I will focus on a specific manifestation of prudence, viz accounting conservatism.

[3] In Statement of Financial Accounting Concepts No. 2 - Qualitative Characteristics of Accounting Information, as issued 1980, paragraph 32, p. 20, the FASB discerns the following four extra accounting qualities: predictive value, feedback value, timeliness, verifiability.
[4] IASCF, Framework for the Preparation and Presentation of Financial Statements, 2001, paragraph 45, p. 86.

The IASB defines prudence as “the inclusion of a degree of caution in the exercise of the judgements needed in making the estimates required under conditions of uncertainty, such that assets or income are not overstated and liabilities or expenses are not understated.” [5]
Obviously the characteristic prudence is intended to prevent management from making opportunistic accounting estimates (overvaluation) that could possibly endanger the reliability of the financial statements, and in the long run even business continuity. The collapse of Enron in December 2001 in the USA and the financial fraud at Parmalat in 2003 in Italy are recent examples of how fraudulent opportunistic accounting estimations endanger the existence of a company.
On the other hand, if management decides to consistently underestimate revenues and gains and/or to overestimate expenses and losses then it will project a too conservative representation of the financial position and performance (undervaluation).
Undervalued companies are more exposed to merger and acquisition activities of other companies which makes the conservative accounting approach to be a threat to business continuity too.
Besides, both situations of managerial accounting decisions relating the prudence requirement do conflict with the qualitative requirement of 'neutrality'.

A more extreme form of addressing the prudence requirement in the financial statements is the performance of accounting conservatism (conservative accounting) by management.
A definition of accounting conservatism which is often used is “accountant's tendency to require a higher degree of verification for recognizing good news than bad news in financial statements.” [6]
Accounting conservatism is the dominant prudential approach to professional judgement on accounting estimates and methods. Management takes a conservative view on how to address its discretionary responsibility by the deployment of more strict criteria for recognition of profits than for losses. As a consequence of this imbalance in timeliness between recognition of negative versus positive news (i.e. losses versus profits), book value and accounting earnings tend to be undervalued in the financial accounts.

This study conducts an empirical examination of the impact of accounting conservatism on information usefulness of financial statements.

1.4 Accounting conservatism and value relevance

From a theoretical point of view accounting conservatism contradicts to the qualitative requirement 'neutrality' and has a negative effect on information usefulness.
In previous studies accounting conservatism has been addressed as one of the explanatory variables that cause decline in financial statements' information usefulness.
The rationale for this assumption is that book value and accounting earnings are undervalued because of accounting conservatism, while on the other hand market valuation does not differentiate in timeliness of recognition of negative versus positive news. Consequently, market value exceeds accounting value. Hence accounting conservatism causes a decline in value relevance (association between market en accounting valuation).

Although the assumed negative impact of accounting conservatism on value relevance seems plausible in theory no extensive empirical examination to this relation has been conducted. Additional empirical evidence on the assumed relation would add value to accounting literature and previous research as the evidence might legitimize assumptions used in prior studies/researches.
The aim of this study is to conduct a research to the assumed negative relation between accounting conservatism and information usefulness of financial statements.

[5] IASCF, Framework for the Preparation and Presentation of Financial Statements, 2001, paragraph 37, p. 84.
[6] Basu, The conservatism principle and the asymmetric timeliness of earnings, 1997, p. 4.

The research will be carried out on statistical data of firms seated in Germany, France and the United Kingdom (UK). By empirically testing the assumption that accounting conservatism reduces information usefulness I will contribute to a more thorough understanding of the relation. Not only does a more profound understanding contribute to accounting literature and previous research, hopefully it will initiate and assist future research.

1.5 Research setup

The central problem I address in this study is to investigate the impact of accounting conservatism on value relevance of financial statement.
The research question of this study is:
Does accounting conservatism negatively impact value relevance of financial statements?

As I explained in the previous subsection, in theory accounting conservatism causes a decline in value relevance of financial statements. This study aims to find evidence on existence and magnitude of the assumed negative relation.
For that, I will compare value relevance of financial statements drawn by firms that practice conservative accounting with value relevance of financial statements of firms not practicing accounting conservatism.
The following research thesis formulates the preposition of the assumed negative relation:
Financial statements of firms practicing accounting conservatism are less value relevant than financial statements of firms not practicing accounting conservatism.
Like the research thesis implies I presume that accounting conservatism will have a negative impact on value relevance of financial statements.

In order to validate the research thesis we will be examining the relation between accounting conservatism and value relevance in three research settings. At each of these settings we shall use empirical evidence to test a relevant hypothesis. Based on these test results we will determine whether to accept or reject the hypothesis and ultimately we will verify the tenability of the research thesis. Finally, conclusions drawn on the thesis' validity will answer the research question.

Section 3 starts our exploration by constructing a framework for empirical investigation that consists of a research outline and three research settings. Next, for each phase in all three research settings relevant hypotheses will be formulated.
Section 4 will focus on the research design and sample composition. In order to assess value relevance and accounting conservatism we will need to deploy some sort of instrument that measures these phenomena. For that purpose the research design will select and discuss suitable proxies and research models that will serve as measurement instruments. Subsequently, an appropriate sample is composed that meets all essential research requirements.
In section 5 empirical results will be discussed and analysed. Hypotheses are now being tested and depending on the empirical outcome these will be accepted or rejected.
Finally, section 6 starts with providing a summary of the research setup. Thereupon it will draw the overall conclusion on the tenability of the research thesis, using test results from section 5. Eventually, verification of the thesis will also answer the research question.
The section concludes with a discussion of the relevance of the research and its findings, and making suggestions for future research.

Before commencing the empirical research we will first gain more knowledge from the concepts information usefulness/value relevance and accounting conservatism in section 2. The section will expound on main characteristics of and research to these accounting phenomena. This discussion will lead to a more profound understanding of the subjects and accordingly it serves as theoretical framework to the empirical research.

Section 2 Literature review

This section will provide a historical outline of conducted research to the two central subjects of this research: usefulness of financial statement information and accounting conservatism. The intention of this section is to create a frame of reference that acts as foundation of the research setup. For each separate subject I will first discuss the basic concepts and characteristics and subsequently I will analyse and compare previous research studies.

Subsection 2.1 concentrates on the discussion of information usefulness (synonyms are: decision usefulness, information relevance).
Subsection 2.2 performs a similar discussion of accounting conservatism.
Essential to the empirical research of this study is the relation between accounting conservatism and information usefulness. Subsection 2.3 will expound on this relation.

2.1 Usefulness of financial statement information

Usefulness of information is a rather theoretical construct and needs to be elucidated before it can be operationalized in research. And so in subsection 2.1.1 I will introduce a definition of the concept 'information usefulness', discuss some relevant characteristics of the concept, enumerate important factors of influence on information usefulness, and discuss two methodologies for accounting research.
Next, I will discuss previous empirical research to value relevance in subsection 2.1.2.

2.1.1 Definition and characteristics of information usefulness

- Definition of usefulness of financial statement information -
In paragraph 12 of Framework for the Preparation and Presentation of Financial Statements the IASB[7] states that one of the objectives of financial statements is to provide useful information for making economic decisions. Other objectives of annual accounts are stewardship and accountability of management.
Clearly the aim is to assist stakeholders in making rational economic decisions by providing decision useful financial statements that reduce information asymmetry between the organization and its stakeholders.

How do we define information usefulness?
Studies use various definitions for information usefulness. For instance Libby states that "information is judged to be useful if it allows users to make correct predictions." [8]
For the purpose of this study information usefulness of financial statements is defined as: the extent to which accounting information answers the information needs of the user.

- Financial statements information needs -
Essential to improving decision usefulness is to attune supply of information to specific information needs of the stakeholders. The organization has different groups of stakeholders, such as investors, employees, banks, customers, government, etc., with each group having its own interests and corresponding information needs.
Whose information needs should the financial statements answer to?
As it would be too costly to address the particular information needs of each group separately, the organization draws general purpose financial statements that are "prepared and presented at least annually and are directed toward the common information needs of a

[7] The study focuses on the European situation; accordingly as from section 2 any reference to accounting standard-setters is confined to the IASB.
[8] Libby, Accounting ratios and the prediction of failure: some behavioral evidence, 1975, p. 152.

wide range of users." [9] Usually investors are supposed to be the primary users of the statements.
Once we have identified the investor as primary user, the following step is to assess his information needs. A fine-tune of financial statements to investor's information needs will improve the decision-making ability of investors (Scott, 2006, p.51).
What information do investors need for making economic decisions?
Decisions and investment theories assist in estimating information needs. These theories assume investor's rationality; that is the investor pursues maximum prosperity at minimum risk. Ideally information would provide investors with firm statements about future cash flows so that investors could assess firm value by calculating the present value of these future cash flows. However, uncertainty is inherent to life, and so future cash flows cannot be predicted.
Instead, annual accounts report historical costs which investors will use to estimate future returns on their investments. Relevant accounting information supports investors in making their own estimates of future payoffs (Scott, 2006, p.75).

- Financial statements information supply -
Normative financial accounting theory is engaged in addressing users' information needs. To enhance information usefulness normative financial accounting theory has developed several judgemental theories prescribing how financial accounting should be performed (Deegan and Unerman, 2006, p.22).
Examples of normative theories are the valuation methodologies that incorporate inflation into the accounts, like current cost accounting and current purchasing power accounting.

Although certainly not all normative theories have been adopted by accounting standard-setters nor been used by accountants, still the discipline has had considerable influence on the accounting practice.
The introduction of conceptual frameworks by accounting standard-setters is a clear example of the influence of normative financial accounting theory on financial reporting.
The IASB's conceptual framework provides concepts and principles for how to prepare and present the financial statements. The conceptual framework adds value to information relevance of financial statements by defining the objective of financial accounting, expounding which qualitative characteristics accounting information should comply with, defining the elements of accounting, and prescribing how to recognize and measure the elements in the financial statements (Deegan & Unerman, 2006, p.376).

- Usefulness of financial statements information -
Information usefulness is the extent to which accounting information answers the information needs of the user. In other words, usefulness is determined by degree of users' appreciation of accounting information.
To assess information usefulness of financial statements it is important to be aware that there are important shortages attached to these statements. These shortages will explain much of the discrepancy between on the one hand users' needs for and on the other hand supply of accounting information.
I will discuss four important shortages to financial statements.

1 - Notwithstanding the aim to provide decision makers with useful information the IASB does recognize that not all decision-useful information can be provided by financial statements. First, financial statements portray a retrospective view on financial performance, i.e. accountability on obtained results in the past, and hardly give any prospective information.

[9] IASCF, Framework for the Preparation and Presentation of Financial Statements, 2001, paragraph 6, p. 78.

Second, financial statements mainly concern financial information and provide only a limited amount of non-financial information.[10]
In other words, limitations in nature and scope bring on that financial statements cannot provide investors with all relevant information.

2 - Management discretion has considerable impact on accounting information and subsequently on information relevance (Deegan & Unerman, 2006, p.376). Managerial decisions concern the selection of accounting methods, choices on accounting assumptions, presentation of the annual accounts, and choices on what disclosures to include in the annual accounts.
Essential to how management employs discretion is its perspective on financial accounting. Theory discerns the following four profound perspectives on managerial behaviour:

a. Efficiency perspective
   Managerial discretion on accounting issues aims to give a true and fair view of underlying performance of the entity by adopting the most accounting efficient methods. (Deegan & Unerman, 2006, p.221). The efficiency perspective intends to minimize agency and contracting costs between the organization and its stakeholders by providing information that optimally reflects the genuine financial position and performance of the organization.

b. Opportunistic perspective
   The opportunistic perspective is based on the agency theory of Jensen and Meckling (1976). The essence of the agency theory is the existence of information asymmetry between managers and investors. The opportunistic perspective now assumes that management will misuse this information asymmetry as it will strive after realization of opportunistic self-interests by selecting more favourable accounting methods. Management manipulates the annual accounts as it attempts to pursue personal or organizational benefits. Positive Accounting Theory of Watts and Zimmerman (1990) discerns the following three types of incentives for opportunistic discretionary behaviour:
   - Bonus plan incentive
     Often the size of management remuneration is linked to the performance of the organization. Obviously this salary system aims to align the interests and activities of managers to the interests of investors. However, assuming that managers want to maximize their own interests the system entices to manipulation of accounting results, often referred to as earnings management.
   - Debt covenant incentive
     To safeguard their own interests debt holders impose restrictions on the activities employed by the borrowing organization. These restrictions concern the organization's financial position. Financial ratios, like liquidity and solvency ratios, are deployed to monitor that the organization does comply with these restrictions. By manipulating the accounts managers relax the burden of these constraints.
   - Political cost incentive
     In particular large-sized companies receive a lot of attention from all kind of stakeholders, like investors, labour unions, clients, government. Publishing large positive accounting results might harm the organization's margins for negotiation as it would provoke stakeholders to increase their claims. Evidently this would negatively affect the interests of the organization. Accordingly, management will manipulate accounting results downwards to avoid these political claims.

[10] IASCF, Framework for the Preparation and Presentation of Financial Statements, 2001, paragraph 13, p. 80.

c. Legitimacy perspective
The legitimacy theory assumes that an organization maintains a 'social contract' with society that regulates the actions and activities the organization is allowed to perform. The organization is committed to compliance with societal expectations, as violation of the social agreement might evoke sanctions by society. The legitimacy perspective focuses on managing the relationship between the organization and society (Deegan & Unerman, 2006).
Restricted by social norms and boundaries the organization intends to give account for its social and environmental responsibility. The aim of financial reporting is to sustain or enhance social acceptance of the organization by rendering accountability for the activities employed. Accounting is used as a means to legitimate the actions and activities of the organization (Deegan & Unerman, 2006, p.274).
Adoption of voluntary disclosures on corporate social and environmental responsibility is an example of practicing the legitimacy motive.

d. Stakeholder perspective
The stakeholder perspective bears much resemblance to the legitimacy viewpoint, but uses a limited scope of audience, viz stakeholders.
Freeman and Reed uses the following two definitions of stakeholders (1983) [11]:
"-*The Wide Sense of Stakeholder*: Any identifiable group or individual who can affect the achievement of an organization's objectives or who is affected by the achievement of an organization's objectives."
"-*The Narrow Sense of Stakeholder*: Any identifiable group or individual on which the organization is dependent for its continued survival."
The wide sense definition of stakeholder generates a similar viewpoint as the legitimacy perspective, as the group of stakeholders highly corresponds to society in general.
The stakeholder perspective uses the narrow sense definition of stakeholders. The organization will concentrate its efforts to provide useful accounting information that serves the interests of the most important and powerful stakeholders to the organization. The aim is to manage the relationship with those stakeholders that are vital for the continuity of the organization.
Adoption of voluntary disclosures that are of particular interest to important stakeholders is an example of practicing the stakeholder argument.

In summary managerial discretion considerably impacts recognition, valuation and presentation of annual accounts.

3 - Another reason for a decline in information usefulness is that most annual accounts are valued at historical cost.
Fair values, however, will probably provide a more realistic approximation of future payoffs. Accordingly, fair values would improve financial statements' information relevance to investors.
The *measurement perspective* encourages use of fair values. This perspective aims to enhance decision usefulness as it advocates the use of fair values in financial reporting to assist investors in assessing firm value (Scott, 2006, p.157).
Replacement of historical cost with fair values increases relevance, yet it decreases reliability. A trade-off between the two requirements must determine whether fair valuation is allowed in financial accounting and to what extent.

4 - The last important shortage to discuss is the strictness of accounting rules for recording intangible assets in the annual accounts.

[11] Freeman and Reed, Stockholders and Stakeholders: a new perspective on corporate governance, 1983, p. 91.

Collins, Maydew and Weiss (1997) proclaim the importance of intangible assets in assessing overall firm value. Current accounting rules, however, only allow recognition of intangible assets in financial statements to some limited extent, i.e. recognition of purchased intangible assets. Consequently, the larger the amounts of unrecorded intangible assets the less useful accounting information will be to assess firm value (Collins, Maydew and Weiss, 1997, p.42). Likewise, Lev and Zarowin (1999) criticise the current financial reporting system. They posit that the current accounting system is inadequate, as financial accounting only partially recognizes the impact of changes in innovation, competition, or deregulation on a firm's economic situation and business operations (Lev and Zarowin, 1999, p.353). Lev and Zarowin make a plea in favour of capitalisation of intangibles for the following reasons: capitalisation of intangible assets will lead to a more realistic allocation of costs and benefits to periods (matching principle), explicit recognition of intangibles on the balance sheet will improve consciousness of size and composition of firm value, size of and changes in the amount of intangibles is used as gauge for the success of firm's research and development (R&D) activities (Lev and Zarowin, 1999, p.379). Several other research papers also discuss empirical evidence on the impact of intangibles on information usefulness.

These four shortages of financial reporting cause discrepancies between need for and supply of relevant information and consequently affect decision usefulness.
Accounting research has also addressed other explaining factors that influence information usefulness, like for instance lags in timeliness of accounting information.
Subsection 2.1.2 will discuss empirical results of research to information usefulness including the factors that have been adduced as explanations.

The central issue of this empirical study, however, is to verify whether accounting conservatism is one of the influencing factors on information usefulness. The research thesis, formulated in subsection 1.5, asserts a negative causal relation between the two phenomena. In subsection 2.3 I will elaborate the theoretical foundations for the assumed causal relation between accounting conservatism and information usefulness.

To fill up the information gap investors will of course also enquire other information sources. Being aware of the information gap it is interesting to assess its size, that is:
how useful are financial statements for decision making?

- Methodology for measuring usefulness of financial statements information -
Accounting research offers two methodologies to measure information usefulness:
1- behavioural research
2- capital market research

<u>1- Behavioural research</u>
Behavioural research studies the impact of particular information items on *individual* behaviour of *users*. Information usefulness is assessed by measuring individual behaviour/reaction to accounting information, like for instance a group of financial analysts commenting on the information content of accounting disclosures. The aim of behavioural research is to assess and possibly to improve the relevance of information content.

<u>2- Capital market research</u>
Capital market research studies the impact of accounting information on *aggregate* behaviour of *investors*. Information usefulness is assessed by measuring reaction of the share market (i.e. aggregate of individual investment decisions) to accounting information. The rationale of the capital market doctrine is that only relevant/useful information will impact investors' expectations and behaviour.

The research methodology is to use a reversal approach to this causal relationship. That is, one measures the impact on investors' expectations and behaviour, using capital market share prices and trade volumes as proxies. Thereupon, presence and size of changes in capital market share prices and trade volumes represent the degree of information usefulness (Scott, 2006, p.123).
Just like behavioural research, the aim of capital market research is to evaluate the relevance of information content.

Foundation of the capital market research is the *information perspective* on information usefulness. This perspective arguments that investors will only react to relevant accounting information. No market response on the issuance of financial reports implies there is no new information content in these reports. Consequently, sign and magnitude of market response to the issuance of accounting information are indications of relevance of information content.

The information perspective heavily rests upon the assumption of Fama's efficient market hypothesis (EMH). This hypothesis assumes that prices always fully, accurately and immediately reflect all available information. In short, prices efficiently incorporate available information (Fama, 1970, p.383).
Capital market research uses share prices as a benchmark for assessing information content of financial reports. Obviously, if we would drop the EMH assumption we would no longer be allowed to regard share prices as a legitimate benchmark.
In general the semi-strong efficiency perspective has been adopted by accounting research. This perspective imposes a restriction to the general EMH as it hypothesizes that all past and present *publicly* available information is efficiently incorporated in share prices. Privately held information (inside information), however, is not represented in share prices (Deegan & Unerman, 2006, p.378).

To assess information usefulness capital market researchers have been using value relevance as proxy. Value relevance is defined as the arithmetical relation between (changes in) market values and (changes in) particular accounting numbers (Holthausen and Watts, 2001, p.4). Value relevance measures the association between financial statements information and market prices and returns. The association is considered to be a proxy for information usefulness.

In this research I will employ value relevance for measuring information usefulness. Therefore, the next subsection will further examine the outcome of previous studies to value relevance.

2.1.2 Value relevance research

Dean of value relevance research is the study of Ball and Brown in 1968 to the usefulness of accounting earnings. This capital market study measures usefulness by information content and timeliness of accounting earnings. Ball and Brown examine whether market returns respond to unexpected accounting earnings in financial statements.
They find empirical evidence of association between unexpected accounting earnings and abnormal market returns, proving that accounting earnings have relevant information content.
However, the study asserts that only 10 to 15 per cent of the information content of accounting earnings is relevant to investors due to late timeliness of financial statements. Other, timelier sources of information, like media and interim reports, capture 85 to 90 per cent of financial statements' information content (Ball and Brown, 1968, p.176).
Ever since the Ball and Brown study much research has been conducted to earnings response coefficient (ERC), i.e. the degree of association between abnormal market return and unexpected accounting earnings.

- Types of value relevance research -

Holthausen and Watts (2001) classify value relevance research into the following three types.

- "(i) *Relative association studies* compare the association between stock market values (or changes in values) and alternative bottom-line measures." [12]

The central issue of this type of research is to compare value relevance in different settings. One example is the study conducted by Asthana and Chen (2007) on differences in value relevance of accounting numbers between financial industries and other industries. They use a regression model that is based on the Ohlson model and find empirical evidence of accounting information being less value relevant for financial firms than for other industries. Other examples of relative association studies are comparisons of accounting information relevance between different countries/accounting standards/periods/etc.

- "(ii) *Incremental association studies* investigate whether the accounting number of interest is helpful in explaining value or returns (over long windows) given other specified variables." [13]

This type of study measures the incremental contribution of a single accounting number to value relevance over longer windows of time.

An example is the study by Amir (1993) to market valuation of postretirement benefits (PRB) liability. Amir questions whether the estimation and recognition of the PRB liability improves relevance of accounting information to investors (Amir, 1993, p.718).

Based on statistical evidence Amir concludes that investors consider the PRB obligation to be value relevant in addition to postretirement cash payments (Amir, 1993, p.721).

- "(iii) *Marginal information content studies* investigate whether a particular accounting number adds to the information set available to investors." [14]

This type of research examines the short term impact of release of additional accounting information on investor's valuation and is often set up as an event study.

For instance, Givoly and Hayn (1992) investigate value relevance of deferred tax liabilities for a sample of 130 events, with a sample period of three working days for each event. Results show that investors do value deferred tax information.

These three types of value relevance research are not mutually exclusive. That is, a study can qualify for more than one type.

- Changes in value relevance over time -

Various relative association studies have been engaged in examining value relevance over time.

Lev and Zarowin (1999) examine changes in value relevance for the period 1978-1996. As operational proxy of value relevance they use the association between market prices and returns, and earnings, cash flows and book values.

They find a systematic decline in value relevance over the period. Lev and Zarowin explain the decline in usefulness of financial information by the increasing degree of business change that is inefficiently reflected in financial accounting due to the inadequacy of the accounting system (Lev and Zarowin, 1999, p.383). More specific, accounting rules generally prescribe that R&D investments have to be expensed rather than capitalized, causing a decrease in book values. In contrast, R&D efforts are appreciated by investors which causes a rise in share prices. Hence, value relevance, measured as the association between market prices and book values, decreases.

[12] [13] [14] Holthausen and Watts, The relevance of the value-relevance literature for financial accounting standard setting, 2001, pp. 5-6.

To adduce changes in value relevance over time Francis and Schipper (1999) recall the two factors of the Ball and Brown research: information content and timeliness. Francis and Schipper conduct a research to changes in value relevance over the period 1952-1994 for which they deploy three measures for value relevance. In contrast to Lev and Zarowin, results show a more mixed view on change in value relevance; that is, predictive value of earnings declines, while predictive value of book value and predictive value of book value + earnings (combined value relevance) increases over the same period. Relating to the information content factor, Francis and Schipper also raise the issue of non-recognition of intangible assets on the balance sheet, just like Lev and Zarowin did. Regarding the timeliness factor Francis and Schipper confirm the observation of Ball and Brown, viz most of the financial statements' information content is already captured by more timely information sources (Francis and Schipper, 1999, p.324).
To address the issues of information content and timeliness Francis and Schipper come up with two obvious solutions, which are: changing the information content, and/or more frequently financial reporting. Their third recommendation, however, is quite interesting as it suggests to include more prospective information in financial reports.

The following studies examine the change in value relevance for US stock listed firms: Collins, Maydew and Weiss (1997) over the period 1953-1993, and Ely and Waymire (1999) over the period 1927-1993. Their conclusions are similar to those of Francis and Schipper: decreasing value relevance of earnings, increasing value relevance of book values, and increasing value relevance of book value + earnings (combined value relevance).

Brown, Lo and Lys (1999) perform a quite similar investigation as Francis and Schipper (1999) and Collins, Maydew and Weiss (1997), using Compustat data for the period 1958-1996. Yet, their results demonstrate the opposite conclusion, i.e. decline in value relevance of accounting numbers. Brown, Lo and Lys elucidate that scale effects have a distorting impact on value relevance; consequently research should control these scale effects. In the research of Francis and Schipper, and Collins, Maydew and Weiss scale effects have not been controlled, which, according to Brown, Lo and Lys, explains the contradictory conclusions.

- Valuation models -

In a literature search on value relevance Holthausen & Watts (2001, p.53-63) distinguish three models for measuring value relevance that are used in accounting research:

1- earnings model :	association between accounting earnings and market returns
2- balance sheet model :	association between book value and market value
3- Ohlson model : (combined model)	association between book value + accounting earnings and market value

Several research papers assert a move in relevance from earnings values to book values. Collins, Maydew and Weiss (1997) conduct a study to the incremental relevance of earnings values and book values. Results document a shift in relevance from earnings values to book values which is explained by the growing importance of one-time items, the growing occurrence of negative earnings, alterations in average firm size and the increasing significance of intangible assets over time (Collins, Maydew and Weiss, 1997, p.65).

As described earlier, Francis and Schipper (1999), and Ely and Waymire (1999) endorse Collins' conclusion on this shift in value relevance.

For their examination Landsman and Maydew (2002) deploy two alternative proxies for earnings relevance: abnormal trading volume and abnormal return variability. They research 1,000 US firms over the period 1972-1998. Statistical data on both proxies give evidence that information content of earnings announcements has increased over time.

Apparently there is no univocal opinion on how earnings relevance has evolved over time. A possible explanation for the contradictory empirical results is the use of different research methodologies in studies.
The lack of clarity on size and evolvement of comparative relevance of earnings respectively comparative relevance of book values pleads for the use of both proxies in value relevance studies. The Ohlson model is a model that combines these two accounting numbers to predict market value.

3- Ohlson model

3a- Ohlson valuation model

Ohlson (1995) formulated a valuation model in which firm's market value of equity (P) is predicted by its book value of equity (BV), present value of future abnormal earnings (E) and other information (ε) :

$$P = BV + E + \varepsilon$$

(Simple version of the Ohlson valuation model)

The model is derived from the dividend valuation model (i.e. market value equals present value of expected dividends (Ohlson 1995, p.662)) and assumes clean surplus accounting, i.e. except for dividend and capital investment transactions all changes in assets/liabilities pass through the income statement (Ohlson, 1995, p.661).

The following equation describes the clean surplus concept :

$$\Delta \text{ book value of equity} = \text{earnings} - \text{dividends} + \text{capital transactions}$$

(Clean surplus concept)

In comparison to other valuation models the Ohlson model is appealing because it only uses accounting data to predict market value. This conceptual relation between accounting data and market data is easily utilizable for regression purposes (Stober, 1999, p.5).

Yet, there are some practical difficulties in operating the Ohlson valuation model.
First, the book value of equity (BV) used in the Ohlson model does not necessarily correspond to accounting's book value of equity/net assets (net assets = assets -/- liabilities). As described earlier, accounting standards prescribe conservative rules on recognition of intangible assets in the balance sheet. Often costs of intangible assets are not allowed to be capitalized, but have to be accounted for as expenses in the profit and loss sheet instead. Evidently, accounting will lead to a conservative valuation of book value of equity, as accounting assets will be mainly composed of only tangible assets. Valuation of assets in the Ohlson model, however, includes both tangible and intangible assets. Consequently there will be a gap between accounting's book value of equity and Ohlson model's book value of equity.
Moreover, some valuation studies show evidence that the portion of intangible assets of overall firm value is growing. For instance, a research conducted by the Brookings Research Institute reports that in 1962 a company's value was based for 62 per cent on its physical capital, but in the next 30 years this percentage had declined to just 38 per cent (Swartz, Swartz and Firer 2006, p.72).
As a result the deviation between accounting's book value of equity and Ohlson's book value of equity will even increase.

The second difficulty of the Ohlson model is having to assess future abnormal earnings (E). As the clean surplus concept demonstrates (normal) earnings, defined as weighted average cost of capital x book value at begin of period, are already incorporated in book value of equity. Abnormal earnings are the difference between total earnings and (normal) earnings, and represent goodwill.

The obvious problem is how to predict these future abnormal earnings.
To circumvent this problem one might assume that competition will bring about a market equilibrium in which excessive earnings have faded. And so the organization will generate no abnormal earnings, but only (normal) earnings to compensate for the cost of capital and business risk.

The third problem concerns the other information variable (ε).
This variable represents information that has not been captured in accounting earnings nor in accounting book value. Ohlson's idea to use the other information variable is that some value relevant events are not incorporated in current accounting numbers, but do impact future expected earnings (Ohlson, 1995, p.663).
In other words, the other information variable represents prospective changes to earnings. Just like with future abnormal earnings (E), again it is difficult to assess size of the information variable, which explains why researchers choose to replace (Hand and Landsman, 1998) or ignore (Aboody, 1996) the information variable in their studies. Ohlson, however, stresses the importance of the information variable as it represents additional value relevant information that is not captured by accounting numbers (Stober, 1999, p.8).

Holthausen and Watts (2001) comment on the Ohlson valuation model for assuming a linear relation between market value, and book value of equity, future abnormal earnings and other information. However, Barth, Beaver and Landsman (2001) object that by adding extra variables the linearity assumption will be relaxed.

3b- Ohlson regression model
Since the development of the Ohlson model it has been frequently used in value relevance studies. For instance Collins, Maydew and Weiss (1997), Lev and Zarowin (1999), Asthana and Chen (2007), Barth, Beaver and Landsman (2001) use linear regression models that are derived from the Ohlson valuation model.
The next equation presents a general Ohlson regression model to measure the relation of market value (P) to accounting book value of equity (BV), accounting earnings (E) and other value relevant information (ε) :

$$P = \alpha_1 BV + \alpha_2 E + \varepsilon$$

(Simple version of the Ohlson regression model)

Although the Ohlson regression model looks fairly similar to the Ohlson valuation model the essential difference relates to the purpose of each model.
The objective of using the valuation model is to predict market value of equity, whereas the regression model is used to assess the extent to which financial statements' accounting information is relevant to investors.
The regression model measures the association between market value of equity, and accounting book value of equity and accounting earnings (ε is a residual term).
This association is a proxy for value relevance.
Coefficient α_1 measures the individual association of book value to market value and coefficient α_2 measures the individual association of accounting earnings value to market value.
The overall relevance of accounting information (i.e. book value + accounting earnings) on market value is quantified by the statistical parameter R^2. R^2 measures the proportion of the market value that is explained by accounting numbers, i.e. combined relevance of both book value and accounting earnings to market value. An increase in R^2 signifies an increase in combined value relevance.

For the variables accounting book value (BV) and accounting earnings (E) sample data are compiled from financial statements, whereas share prices serve as sample data for the variable market value (P).

- Institutional properties influencing value relevance of accounting information -

For the period 1986-1995 Ali and Hwang (2000) examine the influence of the following five country-specific institutional characteristics on value relevance of financial accounting information:

1- bank-oriented or market-oriented financial system,
2- involvement of private sector bodies in accounting regulation process,
3- continental or British-American model countries,
4- influence of tax regulation on financial accounting,
5- level of spending on external auditing services.

Evidence shows that accounting information is less value relevant in bank-oriented countries than in market-oriented countries. Ali and Hwang argue that in bank-oriented countries firms are financed to a large extent by banks, for which these banks will require direct access to company information. In market-oriented countries, however, firms are mostly financed by investors who do not have direct access to company information, but heavily depend on financial reporting to obtain information. As a consequence, value relevance of financial accounting information will be greater in market-oriented countries (Ali and Hwang, 2000, p.4).

Second, the authors find evidence that value relevance is positively related to the involvement of private sector bodies in the accounting regulation process. These bodies are generally more engaged in increasing the information usefulness of financial statements to investors than government bodies are.

Third, in British-American countries accounting information is more relevant than in continental countries. Ali and Hwang elucidate that in British-American countries financial reporting is focussed on providing decision-useful information to investors and creditors and, therefore, financial accounting information is more relevant than in continental accounting practices (Ali and Hwang, 2000, p.5).

Fourth, the extent to which financial statements have to comply with country's tax regulations negatively influences value relevance. The objective of taxation clearly deviates from the objective of financial reporting. Accordingly, countries in which tax regulation is heavily entwined with accounting regulation will generate less value relevant accounting information (Ali and Hwang, 2000, pp. 5-6).

Finally, results show a positive relation between the level of spending on external accounting services and value relevance.

Joos and Lang (1994) conduct a fairly similar research. They compare value relevance of accounting information for two different types of accounting regimes, namely the Anglo-Saxon regime (United Kingdom) and the continental regime (Germany).

Their classification into accounting regimes is based on differences in the following three institutional characteristics:

1- common law versus code law,
2- bank-oriented versus market-oriented financial system,
3- influence of tax regulation on financial accounting.

The first institutional characteristic relates to the extent to which a country imposes legal prescriptions and restrictions to financial accounting. Common law jurisdictions emphasize that financial statements should give a true and fair view (TFV) of financial position and performance. Regulation is confined to general principles and leaves much flexibility to management to act at their own discretion. Whether common law will increase or decrease value relevance of financial statements is not clear and depends highly on the management's perspective on accounting (see four perspectives in subsection 2.1.1, pp. 9-10). On the one hand management may choose for the efficiency perspective, using accounting methods that

best reflect the underlying performance and position. On the other hand management may opt to misuse its discretion for its own interest by choosing less informative accounting methods. This is referred to as the opportunistic perspective.
Code law jurisdictions, however, give extensive and detailed legal prescriptions on how to draw up the annual accounts, and consequently management discretion is more restricted. Anglo-Saxon regimes are classified as common law countries, whereas continental regimes are classified as code law countries

The second factor concerns a country's financial system and corresponds to the first characteristic in the study of Ali and Hwang (2000). In Anglo-Saxon regimes there are numerous shareholders participating in firm's equity and who are mainly interested in profitability, viz returns on investment. Therefore, financial statements have to provide accurate information on profits in market-oriented financial systems.
Continental regimes show bank-oriented financial systems in which a significant portion of the firm is financed by bank loans. As to secure their financial interests banks prescribe firms to use conservative valuation methods so that sufficient means remain on the balance sheet for repaying the bank loans. These cautious valuations result in less accurate accounting information.

The third institutional characteristic corresponds to the fourth factor of Ali and Hwang (2000). In continental regimes financial reports also serves as tax declaration. Because of this concordance there is a tendency to reduce taxes by manipulating profits downwards. Evidently this affects the accurateness of the financial statements negatively. Joos and Lang expect value relevance to be lower for continental regimes in comparison to Anglo-Saxon regimes because of a much stronger link between financial reporting and taxation.

Joos and Lang examine differences in value relevance between Germany (continental regime), United Kingdom (Anglo-Saxon regime) and France (intermediate position) over the period 1982-1990 using three methodologies for assessing value relevance. Overall the results show that value relevance deviates between the accounting regimes in line with expectations.

On the next page table 2.1 presents an overview of the value relevance studies in the same order as these have been discussed.

Table 2.1 Value relevance studies

Value relevance studies				
Authors	Study object	Methodology	Sample	Results
Ball & Brown 1968	Value relevance of accounting earnings	- Earnings model	US sample over period 1957-1965	-Accounting earnings represents value relevance of 10 - 15 per cent
Lev and Zarowin 1999	Usefulness of financial information to investors	- Earnings model - Cash flow model - Ohlson regression model	US sample over period 1978-1996	-Decline in value relevance of financial information
Francis and Schipper 1999	Changes in value relevance of financial information	- Earnings model - Balance sheet model - Ohlson regression model	US sample over period 1952-1994	-Increase in combined value relevance (i.e. accounting earnings + book values) -Increase in incremental value relevance of book values -Decrease in incremental value relevance of accounting earnings
Collins, Maydew and Weiss 1997	Changes in value relevance of financial information	- Earnings model - Balance sheet model - Ohlson regression model	US sample over period 1953-1993	-Increase in combined value relevance (i.e. accounting earnings + book values) -Increase in incremental value relevance of book values -Decrease in incremental value relevance of accounting earnings
Ely and Waymire 1999	Changes in value relevance of financial information	- Earnings model - Ohlson regression model	US sample over period 1927-1993	-Increase in combined value relevance (i.e. accounting earnings + book values) -Increase in incremental value relevance of book values -Decrease in incremental value relevance of accounting earnings
Brown, Lo and Lys 1999	Changes in value relevance of financial information	- Earnings model - Balance sheet model - Ohlson regression model	US sample over period 1958-1996	-Measurement of value relevance is influenced by scale effects -After controlling for scale factors value relevance has declined
Landsman and Maydew 2002	Information content of accounting earnings	- Abnormal volume of traded shares - Abnormal share return variability	US sample over period 1972-1998	-Increase in information content of accounting earnings
Ali and Hwang 2000	Relations between value relevance of financial information and five country-specific factors	- Earnings model - Cash flow model - Ohlson regression model	Sample from seventeen capitalized economies over period 1986-1995	Value relevance of financial information : -is lower in bank-oriented countries than in market-oriented countries -is lower in countries with less involvement of private-sector bodies in standard-setting process -is lower in continental model countries than in British-American model countries -is lower in countries with tax-regulated accounting standards -is positively related to level of spending on external auditing services
Joos and Lang 1994	Effect of regime characteristics and accounting harmonization on value relevance of financial information	- Univariate analysis - Earnings model - Ohlson regression model	German, French and British sample over period 1982-1990	-Regime characteristics have significant impact on size of value relevance -Accounting harmonization has not reduced value relevance differences between regimes

2.2 Accounting conservatism

2.2.1 Definition and characteristics of accounting conservatism

- Definition of accounting conservatism -

The concept accounting conservatism has been defined in various accounting studies. For instance Basu defines accounting conservatism as "capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements…This asymmetry in recognition leads to systematic differences between bad news and good news periods in the timeliness and persistence of earnings." [15]
Bliss (1924) has a more supreme interpretation of the concept, saying "anticipate no profit, but anticipate all losses".[16]
The FASB asserts that conservatism is "a prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered." [17]
In general accounting conservatism is a prudent approach to financial accounting by using more stringent recognition requirements for profits than for losses. The consequence of asymmetrical recognition of profits versus losses is a persistent understatement of both cumulative net assets and cumulative accounting earnings.

- Explanations for accounting conservatism -

Watts (2003) discerns the following four explanations for conservative reporting:
1- contracting
2- shareholder litigation
3- taxation
4- accounting regulation
These explanations are successively discussed below.

1- Contracting
The contracting explanation distinguishes three underlying explications for the employment of conservative accounting. These explanations highly correspond to the three incentives for opportunistic behaviour addressed by the Positive Accounting Theory (for more details see p.9). The contracting explanation posits that in order to address moral hazard, which is caused by parties having asymmetric information, asymmetric payoffs, limited time horizons, and limited liability, accounting conservatism is used as an instrument (Watts, 2003, p.209).

1a- Debt contracts
Debt investments inevitably go together with being exposed to solvency risks, i.e. the risk that the borrowing firm will be unable to repay the invested funds. It is in the interest of the debt investor that the minimum net assets value does exceed the debt capital. Debt contracts stipulate for what actions/decisions management is allowed to make and impose restrictions to payment of dividends, taking new loans, investment policies, use of accounting standards and estimates, etc.
Regarding the latter, it is obvious that debt contracts will prescribe use of conservative accounting methods as these methods incline to underrate net assets value and accordingly shield debt investors against opportunistic valuation methods.

1b- Executive compensation contracts
The agency theory asserts managers hold an advantageous information position to investors. Presuming that managers are predominantly driven by self-interest they incline to use opportunistic accounting methods to push up accounting earnings. Consequently, the financial statements give investors a rather misrepresenting, opportunistic view on the firm's

[15] Basu, The conservatism principle and the asymmetric timeliness of earnings, 1997, p. 4.
[16] Watts, Conservatism in accounting. Part I: explanations and implications, 2003, p. 208.
[17] FASB, Statement of Financial Accounting Concepts No. 2 - Qualitative Characteristics of Accounting Information, as issued 1980, pp. 10.

performance. By means of providing inflated accounting results managers strive after personal gain as these euphemistic results are rewarded with (extra) bonus payments. Conservative accounting methods reduce the danger of opportunistic discretionary behaviour and accordingly improve investors' confidence.

1c- Firm governance
One advantage of asymmetrical verifiability is that losses are identified much sooner. Conservatism helps management in controlling the business as it provides a warning signal for losses (Watts, 2003, p.213). Accounting conservatism accelerates awareness of bad financial results.

2- Shareholder litigation
Overstatement of earnings/net assets may initiate shareholder litigation against the firm (and probably also against the auditors) rather than understatement of these accounting numbers would cause. Moreover, litigation costs of overstatement will generally exceed legal costs ensuing from understatement (Pae, 2007, p.683). In order to avoid expensive lawsuits and compensation claims management applies conservative accounting methods to report moderate values on accounting earnings/net assets.

3- Taxation
Financial reports that coincide with tax reports provide incentives to defer income in order to reduce present value of taxes (Watts, 2003, pp. 216-217). Asymmetric recognition of profits and losses is beneficial as it reduces taxable income and present value of taxes, and thus increases firm value (Gotti, 2008, p.5).

4- Accounting regulation
Losses due to overvalued accounting earnings/net assets may cause adverse consequences to society. Because standard-setters and regulators bear political responsibility for the consequences of accounting rules they will draw up conservative accounting standards to avoid damage to their professional reputation. Conservatism is used by standard-setters and regulators as a means of reducing exposure to reputational damage caused by overvaluation of firm value/income due to accounting standards (Gotti, 2008, p.5).

García Lara, Osma and Mora (2005) cite the next five arguments to explain why European managers engage in persistent income decreasing strategies:

1- The link between dividends and earnings.
Lower reported earnings will increase dividend payout ratios, which is beneficial to firm's reputation.

2- The pecking order theory.
The pecking theory presumes managers have preference for internal funds to finance investment projects. Lowering reported earnings will decrease the amount of dividends and thereby increase retained earnings.

3- The link between earnings and taxation.
This argument is similar to Watts' taxation explanation.

4- Reduced incentives to manage earnings upwards.
Capital markets are less important for financing European firms. Consequently, there is less need for managers to increase earnings to meet investors' expectations.

5- The existence of strong labour unions.
Labour unions take up important positions in Europe. In attempt to temper wage claims managers will lower firm's reported earnings by the use of accounting conservatism.

Notwithstanding the positive rationales for the practice of accounting conservatism Hellman (2008) brings up an important shortage. He explains that the deliberate understatement of assets or income reduces the relevance of accounting information. Conservatism invades the

neutrality of financial statements. Hendriksen (1982, p.83) denounces conservatism for being a poor method of handling uncertainty in valuation and income, which possibly can cause a complete disruption of accounting data (Hellman, 2008, p.72).

- Classifications of accounting conservatism -

Studies of Basu (1997) and Feltham and Ohlson (1995) have introduced two approaches to defining and measuring accounting conservatism, viz earnings conservatism and balance sheet conservatism. These two approaches have become the leading modus operandi of accounting research to conservatism ever since, and will be discussed below.

Earnings conservatism

Basu elucidates that conservatism reflects bad news more quickly than good news, implying systematic differences in the timeliness and persistence of earnings (Basu, 1997, p.3). Basu asserts that earnings reflect bad news earlier and more completely than good news. Either due to managerial discretion or accounting standards expenses/losses are immediately recognized in the income statement, whereas a higher degree of verification is required for recognizing revenues/gains. As a result of the asymmetrical verification requirements both net assets and accounting earnings are persistently understated (Watts, 2003).

Accounting conservatism is realised by the accrual component of earnings (Pae, 2007, p.681). When management expects some bad news in the near future it will immediately estimate the probable losses and start making negative accrual adjustments. On the other hand, management will only make positive accrual adjustments when there are strong verifications for positive outlooks. As a result of this asymmetry net accumulated accruals will be negative over longer periods of time. An indication of conservatism is a consistent predominance of negative accruals over a longer period of time, while the degree to conservatism is measured by the rate of accumulation of net negative accruals (Givoly and Hayn, 2000, p.292).

To verify his theory on accounting conservatism Basu tests the following four hypotheses:

1- earnings are more correlated to share returns in times of negative returns than in times of positive returns,
2- in times of negative unexpected returns difference between earnings and cash flow from operations (CFO) will be greater than in times of positive unexpected earnings,
3- negative earnings changes have a greater tendency to reverse in the following period than positive earnings changes,
4- abnormal return on earnings changes is smaller in times of bad earnings than in times of good earnings.

All four hypotheses are logical consequences of the theory. Using times-series and distributional properties of earnings, cash flows and accruals, Basu's test results establish conclusive proof of each of the four hypotheses.

For the first and fourth hypotheses Basu presumes the efficient market hypothesis.

Balance sheet conservatism

Feltham and Ohlson (1995) use a different line of approach and define conservatism as "the existence of a persistent understatement of the book value figure with respect to market's valuation of the firm." [18] Unlike Basu's method of focusing on earnings distribution, accrual adjustments and cash flows (earnings conservatism) Feltham and Ohlson associate book value with market value. This approach on determining the presence of accounting conservatism is referred to as balance sheet conservatism.

[18] García Lara and Mora, Balance sheet versus earnings conservatism in Europe, 2004, p. 264.

The quotient market value to book value, the market-to-book (MTB) ratio, is a proxy of the degree of accounting conservatism. A MTB ratio larger than one indicates the existence of conservatism, with the higher the ratio the higher the degree of conservative accounting (Givoly and Hayn, 2000, p.314).
Another proxy often used to estimate the association of book value with market value is the Ohlson regression model, discussed in subsection 2.1.2 (pp. 16-17). The Ohlson regression model measures the relation between market value of net assets, and accounting value of net assets (i.e. book value + accounting earnings). As explained earlier, R^2 presents the proportion of the market value that is explained by accounting numbers, and is used as gauge of balance sheet conservatism. That is, a relative low R^2 demonstrates undervaluation of firm value by financial accounting, and is assumed to be caused by conservative accounting.

The twofold operability of the Ohslon regression raises danger of circular reasoning if the regression model is used to measure both value relevance and accounting conservatism in the same research. Section 4.1.3 (p.43) will elucidate this methodological issue in more detail.

Balance sheet conservatism assumes a causal connection between accounting conservatism and MTB ratio / Ohlson regression. However, García Lara and Mora posit that MTB is not only affected by conservatism, but also by other factors, like growth options, possibility of monopoly rents or synergies, inflation (García Lara and Mora, 2004, p.271). At analyzing and interpreting the results one should be aware of the impact of these other factors.

Essential to the legitimacy of the MTB ratio is validity of the efficient market hypothesis (EMH); market value is a true approximation of present value of future cash flows, i.e. firm value. In times of major irregularities on the capital market share prices no longer represent accurate estimates of firms fair values. For instance the 2008 global financial crisis has caused a lot of turmoil on stock exchanges, resulting in an immense drop of stock exchange indices.
(Fore more details of EMH see p.12)

- Accrual accounting as method for practicing accounting conservatism -
Accounting earnings are calculated by the sum of operating cash flows and accrual adjustments. Accounting conservatism is practiced by accrual accounting (Pae, 2007, p.684). That is, asymmetric recognition of losses and profits, either initiated by managerial discretion or accounting standards, impacts the accrual component and not the cash flow component of earnings (Basu, 1997, p.16).

Cash flows are generated by transactions, like for instance cash payments for wages or purchased goods, cash receipts from sold products, etc. However, transactions do not always directly lead up to cash flows. Usually settlement of transactions takes place at a different moment than the actual transactions. Firms using cash flows for reporting purposes (cash accounting) would no sooner report transactions than at their settlement dates. Obviously this method of accounting is undesirable; balance sheet and income statement are largely affected by casual moments of settlement rather than by the original transaction dates. Therefore GAAP's (generally accepted accounting principles) matching principle prescribes the use of accruals in order to align the moment of recording a transaction into the accounts with the period in which that transaction is originated.
Ball and Shivakumar consider accrual accounting as a technology used for increasing the usefulness of financial reporting for performance measurement and contracting purposes (Ball and Shivakumar, 2006, pp. 207-208).

Accruals are used for bridging timing differences. Because accruals are reversed in next periods, one would expect cumulative earnings to be equal to cumulative cash flows in the long run, i.e. cumulative accruals are zero. Differences between cash flow-based earnings and accrual-based earnings would be merely temporarily. García Lara and Mora proclaim that if profits and losses are not recognized in current earnings these will be recognized later on; and so accounting earnings will match economic earnings in the long run (García Lara and Mora, 2004, p.262).

Yet studies have observed that cumulative accruals do not incline to zero, but, by contrast, are negatively increasing. Givoly and Hayn (2000) find empirical evidence of positive cumulative accruals from 1966 to the early 1980s, and negative cumulative accruals from 1982 to 1998. They bring up the following economic explanations for this increase in cumulative negative accruals: non cash flow charges to income from restructuring activities, mergers and acquisitions causing increasing accruals for depreciation on goodwill/revaluated tangible assets, increased cost of pension and post-retirement benefits as result of changes in accounting standards, growth and inflation pushing up accruals.
Then again, the increase might also be explained by accounting conservatism (i.e. asymmetric recognition of bad and good news).

Research by Roychowdhury and Watts (2007) establish a relationship between accounting conservatism and the market-to-book ratio that is mainly explained by the accrual component of earnings, not the cash flow components.
Ryan and Zarowin (2003) find a declining linear relation between annual share returns and accounting earnings which is largely explained by increases in earnings' lags and asymmetry over time. Empirical evidence demonstrates stronger lags and asymmetry for the accrual component of earnings than the operational cash flows component of earnings, indicating that the declining relation between returns and earnings is caused by accounting (Ryan and Zarowin, 2003, p.551). As possible explanations Ryan and Zarowin enumerate: nature of accounting rules, managerial reporting choices, non-earnings information, market efficiency, or competition (Ryan and Zarowin, 2003, p.552).
Givoly and Hayn (2000) use level and rate of accumulated nonoperating accruals over time as measure of accounting conservatism in the U.S.

Unlike cash flows, accruals are highly manipulable and reflect management expectations/ behaviour. Differences between on the one hand accrual-based earnings and on the other hand cash flow-based earnings or share returns are used for measuring the degree of accounting conservatism. Obviously, one must always reckon with other plausible explanations.

- Accrual models -
Timing and size of accruals are influenced by accounting standards and managerial discretion.
Regarding accounting standards Pae states that generally accepted accounting principles (GAAP) prescribe the asymmetric recognition of good versus bad news; that is, recognition of unrealised profits is generally prohibited, whereas recognition of unrealised losses is permitted. Examples of conservative accounting rules are the lower of costs or market value for inventory, impairment of fixed assets, non-recognition of intangible assets, and treatments of contingent losses and gains (Pae, 2007, p.685). In that accounting standard-setters hold a rather ambiguous position towards conservatism. On the one hand the IASB takes the position that interpreting the qualitative characteristic of 'prudence' into conservative accounting rules conflicts with the quality of 'neutrality' (Hellman 2008, p.77), while on the other hand the IASB itself draws up and prescribes conservative accounting rules.
Regarding managerial discretion, conservatism is practiced by selecting more conservative accrual estimates and accounting methods (Pae, 2007, p.685).

Considering the use of accruals for accounting conservatism some research models classify accruals into categories. A fundamental distinction between categories is the extent to which accruals are open to objectification.

Givoly and Hayn (2000) distinguish the following two accrual components:

1- Operating accruals
   Accruals aimed at timely recognition of daily transactions on working capital, for instance changes to accounts receivable/payable, inventories.
2- Nonoperating accruals
   Timing and amount of these accruals are subject to accounting regulation or managerial discretion.

The essence of this classification is separating objective, non-discretionary accruals from subjective, discretionary accruals.
Non-discretionary accruals highly correspond to the level of business activity; more business will for instance affect accrued prepaid expenses, changes in accounts receivable/payable, etc.
Discretionary accruals, however, are not necessarily linear connected to business activity; timing and size of amounts are related to accounting rules or managerial discretion (2000, p.304). Examples of discretionary accruals are depreciations/amortizations, changes in accounting estimates, bad debt provisions, incidental gains/losses, impairment losses, etc.
Accumulated discretionary accruals are considered to be a proxy of conservatism.

For construction of the research model Pae (2007) discerns the following types of accruals:

1- Expected accruals
   Using the Jones model (1991) and variants of this model Pae intends to capture the systematic association between accruals and cash flows.
2- Unexpected accruals
   Difference between total accruals and expected accruals. Evidence shows that accounting conservatism is primarily generated by unexpected accruals.

Ball and Shivakumar (2006) classify accruals on the following two roles they perform:

1- Noise reduction
   Accruals level out transitory variation that reverses over time.
2- Asymmetrically timely loss recognition
   Revisions of estimations of future gains/losses.

2.2.2 Accounting conservatism research

- Institutional properties influencing accounting conservatism -
Watts' explaining theory of accounting conservatism has been used in various research studies as fundamental principle to address the influence of institutional properties on conservatism.

Ball, Kothari and Robin investigate the effect of institutional differences between code law and common law countries on the extent of accounting conservatism (Ball, Kothari and Robin, 2000, p.21).
Code law countries are characterized by strong political influence on accounting standard setting and close involvement of stakeholders with the firm, i.e. stakeholder governance model.
In common law countries accounting standards permit more flexibility to managerial discretion and because firms operate at arm's length from investors timely accounting information is more important to bridge the information gap.
Ball, Kothari and Robin find evidence that common law countries exhibit more earnings conservatism than code law countries do due to the larger need for timely information on losses (Ball, Kothari and Robin, 2000, p.22), which is explained by the larger distance

between debt/equity investors and management, and larger potential litigation costs (Ball, Kothari and Robin, 2000, p.47).

Bushman and Piotroski (2006) discern four country-level institutions and conjecture the probable effect of these properties on conservatism, using Watts' theory as rationale. Consistent with the outcome of Ball, Kothari and Robin (2000), results document more earnings conservatism in common law countries than in code law countries (2006, p.122 / p.126). Empirical evidence on a sample of 38 countries over the period 1992-2001 demonstrates:

- contracting demand for verifiable information results in more conservatism in countries with a high quality legal/judicial system,
- adoption of rigid securties laws has almost no impact on conservatism,
- countries with high risk of expropriation and/or with high state ownership of enterprise show increased incentives to restrict conservatism,
- mixed and inconclusive results on the effect of financial architecture and tax regimes.

Raonic, McLeay and Asimakopulos (2004) investigate the impact of three institutional variables on conservatism in a European setting. Results show that “the importance of equity markets and the degree of regulatory enforcement each has a positive and significant effect on asymmetric timeliness”, whereas financial disclosure “is not associated with asymmetrical timeliness”.[19]

García Lara & Mora (2004) study differences in existence of balance sheet conservatism versus earnings conservatism in eight Western European countries over the period 1987-2000.
Balance sheet conservatism tends to be more pronounced in code law countries, where companies are predominantly financed by financial institutions. In accordance with Watts' debt contracting explanation companies will attempt to safeguard debt holders' interests by understating book value.
By contrast common law countries give evidence of more earnings conservatism because of increased exposure to shareholders litigation risk and tendency to smooth earnings over time. In addition, García Lara and Mora posit a negative relation between balance sheet conservatism and earnings conservatism which explains a decline in earnings conservatism in code law countries.

Giner and Rees (2001) compare presence of earnings conservatism for France, Germany and the United Kingdom over the period 1990-1998. In line with the outcome of García Lara and Mora (2004) they find the strongest evidence of asymmetric recognition of earnings in the United Kingdom. Moreover, results show a negative relation between firm size and earnings conservatism.

Ahmed and Duellman (2007) explore the relation between board independence and accounting conservatism. Based on Watts' firm governance explanation they hypothesize to find a positive relation between the two phenomena for an US sample over the period 1999-2001.
Statistical evidence validates the assumed relation. First, results shows that as the relative size of inside directors on the board increases (i.e. decrease in board independence) the degree of accounting conservatism declines. Second, the research affirms a positive association between the percentage of shares owned by outside directors (i.e. increase in board independence) and accounting conservatism.

[19] Raonic, McLeay and Asimakopoulos, The timeliness of income recognition by European companies: an analysis of institutional and market complexity, 2004, p. 138.

- Relation between earnings conservatism and balance sheet conservatism -

The relation between the two approaches of accounting conservatism, i.e. earnings conservatism and balance sheet conservatism, has been object of study. In theory one expects a positive relation between earnings conservatism and balance sheet conservatism, i.e. asymmetric recognition of earnings corresponds to increases in MTB ratio because of a persistent understatement of accounting earnings and book value.

Roychowdhury and Watts (2007) find evidence of a positive correlation between the two conservatism approaches over longer periods of time. However, over shorter horizons their study establishes a negative correlation, which, according to the authors, is caused by accounting measurement deficiencies of economic rents and IPO (initial public offering).
Ball and Kothari (2007) confirm Roychowdhury and Watts' findings and come up with the following somewhat analogous explanation for the short-term negative relation between the two approaches: changes in market expectations about growth opportunities (Ball and Kothari, 2007, p.20). They argue that as changes in growth opportunities are immediately discounted in firm's market value of equity, these changes affect the MTB-ratio. By contrast, growth opportunities are not captured in accounting income. As a result the outcome of the two accounting conservatism approaches will diverge in the short. Yet, over longer periods of time the disparity between the two approaches diminishes because changes in growth opportunities by then will have affected accounting income as well.
Pae, Thornton and Welker (2005) demonstrate that the negative relation between the two approaches is caused by the accrual component of earnings, not the cash flow component.

- Changes in accounting conservatism over time -

Over the period 1963-1990 Basu (1997) reports empirical evidence of a positive relation between changes in accounting conservatism and changes in auditor litigation exposure. On average he finds an increase in accounting conservatism throughout the whole sample period.

Givoly and Hayn (2000) conduct a study to the intertemporal variations in conservatism over a 49-year period from 1950 to 1998, using four proxies to measure conservatism.
Results on each of the proxies show the increase in accounting conservatism over the last several decades. To increase the legitimacy of their conclusion the authors also test alternative explanations of the found results; test results indicate only a minor explanatory contribution of these alternatives.
Givoly and Hayn do not expound on a theory to interpret the found results, but only posit the conservative influence of accounting principles.

As discussed in subsection 2.1.2 (p.14) various information usefulness studies report a decline in value relevance of accounting earnings. Ryan and Zarowin (2003) investigate the following two possible explanations for this decline: increasing delay of recognition of all news in earnings (lags), increasing asymmetric recognition of good versus bad news in earnings (earnings conservatism).
Relating the second explanation, Ryan and Zarowin hypothesize a growth of conservatism because of increase in conservative accounting rules and managerial discretion becoming increasingly conservative.
Test results on sample period 1966-2000 prove that both lags and earnings conservatism have increased over time; jointly these provide considerable explanation of the declining value relevance of accounting earnings.

All discussed studies have been summarized by table 2.2 on the next two pages.

Table 2.2 Accounting conservatism studies

Accounting conservatism studies				
Authors	Study object	Methodology	Sample	Results
Ball, Kothari and Robin 2000	Differences in timeliness and conservatism of accounting earnings between code law and common law countries	Earnings conservatism : 1-association of accounting earnings and share returns 2-association of dividends and share returns 3-association of cash flows and share returns	Sample from seven capitalized economies over period 1985-1995	-Timeliness and accounting conservatism of accounting earnings are more profound in common law countries
Bushman and Piotroski 2006	Effect of four country-level institutional properties on accounting conservatism	Earnings conservatism : 1-association of accounting earnings and share returns	Sample from thirty-eight countries over period 1992-2001	-Earnings conservatism is positively related to quality of the legal system -Earnings conservatism is almost not affected by securties laws -Earnings conservatism is negatively related to risk of expropriation by the state / state ownership -Mixed and inconclusive results on effect of financial architecture and tax regime on earnings conservatism
Raonic, McLeay and Asimakopoulos 2004	Influence of three institutional variables on conservatism of accounting earnings	Earnings conservatism : 1-association of accounting earnings and share returns	Sample from thirteen Western European countries over period 1987-1999	-Extent of financial disclosure is not related to earnings conservatism -Importance of capital market finance is positively related to conservatism -Extent of regulatory enforcement is positively related to conservatism NB Combination of capital market + regulatory enforcement is negatively related to conservatism
García Lara and Mora 2004	Level of accounting conservatism in eight Western European countries	Earnings conservatism : 1-association of accounting earnings and share returns Balance sheet conservatism : 1-Ohlson regression model	Sample from eight Western European countries over period 1987-2000	-Balance sheet conservatism is more profound in code law countries -Earnings conservatism is not significantly more profound in common law countries -Balance sheet conservatism and earnings conservatism are negatively related
Giner and Rees 2001	Level of earnings conservatism in Germany, France and the UK	Earnings conservatism : 1-association of accounting earnings and share returns 2-persistence of negative versus positive accounting earnings 3-association accounting earnings and prior period share returns	German, French and British sample over period 1990-1998	-Overall results show earnings conservatism to be most profound in the UK (common law country) and least profound in Germany (code law country)
Ahmed and Duellman 2007	Relation between board independence and accounting conservatism	Balance sheet conservatism : 1-market-to-book (MTB) ratio Earnings conservatism : 1-accrual-based ratio 2-association of accounting earnings and share returns	US sample over period 1999-2001	-Positive relation between board independence and accounting conservatism

Table 2.2 Accounting conservatism studies (continuation)

Accounting conservatism studies				
Authors	Study object	Methodology	Sample	Results
Roychowdhury and Watts 2007	Relation between earnings conservatism and balance sheet conservatism	Balance sheet conservatism : 1-market-to-book (MTB) ratio Earnings conservatism : 1-association of accounting earnings and share returns	US sample over period 1972-1999	-Negative relation between balance sheet conservatism and earnings conservatism over short periods due to accounting deficiencies and impact of IPO's -Positive relation between balance sheet conservatism and earnings conservatism over longer horizons
Ball and Kothari 2007	Theoretical discussion of relation between earnings conservatism and balance sheet conservatism	Balance sheet conservatism : 1-market-to-book (MTB) ratio Earnings conservatism : 1-association of accounting earnings and share returns	(No empirical examination)	-Negative relation between balance sheet conservatism and earnings conservatism over short periods which is caused by changes in market expectations on growth opportunities that have not been accounted yet -Negative relation decreases over longer horizons
Pae, Thornton and Welker 2005	Relation between earnings conservatism and balance sheet conservatism	Balance sheet conservatism : 1-market-to-book (MTB) ratio Earnings conservatism : 1-association of accounting earnings and share returns	US sample over period 1970-2001	-Negative relation between balance sheet conservatism and earnings conservatism is caused by accrual component of earnings and not cash flow component of earnings
Basu 1997	Examination of level of accounting conservatism over three decades	Earnings conservatism : 1-association of accounting earnings and share returns 2-association accounting earnings and cash flows 3-persistence of negative versus positive accounting earnings 4-association unexpected accounting earnings and abnormal share returns	US sample over period 1963-1990	-Increase in earnings conservatism over three decades which is positively associated to increase in auditor litigation exposure
Givoly and Hayn 2000	Examination of changes in accounting conservatism over five decades	Earnings conservatism : 1-accumulated accruals 2-association of accounting earnings and share returns 3-skewness and variability of earnings distribution Balance sheet conservatism : 1-market-to-book (MTB) ratio	US sample over period 1950-1998	-Increase in accounting conservatism over sample period
Ryan and Zarowin 2003	Examination of explanations for declining value relevance of accounting earnings	Earnings conservatism : 1-association accounting earnings and prior period share returns 2-association cash flows and prior period share returns	US sample over period 1966-2000	-Decline in value relevance of accounting earnings is caused by : 1-increase in time lag at reflecting news between accounting earnings and share returns 2-increases in accounting conservatism

2.3 Information usefulness and accounting conservatism

With reference to the central research question, stated in subsection 1.5 (p.6), the aim of this study is to find empirical evidence of the relation between accounting conservatism and information usefulness. This subsection will elaborate on the relation between the two accounting phenomena and serves as theoretical foundation of the research thesis.

The previous two subsections described characteristics of and research to information usefulness and accounting conservatism separately, at which occasionally the relation between the phenomena came up for discussion.
As discussed, the objective of accounting standards-setters is to assure information usefulness of financial statements. For that they constructed a conceptual framework that provides compulsory and guiding rules on drawing up annual accounts.
One of the regulatory elements of the conceptual framework is the imposition of a number of qualitative requirements that prescribe what normative characteristics accounting information should comply with.

Although the purpose of each of the qualitative characteristics is to assure information usefulness, however, some of these characteristics may pursue conflicting interests.
Essential to this study is the conflict between the following two qualitative characteristics: neutrality versus prudence.
Hellman (2008) explains that prudence is a means of addressing uncertainty by taking cautious judgements. A reasonable practice of prudence in financial accounting contributes to information usefulness. Yet, if prudence is practiced excessively it generates (too) conservative accounting data and accordingly violates neutrality of financial information.

Accounting conservatism is a more radical approach to prudence; its one-sided focus on prudence may harm neutrality and usefulness of financial statements information. In other words, from a theoretical perspective the asymmetrical recognition of good/bad news causes understatement of accounting earnings and net assets, which is incompatible with neutrality, and by that it distorts financial statements' information usefulness.

In literature and accounting research conservatism is adduced as one of the explaining factors for the degree of information usefulness.
For instance, IASB Framework paragraph 37 states that the deliberate understatement of assets and income harms neutrality and subsequently reliability of financial statements (Hellman, 2008, p.76).
Likewise, Ryan and Zarowin claim that increases in accounting conservatism have caused a decline in value relevance of accounting earnings (Ryan and Zarowin, 2003).

The negative causal association between accounting conservatism and information usefulness is commonly accepted as a plausible assumption. However, the assumed relation is not substantiated by extensive empirical evidence. This lack of evidence inevitably evokes questioning the legitimacy of the assumed negative relation between conservatism and information usefulness.
The aim of this study is to investigate the relationship between accounting conservatism and information usefulness. Next section will discuss the research outline and research settings that are used for that.

Section 3 Hypotheses development

As described in section 1 the research question in this study is: *does accounting conservatism negatively impact value relevance of financial statements?*
From a theoretical point of view one would expect to find a negative relation between these two variables. That is, the association between market value and book value (i.e. value relevance) will decline as result of the deliberate undervaluation of book value (i.e. accounting conservatism).
The presumed negative relation is phrased by the following research thesis:
Financial statements of firms practicing accounting conservatism are less value relevant than financial statements of firms not practicing accounting conservatism.

Clearly, the next step is to verify the tenability of this research thesis. Based on empirical evidence the thesis is either validated or rejected. For that an empirical research will have to be conducted to find evidence on the presumed negative relationship between accounting conservatism and value relevance.
However, the research thesis is a rather broad presumption and, unlike hypotheses, cannot be tested itself. Therefore the next two subsections will discuss the outline and settings employed for composing six relevant hypotheses.
Validation/falsification of these hypotheses will answer the tenability of the research thesis.

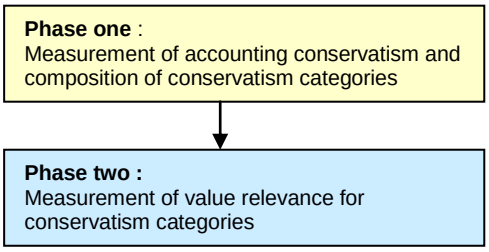
3.1 Research outline

The aim of the empirical research is to investigate whether value relevance declines for increasing levels of accounting conservatism. In order to measure value relevance for different levels of accounting conservatism the research outline is split up into two phases:

a- phase one measures accounting conservatism and divides the test sample into categories representing the different levels of conservatism, i.e. conservatism categories,
b- phase two measures value relevance for each of the conservatism categories in order to test the legitimacy of the research thesis. In line with the research thesis I expect results to show that value relevance declines as the degree of accounting conservatism increases from one category to the other.

Phase one contributes to the research as it discerns different levels of conservatism which are used for testing the research thesis in phase two. In this respect phase one is a derivative stage; it is essential to the research but it will not test the research thesis. Accordingly, the hypotheses of phase one will serve as supporting hypotheses to the hypotheses of phase two.

Figure 3.1 - Research outline [20]



Section 4 will describe the research design in more detail, including the proxies and models used for measuring accounting conservatism and value relevance.
Adoption of this research outline implies that I assume that all deviations in value relevance are caused by only one determinant, i.e. accounting conservatism. Obviously at analyzing test results one should also consider the possible impact of other factors.

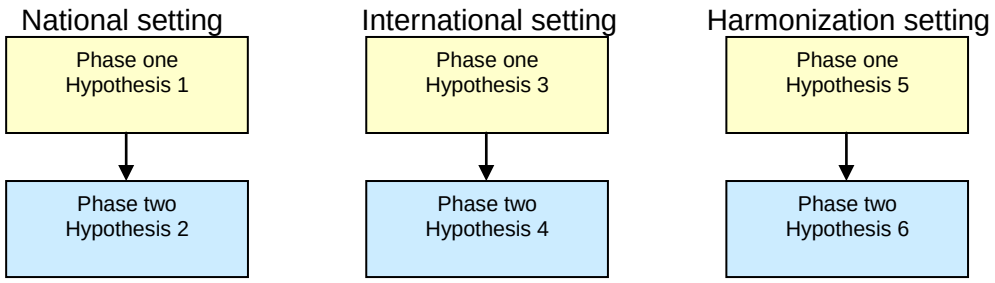
[20] Figures/tables that relate to phase one are reported in yellow, and to phase two in blue.

3.2 Research settings

The basic research methodology is to compare value relevance for different degrees of conservatism (i.e. conservatism categories). To increase the legitimacy of final research conclusions the research outline is conducted in the following three different research settings:

1- comparison between firms in a national setting,
2- comparison between firms in an international setting,
3- comparison between firms during international harmonization of accounting standards.

Figure 3.2 - Research settings



As discussed in the previous subsection, the research outline of each research setting consists of the two phases.
Supporting hypotheses 1, 3 and 5 are used in phase one to measure accounting conservatism and to classify firms into conservatism categories; these derivative hypotheses do not test the tenability of the research thesis.
In phase two hypotheses 2, 4 and 6 test the research thesis by measuring value relevance for each of the conservatism categories.

Obviously, the advantage of performing the same examination in different settings is that final research conclusions are drawn from a wider range of evidence, which contributes to the validity of these conclusions. Moreover, there is no comparable previous research to the quantitative effect of accounting conservatism on value relevance; the lack of reference evidence material urges the necessity for this study to support conclusions with substantial evidence.

The next three subsections will expound the relevant characteristics of each setting separately, and from there deduce and elucidate the hypotheses to be tested.

3.2.1 National setting

In the national setting categories of conservatism are composed of firms from just one country. Phase one classifies firms into one of the categories depending on firm's degree of conservatism in proportion to the average degree of conservatism of all firms. Thereupon, phase two estimates value relevance of each conservatism category.

In this setup of composing conservatism categories, firms from all industries are compared with each other. However, research studies call attention to the influence of industry characteristics on measuring accounting conservatism. Many of these conditions vary from one industry to the other, like economic growth rates, interest rates, industrial inflation rates, stage of business cycle, firm size, capital/financial structure, accounting regulation, institutional factors (e.g. law and regulation), etc. These industry conditions affect the accounting position/performance of firms. As accounting numbers are used to measure conservatism, differences in industry conditions will disrupt comparison of conservatism between firms operating in divergent industries. For instance, a technology firm invests large amounts into research and development (R&D) for development/improvement of products.

Accounting standards prescribe that costs of research need to be accounted for as expenses in the profit and loss sheet, rather than being capitalized as intangible fixed assets on the balance sheet. To less capital-intensive industries, like the services sector, these particular accounting standards will have minor/no impact on the profit and loss sheet and balance sheet. Comparing the degree of conservatism of technology firms with that of firms operating in less capital-intensive industries would disregard the disrupting influence of differences in industry conditions.
To restrict the potential disruptive influence of industry conditions, only firms active in the same industry should be compared at composing categories of conservatism.
The following hypothesis verifies the assumed impact of industry conditions on accounting conservatism:

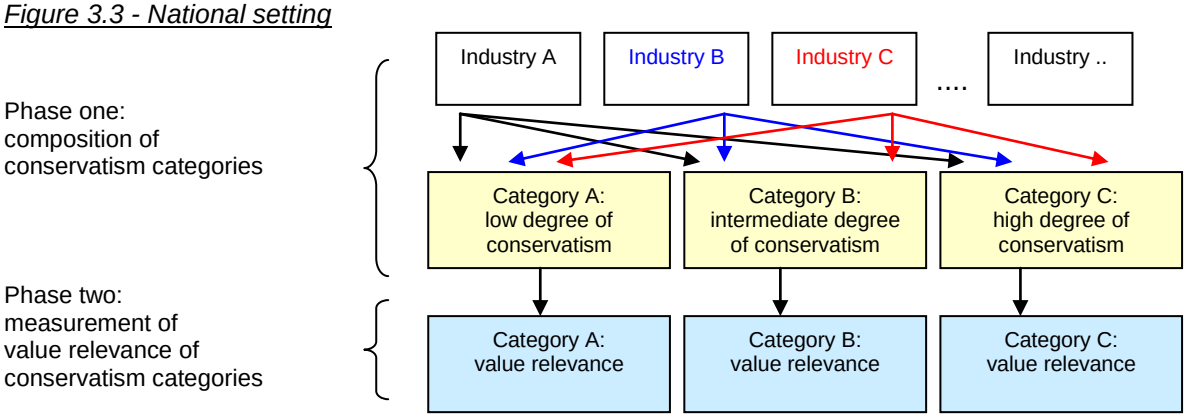
Hypothesis 1
The degree of accounting conservatism differs between various industries

To eliminate the distorting impact on test results, industry conditions need to be controlled. For that purpose comparison of the degree of conservatism takes place between firms operating in the same industry. This approach will level out the impact of industry conditions, assuming that most of these conditions apply equally to all firms operating in the same industry. Subsequently, in phase one categories will be composed of firms with similar degrees of conservatism from all industries.
Thereupon value relevance will be measured for each category in phase two.
The following hypothesis will verify the tenability of the research thesis:

Hypothesis 2
Value relevance declines for increasing levels of accounting conservatism

To conclude the discussion the following figure recapitulates the outline of the national setting.

Figure 3.3 - National setting



3.2.2 International setting

In the international setting we examine the impact of cross-country conservatism differences on value relevance.
As described in subsection 2.2.2 prior studies have investigated international differences in accounting conservatism, using Watts' four institutional motives to explain empirical findings. Considering the substantial differences in institutional properties between code law and common law countries many of these studies compared size of accounting conservatism between these two regimes.

From a theoretic point of view Watts' four institutional motives have been allocated to either the code law regime or the common law regime in table 3.1.

For a more detailed discussion of these four institutional motives see subsection 2.2.1 (pp. 20-21).

Table 3.1: Allocation of institutional properties to regimes

Institutional properties causing accounting conservatism	Common law regime	Code law regime
1. Contracting: - *Debt contract* - *Executive compensation contract* - *Firm governance*	 X ...	 X ...
2. Shareholder litigation	X	
3. Taxation		X
4. Accounting regulation	...	...

The allocation of institutional motives in table 3.1 is based on the following key characteristics of each regime.
The common law regime is characterized by a strong focus on individual contracting in the private sector (Ball, Kothari and Robin, 2000, p.13) and the predominant role of shareholders at financing firms.
First the private sector initiates the development and use of new common laws. After some period of time the regulatory bodies will codify those effective common laws into formal regulation (i.e. code laws)
Information asymmetry between management and investors is mainly resolved by providing timely disclosures to shareholders, for which financial statements should provide a true and fair view (TFV) of financial position and performance.
Despite the emphasis on true and fair view in common law regimes management may still want to practice caution by using conservative accounting methods in order to behold shareholders' confidence; this explanation corresponds to the 'executive compensation contract' motive.
Moreover, as it is more likely that shareholders are financially damaged by overstated rather than understated annual accounts, the risk of shareholder litigations will urge management to use a conservative accounting approach.

The code law regime is characterized by the predominant role of (quasi-) governmental bodies at introducing and enforcing regulation and by the prominent role of debt capital at financing firms.
Public bodies establish code laws and impose these formal laws on the private sector; the private sector is strongly directed by formal regulation.
Financial reporting regulation and tax reporting rules are often closely related as both sets of rules are developed by (quasi-) governmental institutions. As a result firms will have incentives to use conservative financial reporting methods in order to reduce tax amounts.
Because firms are substantially financed with debt capital banks hold influential positions to firms. Consequently, banks will impose debt contracts/covenants that enforce rigid restrictions in order to secure firm's solvency; one of the covenant instructions will be the adoption of a conservative accounting approach.

Regarding the institutional motives 'firm governance' and 'accounting regulation', there is no evident theoretic rationale to presume that these motives apply more to common law or to code law regimes. That is why in table 3.1 these two motives have not been allocated to either one of these regimes.

For more background information on the institutional differences between code law and common law regimes see the discussion of the study of Joos and Lang (pp. 17-18).
In this study they examine the impact of differences between common law regimes (i.e. Anglo-Saxon regime) and code law regimes (i.e. continental regime) on value relevance in an European setting.

Joos and Lang argue that on the longer run the size of regime differences between countries of the European Union (EU) will diminish due to accounting harmonization efforts.
Since 1978 the European Commission (EC) has introduced two important accounting directives (4th and 7th Council Directive) to harmonize accounting practices in member states. These directives imply a progress to the common law approach, as :

- true and fair view (TFV) has become the essential requirement of financial statements,
- financial reporting is less restricted by tax rules.

As a result of EU harmonization regime differences are fading as member states will increasingly have to comply with one set of accounting rules. Consequently, deviations in legal regimes will be less of an explanation of accounting differences in the EU.

In subsection 3.2.3 I will discuss in more detail the effect of EU accounting harmonization on cross-country accounting differences between divergent legal regimes. Hypothesis 5 will investigate whether accounting conservatism differences between legal regimes have decreased during periods of harmonization.
Because in the third setting we will be examining the impact of EU harmonization on the association between value relevance and conservatism, I shall use this European context in the second setting as well.

The distinction between common law and code law regimes has become less significant for EU member states. Nevertheless I will hold on to the classification of code law and common law regimes in both settings (i.e. second and third setting), in order to explain cross-country conservatism differences. Use of the regime classification is legitimate given that harmonization is a lengthy and gradual process and therefore many of the regime characteristics still apply to member states to some extent.

On the whole the studies discussed in subsection 2.2.2 report the strongest evidence of (earnings) conservatism in common law countries. Yet, there is no theoretic rationale for presuming conservatism to be more prominent in code law or in common law countries. Watt's four motives to conservatism are evenly allocated to either of the two regimes and one can only speculate to which regime the scale will tip.
Assuming conservatism differences will be most pronounced at comparing divergent institutional regimes, the following hypothesis aims to verify and quantify variations in accounting conservatism between EU countries of different regimes:

Hypothesis 3
The degree of accounting conservatism differs between countries with different regimes

Phase one of the research outline will first classify all countries into different conservatism categories using the results from hypothesis 3.
Once the differences in conservatism between countries of divergent regimes are assessed the following step is to use hypothesis 4 to estimate the effect of these international conservatism differences on value relevance.
The following hypothesis will verify the tenability of the research thesis:

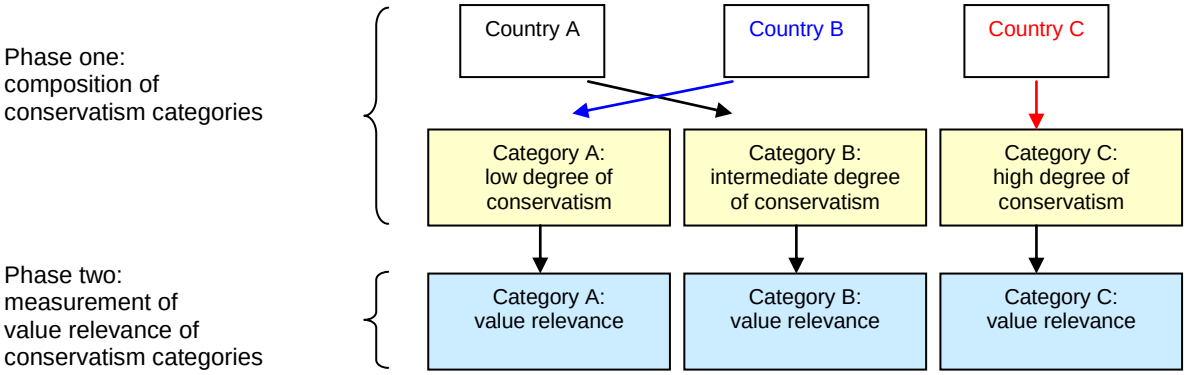
Hypothesis 4
Value relevance declines for countries with increasing levels of accounting conservatism

Although hypothesis 4 and hypothesis 2 may seem to be identical there is a clear distinction between these two.

Hypothesis 2 examines the association between value relevance and accounting conservatism in a national setting. All conservatism categories are composed of firms operating in the same country.
Hypothesis 4, however, investigates the relation between value relevance and conservatism in an international setting, assuming that deviations between legal regimes will probably cause cross-country conservatism differences. Each of the conservatism categories is composed of firms from just one single country and so comparison between categories presents a cross-country research. Conversely, the national setting does not examine the impact of regime differences.

The following figure represents the research outline of the international setting.

Figure 3.4 - International setting



3.2.3 International harmonization of accounting standards setting

The third setting investigates the impact of international accounting harmonization on cross-country conservatism differences. Once the changes in cross-country conservatism differences due to harmonization are assessed the next move is to examine the impact of these changes on value relevance.

During the last three decades the European Union (EU) has introduced a number of directives in member states on the composition and presentation of annual accounts. The aim of implementation of these directives is to establish an integrated European capital market by harmonizing accounting regulation. Considering the continuous process of economic globalization it is of importance for the EU to strengthen its competitive position by creating an extensive internal market. These EU directives sustain this ambition by improving comparability, reliability and understandability of annual accounts (see subsection 1.2, pp. 3-4, for a discussion of qualitative characteristics of accounting information). The more accounting regulation will be harmonized the more transparent financial reporting will be and the more easily it will be for investors to interpret and compare financial statements coming from divergent countries. In that harmonization establishes a level-playing-field on the European capital market in which the volume of cross-border investments will flourish.

In the process of EU accounting harmonization the following directives and regulation have been implemented.

1- Fourth EU Directive
In July 1978 the Council of the European Union (the Council) adopted the Fourth Council Directive (78/660/EEC) that regulates content and presentation, valuation methods and publication of annual accounts for all limited liability companies in member states.

2- Seventh EU Directive
In June 1983 the Council adopted the Seventh Council Directive (83/349/EEC) which states that the requirements of the Fourth Council Directive also apply to the consolidated accounts of groups in which either the parent company or one of its subsidiaries is a limited liability company.

3- IFRS
In July 2002 the Council and the European Parliament adopted the Regulation on the application of International Accounting Standards (IAS) (1606/2002) that prescribes the use of IAS for the preparation of consolidated accounts as of 1 January 2005 for all publicly traded companies in member states. These accounting rules are referred to as International Financial Reporting Standards (IFRS).

In order to comply with changing circumstances the EU directives have been amended several times since implementation.

Just like accounting regulation in common law regimes, the two EU accounting directives emphasize the principle that financial statements should give a true and fair view (TFV), as is reflected in article 2 of the Fourth Council Directive and article 16 of the Seventh Council Directive.
Joos and Lang (1994) expect the EU directives to have the greatest impact on code law countries as consolidated financial statements are no longer allowed to converge with tax reporting. They hypothesize that accounting measurement differences between divergent accounting regimes will reduce as a result of harmonization. To verify this presumption they compose a sample of three European countries (Germany, United Kingdom, and France) over the period 1982-1990. In contrast to their premise the results show no evidence of accounting convergence after implementation of the EU directives.

Notwithstanding the conclusion of Joos and Lang, in theory one may posit that steady EU accounting harmonization will diminish cross-country conservatism differences. Irrespective of whether EU directives will actually increase or decrease the degree of conservatism in comparison to the pre-directives period, conservatism differences between member states should decline as firms are using comparable accounting principles and accounting methods. Adoption and implementation of new accounting regulation is a rather gradual and time-consuming process. The use of a (too) small sample period may have influenced the negative outcome of Joos and Lang's research. Therefore use of an extensive sample period is preferable. (As subsection 4.2.1 will discuss, the sample period used in this study is confined to 13 years due to financial data availability restrictions.)

The following hypothesis verifies the assumed impact of EU accounting harmonization on cross-country conservatism differences:

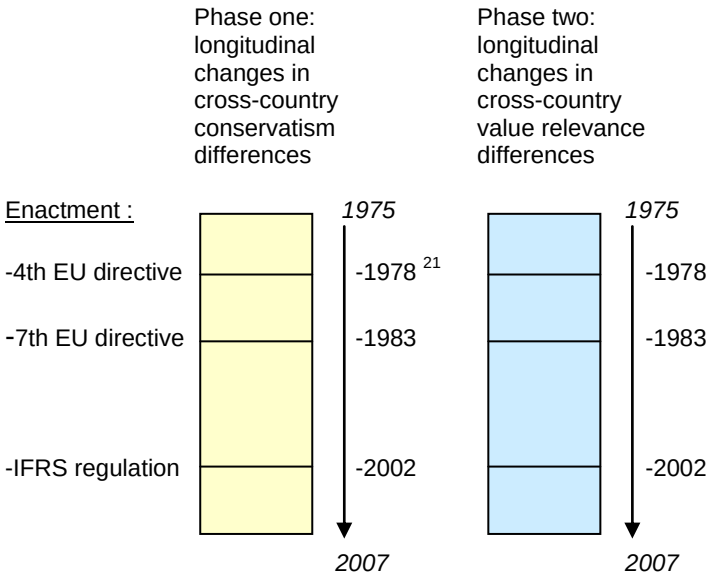
Hypothesis 5
The degree of cross-country differences in accounting conservatism declines as EU accounting directives/regulation are implemented

Test results of hypothesis 5 will show changes to international accounting conservatism differences over a period of time.
Next is to assess the changes of international differences in value relevance over the same period of time. In theory we expect that a decline in international conservatism differences will cause a decline in international value relevance differences.
The following hypothesis will verify the tenability of the research thesis:

Hypothesis 6
Cross-country differences in value relevance are positively associated to cross-country differences in accounting conservatism

The following figure represents the research outline of the international accounting harmonization setting.

Figure 3.5 - EU accounting harmonization setting



[21] Year of enactment refers to adoption of directives/regulation by the European Council / Parliament. After enactment member states are assigned to transpose the EU directives/regulation into the national law within a certain period of time.

Section 4 Research design and sample selection

In the previous section I developed a research outline intended to test the research hypotheses. This outline is practised in three different settings, with each setting testing a relevant hypothesis on the association between accounting conservatism and value relevance.
Next step is to elaborate on the research outline by developing a research design and composing an appropriate sample.

Subsection 4.1 discusses the research design. The central issue is the selection of suitable proxies and corresponding research models to measure accounting conservatism and value relevance.
Subsection 4.2 examines the selection of a sample that is suitable for testing the defined hypotheses.

4.1 Research design

All three research settings operate a similar research outline (see subsection 3.1, p.31) :
a- phase one measures size of conservatism and composes conservatism categories,
b- phase two measures value relevance for each of the conservatism categories and assesses the association between the two phenomena.

However, accounting conservatism and value relevance are rather abstract concepts and cannot be measured straightforwardly. For that purpose one has to design a research methodology that defines and deploys operational derivatives of accounting conservatism and value relevance in order to assess the proportions of these phenomena.
Subsection 4.1 concentrates on the selection of proper operational derivatives (proxies) of value relevance and accounting conservatism, and on the elaboration of these proxies into concrete research models. Subsections 4.1.1 and 4.1.2 discuss phase two: the proxy and research model used to measure value relevance. Subsections 4.1.3 and 4.1.4 focus on phase one of the research design: the proxies and research models used to assess accounting conservatism.

4.1.1 Value relevance as proxy of information usefulness

In capital market research value relevance is used as proxy of information usefulness of financial statements by measuring the association between market values and accounting values (see subsection 2.1.1, pp. 11-12).
As is shown by the research question, thesis and hypotheses of this study, I have already chosen to deploy value relevance as proxy of information usefulness. The following two motives will explain this choice.

The major advantage of using value relevance as proxy of information usefulness is that it allows examination of information usefulness on aggregate level; all investors valuations together culminate in total market values. Adoption of research on aggregate scale contributes to the legitimacy of results and conclusions.
By contrast, behavioural research confines itself to a limited group of investors. Results and conclusions possibly only apply to this restricted group of investors and may not be valid for the whole population of investors.
In sum, deployment of value relevance as proxy of information usefulness increases the effectiveness of the research.

Another important advantage of the proxy is that required market information is available extensively, immediately and at low cost at professional databases.
Unlike behavioural accounting research there is no need to first conduct a survey on investors for collecting data on information content of accounting numbers.

Accordingly, use of value relevance as proxy of information usefulness adds considerably to the efficiency of the research by reducing the lead time of the research.

4.1.2 Ohlson regression model as research model of value relevance

Once having selected and motivated the use of value relevance as proxy of information usefulness next step is to convert the proxy into a concrete research model.

As described in subsection 2.1.2 (p.14) Holthausen & Watts (2001) distinguish the following three value relevance models :
1- earnings model
2- balance sheet model
3- Ohlson model (combined model)

Regarding the effectiveness of the earnings model and the balance sheet model at measuring value relevance, prior studies report deviant results on the incremental relevance of book values in relation to incremental relevance of accounting earnings. Collins, Maydew and Weiss (1997), Francis and Schipper (1999) and Ely and Waymire (1999) find evidence of a decline in the relevance of accounting earnings, whereas Landsman and Maydew (2002) report an increase in accounting earnings relevance.
These contradictory findings advocate the use of the Ohlson regression model, in which both book values and accounting earnings are employed to measure value relevance.

Table 4.1 presents a version of the Ohlson regression model that is used by Collins, Maydew and Weiss (1997) and Lev and Zarowin (1999). This research model will be used in phase two of the research to assess the magnitude of value relevance of accounting information.

Table 4.1: Ohlson regression model

$$P_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 BV_{it} + \varepsilon_{it}$$

where,

P_{it}	: share price of firm i x months after fiscal year-end t
E_{it}	: accounting earnings per share of firm i during year t
BV_{it}	: book value per share of firm i at the end of year t
ε_{it}	: other value-relevant information of firm i for year t
α_1	: value-relevance of accounting earnings
α_2	: value-relevance of book value

The Ohlson model is a regression of market value (P) on accounting earnings (E), book value (BV) and other value-relevant information (ε).
Accounting numbers originate from the financial statements and market value is represented by share price. Table 4.11 in subsection 4.2.2 specifies for each variable its composition of database items.

The model assesses value relevance of financial statements by comparing market value (P) with accounting values (E + BV). For the sake of legitimacy of the research methodology it is important that share prices incorporate financial statements' accounting information. Depending on local filing requirements, financial statements are reported months after fiscal year-end. Accordingly, share prices at end of fiscal year are of no use.
In order to retain that share prices incorporate financial statements' accounting information we will estimate the average reporting period of financial statements for each country (table 4.1: x months). Subsequently, we shall use share prices at the end of this average reporting period in the Ohlson regression model.

Coefficient α_1 of the Ohlson regression measures individual relevance of accounting earnings on market value and coefficient α_2 measures individual relevance of book value on market value.
The overall relevance of accounting information on market value is quantified by R^2.
Derived from linear regression R^2 represents the combined explanatory power of all accounting variables. In other words, R^2 assesses the combined relevance of both accounting earnings and book value on market value. A rise/decline in R^2 signifies an increase/ decrease in combined value relevance of accounting information.
This study will use R^2 as benchmark for the size of value relevance of accounting information.

In harmony with the research outline sample firms are classified into separate conservatism categories in phase one. Next, phase two will measure R^2 for each of these categories. Comparison of R^2 between the different conservatism categories will decide on whether to accept/reject the hypotheses. In line with the research thesis we expect to find empirical evidence of significant increases of R^2 for decreasing levels of accounting conservatism from one category to the other.

Finally, in operating the Ohlson regression model we are making the following two assumptions.
First, book value and accounting earnings are legitimate representatives of information value of financial statements.
Second, I assume semi-strong capital market efficiency, i.e. all publicly available information is efficiently incorporated into market prices. The basic notion is that market prices represent all relevant information.
These two assumptions are vitally important to the methodology of measuring value relevance, as these premises enable the regression model to associate the information relevance of financial statements in relation to all relevant information.

4.1.3 Asymmetric accrual-to-cash-flow and earnings persistence as proxies of accounting conservatism

Subsection 2.2.1 (pp. 23-24) expounded that accrual accounting is used as instrument for practicing accounting conservatism. Asymmetric recognition requirements cause bad news to be reflected earlier and more completely in accruals than positive news is. As a result of asymmetric accruals accounting earnings decline and book values are persistently understated.
These specific symptoms of conservatism are used by proxies and research models to determine presence and size of conservatism.

Research of accounting literature demonstrates that various methods have been developed to measure accounting conservatism. The following list enumerates six proxies that have been commonly used for assessing conservatism (see subsection 2.2.1, pp. 22-23) :

Proxies for earnings conservatism
a- association between accounting earnings and share returns in periods of bad/good news,
b- association between accounting earnings and cash flows in periods of bad/good news,
c- persistence of negative versus positive accounting earnings,
d- association unexpected accounting earnings and abnormal share returns in periods of bad/good news (i.e. earnings response coefficient (ERC)).

Proxies for balance sheet conservatism
e- market-to-book (MTB) ratio,
f- Ohlson regression model.

Sub a
In accordance to conservatism, unrealized negative news (i.e. losses) is fully and immediately incorporated into accounting earnings, whereas positive news (i.e. gains) is only incorporated at moment of realization. The stock market, however, does not make a distinction in recognition between unrealized losses or unrealized gains; according to the efficient market hypothesis all relevant news, whether realized or not, is immediately and completely incorporated into share prices. As a result of accounting's tardy recognition of gains accounting earnings will be more associated with share returns in times of losses than in times of gains.

Sub b
As just explained at sub a, negative news (i.e. losses) directly impacts accounting earnings, whereas positive news (i.e. gains) is incorporated into accounting numbers as from moment of realization.
Cash flows, however, are not affected by any kind of unrealized gains or losses. On the contrary, cash flows are only affected by settlement of realized transactions.
Accounting's asymmetric timeliness of recognition of gains and losses causes an asymmetrical association between accruals and cash flows, at which the association is greater in times of losses because of the incremental timeliness of loss recognition in accounting (Ball and Shivakumar, 2006, p.213).

Sub c
Asymmetric recognition requirements cause negative news (i.e. losses) to be immediately and completely incorporated into accounting earnings. Because the full impact of losses is recognized at once it only has a one-time effect on results.
Conversely, positive news (i.e. gains) is recognized at realization, which usually takes place gradually and over longer periods of time. Gains have a somewhat more moderate but rather more consistent impact on accounting earnings.
Adoption of conservatism demonstrates persistence of positive earnings to be higher than persistence of negative earnings.

Sub d
As derived at sub c, positive news (i.e. gains) has a more persistent effect on future accounting earnings than negative news (i.e. losses) has. Consequently investors will react more strongly to unexpected gains. As a result abnormal share returns will be associated more strongly with unexpected positive earnings changes than with unexpected negative earnings changes.

Sub e
Conservatism results in a persistent understatement of net assets value. The MTB ratio measures presence and size of conservatism by comparing market value with book value. Ratios larger than one point to conservatism, with the higher the ratio the higher the degree of conservative accounting.

Sub f
Like the MTB ratio, the rationale for using the Ohlson regression model is the persistent understatement of net assets value caused by conservatism.
However, in line with the Ohlson valuation model, the Ohlson regression model employs book value + accounting earnings as approximation of net assets value.
Subsequently, the regression measures the association of market valuation of net assets (i.e. share prices) with accounting valuation of net assets (i.e. book value + accounting earnings).
R^2 is used as gauge of conservatism: low values of R^2 are clues for conservatism.

Next to these six operational measures accounting literature has also come up with other proxies. For instance, Givoly and Hayn (2000) use skewness of earnings distribution,

variability of earnings, and accumulated accruals as conservatism proxies, while Ball and Shivakumar (2006) deploy different accruals models to assess conservatism. Most of these other proxies are much related to one of the six proxies discussed above. That is, the proxy uses a similar methodology but only a different technique.
For example, Ball and Shivakumar's accruals models are quite similar to proxy b, i.e. asymmetric association between accounting earnings and cash flows in periods of losses/gains. Both proxies use the basic principle that association between cash flows and results/accruals increases in times of losses. The only difference between the two is the research technique; proxy b associates cash flows to accounting earnings, whereas Ball and Shivakumar's accruals models associate cash flows to accounting accruals.
Since accounting earnings = accruals + cash flows, both proxies should come up with the same results.

Once having discussed the various proxies of conservatism next step is to decide on which proxy to employ in our research design.
The research design consists of two phases, with each phase operating a proxy. It is of the utmost importance not to use proxies with similar methodological structures in both phases, as this will probably violate the objectiveness of the research due to circular reasoning.
From subsection 2.1.2 (p.14) I recall that all three models for assessing value relevance use the market-based methodology, which associates accounting values with market values.
Except for proxy b and c, all conservatism proxies also use the market-based methodology.
If I would apply market-based proxies at both phases of the research I would most likely be measuring the same phenomenon twice. As a consequence, the research would get entangled in a tautology in which the research design would not only record test results but unintentionally also influence these results.

A striking example of the danger of circular reasoning is the twofold operability of the Ohlson regression model. As explained in subsection 2.2.1 (p.23) the Ohlson regression can be used to assess both conservatism and value relevance (i.e. twofold operability). Obviously, to avert circular reasoning the Ohlson regression model is allowed to be applied at only one phase at a time.
Likewise if I would construct a research design that, for instance, combines the MTB ratio with the Ohlson regression model this design would too bring on a situation of circular reasoning as both proxies associate market values with accounting values.

Phase two employs the Ohlson regression (market-based model) for determining value relevance of financial statements. As a consequence, only the following two non market-based proxies are suitable to measure accounting conservatism in phase one:
proxy 1 - association between accounting earnings and cash flows in periods of bad/good news (proxy b, p.42) ,
proxy 2 - persistence of negative versus positive accounting earnings (proxy c, p.42).
The aim of phase one of the research outline is to measure degree of conservatism and to classify results into different conservatism categories.
For that purpose proxy 1 is an adjusted version of proxy b, i.e. the association between accounting *accruals* and cash flows. The rephrasing of the proxy is legitimate as it merely presents a technical change and not a methodological change to the proxy.
Subsequently, we will employ proxy 2 to perform robustness checks on the outcome of proxy 1.

4.1.4 Research models of accounting conservatism

In the previous subsection I selected and motivated the use of two conservatism proxies. This subsection will develop a research model to each of these proxies.

Proxy 1 - association between accounting accruals and cash flows
Accounting literature has developed various accruals models that associate accounting earnings with cash flows, like for example the Jones model and the Dechow and Dichev model.
Table 4.2 presents a regression model that is founded on one of the accruals models used by Ball and Shivakumar (2006), and is referred to by Wang, Ó hÓgartaigh and Van Zijl (2008) as the Asymmetric Accrual-to-Cash-Flow (AACF) model. This research model will be adopted in phase one of the research to assess the degree of accounting conservatism.

Table 4.2: Asymmetric Accrual-to-Cash-Flow (AACF) model

$$AAC_{it} = \alpha_0 + \alpha_1 DCFO_{it} + \alpha_2 CFO_{it} + \alpha_3 DCFO_{it} \times CFO_{it} + \varepsilon_{it}$$

where,
AAC_{it} : accounting accruals of firm i for period t
CFO_{it} : cash flow from operations of firm i for period t
$DCFO_{it}$: dummy variable that is set to 0 if $CFO_{it} \geq 0$; and set to 1 if $CFO_{it} < 0$
ε_{it} : impact of other variables of firm i for period t
α_2 : association between accruals and cash flows
α_3 : incremental association between accruals and cash flows, in times losses

The AACF model is a regression of accounting accruals (AAC) on cash flows from operations (CFO) and other variables (ε).
All variables originate from the financial statements. Table 4.11 (p.53) provides details on each variable's compilation from database items.

Coefficient α_2 of the AACF model measures the overall association between accruals and cash flows. Coefficient α_3 measures the incremental association for losses relative to gains. DCFO is a dummy variable that is used to distinguish losses from gains; losses are defined by $CFO < 0$, whereas gains are defined by $CFO \geq 0$.
Consequently, the association between accruals and cash flows is represented by α_2 for gains and by $\alpha_2 + \alpha_3$ for losses.

In conformity to proxy b (p.42) I expect to find a closer relation between accruals and cash flows for losses than for gains. The marginal association for losses is represented by coefficient α_3 and so I expect this coefficient to be positive.

Conservatism is the asymmetric recognition of gains and losses, and is represented by the ratio between α_2 (i.e. association of gains) and $\alpha_2 + \alpha_3$ (i.e. association of losses).
The ratio $(\alpha_2 + \alpha_3) / \alpha_2$ is commonly used as benchmark of the degree of accounting conservatism, at which the size of the ratio is positively related to the degree of conservatism.

The simplicity of using the ratio to assess conservatism is quite appealing. The heuristic for interpreting the ratio is rather straightforward: size of the ratio is positively related to the degree of conservatism.
However, the heuristic does not apply for all possible situations. The next table presents an arithmetic example of the ratio in four possible situations. In some of these situations the ratio produces rather delusive results.

Table 4.3: Ratio in four situations - example –

Coefficient	Situation 1	Situation 2	Situation 3	Situation 4
α_2	0.2	-0.2	0.2	-0.2
α_3	0.6	0.6	-0.6	-0.6
$\alpha_2 + \alpha_3$	0.8	0.4	-0.4	-0.8
ratio $(\alpha_2 + \alpha_3) / \alpha_2$	4	-2	-2	4

As table 4.3 shows, the ratio is the same for both situations 1 and 4, as well as for situations 2 and 3.
If I would merely apply the general heuristic I would affirm that situation 1 represents the same degree of conservatism as situation 4.
Yet, looking more thoroughly at the figures one has to conclude that situation 4 is not at all comparable to situation 1. The profound difference between the two is the negative value of incremental association of losses (α_3) in situation 4, which indicates a delay in recognition of losses relative to gains. Hence in situation 4 there is no conservatism at all, and so the positive ratio 4 is incorrect.
A similar rationale applies to situations 2 and 3.
The ratio is inaccurate and therefore not suitable for measuring conservatism.

In reality situations 1 and 2, as well as situations 3 and 4 show similar values of incremental association of losses (α_3), and for that reason should be scaled at the same degree of conservatism. Consequently, we will use the alternative ratio $\alpha_3 / |\alpha_2|$, which I will refer to as the AACF ratio, as benchmark of the degree of accounting conservatism. The size of the AACF ratio is positively related to the degree of conservatism for all possible situations.
Table 4.4 re-assesses the degree of conservatism using the AACF ratio in the four situations and it shows that the AACF ratio accurately discerns the different levels of conservatism.

Table 4.4: AACF ratio in four situations - example –

Coefficient	Situation 1	Situation 2	Situation 3	Situation 4
α_2	0.2	-0.2	0.2	-0.2
α_3	0.6	0.6	-0.6	-0.6
AACF ratio: $\alpha_3 / |\alpha_2|$	3	3	-3	-3

Once having defined and specified the research model it is ready for deployment in phase one of the research outline. The objective of phase one is the assessment and classification of conservatism.
For that purpose I will use the following operating procedures:

- National setting
  For each industry all firms' individual AACF ratios are compared to the average AACF ratio of that particular industry. Conditional upon the outcome each firm is allocated to one of the conservatism categories.
- International setting
  The average AACF ratio is calculated for each country and thereupon compared to the average AACF ratios of other countries. Conditional upon the outcome a country is classified into one of the conservatism categories.
- International harmonization of accounting standards
  The average AACF ratio is calculated for each country during the pre-harmonization period and during the harmonization-period. To determine the impact of accounting

harmonization on cross-country conservatism differences, countries' average AACF ratios are compared with each other for the pre-harmonization period and for the harmonization period.

Proxy 2 - persistence of accounting earnings
Different variations of the proxy 'persistence of accounting earnings' have been explored in prior studies, like for example the skewness of earnings distribution and the variability of earnings by Givoly and Hayn (2000).
Table 4.5 shows a regression model similar to the model used by Basu (1997).
This research model will be applied for performing robustness checks on the AACF model, and will be referred to as the Asymmetric Persistence-of-Earnings (APE) model.

Table 4.5: Asymmetric Persistence-of-Earnings (APE) model

$$\Delta E_{it} = \alpha_0 + \alpha_1 D\Delta E_{it-1} + \alpha_2 \Delta E_{it-1} + \alpha_3 D\Delta E_{it-1} \times \Delta E_{it-1} + \varepsilon_{it}$$

where,
ΔE_{it} : change in earnings of firm i for period t
$D\Delta E_{it-1}$: dummy variable that is set to 0 if $\Delta E_{it-1} \geq 0$; and set to 1 if $\Delta E_{it-1} < 0$
ε_{it} : impact of other variables of firm i for period t
α_2 : association between earnings this year with earnings last year
α_3 : incremental association between earnings this year with earnings last year for negative earnings changes in last year

The APE model is a regression of current year earnings changes (ΔE_{it}) on prior year earnings changes (ΔE_{it-1}) and other variables (ε).
All variables originate from the financial statements. Table 4.11 (p.53) specifies each variable's composition of database items.

Coefficient α_2 of the APE model measures the overall association between current year and last year earnings changes. Coefficient α_3 measures the incremental association for losses relative to gains.
$D\Delta E_{it-1}$ is a dummy variable that is used to distinguish losses from gains; losses are defined by $\Delta E_{it-1} < 0$, whereas gains are defined by $\Delta E_{it-1} \geq 0$.
Consequently, the association between current year and last year earnings changes is represented by α_2 for gains and by $\alpha_2 + \alpha_3$ for losses.

In conformity to proxy c (p.42) I expect to find a closer association for gains than for losses. The marginal association for losses is represented by coefficient α_3 and so I expect this coefficient to be negative.

Conservatism is the asymmetric recognition of gains and losses, and is represented by the ratio between α_2 (i.e. association of gains) and $\alpha_2 + \alpha_3$ (i.e. association of losses).
The ratio $(\alpha_2 + \alpha_3) / \alpha_2$ can be used as benchmark of the degree of accounting conservatism, at which the size of the ratio is negatively related to the degree of conservatism.
Yet, similar to arithmetic issue raised in table 4.3 (p.45), the ratio copes with the problem of measurement inaccuracy. For that reason I will employ the alternative ratio $\alpha_3 / |\alpha_2|$, which I will refer to as the APE ratio, as benchmark of the degree of accounting conservatism.
The size of the APE ratio is negatively related to the degree of conservatism for all possible situations.

The APE model is deployed to perform robustness tests on the AACF ratio.
Regarding the operating procedures in the three settings, these are similar to the ones discussed at the AACF model (pp. 45-46).

4.2 Sample selection

Once the research outline, research settings and the research design have been developed we now have come to the stage of selecting a proper sample. The aim of this subsection is to compose a data sample that is appropriate for testing the hypotheses in each of the three research settings.
In subsection 4.2.1 I will first deliberate about some important conditions of a suitable sample. Subsection 4.2.2 will then focus on the actual composition of the data sample and the compilation of research model variables from database items.

4.2.1 Sample conditions

Aim of any empirical research is the examination of the tenability of postulated theses/ hypotheses by testing these postulations for a relevant sample. The appropriateness of the sample is much determined by the setup of the research.
This subsection will consider the requirements imposed by the three research settings and the research design for composing a relevant sample.

Research settings requirements

-1- Country requirements
Obviously, in order to make international comparisons the sample should include at least two countries. In addition these sample countries should meet the following requirements:

a- Hypothesis 1 presumes the degree of conservatism will deviate between various industries. Consequently, the sample country has to include a wide range of industries. Generally, capitalized countries with large-sized economies will meet the requirement.
b- Hypothesis 3 conjectures the degree of conservatism will deviate between countries with divergent legal regimes. Therefore sample countries have to be clear representatives of either the common law regime or the code law regime.
c- To eliminate the possible side effect of other factors on cross-country conservatism differences, economic and market conditions of sample countries have to be highly analogous.
d- Hypothesis 5 postulates that due to EU harmonization of accounting standards cross-country conservatism differences between EU countries will decrease. Consequently, the sample has to include EU member states that took part in the process of accounting harmonization.

Considering the enumerated requirements I will use the following sample countries:

- Germany : a code law country characterized by tax-rules based financial reporting and prominent role of debt finance,
- France : a code law country characterized by extensive governmental/legal accounting regulation,
- United Kingdom : a common law country characterized by prominent role of equity financing and individual contracting.

Grounds for inclusion of these countries in the sample are:

sub a- all three countries are highly developed, capitalized countries with large-sized, diversified economies,
sub b- each country has its own unique legal regime that deviates from the legal regimes of the other countries,
sub c- economic and market conditions are highly comparable between the countries,
sub d- all countries have been EU member states since the introduction of the EU directives.

Based on the four country requirements Italy also classifies for inclusion in the sample.

However, previous studies of Joos and Lang (1994) and Giner and Rees (2001) investigate cross-country accounting differences for Germany, France and the UK. These studies make rather opposite conclusions.
In my opinion deployment of a sample analogous to the one of Joos and Lang, and of Giner and Rees will improve the relevance of the study as research results can be compared with their findings. Examination of new empirical results may contribute to a better understanding of the studied phenomena.

Regarding the other EU member states, these countries do less/not comply with the four country requirements and therefore are not included in the sample.

-2- Local accounting standards requirement
International comparison of conservatism (second setting requires that firms use local accounting standards (local GAAP) for financial reporting. This requirement intends to preserve international conservatism differences by ruling out the possibility that firms in different EU member states are using the same set of accounting rules.
The third setting as well does require sample firms to use local GAAP's in order to study the effect of attuning local accountings standards on conservatism differences.

-3- Compliance with EU directives/standards requirement
For analyzing the impact of EU harmonization financial statements have to comply with the EU accounting directives and regulation.

Research design requirements

-4- Data consistency requirement
One general requirement to the research design is the consistency of sample data, which relates both to the compilation of the sample population and to the use of database items. Usually inconsistent sample data generates less accurate results. For that reason it is preferable to use a constant sample of firms and a constant set of database items over a long sample period.

Unfortunately, the database used for this study only provides a constant data stream for European firms as from 1995. So we are forced to use a relative small sample period of 13 years (e.g. 1995-2007); financial year 2008 will be left out the sample to preclude possible distortion of the global financial crisis, which started during the autumn of 2007.

Ideally one would prefer to use a sample period, like presented in figure 3.5 (p.38), that dates back some years before the introduction of the Fourth Council Directive of July 1978. That way we would be able to monitor the full impact of EU accounting harmonization on cross-country conservatism differences in the third setting.
Adoption and implementation of new accounting standards are a gradual and long-term process. Use of an extensive sample period would shed more light on international conservatism differences and the impact of accounting harmonization on these differences. Besides, value relevance and conservatism are rather relative phenomena that cannot be pinpointed, but have to be deduced from long-term trends. That is why previous empirical studies, like some discussed in section 2, use a longitudinal approach to compare results between different periods of time.

Especially for the third setting the compulsory curtailment of the sample period to 13 years may have considerable impact on the research outcome and therefore this impact needs to be considered at the analysis of results.
As the enactment of the Fourth and Seventh EU Directives are not included in the sample scope empirical examination to the impact of these directives is not possible.

Instead I will discuss a literature search for the effect of the two EU directives in section 5.2.3. Subsequently, the empirical research will concentrate on the harmonization effect of the following major amending acts (table 4.6) and IFRS regulations (table 4.7) adopted by the European Council during the timeframe 1995-2007:

Table 4.6: Amending acts 1995-2007

Amending Act	Scope	Deadline transposition into national law
2006/46/EC	Increase in the transparency of related parties transactions and off-balance sheet arrangements	5 September 2008 *
2001/65/EC	Contribution to the implementation of IFRS by introducing fair value accounting for financial instruments	31 December 2003

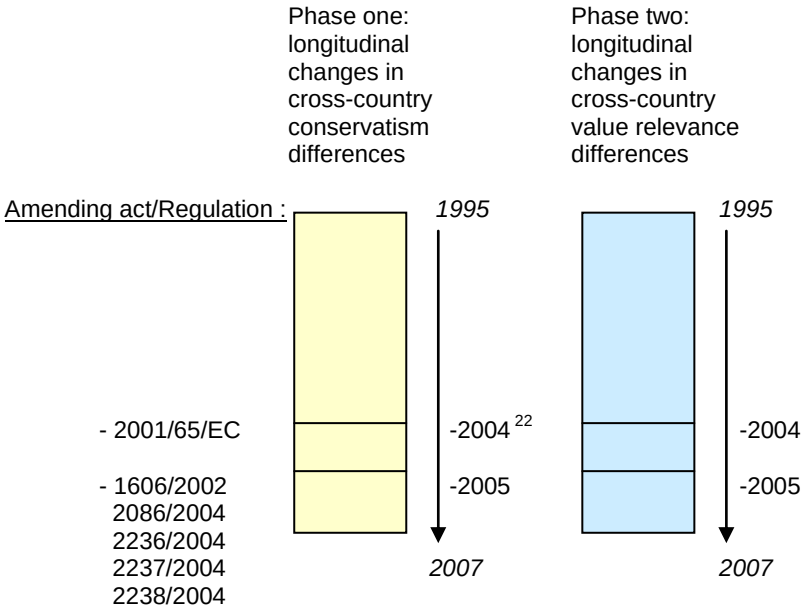
***** *Amending act 2006/46/EC is adopted in 2006, yet the transposition date is beyond the sample period. Accordingly this act will have no impact on the empirical results.*

Table 4.7: Regulations 1995-2007

Regulation	Scope	Effective date
2238/2004 2237/2004 2236/2004 2086/2004	Adoption of prescribed IFRS / IAS	1 January 2005
1606/2002	Regulation that instructs publicly traded companies to use IAS for the preparation of their consolidated financial statements	1 January 2005

Figure 4.1 represents the revised research outline of the international accounting harmonization setting (i.e. third setting).

Figure 4.1 - Revised EU accounting harmonization setting



[22] Years refers to commencing dates at which the EU directives/regulations become effective.

-5- Market efficiency requirement
As discussed in subsection 2.1.1 (p.12) deployment of the value relevance proxy is based on the assumption of semi-strong market efficiency. By definition relevant information is incorporated much faster in marketable shares than in less actively traded shares. As a result prices of more actively traded shares are generally more accurate estimates of firms value. To comply with the assumption of market efficiency the sample will include the largest and most actively traded firms.

4.2.2 Composition of data sample and compilation of research model variables

The research sample is compiled from marketable publicly traded firms at German, French and British stock indices:

- German firms are listed at the Prime Standard Segment index of the Deutsche Börse AG in Frankfurt,
- French firms are listed at the SBF250 index of NYSE Euronext in Paris,
- British firms are listed at the FTSE350 index of the London Stock Exchange.

All sample firms use local accounting standards and have to comply with EU accounting directives/regulations.

Sample data are obtained from the Compustat Global - Fundamentals Annual and Compustat Global - Security Daily databases over the period 1995-2007 and consist of financial statement data and share prices. To preclude distortion of the global financial crisis financial year 2008 is left out of the sample base.
For Germany and France all financial data have been converted into Euro's, using official fixed rates.
Financial data of each country are deflated at PPI Manufacturing-index, available at the statistics database of the Organisation for Economic Co-operation and Development (OECD) (Appendix C, p.92).
Share prices are established at the last day of the following assessed average reporting periods (table 4.1, p.40: x months): Germany 5 months, France 6 months, UK 4 months.

Intrinsic to their business activity financial firms usually show stronger correlations between book value and market value of net assets than nonfinancial firms do. To prevent distortion of the Ohlson regression model financial firms (SIC code 6000-6799) are excluded.
Exclusion of financial firms in order to prevent distortion of empirical results is commonly practiced in accounting research.

The total sample consists of 6,413 firm-years; firm-years with missing data-items have been excluded. The number of firm-years per firm fluctuates between 1 and 13.

- AACF/APE regressions are estimated for each firm individually and so firms with 8 or less firm-years are excluded from the sample (loss of 1,385 firm-years).
- To estimate the AACF/APE regression each firm has got to include at least one loss-year (loss-year AACF model: $CFO_{it} < 0$; loss-year APE model $\Delta E_{it-1} < 0$). As a result the AACF model excludes 3,261 firm-years and the APE model 174 firm-years.

The final sample is now compiled of (see table 4.9, p.51) :

- 1,767 firm-years for the AACF model (Germany 820, France 469, UK 478) (Appendix A, p.84), and
- 4,854 firm-years for the APE model (Germany 1,440, France 1,282, UK 2,132) (Appendix B, p.86).

The large difference in sample size between the AACF model and APE model proves that the AACF model uses a more rigid definition of losses than the APE model.

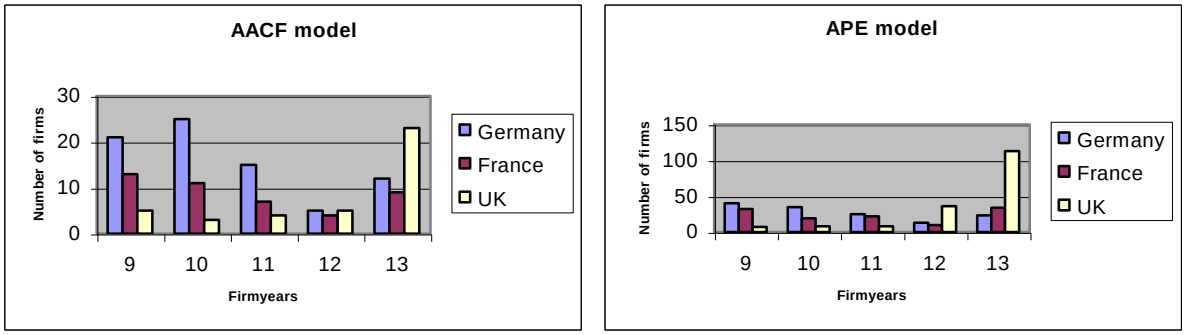
As to preserve a substantial sample size extreme observations have not been eliminated from the sample.

Table 4.8 lists the number of sample firms participating at each level of firm-years for both the AACF model and the APE model; figure 4.2 presents the graphics of this table.

Table 4.8 Number of firms per firm-year

Firm-years per firm	AACF model				APE model			
	Germany	France	UK	Total	Germany	France	UK	Total
9	21	13	5	39	40	32	7	79
10	25	11	3	39	35	19	8	62
11	15	7	4	26	25	22	8	55
12	5	4	5	14	13	10	36	59
13	12	9	23	44	23	34	113	170
Total	78	44	40	162	136	117	172	425

Figure 4.2 Distribution of firms over firm-years



Due to the rigid loss definition the total number of sample firms in the AACF model (162) is considerably lower than in the APE model (425). Other things being equal, the larger sample size of the APE model is preferred from statistical point of view because it contains more observations.
Besides, the percentage of firms with more observations per firm (i.e. large number of firms-years per firm) is larger in the APE model than in the AACF model. In general, the more observations used for estimating regressions the more reliable results will be.
Because in setting 1 regressions are estimated for each firm separately, the APE model will generate more relevant results.

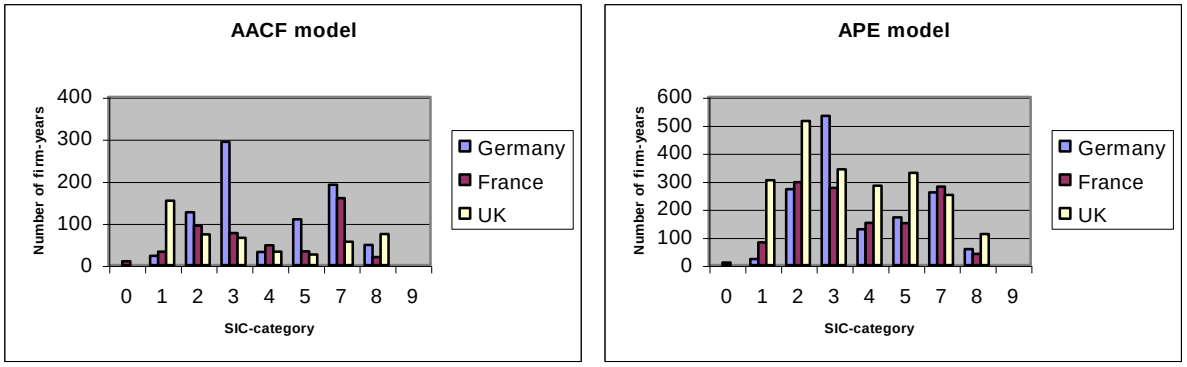
In hypothesis 1 we examine whether accounting conservatism deviates between industries. Sample firms have been allocated to industry-sectors using SIC (Standards Industrial Classification) codes. Thereupon all firms have been aggregated to high-level SIC codes as to preserve a substantial industry-split sample base for empirical investigation.
In table 4.9 the number of firm-years in each SIC category is presented for the AACF model and APE model; figure 4.3 is the graphical representation of this table.

Table 4.9 Number of firm-years per SIC

SIC categories	AACF model				APE model			
	Germany	France	UK	Total	Germany	France	UK	Total
0	0	9	0	9	0	9	0	9
1	22	32	153	256	22	81	303	406
2	126	94	73	306	271	296	514	1,081
3	293	76	65	461	533	275	342	1,150
4	31	47	32	116	128	151	283	562
5	109	33	25	177	170	150	329	649
7	191	159	56	433	259	280	250	789
8	48	19	74	155	57	40	111	208
9	0	0	0	0	0	0	0	0
Total	820	469	478	1,767	1,440	1,282	2,132	4,854

Legend SIC categories
0 Agriculture, forestry, fishing
1 Mining, refinery
2 Consumer products and chemicals
3 Industrial production and assembly
4 Transportation
5 Wholesale and retail
6 Finance (excluded from sample)
7 Profit services
8 Medical and social services
9 Other

Figure 4.3 Distribution of firm-years over SIC categories



Obviously, in line with the difference in sample size between the AACF model and the APE model, the number of firm-years per SIC-category also diverges between the two models. Germany and France show a somewhat similar spread of firm-years over the SIC categories in both models. The UK, on the other hand, exhibits a complete different distribution in each situation.
As discussed at table 4.8, relevance of regression depends on the number of observations used for estimating regression; the more observations the more relevant the calculated regression will be. In both models Germany and the UK show no firm-years in SIC categories 0 and 9, while France shows only nine firm-years in SIC category 0 and none in SIC category 9. Accordingly SIC categories 0 and 9 will not be used for testing hypotheses.

Furthermore table 4.9 substantiates the decision not to eliminate extreme observations from the sample. Such an elimination would further erode the sample size in each SIC category which would endanger the relevance of empirical results.

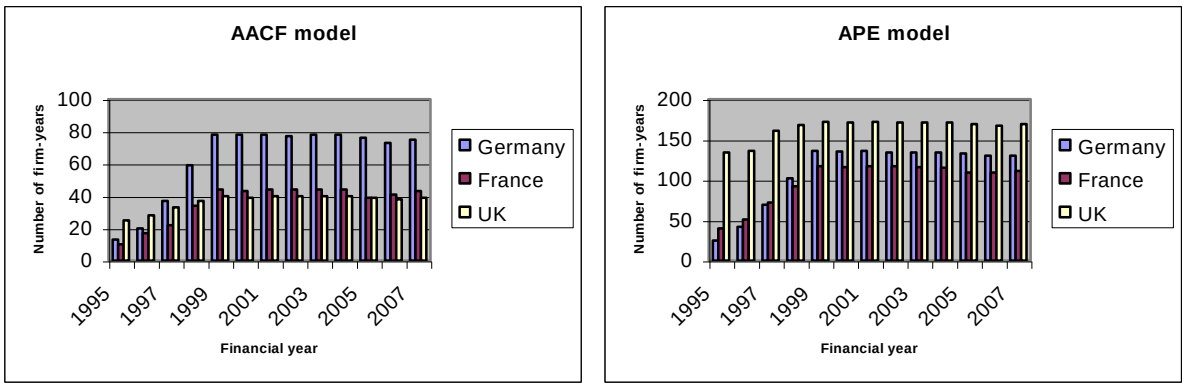
Hypothesis 5 asserts a decline in cross-country conservatism differences as result of accounting harmonization. Table 4.10 presents the number of firm-years per financial year; figure 4.4 presents the graphics of this table.

Table 4.10 Number of firm-years per financial year

Financial	AACF model				APE model			
year	Germany	France	UK	Total	Germany	France	UK	Total
1995	13	10	25	48	25	40	134	199
1996	20	17	28	65	42	51	136	229
1997	37	22	33	92	69	72	161	302
1998	59	34	37	130	102	92	168	362
1999	78	44	40	162	136	117	172	425
2000	78	43	39	160	135	116	171	422
2001	78	44	40	162	136	117	172	425
2002	77	44	40	161	134	117	171	422
2003	78	44	40	162	134	116	171	421
2004*	78	44	40	162	134	115	171	420
2005**	76	39	39	154	133	109	169	411
2006	73	41	38	152	130	109	167	406
2007	75	43	39	157	130	111	169	410
Total	820	469	478	1,767	1,440	1,282	2,132	4,854

* Amending act 2001/65/EC becomes effective
** IFRS regulations 1606/2002 , 2086-2236-2237-2238/2004 become effective

Figure 4.4 Distribution of firm-years over financial years



Again, the number of firm-years in the APE model exceeds the number in the AACF model. However, the distribution of observations over the financial years is quite similar.
As from 2004 the EU amending act has become effective (table 4.6, p.49), and in 2005 IFRS regulations have come into force (table 4.7, p.49). Hypothesis 5 will be verified by comparing accounting conservatism between time frames 1995-2003 and 2004-2007.

Finally table 4.11 presents the compilation of the research model variables from the Compustat database items.

Table 4.11 Compilation of research model variables from Compustat database items

Research model	**Model variables**	**Compustat database items**
Ohlson regression-model	P	PRCCD
Ohlson regression-model	E	IB / CSHOI
Ohlson regression-model	BV	CEQ / CSHOI
AACF model	AAC	IBC -/- OANCF
AACF model	CFO	OANCF
APE model	ΔEit	IBt -/- IBt_{-1}
APE model	ΔEit_{-1}	IBt_{-1} -/- IBt_{-2}

Legend

Model variables			Compustat database items		
P	=	share price	PRCCD	=	price close daily
E	=	accounting earnings per share	CSHOI	=	common shares outstanding - issue
BV	=	book value per share	CEQ	=	common/ordinary equity - total
AAC	=	accounting accruals	IB	=	income before extraordinary items
CFO	=	cash flow from operations	IBC	=	income before extraordinary items (cash flow)
ΔEit	=	change in accounting earnings	OANCF	=	operating activities - net cash flow
ΔEit_{-1}	=	previous year's change in accounting earnings			

Section 5 Results and analysis

This section will present and analyse the outcome of the empirical research.
At the centre of this section is the testing of the six hypotheses phrased in section 3 and ultimately the verification of the tenability of the research thesis.

First I will discuss the descriptive statistics in subsection 5.1.
Next, the empirical results of each of the research settings are successively in subsection 5.2.

5.1 Descriptive statistics

In phase one of the research outline we operate the AACF model and APE model to estimate accounting conservatism, at which the results of the APE model are used as robustness checks on the outcome of the AACF model.
Because each model defines losses (i.e. negative news) differently two separate samples are constructed: AACF model sample and the APE model sample.

Table 5.1 and table 5.2 present pooled year descriptive statistics of these two samples.

Table 5.1 Descriptive statistics AACF model sample

Variable	P *	BV *	E*	AAC **	CFO **
Germany					
Mean	32.52	16.14	1.41	49.64	-16.46
Median	14.01	6.08	.56	8.28	-3.03
Std dev	62.57	43.37	6.72	148.77	143.03
Maximum	739.64	443.93	91.31	1,262.89	1,200.78
Minimum	.23	-22.28	-51.61	-509.30	-3,131.26
No. firm-years		820			
France					
Mean	41.03	20.87	1.54	-99.63	96.82
Median	25.10	12.52	.97	-10.18	21.63
Std dev	47.72	33.27	4.70	543.87	271.77
Maximum	300.28	369.99	52.87	2,569.00	2,696.04
Minimum	.00	-4.21	-24.94	-7,394.06	-1,245.00
No. firm-years		469			
UK					
Mean	3.78	1.57	.20	108.36	-80.03
Median	2.91	1.11	.13	38.24	-11.49
Std dev	3.43	1.80	.70	241.12	271.29
Maximum	22.56	22.38	12.88	1,995.18	1,221.20
Minimum	.01	-.58	-1.49	-515.80	-2,445.09
No. firm-years		478			

* Germany/France in Euro's (€) , UK in pounds sterling (£)
** Germany / France in thousands Euro's (€), UK in thousands pounds sterling (£)

Looking at mean and median of the Ohlson model variables (i.e. P, BV and E) for all three countries in table 5.1 we see that share prices have been valued much higher than the sum of book values and accounting earnings. In Germany, for instance, mean share price (P) is € 32.52 while the total of mean book value (BV) and mean accounting earnings (E) is € 17.55 (€ 16.14 + € 1.41); accounting figures substantiate only 54% of the market price. Apparently market valuation is not entirely based on accounting information; investors use complementary information sources.
Subsection 2.1.1 addressed four important shortages of financial statements that reduce information usefulness of these statements.

Mean and median of AAC and CFO are opposite numbers in all three countries. That is, in Germany and the UK mean and median of AAC are positive, while the mean and median of CFO are negative. The situation in France is just the opposite: negative values for AAC and positive values for CFO.
These results indicate a negative relation between AAC and CFO.

Table 5.2 Descriptive statistics APE model sample

Variable	P *	BV *	E*	ΔEit **	ΔEit-1 **
Germany					
Mean	46.63	24.49	2.85	13.82	11.77
Median	19.16	10.34	1.09	1.15	.44
Std dev	114.95	55.11	9.84	961.92	956.37
Maximum	2,021.02	582.05	163.08	25,450.87	25,450.87
Minimum	.23	-22.28	-51.61	-20,813.97	-20,813.97
No. firm-years			1,440		
France					
Mean	65.64	28.99	2.77	30.51	24.18
Median	43.14	20.78	2.14	2.34	1.13
Std dev	95.04	32.70	4.78	1,258.07	1,243.89
Maximum	951.22	369.99	52.87	23,695.55	23,695.55
Minimum	.00	-8.28	-24.94	-15,734.77	-15,734.77
No. firm-years			1,282		
UK					
Mean	5.74	2.65	.71	22.80	18.93
Median	3.82	1.31	.21	3.52	2.93
Std dev	12.54	22.26	12.11	613.89	566.82
Maximum	481.65	849.45	445.13	11,728.96	11,728.96
Minimum	.01	-4.94	-2.75	-10,257.42	-10,257.42
No. firm-years			2,132		

* Germany/France in Euro's (€) , UK in pounds sterling (£)
** Germany / France in thousands Euro's (€), UK in thousands pounds sterling (£)

Table 5.2 shows similar associations between the Ohlson model variables: accounting variables substantiate only 48% to 59% of market value.

ΔEit and ΔEit-1 are actually the same variable with only a one-year timing difference. Mean and median of ΔEit and ΔEit-1 are positive in all three countries.

Table 5.3 and table 5.4 present pooled-year Pearson and Spearman correlations among model variables for the AACF model sample and APE model sample.

Table 5.3 Correlation among variables in the AACF model sample

Germany	P	BV	E		AAC	CFO
P	1.000	.657*	.670*	AACF	1.000	-.601*
BV	.462*	1.000	.654*	CFO	-.236*	1.000
E	.424*	.732*	1.000			
No. firm-years			820			
France	P	BV	E		AAC	CFO
P	1.000	.755*	.640*	AACF	1.000	-.604*
BV	.624*	1.000	.606*	CFO	-.511*	1.000
E	.524*	.694*	1.000			
No. firm-years			469			
UK	P	BV	E		AAC	CFO
P	1.000	.568*	.602*	AACF	1.000	-.693*
BV	.436*	1.000	.596*	CFO	-.752*	1.000
E	.235*	.719*	1.000			
No. firm-years			478			

Pearson correlations are presented in bottom-left of matrix
Spearman correlations are presented in upper-right of matrix
* significant at the 1% confidence level (2-tailed)
** significant at the 5% confidence level (2-tailed)

In accordance with the rationale of the Ohlson model, correlations between accounting variables (i.e. BV and E) and share prices (P) are positive and significant in all countries.

As already anticipated associations between AAC and CFO are negative.
Both Pearson and Spearman correlations are negative and significant in all countries.
These negative correlations correspond to empirical evidence found by Ball and Shivakumar (2006). In their study Ball and Shivakumar (2006, p.221) distinguish the following two roles of accruals (see subsection 2.2.1, p.25) :

1- the noise reduction role of accruals
   This role generates a negative relation between cash flows and accruals.
2- the asymmetrically timely recognition role of accruals
   This role generates a positive relation between cash flows and accruals.

Ball and Shivakumar (2006, p.214) attribute empirical findings of negative correlations to the assumption that the noise mitigation role of accruals exceeds the timely recognition role.

Table 5.4 Correlation among variables in the APE model sample

Germany	P	BV	E		ΔEit	ΔE_{it-1}
P	1.000	.701*	.737*	ΔEit	1.000	.009
BV	.684*	1.000	.756*	ΔE_{it-1}	-.252*	1.000
E	.741*	.807*	1.000			
No. firm-years			1,440			
France	**P**	**BV**	**E**		**ΔEit**	**ΔE_{it-1}**
P	1.000	.704*	.687*	ΔEit	1.000	.002
BV	.366*	1.000	.702*	ΔE_{it-1}	-.131*	1.000
E	.351*	.647*	1.000			
No. firm-years			1,282			
UK	**P**	**BV**	**E**		**ΔEit**	**ΔE_{it-1}**
P	1.000	.560*	.723*	ΔEit	1.000	-.045**
BV	.012	1.000	.607*	ΔE_{it-1}	.028	1.000
E	.002	.966*	1.000			
No. firm-years			2,132			

Pearson correlations are presented in bottom-left of matrix
Spearman correlations are presented in upper-right of matrix
* significant at the 1% confidence level (2-tailed)
** significant at the 5% confidence level (2-tailed)

Similar to table 5.3 (p.55) all correlations between the Ohlson model variables are positive and significant in the APE model sample.

For APE model variables (i.e. ΔE_{it} and ΔE_{it-1}) Pearson and Spearman coefficients are less pronounced and only negative correlations are significant.

5.2 Results of research settings

Subsections 3.1 and 3.2 explained that we use three research settings with each setting operating a similar research outline that consists of two phases.
In total we will test six hypotheses, that is one hypothesis at each phase of the three research settings (see figure 3.2, p.32).
To test these hypotheses we will make use of the research design and sample, discussed in sections 4.1 and 4.2. The Ohlson model is used to measure value relevance and the AACF/APE model to measure accounting conservatism. The two samples (AACF/APE model sample) are composed of three EU member states over the period 1995-2007.

The empirical results of the three research settings are presented and analysed in the next subsections.

5.2.1 National setting

Hypothesis 1

To verify the presumption that industry conditions impact accounting conservatism the first phase of the national setting assesses the AACF/APE ratios for each industry sector (i.e. SIC category) and compares the outcome between these sectors. Table 5.5 displays the results of the linear AACF/APE regressions.

Table 5.5 AACF/APE model linear regression per SIC

Germany										
	AACF model Unstandardized Coefficients					APE model Unstandardized Coefficients				
SIC	α_0	α_1	α_2	α_3	AACF ratio	α_0	α_1	α_2	α_3	APE ratio
1	41.159 *.048*	-103.863 *.119*	-.787 *.000*	-1.172 *.015*	-1.489	-9.567 *.609*	-7.490 *.838*	.617 *.342*	-.768 *.361*	-1.245
2	-21.761 *.148*	-5.084 *.884*	-.100 *.018*	-2.120 *.000*	-21.200	43.240 *.154*	62.462 *.305*	-.643 *.000*	.581 *.000*	.904
3	-6.919 *.161*	12.420 *.275*	-.155 *.000*	-1.184 *.001*	-7.639	-1.201 *.892*	15.560 *.356*	.527 *.000*	-.561 *.000*	-1.065
4	9.656 *.944*	-11.053 *.963*	-.352 *.866*	6.781 *.041*	19.264	-129.411 *.674*	-417.914 *.470*	.062 *.574*	-.752 *.000*	-12.129
5	3.410 *.315*	.907 *.887*	-.642 *.000*	-.553 *.004*	-.861	8.791 *.028*	-16.953 *.013*	-.413 *.000*	.617 *.000*	1.494
7	1.321 *.529*	-5.996 *.083*	-.845 *.000*	-.688 *.000*	-.814	-.194 *.863*	-6.374 *.002*	-.014 *.863*	-.910 *.000*	-65.000
8	-2.212 *.291*	.646 *.884*	-.643 *.000*	-.995 *.041*	-1.547	32.695 *.308*	-33.166 *.665*	.008 *.954*	-1.062 *.758*	-132.750

France										
	AACF model Unstandardized Coefficients					APE model Unstandardized Coefficients				
SIC	α_0	α_1	α_2	α_3	AACF ratio	α_0	α_1	α_2	α_3	APE ratio
1	8.875 *.903*	28.343 *.809*	-.634 *.000*	1.439 *.000*	2.270	-1.910 *.964*	93.600 *.228*	.338 *.048*	-.096 *.724*	-.284
2	49.624 *.159*	-113.217 *.048*	-1.012 *.000*	.148 *.822*	.146	4.023 *.923*	-35.576 *.633*	.220 *.001*	-1.129 *.000*	-5.132
3	248.413 *.189*	-585.188 *.068*	-1.727 *.000*	.478 *.589*	.277	-47.809 *.358*	16.045 *.864*	.171 *.119*	-.442 *.001*	-2.585
4	75.787 *.017*	-151.432 *.050*	-.870 *.000*	-1.024 *.019*	-1.177	-226.003 *.494*	581.590 *.363*	.017 *.872*	-.340 *.053*	-20.000
5	1.649 *.816*	8.791 *.558*	-.674 *.000*	-1.921 *.497*	-2.850	34.200 *.007*	-18.715 *.424*	-.699 *.000*	.467 *.005*	.668
7	6.576 *.402*	2.863 *.851*	-.942 *.000*	.500 *.088*	.531	3.254 *.631*	-16.833 *.206*	-.133 *.157*	-.350 *.008*	-2.632
8	-15.540 *.307*	16.821 *.761*	-.131 *.710*	.216 *.995*	1.649	3.944 *.647*	-.585 *.972*	-.500 *.244*	.443 *.347*	.886

UK										
	AACF model Unstandardized Coefficients					APE model Unstandardized Coefficients				
SIC	α_0	α_1	α_2	α_3	AACF ratio	α_0	α_1	α_2	α_3	APE ratio
1	19.711 *.005*	2.196 *.868*	-.360 *.000*	-1.016 *.000*	-2.822	11.092 *.470*	12.688 *.668*	.466 *.000*	-.583 *.001*	-1.251
2	-2.186 *.904*	14.955 *.731*	-.864 *.000*	.117 *.953*	.135	27.079 *.254*	-.080 *.998*	-.088 *.107*	-.255 *.017*	-2.898
3	-24.612 *.513*	16.762 *.875*	-.874 *.000*	-1.513 *.007*	-1.731	-1.822 *.853*	7.316 *.677*	-.205 *.003*	-.267 *.025*	-1.302
4	-131.472 *.171*	123.947 *.551*	-.372 *.040*	.161 *.884*	.433	-136.998 *.239*	65.097 *.730*	.490 *.000*	-.761 *.000*	-1.553
5	-31.966 *.506*	-20.669 *.942*	-.541 *.205*	-5.466 *.749*	-10.104	5.529 *.482*	-38.161 *.010*	.045 *.577*	-.630 *.000*	-14.000
7	10.746 *.840*	10.141 *.940*	-1.118 *.000*	1.648 *.310*	1.474	9.519 *.493*	20.039 *.439*	-.547 *.000*	.242 *.051*	.442
8	13.561 *.156*	1.761 *.949*	-.845 *.000*	10.383 *.002*	12.288	-1.048 *.853*	-21.809 *.061*	-.058 *.566*	-1.109 *.000*	-19.121

Significance at 5% confidence level
AACF model: $AACit = \alpha_0 + \alpha_1 DCFOit + \alpha_2 CFOit + \alpha_3 DCFOit \times CFOit + \varepsilon it$
APE model: $\Delta Eit = \alpha_0 + \alpha_1 D\Delta Eit_{-1} + \alpha_2 \Delta Eit_{-1} + \alpha_3 D\Delta Eit_{-1} \times \Delta Eit_{-1} + \varepsilon it$
AACF/APE ratio $=\alpha_3 / /\alpha_2/$
SIC categories 0 and 9 are excluded because of inadequate number of observations

Table 5.5 numerates the AACF/APE ratios of all SIC categories.
However, not all of these ratios are statistically significant. The AACF/APE ratios are calculated from coefficients α_2 and α_3 and therefore only statistically significant coefficients generate significant AACF/APE ratios. For the analysis of the empirical results we will now concentrate only on the significant AACF/APE ratios, which in table 5.5 have been marked gray.

As I recall from subsection 4.1.4 accounting conservatism is represented by positive AACF ratios and negative APE ratios.
In this respect the results of the AACF model are highly remarkable as almost all of the significant AACF ratios are negative. These results indicate non-existence of conservatism; that is, accounting does not recognize bad news sooner than good news. In fact the results confirm quite the opposite: positive news is recognized earlier than negative news is.
The results of the APE model present a more balanced picture. Five SIC categories show evidence of conservatism (i.e. negative APE ratios) while four other SIC categories do not show any proof of conservatism (i.e. positive APE ratios).

For some SIC categories both the AACF ratio and APE ratio are statistically significant. These situations enable us to test the mutual consistency of both models. Ideally both models would produce corresponding results. That is, either evidence of conservatism is found by both models or by none of the models.
For Germany we find consistency of results between the two models for SIC categories 2 and 5. These categories show negative AACF ratios and positive APE ratios; so both models find evidence of no conservatism.
However, with regard to the magnitude of the measured ratios the two models are less harmonious. The APE model generates the highest ratio in category 5, while the AACF model produces the largest ratio in category 2.
For SIC categories 1 and 3 of the UK and SIC category 3 of Germany the models generate incompatible results; for all of these categories both AACF ratios and APE ratios are negative.

Based on these results I must conclude that the two models are not mutually consistent. The obvious reason for the inconsistency is that the models use different, non corresponding definitions of accounting conservatism.

For instance, a year in which a firm faces a decline in profits but is still making positive operating cash flows is classified as a loss-year by the APE model but as a profit-year by the AACF model. Obviously, these differences in classification will impact the results.

Another cause for the found inconsistency is the use of a confined sample in combination with AACF model's stringent loss definition. Due its rigid loss definition the AACF model detects relatively few loss-years. Moreover, as the time frame of the sample is limited to a maximum of 13 firm-years the number of losses found is further reduced. In fact many of the sample firms exhibit just one loss-year. The relative low number of found losses highly affects the reliability of the empirical results as regressions measure conservatism by only one or two loss-year observations.
This problem applies to the APE model to a lesser degree for the following two reasons:

- the total APE model sample is considerably larger than the AACF model sample (see tables 4.8 and 4.9, p.51). The number of sample firms is much larger in the APE model sample which contributes to the relevance of test results,
- due to a more relaxed definition of losses the APE model finds a relatively larger number of loss-years. Consequently assessment of conservatism by the APE model is based on more loss-year observations which generates more accurate results.

From statistical point of view the APE model will produce more accurate regressions and consequently more relevant results.

Hypothesis 1
The degree of accounting conservatism differs between various industries

First we shall look at the outcome of the AACF model:

- for Germany all significant AACF ratios differ significantly from each other: AACF ratios vary from -0.814 (SIC category 7) to -21.200 (SIC category 2),
- for France the only two significant AACF ratios are clearly different: for SIC category 4 the AACF ratio is -1.177 and for SIC category 1 the ratio is 2.270,
- the UK presents three deviating significant AACF ratios ranging from -2.822 for SIC category 1 to 12.888 for SIC category 8.

In each country we find that significant AACF ratios differ between industries.
These results support hypothesis 1.

The APE-model presents the following results:

- all three German significant APE ratios are quite different from each other: APE ratios range from -1.065 to 1.494,
- France produces two deviating significant APE ratios: -5.132 for SIC category 2 and 0.668 for SIC category 5,
- for the UK the APE ratios of SIC categories 1, 3 and 4 are quite similar. However, the APE ratio of SIC category 7 shows a clear deviating result from the other three SIC categories.

Most of the significant APE ratios deviate between the various industries.
These results confirm hypothesis 1.

Based on the empirical results hypothesis 1 is accepted.

<u>Hypothesis 2</u>
In phase two all firms have been classified into three conservatism categories by comparing a firm's individual AACF/APE ratio with the corresponding industry's average AACF/APE ratio.

The following conservatism categories are discerned:
A - low degree of conservatism
B - intermediate degree of conservatism
C - high degree of conservatism
Firms with AACF/APE ratios within the range of one standard error below/above the industry's average AACF/APE ratio are classified into category B. All the other firms are classified into either category A or C.
Subsequently the Ohlson regression is estimated for every conservatism category
Table 5.6 displays the results.

Table 5.6 Ohlson linear regression per conservatism category

Germany								
Conservatism category	AACF model - Unstandardized Coefficients				APE model - Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
A	10.131 *.118*	2.901 *.010*	2.609 *.000*	.240 *.000*	14.754 *.000*	0.722 *0.223*	.977 *.000*	.421 *.000*
B	17.521 *.000*	.537 *.239*	.420 *.000*	.271 *.000*	25.340 *.000*	2.214 *.010*	.611 *.000*	.420 *,000*
C	23.888 *.000*	.356 *.676*	.812 *.000*	.312 *.000*	12.686 *.010*	7.021 *.000*	.795 *.000*	.711 *,000*

France								
Conservatism category	AACF model - Unstandardized Coefficients				APE model - Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
A	15.145 *.000*	3.547 *.000*	1.146 *.000*	.456 *.000*	33.168 *.000*	2.789 *0.000*	.687 *.000*	.229 *.000*
B	24.235 *.000*	1.326 *.043*	.727 *.000*	.419 *.000*	20.829 *.000*	4.569 *.000*	.791 *.000*	.424 *.000*
C	46.454 *.000*	1.976 *.022*	-.311 *.041*	.638 *.047*	42.588 *.000*	4.436 *.031*	.768 *.005*	.092 *.000*

UK								
Conservatism category	AACF model - Unstandardized Coefficients				APE model - Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
A	2.229 *.000*	2.060 *.011*	1.366 *.000*	.333 *.000*	4.241 *.000*	-1.448 *0.000*	1.061 *.000*	.104 *.000*
B	2.146 *.000*	-1.352 *.000*	1.121 *.000*	.227 *.000*	4.956 *.000*	-.189 *.001*	.094 *.001*	.018 *.004*
C	1.491 *.012*	1.013 *.574*	.902 *.029*	.375 *.000*	5.077 *.000*	4.854 *.018*	.042 *.926*	.011 *.018*

Significance at 5% confidence level
Ohlson model: $P_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 BV_{it} + \varepsilon_{it}$
R^2 = combined explanatory relevance of accounting earnings (E) and book value (BV) for market value (P)
Conservatism categories : A = low degree of conservatism
B = intermediate degree of conservatism
C = high degree of conservatism

Hypothesis 2
Value relevance declines for increasing levels of accounting conservatism

In the Ohlson regression R^2 is deployed as proxy of value relevance. R^2 measures the extent to which market value is explained by accounting earnings and book values.
The higher R^2 the more value relevant accounting information is at assessing market values.
For all countries R^2 is found to be statistically significant for all categories at both the AACF model and APE model.
In line with hypothesis 2 I expect R^2 to be the highest at category A and the lowest at category C.

For the AACF model table 5.6 presents the following results:

- Germany exhibits increase in R^2 for increasing levels of conservatism,
- for France we observe increase in R^2 from category A to category C,
- the UK also gives evidence of increase in R^2 from category A to category C.

In sum, all countries show evidence of a rise of value relevance for increasing levels of accounting conservatism. These results contradict the assumed relation between value relevance and accounting conservatism of hypothesis 2.
Consequently hypothesis 2 is rejected.

The APE model exhibits the following results:

- Germany shows increase in R^2 from category A to category C,
- France shows a more ambiguous pattern: R^2 rises from category A to category B but then decreases from category B to category C. Overall we observe a decline in R^2,
- in the UK we find R^2 to decline for increasing levels of conservatism, which corresponds to hypothesis 2.

Evidence of the APE model is not univocal and for that reason I will reject hypothesis 2.

Based on evidence of the AACF model and the APE model hypothesis 2 is not accepted.

5.2.2 International setting

Hypothesis 3
Hypothesis 3 presumes cross-country accounting conservatism differences that are caused by accounting regime differences. For that we will compare the AACF/APE ratios between the three European countries. As discussed in subsection 3.2.2 (p.35), from a pure theoretical point of view we cannot predict which regime is expected to be the most conservative. And so empirical results must establish the actual conservatism differences between the accounting regimes.

Test results on hypothesis 1 demonstrate that accounting conservatism deviates between industries. Because each country has its own unique industry composition it would be erroneous to compare the AACF/APE ratios without controlling for these industry composition differences. Therefore we need to use AACF/APE ratios that are based on equal industry compositions in all three countries.
A country's industry-controlled AACF/APE ratio is calculated as the mean of AACF/APE ratios from all underlying SIC categories, presented in table 5.5 (pp. 57-58). All industries equally contribute to the overall AACF/APE ratio.
For calculating a country's industry-controlled AACF/APE ratio we use ratios of all underlying SIC categories, including the statistically non-significant ratios. Imposing a restriction that allows the use of only statistically significant ratios would make the research impracticable. In that case only SIC categories with significant ratios in all three countries would be suitable.
For the AACF model only SIC category 1 meets the requirement of having significant ratios in all three countries, and for the APE model none of the categories meets the requirement at all.
The bottom line of table 5.7 displays the industry-controlled AACF/APE ratios of all countries.

Table 5.7 Industry-controlled AACF/APE ratio per country

SIC	AACF ratio			APE ratio		
	Germany	France	UK	Germany	France	UK
1	-1.489	2.270	-2.822	-1.245	-.284	-1.251
2	-21.200	.146	.135	.904	-5.132	-2.898
3	-7.639	.277	-1.731	-1.065	-2.585	-1.302
4	19.264	-1.177	.433	-12.129	-20.000	-1.553
5	-.861	-2.850	-10.104	1.494	.668	-14.000
7	-.814	.531	1.474	-65.000	-2.632	.442
8	-1.547	1.649	12.288	-132.750	.886	-19.121
Industry-controlled	-2.041	.121	-.047	-29.970	-4.154	-5.669

SIC categories 0 and 9 are excluded because of inadequate number of observations

Hypothesis 3
The degree of accounting conservatism differs between countries with different regimes

The results of the AACF model present the following cross-country conservatism differences:

- Germany's industry-controlled AACF ratio of -2.041 points that there is no conservatism,
- with a ratio of -0.047 the UK takes place in-between the other two countries,
- France's ratio of 0.121 stands for a highly moderate degree of conservatism.

The APE model exhibits the following picture:

- Germany's industry-controlled APE ratio of -29.970 represents the highest degree of conservatism of all three countries, which is strongly caused by the extreme APE ratio of SIC category 8,
- the UK 's ratio of -5.669 gives evidence of a considerable amount of conservatism,
- France shows the lowest degree of conservatism with a ratio of -4.154.

Just like at the national setting, discussed in the previous subsection, the results of the two models are found to be incompatible. The two models show quite opposite results. Nevertheless in both models each country's industry-controlled ratio substantially differs from the ratios of the other two countries, especially for Germany.

Based on the results hypothesis 3 is accepted.

Hypothesis 4
In table 5.8 the three sample countries have been allocated to one of the conservatism categories depending on the found industry-controlled AACF/APE ratios.

Table 5.8 Allocation of countries into conservatism categories

Conservatism categories	**AACF model**	**APE model**
A - low degree of conservatism	Germany	France
B - intermediate degree of conservatism	UK	UK
C - high degree of conservatism	France	Germany

Next the Ohlson regression is estimated for each conservatism category.
The results are displayed in table 5.9.

Table 5.9 Ohlson linear regression per conservatism category

Conservatism category	AACF model - Unstandardized Coefficients				APE model - Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
A	22.497	1.722	.471	.229	34.700	3.900	.695	.395
	.000	*.000*	*.000*	*.000*	*.000*	*.000*	*.000*	*.000*
B	2.284	-.798	1.051	.203	5.612	-.160	.091	.002
	.000	*.006*	*.000*	*.000*	*.000*	*.067*	*.055*	*.158*
C	23.270	1.786	.720	.405	15.995	6.324	.516	.570
	.000	*.000*	*.000*	*.000*	*.000*	*.000*	*.000*	*.000*

Significance at 5% confidence level
Ohlson model: $Pit = \alpha_0 + \alpha_1 Eit + \alpha_2 BVit + \varepsilon it$
R^2 = combined explanatory relevance of accounting earnings (E) and book value (BV) for market value (P)
Conservatism categories : A = low degree of conservatism
B = intermediate degree of conservatism
C = high degree of conservatism

Hypothesis 4
Value relevance declines for countries with increasing levels of accounting conservatism

In accordance to hypothesis 4 we presume R^2 will gradually decrease from category A to category C.

Unlike the presumption expressed by hypothesis 4 the results of the AACF model give evidence of quite the opposite. The results show that as accounting conservatism increases from category A to category C so does value relevance.
Also the APE model presents increase in value relevance for increasing levels of accounting conservatism.
Another striking element is that though in both models the UK holds a mediate position (i.e. category B) it always presents the lowest degree of value relevance.
Based on the empirical evidence of both the AACF model and the APE model hypothesis 4 is not accepted.

5.2.3 International harmonization of accounting standards setting

Initially I intended to investigate a sample scope that would start in 1975 so that it would include the enactment of the Fourth and Seventh EU Directives (see figure 3.5, p.38). However, due to limited availability of data the actual sample had to be curtailed to a 13 year period starting from 1995 (see figure 4.1, p.49). As a consequence it is no longer able to empirically examine the impact of the two harmonization directives on cross-country conservatism differences. Instead empirical results on hypotheses 5 and 6 will now be explained from the impact of amending acts and IFRS regulations that were enacted during the period 1995-2007.

Because of the impossibility to empirically examine to the impact of the Fourth and Seventh EU Directives on international accounting harmonization this subsection will start with a literature search for relevant prior research on this issue.

<u>Prior studies to international harmonization of accounting standards</u>
Van der Tas (1988, p.157) defines harmonization as the coordination of two or more objects. “Comparability can be considered as an increase in the degree of consensus concerning the choice between alternative methods of accounting for an item in the financial reports.” (1988, p.159) The maximum degree of international harmony is established when all reporting firms

in all countries use the same accounting method for a particular financial statement item (Cañibano and Mora 2000, p.353).
Archer, Delvaille and McLeay (1996) operate a definition of distributional harmony. In their opinion harmony is achieved when the distribution of selected accounting methods is the same in each country.

Van der Tas (1988, p.158) distinguishes the two following types of harmonization:

1- Material/de facto harmonization: harmonization of financial statements (e.g. harmonization of accounting practice),
2- Formal/de jure harmonization: harmonization of accounting standards (e.g. harmonization of accounting regulations).

Subsequently he discerns two domains of harmonization:

1- Measurement harmonization: harmonization of applied accounting methods,
2- Disclosure harmonization: harmonization of extent and detail of disclosure.

Within the scope of this research setting we are looking for evidence of international material measurement harmonization in a European context. Possible evidence of international material measurement harmonization proofs that in different countries firms are using similar recognition and valuation methods to account for particular financial statement items. As a consequence of more firms using comparable accounting methods international accounting differences will decline, and so will the degree of cross-country conservatism differences.

Previous studies have come with two methods to measure the comparability of financial statements:

1- Concentration indices
   Van der Tas (1988) introduced the H, C and I indices. These indices measure the concentration of applied accounting methods at which results vary from 0 (no harmony) to 1 (maximum harmony).
2- Statistical models
   Tay and Parker (1990, p.85) criticize concentration indices for lacking statistical significance tests to assess the likelihood of results. Instead they advocate the use of statistical models, which compare actual distribution of firms among available accounting methods with random/expected distribution. Significant differences between actual distribution and random/expected distribution is regarded as evidence of distributional harmony.
   Archer, Delvaille and McLeay (1996) developed six statistical models to measure distributional harmony.

Examining overall harmony of financial statements is rather difficult as we would have to measure comparability of all accounting items and then aggregate the results into one final conclusion. Obviously this procedure is impractical.
Instead, prior studies examine harmony for accounting items/transactions separately. Popular accounting items for investigation are recognition and valuation of: goodwill, deferred taxes, leasing and foreign currency translation.
The obvious advantage of the single item/transaction approach is that it generates more detailed and refined results. Important shortage of this methodology, however, is that it often does not provide a clear and definite view on overall accounting harmony. For some accounting items harmony may have increased while for other items it has declined. Consequently, prior research has not come up with conclusive evidence and convincing conclusions on the impact of the Fourth and Seventh EU Directives on accounting harmonization. Studies rather report trends in international harmony which are partly attributed to the effect of formal harmonization. In that these studies provide circumstantial evidence of the impact of the Fourth and Seventh EU Directives on international accounting harmonization.

Hereafter I will discuss the outcome of some prior studies on the effect of the Fourth and Seventh EU Directives on international material measurement harmonization.

Van der Tas (1992) uses the C-index to examine the impact of the two EU directives on the degree of harmony for deferred taxes in nine EU member states during the period 1978-1988. The outcome shows an ambivalent picture:

- for individual accounts there is significant evidence of positive impact of the Fourth EU Directive,
- regarding the consolidated accounts the impact of the Fourth EU Directive is not significant.

Van der Tas comments that his findings are not statistically valid as he did not use a representative sample.

Emenyonu and Gray (1992) conduct a research to accounting differences in 1989 between Germany, France and the UK by comparing accounting practice for six items. Despite the enactment of the EU directives they find evidence of statistically significant accounting differences for five items. In their comment Emenyonu and Gray explain that measurement provisions of the Fourth EU Directive impose only a small amount of restrictions on accounting and so (too) much flexibility is left.

In 1992 Walton performed a case study to the comparability of French and British financial statements. French and British participants were asked to prepare the statements of a fictitious construction company. Results showed little degree of accounting harmony on both international and national level of comparison. Walton concludes that despite considerable efforts the EU has not established accounting harmony on international level or even on national level.

To assess the size of international harmonization Archer, Delvaille and McLeay (1996) use statistical models to examine distribution of accounting policies used on deferred taxes and goodwill in eight European countries between 1986/87 and 1990/91. The authors conclude that the EU has made good improvements on formal harmonization but achieved little progress towards harmonization of cross-country accounting practices.
In line with Emenyonu and Gray they argue that EU directives concede a wide range of accounting methods. Moreover member states are granted much latitude at converting the EU directives into national laws. As a result the directives generate only a small contribution to international material harmony.

Cañibano and Mora (2000) draw the very same conclusion. They state that the EU has put great efforts in the harmonization of accounting standards, but that the actual provisions of the directives are only minimal and insufficient for achieving comparability.
Their study examines the degree of international material harmony for four accounting items between accounting periods 1991/92 and 1996/97, using a sample of 85 companies from thirteen European countries.
Results for all four items show an increase in harmony. Moreover, most of the results proof to be statistically significant as well. Cañibano and Mora ascribe these findings largely to spontaneous harmonization, i.e. companies are voluntary adopting similar accounting methods in order to improve understandability and comparability of their financial statements, and only marginally to formal harmonization.
In their analysis they assert that the EU directives achieve only little international material harmony. They even posit the opposite relation between formal and material harmonization. That is, accounting practice is harmonizing at greater pace than accounting legislation is, and this lead of material harmony on formal harmony will put pressure on EU legislators to attune directives/regulation to existing accounting practice.

On the whole these prior studies report little evidence of international material measurement harmonization. Moreover, they conclude that the EU directives have contributed little to this process because these directives provide a rough accounting framework and leaves much space to diversity. Or just like Van Hulle states “rules are often minimum rules and it is not uncommon to have options for Member States and/or for companies.” (1992, p.161)
Thorell and Whittington report that EU harmonization has been more successful in areas of format and disclosure and less in measurement (1994, p.219).
By contrast, studies designate spontaneous harmonization as important explanation for increases in material harmony.

Hypothesis 5
Hypothesis 5 asserts a decline in cross-country conservatism differences due to international accounting harmonization.
We just have learned from prior studies that there is only a small effect of formal harmonization on international material measurement harmony. Nevertheless, in this study we deploy a methodology that uses accounting standards harmonization as proxy of international accounting harmonization.
As from 2004 (table 4.6 and 4.7, p.49) the EU has enacted a number of significant harmonization amending acts and regulations relating to the introduction of IFRS.
For testing hypothesis 5 the sample is splitted into the following two time frames:

- 1995-2003: period before enactment of amending acts/regulations
- 2004-2007: period as from enactment of amending acts/regulations

For each country the industry-controlled AACF/APE ratios are estimated for both time frames. Like in the international setting the industry-controlled AACF/APE ratios are calculated from all underlying SIC categories (excluding SIC categories 0 and 9).
Due to the impact of international accounting harmonization we expect cross-country differences in industry-controlled AACF/APE ratios to be smaller in time frame 2004-2007 than in time frame 1995-2003.

From statistical point of view there are some comments to be made on this research outline. First, the number of observations in time frame 1995-2003 is approximately twice the size of time frame 2004-2007. In general, the more observations the more accurate regression results will be. And so theoretically results of the first time frame should be more accurate.
Second, like already discussed in subsection 5.2.1 (p.59), a considerable amount of the sample firms report few loss-years. Actually there are some firms that report only one loss-year, especially at the AACF model. And so due to the split up of firm-years into time frames some firms will report no losses at one of the time frames. Strictly speaking one has to eliminate these firms from the sample because we cannot estimate the degree of accounting conservatism without loss-year observations.
However, compliance with this procedure would imply a considerable diminution of the sample size. In order to sustain a tolerable sample size we shall not carry through such elimination. Moreover, I assume loss-years are evenly distributed among years on aggregate level. Consequently the difficulty of firms reporting no losses does now apply equally to each time frame. And so industry-controlled AACF/APE ratios are still comparable between the two time frames.

Table 5.10 presents the industry-controlled AACF/APE ratios of all countries for both time frames.

Table 5.10 Industry-controlled AACF/APE ratio per time frame per country

AACF model sample						
	Time frame 1995 - 2003			Time frame 2004 - 2007		
SIC	Germany	France	UK	Germany	France	UK
1	-1.224	2.171	-3.839	-	10.346	-1.053
2	-9.489	-.483	1.122	-12.505	6.880	-.120
3	-3.284	.383	-1.663	-29.725	-3.523	-3.630
4	19.892	-1.257	-.014	-145.309	130.636	-
5	-.988	.752	-13.239	-3.220	-10.089	-4.680
7	-.206	.640	1.395	-20.625	-1.848	-0.487
8	-2.066	-842.232	9.613	-4.029	3.658	-126.028
Industry-controlled	.376	-120.004	-.946	-35.902	19.437	-22.666

APE model sample						
	Time frame 1995 - 2003			Time frame 2004 - 2007		
SIC	Germany	France	UK	Germany	France	UK
1	-1.401	2.286	.779	-.968	-6.153	-11.185
2	1.174	-5.429	.264	-5.695	-4.614	-2.778
3	.234	-107.667	-.135	-1.071	1.551	-4.097
4	.638	.944	.537	.127	-54.900	-3.003
5	-2.560	1.154	-7.391	-1.130	.094	-2.738
7	-6.649	.615	.778	-23.350	-5.073	-17.625
8	-182.167	.975	-49.760	.498	97.462	.087
Industry-controlled	-27.247	-15.303	-7.847	-4.513	4.052	-5.906

SIC categories 0 and 9 are excluded because of inadequate number of observations

Hypothesis 5
The degree of cross-country differences in accounting conservatism declines as EU accounting directives/regulation are implemented

Table 5.10 shows the following results on the AACF model sample

- time frame 1995-2003: industry-controlled AACF ratios range from 0.376 (Germany) to -120.004 (France); cross-country conservatism difference is 120.380.
- time frame 2004-2007: industry-controlled AACF ratios are ranging from 19.437 (France) to -35.902 (Germany); cross-country conservatism difference is 55.339.

Since enactment of the harmonization acts/regulations in 2004/2005 international conservatism difference has declined hugely from 120.380 to 55.339 (decline rate of 54%).

Table 5.10 presents the following outcome of the APE model sample:

- time frame 1995-2003: industry-controlled APE ratios range from -7.847 (France) to -27.247 (Germany); cross-country conservatism difference is 19.400.

- time frame 2004-2007: industry-controlled APE ratios vary from 4.052 (France) to -5.906 (UK); cross-country conservatism difference is 9.958.

During the second time frame cross-country conservatism difference declined from 19.400 to 9,958 (decline rate 49%).

In accordance to hypothesis 5 these results show a considerable decline in international accounting conservatism differences after implementation of the EU amending acts and regulations.
What's more, both models present quite similar decline rates (54% and 49%) which obviously contributes to the credibility of the evidence found.
Based on these empirical results hypothesis 5 is accepted.

Hypothesis 6

Once having found evidence of decreasing conservatism differences we now investigate cross-country differences in value relevance for the two time frames.
Table 5.11 shows the results of the Ohlson regression for both the AACF model sample and APE model sample.

Table 5.11 Ohlson linear regression per time frame per country

AACF model sample								
Conservatism category	Time frame 1995 - 2003 Unstandardized Coefficients				Time frame 1995 - 2003 Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
Germany	4.434 *.000*	-.022 *.069*	-.004 *.002*	.038	5.935 *.002*	4.275 *.000*	1.021 *.000*	.484
France	23.154 *.000*	2.403 *.000*	.862 *.000*	.252	17.880 *.000*	.716 *.245*	.757 *.000*	.772
UK	2.323 *.000*	-.910 *.004*	.896 *.000*	.136	2.158 *.000*	4.049 *.000*	.650 *.002*	.446

APE model sample								
Conservatism category	Time frame 1995 - 2003 Unstandardized Coefficients				Time frame 1995 - 2003 Unstandardized Coefficients			
	α_0	α_1 (E)	α_2 (BV)	R^2	α_0	α_1 (E)	α_2 (BV)	R^2
Germany	20.833 *.000*	6.482 *.000*	.481 *.000*	.567	9.709 *.000*	4.908 *.000*	.615 *.000*	.535
France	40.495 *.000*	4.301 *.000*	.710 *.000*	.135	24.547 *.000*	3.589 *.000*	.597 *.000*	.274
UK	5.439 *.000*	-.090 *.381*	.049 *.379*	.001	1.781 *.000*	7.611 *.000*	.824 *.000*	.642

Significance at 5% confidence level
Ohlson model: $Pit = \alpha_0 + \alpha_1 Eit + \alpha_2 BVit + \varepsilon it$
R^2 = combined explanatory relevance of accounting earnings (E) and book value (BV) for market value (P)

Hypothesis 6
Cross-country differences in value relevance are positively associated to cross-country differences in accounting conservatism

In accordance to hypothesis 6 we assume cross-country value relevance differences will decline from time frame 1995-2003 to time frame 2004-2007.

Table 5.11 presents the following results on the AACF model sample:

- time frame 1995-2003: R^2 varies from 0.038 (Germany) to 0.252 (France); cross-country value relevance difference is 0.214.
- time frame 2004-2007: R^2 is ranging from 0.446 (UK) to 0.772 (France): cross-country value relevance difference is 0.326.

Comparing the two time frames we find an increase in international value relevance difference from 0.214 to 0.326 (increase rate 52%).
Opposite to our assumption we find no positive relation between cross-country conservatism difference (decline rate 54%) and cross-country value relevance difference (increase rate 52%).
As a consequence hypothesis 6 is rejected.

On the APE model sample table 5.11 displays the following outcome:

- time frame 1995-2003: R^2 range from 0.001 (UK) to 0.567 (Germany) ; cross-country value relevance difference is 0.566.
- time frame 2004-2007: R^2 is ranging from 0.274 (France) to 0.642 (UK) : cross-country value relevance difference is 0.368.

Results show that in time frame 2004-2007 international value relevance difference has decreased from 0.566 to 0.368 (decline rate 35%).
In line with hypothesis 6 these results demonstrate a positive relation between cross-country conservatism difference (decline rate 49%) and international value relevance difference (decline rate 35%).
Accordingly hypothesis 6 is accepted.

The AACF model sample and APE model sample draw incompatible conclusions on the validity of hypothesis 6. However, considering the fact that we have found falsifying evidence, hypothesis 6 is no longer tenable.
Based on evidence of both the AACF model sample and the APE model sample hypothesis 6 is not accepted.

Section 6 Summary and conclusions

In section 5 the empirical findings were presented and analysed. The final sequel in this study is to validate the tenability of the research thesis and to answer the research question.

First I will summarize the research setup and its empirical findings in subsection 6.1
In the next subsection I will draw a definite conclusion on the tenability of the research thesis and answer the research question consistently. Because the empirical findings require some additional explanation and interpretation I will also discuss some limitations to this study that allows us to view the results in the proper context.
Subsection 6.3 will focus on the relevance of the study to accounting literature. I will expound the contribution of the research and discuss some (dis)similarities with prior studies.
To conclude, subsection 6.4 will give recommendations for future research.

6.1 Summary

Subsection 1 - Problem statement and research thesis
Accounting standard-setters strive for financial statements providing useful information for making economic decisions. To that end they have discerned a number of qualitative characteristics of financial statements in order to assure information usefulness of these statements. Some of these characteristics, however, are less compatible with each other; prudence and neutrality are two potential conflicting qualitative characteristics that need to be balanced at composing the annual accounts.
Accounting conservatism is a radical approach to the prudence characteristic. It generates the understatement of accounting earnings and net assets. As a result accounting conservatism will upset the balance between prudence and neutrality and consequently harm information usefulness of the financial statements.
From theoretic viewpoint I conjecture that information usefulness is negatively affected by accounting conservatism. And so the research question of the study is:
Does accounting conservatism negatively impact value relevance of financial statements?

The aim of this study is to answer the research question by empirical investigation, at which value relevance is deployed as proxy of information usefulness.
In harmony with the research question the study examines the following research thesis:
Financial statements of firms practicing accounting conservatism are less value relevant than financial statements of firms not practicing accounting conservatism.

Subsection 2 - Literature review
The literature review discusses definitions and characteristics of information usefulness and accounting conservatism. Subsequently, it examines relevant accounting research to both phenomena.

Subsection 3 - Research settings and research outline
The research is conducted in three different settings:
1- national setting
2- international setting
3- international harmonization of accounting standards setting
Each setting examines the validity of the research thesis from a different angle.

In order to investigate whether value relevance declines for increasing levels of accounting conservatism, one first needs to discern different levels of conservatism. For that purpose all three settings operate a similar research outline that consists of two phases:
a- phase one; measures levels of accounting conservatism (i.e. conservatism categories),
b- phase two; measures value relevance for each level of accounting conservatism.

Phase one serves as supporting stage by assessing and classifying different levels of conservatism. Thereupon these levels of conservatism are employed for testing the tenability of the thesis in phase two. Accordingly, hypotheses of phase one facilitate hypotheses of phase two.

Subsection 4 - Research design and sample selection
The research design defines proxies and research models that are used for measuring value relevance and accounting conservatism. Value relevance is estimated by the combined value relevance of accounting earnings and book value (R^2) of the Ohlson regression model. Accounting conservatism is assessed by the AACF ratio (AACF model) and the APE ratio (APE model). Deployment of two conservatism research models enables us to carry out robustness checks on results.
The research sample is compiled from marketable publicly traded firms in Germany, France and the UK over the period 1995-2007.

Subsection 5 - Results and analysis
1- National setting
a- Phase one
Hypothesis 1 assumes the extent of accounting conservatism will differ between various industry sectors (SIC) because of differences in characteristics/conditions. Results in all three countries establish evidence of significant deviations in AACF ratios and APE ratios for different industries. Consequently, hypothesis 1 is accepted.

b- Phase two
For hypothesis 2 we assess the extent of value relevance for each conservatism category. In line with the research thesis we expect value relevance to decline for increasing levels of conservatism.
However, the empirical findings do not found this presupposition. On the contrary, results predominantly show increase in value relevance for increasing levels of conservatism. Therefore, hypothesis 2 is rejected.

2- International setting
a- Phase one
The basic assumption of hypothesis 3 is that variations in accounting regimes will generate differences in the extent of conservatism. The three countries used in our sample represent different accounting regimes. Accordingly in this setting we investigate and compare the degree of conservatism between these countries. Results of the AACF/APE model show substantial differences between the sample countries. And so the outcome of both models substantiates hypothesis 3.

b- Phase two
In harmony with the research thesis hypothesis 4 expects to find decrease in value relevance for increasing levels of conservatism from one country to the other. Unlike the assumption results do not demonstrate this decline in value relevance. Like at hypothesis 2, empirical findings again do not substantiate a negative relation between value relevance and accounting conservatism. Hypothesis 4 is rejected.

3- International harmonization of accounting standards setting
a- Phase one
In this setting we examine the effect of international accounting standards harmonization on conservatism. Hypothesis 5 conjectures that international conservatism differences will decline because countries are increasingly using similar accounting standards due to accounting harmonization.

Empirical results of both conservatism models show that cross-country conservatism differences considerably declined after enactment of EU directives/regulations in 2004/2005. And so hypothesis 5 is accepted.

b- Phase two

Hypothesis 6 assumes that decrease in cross-country conservatism differences will lead to a decline in cross-country value relevance differences.
Results of the APE model provide supporting evidence for this presumption. However, the AACF model negates hypothesis 6 as results on the three sample countries show increase in value relevance differences for decreasing conservatism differences. Consequently, hypothesis 6 is rejected.

6.2 Conclusions and limitations

In subsection 5.2 we discussed the results found on testing the hypotheses.
Based on empirical findings we accept all three supporting hypotheses of phase one (i.e. hypotheses 1, 3 and 5). These hypotheses relate to the impact of industry differences, international accounting regime variations and international accounting harmonization on the degree of accounting conservatism.

The actual verification of the research thesis is performed by hypotheses 2, 4 and 6 in phase two. The empirical results of the three settings demonstrate no supporting evidence for any of these hypotheses. On the whole the results demonstrate no negative association between value relevance and accounting conservatism, i.e. a decline in value relevance for increasing levels of conservatism.
Based on these empirical results we reject the research thesis (worded in subsection 1.5), and so: *financial statements of firms practicing accounting conservatism are **not** less value relevant than financial statements of firms not practicing accounting conservatism*.

The ultimate purpose of this study is to answer the research question (phrased in subsection 1.5). For that, we deduce the thesis/hypotheses from the research question and then conduct a research to the validity of these premises.
From rejecting the research thesis we now have to conclude that:
*empirical evidence demonstrates that accounting conservatism does **not** negatively impact value relevance of financial statements*.

The results in this study negate the validity of the research thesis. Therefore we draw the conclusion that the empirical evidence in this study does not demonstrate a negative relation between value relevance and accounting conservatism. Based on our test results we have drawn the accurate conclusion. Yet, it would be premature to generally apply this conclusion without considering the research setup critically.
Basically we have the following two possible situations:

a- either the presumed negative relation between value relevance and accounting conservatism does <u>not</u> exist, and so our findings are appropriate, or
b- the negative relation does exist but is not demonstrated by the research, in which case our results are deluding. It is conceivable that due to limitations of the research setup results may misrepresent the relation between value relevance and conservatism.

<u>Sub a</u>
For the first situation the research thesis is proved to be invalid. Obviously, one will ask for an explanation for non-existence of the negative relation, especially since this relation seems to be quite convincing.
As discussed in subsection 4.1.2 (p.41) we have assumed capital markets to be semi-strong efficient. That is, investors are supposed to correctly assess information usefulness of annual accounts and thereby to distinguish conservative from non-conservative accounts.
In reality, however, it may turn out to be more problematic for investors to recognize conservative financial statements. Accounting conservatism is performed through discretionary accounting decisions and most investors will not be able to verify legitimacy of these decisions. It may take quite some time for investors to identify conservative financial statements. Thus, a plausible explanation for rejection of the research thesis is the non-validity of the efficient market hypothesis (EMH).

<u>Sub b</u>
At the second situation the negative association actually does exist but is not detected by the research. In other words, the results are not reliable as they fail to notice presence of the negative relation.

For the empirical investigation we have defined and employed a setup/methodology for examining the research thesis/hypotheses. This setup has been carefully constructed in order to find accurate results. Nevertheless, there are a still some limitations to this setup that may have disrupted the outcome.
The following limitations to the research setup possibly bring about inaccurate results:

- Reliability of AACF/APE linear regression models
  For estimating size of accounting conservatism both linear regression models operate a dummy variable to discriminate loss-years from profitable years, with each model using a different definition of losses. As discussed in subsection 5.2.1 (p.59) the number of loss-years found in the sample is scarce, especially at the AACF model because of its rigid definition of losses.
  This relative low number of loss-years affects the reliability of the results as linear regressions assess conservatism by only a few loss-year observations.

- Relevance of sample period
  Value relevance and accounting conservatism are rather indefinite variables that cannot be observed easily. For that reason prior studies have often used longitudinal techniques to detect increases/decreases in variables over longer periods of time.
  The initial plan was to examine the sample period 1975-2007 (figure 3.5, p.38). Unfortunately, the Compustat Global database only provides substantial sizes of financial data as from 1995 and so the sample is curtailed to 13 year period.
  In general the longer the sample period, the more relevant results will be. The necessity to reduce the sample period from 33 years to 13 years may have influenced the relevance of the results considerably.

- Distortion by other factors
  For composing the research setup we recognize the impact of industry conditions, accounting regimes and accounting harmonization on conservatism. Subsequently we employ three research settings as to control for the impact of these factors. Moreover, we compose a sample from countries with comparable economic and market conditions in order to eliminate possible cross-country distortion by these factors.
  In attempt to assess the relation between value relevance and accounting conservatism the impact of several factors is considered and eliminated.
  In spite of these efforts it is likely that the relation is also affected by other, undetermined circumstances which have not been controlled for. And so test results may possibly be disrupted by the impact of other factors.

- Extreme observations
  Due to the curtailment of the sample period to 13 years the number of sample items available for examination is heavily reduced. In order to maintain a sufficient number of sample items extreme observations have not been eliminated from the sample. Research results may possibly be distorted by these extreme observations.

6.3 Relevance of study

Accounting literature and standard-setting frameworks generally conceive conservatism to be harmful to information usefulness of financial statements. Though this assumption is quite plausible, yet it has not been extensively tested. The contribution of this study is that it examines the validity of the assumed negative relation between accounting conservatism and value relevance. Subsequently, in retrospect the outcome of this study confirms/negates conclusions on the relation drawn by prior research.

Like discussed in the previous subsection our results do not substantiate the assumed relation. However, on the basis of just one empirical research it would be pretentious to claim that the assumption is inaccurate or even to doubt the adequacy of prior studies. By means of additional empirical evidence we would probably gain a more profound understanding of the relation. Possibly additional evidence might demonstrate our conclusion to be inaccurate as it could be disrupted by some shortcomings in the research setup. Just as much, the additional empirical evidence might perhaps sustain our findings and conclusion.
For the time being we hold on to the conclusion that empirical findings do not give evidence of a negative relation between accounting conservatism and value relevance.

On comparing our research findings with results of prior studies the following notable (dis)similarities appear:

- Ryan and Zarowin (2003) find evidence that a decline in value relevance over 30 years is caused by increases in accounting conservatism and earnings lags. In contrast to our results these authors do find evidence of a negative relation between accounting conservatism and value relevance.

- Joos and Lang (1994) investigate differences in value relevance for Germany, France and the UK, using the Ohlson regression. Their ranking of countries corresponds to the ranking we have found in the AACF model in table 5.9 (p.63). That is, value relevance is most prominent in France, next in Germany and finally in the UK.

  Furthermore it is quite remarkable to establish that at both conservatism models (AACF/APE model) the size of value relevance appears to be the least in the UK.
  In explanation of that Joos and Lang adduce the impact of cross-country conservatism differences. They reason that as (earnings) conservatism is most present in the UK the level of value relevance will be the lowest there. In other words Joos and Lang assume a negative relation between accounting conservatism and value relevance. Yet, they do not actually assess the level of conservatism in each of these countries but instead conjecture on cross-country conservatism differences.
  Our empirical results, however, demonstrate that the UK is just average at both conservatism models. Moreover, we have found no evidence of a negative relation between conservatism and value relevance.
  Accordingly, Joos and Lang's explanation that the low level of value relevance in the UK is caused by a high degree of conservatism is not substantiated by factual evidence.

  Finally, Joos and Lang examine the impact of EU accounting standards harmonization on cross-country convergence of value relevance. Results show no increase in accounting harmony after implementation of EU directives. So the authors conclude that the EU directives have had minor impact on harmonization of European accounting practices.
  These findings are in line with the results of the AACF model in table 5.11 (p.68). These results do not show a decline in cross-country value relevance differences after enactment of the EU amending acts/regulations.

- Ali and Hwang (2000) study the impact of legal regimes on value relevance. They posit that value relevance will generally be more profound in common law countries due to their institutional characteristics. Research yields supporting evidence of their presupposition and consequently they conclude that code law countries generate lower levels of value relevance than common law countries do.
  However, our results in table 5.9 (p.63) claim the exact opposite. That is, at both the AACF model and the APE model common law countries (e.g. the UK) produce the least value relevant financial statements, whereas Germany and France change from ranking places in these two models.
  In subsection 3.2.2 (table 3.1, p.34) we found these institutional characteristics to be evenly allocated to both legal regimes; as long as we do not know the importance of each characteristic we cannot determine which regime will outperform the other.
  And so Ali and Hwang's presupposition and conclusion on cross-country value relevance differences are questioned for both theoretical and empirical reasons.

- For the period 1990-1998 Giner and Rees (2001) examine the extent of accounting conservatism in Germany, France and the UK. One of the proxies they use is a model that incorporates persistency of good/bad news in previous earnings. This proxy corresponds to the APE model.
  They report the highest level of conservatism for the UK. This is inconsistent to the results displayed in table 5.8 (p.62), which shows the UK holds the intermediate position on the degree of conservatism.

- For testing hypotheses 5 and 6 we examine the impact of EU accounting harmonization on accounting conservatism and value relevance. After enactment of EU amending acts/regulations both international accounting conservatism differences on the AACF/APE model and international value relevance differences on the APE model considerably declined. These results indicate a considerable increase in material accounting harmonization.
  Our findings contrast with assertions made by Emenyonu and Gray (1992), Walton (1992), and Archer, Delvaille and McLeay (1996), who claim material accounting harmonization has only progressed to a small extent because EU directives grant (too) much flexibility.
  By contrast Cañibano and Mora (2000) report significant supporting evidence of increasing European accounting harmony. Accordingly their results correspond to the evidence in this study.

6.4 Suggestions for future research

The aim of this study is to examine the assumed negative relation between accounting conservatism and value relevance. Though this relation has often been assumed yet it has never been empirically tested.
In this study we do not find empirical results that support the tenability of the assumption. However, it would be premature to invalidate the assumption on the basis of just one empirical research. Most likely additional empirical research will refine our understanding of the relation and by that contribute to accounting literature.

First suggestion for future research is to study the relation between the two phenomena for the USA. Not only will the results of such a study provide us with relevant reference material but probably the results will also give a more accurate representation of the relation between conservatism and value relevance for the following reasons:

- Reliability of AACF/APE linear regression models will improve.
  Databases have stored financial data of American firms for over several decades. Application of the AACF/APE regressions will generate more accurate estimations as conservatism is assessed using considerably more (loss) observations per firm and because the number of participating sample firms increases.
- Relevance of sample period will improve.
  Availability of financial data over several decades enables research to use a longitudinal approach. Evidence from a longer sample period will increase relevance of results.
- No distortion of results due to legal regime differences.
  Examination in the USA has the advantage of not having to reckon with possible disruptive impact of legal regime differences on results. Accordingly, elimination of legal regime differences contributes to thorough assessment of the assumed relation.
- No distortion of results due to accounting standards differences.
  In the American research setup sample firms will report financial statements using US GAAP. Consequently there are no accounting standards differences that need to be controlled for in order to estimate the assumed association.

Another recommendation for future studies is to deploy other proxies/research models for assessing value relevance and accounting conservatism. In this study we use two different models for measuring accounting conservatism and many times we observe discrepancies between the results of each model. Possibly these differences are caused by one of the limitations of the research setup, i.e. reliability of AACF/APE linear regression models, and will diminish when using some larger sample base.
Nevertheless, deployment of other research models may offer new insights.

Finally, I call on future research to examine the influence of other factors on the relation. Although several factors have been controlled for in this study perhaps our results may have been distorted by other unknown circumstances. Additional research may explore the impact of these other factors and accordingly contribute to the interpretation of the results of this study.

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Appendix

Appendix A: Constituent firms in AACF sample

Germany - constituent firms AACF sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	ADIDAS AG	DE0005003404	3	13	1
2	AHLERS AG	DE0005009732	2	13	1
3	AUGUSTA TECHNOLOGIE AG	DE000A0D6612	3	11	5
4	AURUBIS AG	DE0006766504	3	10	1
5	BALDA AG	DE0005215107	3	9	1
6	BAYWA AG	DE0005194062	5	10	2
7	BEATE UHSE AG	DE0007551400	5	10	2
8	BERTRANDT AG	DE0005232805	8	11	1
9	BILFINGER BERGER AG	DE0005909006	1	13	1
10	BIOTEST AG	DE0005227235	2	13	6
11	BRUEDER MANNESMANN AG	DE0005275507	5	11	4
12	CENIT AG SYSTEMHAUS	DE0005407100	7	11	2
13	CENTROTEC SUSTAINABLE AG	DE0005407506	3	10	1
14	CONSTANTIN FILM AG	DE0005800809	7	9	4
15	COR AG FINANCIAL	DE0005083208	7	10	4
16	CURANUM AG	DE0005240709	8	9	1
17	DEUTZ AG	DE0006305006	3	11	1
18	DOUGLAS HOLDING AG	DE0006099005	5	13	1
19	DRILLISCH AG	DE0005545503	4	11	2
20	EINHELL GERMANY AG	DE0005654933	3	10	2
21	ELEXIS AG	DE0005085005	3	9	2
22	EMPRISE MGMT CONSULTING AG	DE0005710503	7	10	6
23	ESCADA AG	DE0005692107	2	10	3
24	FJA AG	DE0005130108	7	9	4
25	FORTEC ELEKTRONIK VERTRIEBS	DE0005774103	3	9	3
26	FREENET AG	DE000A0EAMM0	4	10	3
27	GFT TECHNOLOGIES AG	DE0005800601	7	10	3
28	GILDEMEISTER AG	DE0005878003	3	13	3
29	GRAMMER AG	DE0005895403	2	10	1
30	GRAPHIT KROPFMUEHL AG	DE0005896005	3	10	2
31	HAWESKO HOLDING AG	DE0006042708	5	10	1
32	HENKEL AG & CO KGAA	DE0006048432	2	13	1
33	HOCHTIEF AG	DE0006070006	1	9	1
34	HOEFT & WESSEL AG	DE0006011000	3	11	3
35	INTEGRALIS AG	DE0005155030	7	10	6
36	IVU TRAFFIC TECHNOLOGIES AG	DE0007448508	7	9	4
37	JAXX AG	DE000A0JRU67	7	9	5
38	JENOPTIK AG	DE0006229107	3	11	3
39	JETTER AG	DE0006264005	3	10	3
40	K&S AG	DE0007162000	2	11	1
41	KLOECKNER-WERKE AG	DE0006780000	3	13	3
42	KOENIG & BAUER AG	DE0007193500	3	10	1
43	KUKA AG	DE0006204407	3	11	2
44	LPKF-LASER & ELECTRONICS AG	DE0006450000	3	11	1
45	MARSEILLE-KLINIKEN AG	DE0007783003	8	10	2
46	MASTERFLEX AG	DE0005492938	2	9	1
47	MAXDATA AG	DE0006581309	3	10	4
48	MEDICLIN AG	DE0006595101	8	9	1
49	MEDION AG	DE0006605009	5	10	1
50	MENSCH & MASCHINE SOFTWARE	DE0006580806	5	12	6
51	P&I PERSONAL & INFORMATIK AG	DE0006913403	7	10	2
52	PARAGON AG	DE0005558696	3	9	2
53	PC-WARE INFO TECHNOLOGIES AG	DE0006910904	7	10	2
54	PNE WIND AG	DE000A0JBPG2	4	10	6
55	PUMA AG RUDOLF DASSLER SPORT	DE0006969603	3	13	2
56	SARTORIUS AG	DE0007165631	3	13	1
57	SCHALTBAU HOLDING AG	DE0007170300	3	12	2
58	SCHLOTT GRUPPE	DE0005046304	2	12	1
59	SECUNET SECURITY NETWORKS AG	DE0007276503	7	9	5
60	SGL CARBON SE	DE0007235301	3	12	2
61	SHS VIVEON AG	DE000A0XFWK2	7	10	6
62	SINGULUS TECHNOLOGIES AG	DE0007238909	3	11	2
63	SIXT AG	DE0007231326	7	9	4
64	SOFTM SOFTWARE & BERATUNG	DE0007249104	7	10	1
65	SOFTWARE AG	DE0003304002	7	9	1
66	SOLON SE	DE0007471195	3	9	8
67	SPLENDID MEDIEN AG	DE0007279507	7	9	2
68	STADA ARZNEIMITTEL AG	DE0007251803	2	11	2
69	SUEDZUCKER AG	DE0007297004	2	11	1
70	SYNAXON AG	DE0006873805	5	9	1
71	TA TRIUMPH-ADLER AG	DE0007495004	5	11	1
72	TELES AG INFORMATIONSTECHNOL	DE0007454902	7	10	6
73	TRIA IT-SOLUTIONS AG	DE000A0XYL53	7	9	8
74	TV LOONLAND AG	DE0005348403	7	9	2
75	UMS UNITED MEDICAL SYS INTL	DE0005493654	8	9	1
76	VBH HOLDING AG	DE0007600702	5	13	6
77	WASHTEC AG	DE0007507501	3	12	1
78	WEBER (GERRY) INTERNATNL AG	DE0003304101	2	13	3
			Total	**820**	**204**

* ISIN = International Securities Identification Number

France - constituent firms AACF sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	ALCATEL-LUCENT	FR0000130007	3	13	4
2	ALSTOM SA	FR0010220475	1	10	4
3	ALTEN SA	FR0000071946	7	9	1
4	ALTRAN TECHNOLOGIES SA	FR0000034639	8	9	1
5	ATARI	FR0000052573	7	9	8
6	BOLLORE	FR0000039299	4	12	2
7	BULL SA	FR0010266601	3	11	6
8	CANAL PLUS SA	FR0000125460	4	11	2
9	CHARGEURS INTERNATIONAL SA	FR0000130692	2	13	3
10	CLUB MEDITERRANEE SA	FR0000121568	7	13	2
11	COMPAGNIE DES ALPES	FR0000053324	7	10	1
12	CS COMMUNICATION & SYSTEMES	FR0007317813	7	12	5
13	ETABLISSEMENTS MAUREL & PROM	FR0000051070	1	11	4
14	ETAM DEVELOPPEMENT SCA	FR0000035743	5	11	1
15	EUROFINS SCIENTIFIC	FR0000038259	8	10	1
16	FIMALAC SA	FR0000037947	7	9	1
17	FINANCIERE DE L'ODET SA	FR0000062234	4	12	2
18	GFI INFORMATIQUE SA	FR0004038099	7	10	2
19	GIFI	FR0000075095	5	9	2
20	GL EVENTS	FR0000066672	7	10	1
21	GROUPE CENTRE RECHERCHES IND	FR0000036675	7	9	1
22	GROUPE OPEN SA	FR0004050300	7	9	2
23	HAVAS	FR0000121881	7	13	1
24	IMS-INTL METAL SERVICE SA	FR0000033904	5	13	4
25	INGENICO SA	FR0000125346	3	9	3
26	INTER PARFUMS SA	FR0004024222	2	11	3
27	LACIE GROUP SA	FR0000054314	3	10	2
28	LAURENT-PERRIER & CO	FR0006864484	2	9	2
29	LECTRA	FR0000065484	7	13	3
30	NICOX SA	FR0000074130	2	10	9
31	PHARMAGEST INTERACTIVE	FR0000077687	7	9	1
32	REMY COINTREAU	FR0000130395	2	13	1
33	RHODIA	FR0010479956	2	9	2
34	SEQUANA	FR0000063364	2	10	2
35	SOITEC	FR0004025062	3	10	5
36	SYNERGIE SA	FR0000032658	7	13	4
37	TECHNIP COFLEXIP SA	FR0000131708	1	11	2
38	THALES	FR0000121329	3	13	1
39	THOMSON	FR0000184533	3	10	1
40	TONNELLERIE FRANCOIS FRERES	FR0000071904	2	10	1
41	TOUAX SA	FR0000033003	4	12	2
42	TRANSGENE	FR0005175080	2	9	9
43	UBI SOFT ENTERTAINMENT SA	FR0000054470	7	11	2
44	VILMORIN CLAUSE & CIE SA	FR0000052516	0	9	1
			Total	**469**	**117**

* ISIN = International Securities Identification Number

United Kingdom - constituent firms AACF sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	AGGREKO PLC	GB0001478998	7	11	1
2	BABCOCK INTERNATIONAL GROUP	GB0009697037	8	13	2
3	BAE SYSTEMS PLC	GB0002634946	3	13	1
4	BALFOUR BEATTY PLC	GB0000961622	8	13	1
5	BARRATT DEVELOPMENTS PLC	GB0000811801	1	13	3
6	BELLWAY PLC	GB0000904986	1	13	2
7	BERKELEY GROUP HLDGS PLC	GB00B02L3W35	1	13	5
8	BIG YELLOW GROUP PLC	GB0002869419	4	9	3
9	BOVIS HOMES GROUP PLC	GB0001859296	1	11	4
10	BRITISH SKY BROADCASTING GRP	GB0001411924	4	13	1
11	BTG-BRITISH TECHNOLOGY GROUP	GB0001001592	2	13	9
12	CARILLION PLC	GB0007365546	1	10	3
13	CITY OF LONDON GROUP PLC	GB0001991685	8	13	3
14	CONNAUGHT PLC	GB00B139BQ35	8	9	1
15	CRODA INTERNATIONAL PLC	GB0002335270	2	13	1
16	DANA PETROLEUM PLC	GB0033252056	1	11	1
17	EMERALD ENERGY PLC	GB00B01NJN34	1	12	5
18	FILTRONIC PLC	GB0003362992	3	13	2
19	INTERNATIONAL POWER PLC	GB0006320161	4	10	1
20	INVENSYS PLC	GB00B19DVX61	7	13	2
21	JKX OIL & GAS PLC	GB0004697420	1	12	2
22	KIER GROUP PLC	GB0004915632	1	11	1
23	MELROSE RESOURCES PLC	GB0009354589	1	9	1
24	MORGAN CRUCIBLE CO PLC	GB0006027295	3	13	1
25	MOTHERCARE PLC	GB0009067447	5	13	1
26	PACE PLC	GB0006672785	3	13	3
27	RANDGOLD RESOURCES LTD	GB00B01C3S32	1	12	5
28	RANK GROUP PLC	GB00B1L5QH97	7	13	1
29	REDROW PLC	GB0007282386	1	13	3
30	REGUS PLC	JE00B3CGFD43	7	9	3
31	ROBERT WISEMAN DAIRIES PLC	GB0007442014	2	12	1
32	SDL PLC	GB0009376368	7	10	1
33	SERCO GROUP PLC	GB0007973794	8	13	1
34	SHIRE LTD	JE00B2QKY057	2	9	1
35	SPIRENT COMMUNICATIONS	GB0004726096	3	13	1
36	TATE & LYLE PLC	GB0008754136	2	13	1
37	TAYLOR WIMPEY PLC	GB0008782301	1	13	2
38	VT GROUP PLC	GB0031729733	8	13	1
39	WH SMITH PLC	GB00B2PDGW16	5	12	1
40	WILLIAM SINCLAIR HLDGS PLC	GB0009665661	2	13	1
			Total	**478**	**83**

Appendix B: Constituent firms in APE sample

Germany - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	ADIDAS AG	DE0005003404	3	13	2
2	AHLERS AG	DE0005009732	2	13	5
3	ALL FOR ONE MIDMARKET AG	DE0005110001	7	10	5
4	ALTANA AG	DE0007600801	2	11	2
5	AMADEUS FIRE AG	DE0005093108	7	10	2
6	ARCANDOR AG	DE0006275001	4	13	5
7	AS CREATION TAPETEN AG	DE0005079909	2	10	2
8	AUGUSTA TECHNOLOGIE AG	DE000A0D6612	3	11	4
9	AURUBIS AG	DE0006766504	3	10	4
10	AXEL SPRINGER VERLAG AG	DE0005501357	2	13	2
11	BALDA AG	DE0005215107	3	9	2
12	BASF SE	DE0005151005	2	13	4
13	BAYER AG	DE0005752000	2	13	4
14	BAYWA AG	DE0005194062	5	10	3
15	BEATE UHSE AG	DE0007551400	5	10	3
16	BEIERSDORF AG	DE0005200000	2	10	1
17	BERTRANDT AG	DE0005232805	8	11	3
18	BILFINGER BERGER AG	DE0005909006	1	13	5
19	BIOTEST AG	DE0005227235	2	13	3
20	BMW-BAYER MOTOREN WERKE AG	DE0005190003	3	12	3
21	BOEWE SYSTEC AG	DE0005239701	3	12	2
22	BRUEDER MANNESMANN AG	DE0005275507	5	11	5
23	BURGBAD AG	DE000A0EKLW0	2	9	3
24	CELESIO AG	DE000CLS1001	5	11	3
25	CENIT AG SYSTEMHAUS	DE0005407100	7	11	2
26	CENTROTEC SUSTAINABLE AG	DE0005407506	3	10	2
27	CEWE COLOR HOLDING AG	DE0005403901	7	12	4
28	COMPUGROUP HOLDING AG	DE0005437305	7	9	3
29	CONSTANTIN FILM AG	DE0005800809	7	9	4
30	COR AG FINANCIAL	DE0005083208	7	10	2
31	CURANUM AG	DE0005240709	8	9	2
32	DEUTSCHE LUFTHANSA AG	DE0008232125	4	10	3
33	DEUTSCHE POST AG	DE0005552004	4	9	3
34	DEUTSCHE TELEKOM	DE0005557508	4	11	4
35	DEUTZ AG	DE0006305006	3	11	4
36	DOUGLAS HOLDING AG	DE0006099005	5	13	6
37	DRAEGERWERK AG	DE0005550636	3	11	3
38	DRILLISCH AG	DE0005545503	4	11	2
39	DYCKERHOFF AG	DE0005591036	3	13	4
40	EINHELL GERMANY AG	DE0005654933	3	10	3
41	ELEXIS AG	DE0005085005	3	9	2
42	ELRINGKLINGER AG	DE0007856023	3	9	1
43	EMPRISE MGMT CONSULTING AG	DE0005710503	7	10	4
44	ESCADA AG	DE0005692107	2	10	3
45	FIELMANN AG	DE0005772206	3	12	2
46	FJA AG	DE0005130108	7	9	2
47	FORTEC ELEKTRONIK VERTRIEBS	DE0005774103	3	9	1
48	FRAPORT AG FRANKFURT AIRPORT	DE0005773303	4	9	2
49	FREENET AG	DE000A0EAMM0	4	10	4
50	FUCHS PETROLUB AG	DE0005790430	2	13	2
51	FUNKWERK AG	DE0005753149	3	9	2
52	GEA GROUP AG	DE0006602006	8	9	2
53	GESCO AG	DE0005875900	3	9	3
54	GFT TECHNOLOGIES AG	DE0005800601	7	10	2
55	GILDEMEISTER AG	DE0005878003	3	13	1
56	GRAMMER AG	DE0005895403	2	10	4
57	GRAPHIT KROPFMUEHL AG	DE0005896005	3	10	3
58	H & R WASAG AG	DE0007757007	2	9	2
59	HAWESKO HOLDING AG	DE0006042708	5	10	3
60	HEIDELBERGCEMENT AG	DE0006047004	3	10	3
61	HEIDELBERGER DRUCKMASCHINEN	DE0007314007	3	12	5
62	HENKEL AG & CO KGAA	DE0006048432	2	13	3
63	HOCHTIEF AG	DE0006070006	1	9	3
64	HOEFT & WESSEL AG	DE0006011000	3	11	5
65	HORNBACH HOLDING AG	DE0006083439	5	10	5
66	HORNBACH-BAUMARKT AG	DE0006084403	5	9	3
67	HUGO BOSS AG	DE0005245534	2	13	2
68	INTEGRALIS AG	DE0005155030	7	10	5
69	IVU TRAFFIC TECHNOLOGIES AG	DE0007448508	7	9	4
70	JAXX AG	DE000A0JRU67	7	9	2
71	JENOPTIK AG	DE0006229107	3	11	5
72	JETTER AG	DE0006264005	3	10	3
73	JUNGHEINRICH AG	DE0006219934	3	9	1
74	K&S AG	DE0007162000	2	11	3
75	KLOECKNER-WERKE AG	DE0006780000	3	13	6
76	KOENIG & BAUER AG	DE0007193500	3	10	3
77	KRONES AG	DE0006335003	3	12	2
78	KUKA AG	DE0006204407	3	11	4
79	LEIFHEIT AG	DE0006464506	3	11	4
80	LINDE AG	DE0006483001	2	11	3
81	LOEWE AG	DE0006494107	3	9	2
82	LPKF-LASER & ELECTRONICS AG	DE0006450000	3	11	3
83	LUDWIG BECK AG	DE0005199905	5	11	4
84	MAN SE	DE0005937007	3	13	2
85	MARSEILLE-KLINIKEN AG	DE0007783003	8	10	2
86	MASTERFLEX AG	DE0005492938	2	9	3
87	MAXDATA AG	DE0006581309	3	10	6
88	MEDICLIN AG	DE0006595101	8	9	2
89	MEDION AG	DE0006605009	5	10	3
90	MENSCH & MASCHINE SOFTWARE	DE0006580806	5	12	4

* ISIN = International Securities Identification Number

Germany - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
91	MERCK KGAA	DE0006599905	2	13	4
92	METRO AG	DE0007257503	5	11	3
93	MVV ENERGIE AG	DE000A0H52F5	4	9	2
94	NEMETSCHEK AG	DE0006452907	7	9	2
95	P&I PERSONAL & INFORMATIK AG	DE0006913403	7	10	1
96	PARAGON AG	DE0005558696	3	9	3
97	PC-WARE INFO TECHNOLOGIES AG	DE0006910904	7	10	2
98	PNE WIND AG	DE000A0JBPG2	4	10	4
99	PROCON MULTIMEDIA AG	DE0005122006	7	9	2
100	PROGRESS-WERK OBERKIRCH AG	DE0006968001	3	10	1
101	PROSIEBEN SAT 1 MEDIA AG	DE0007771172	4	12	3
102	PUMA AG RUDOLF DASSLER SPORT	DE0006969603	3	13	2
103	R STAHL AG	DE0007257727	3	12	4
104	RHEINMETALL AG	DE0007030009	3	13	3
105	RWE AG	DE0007037129	4	11	2
106	SALZGITTER AG-STAHL & TECHNO	DE0006202005	3	10	3
107	SARTORIUS AG	DE0007165631	3	13	2
108	SCHALTBAU HOLDING AG	DE0007170300	3	12	5
109	SCHLOTT GRUPPE	DE0005046304	2	12	4
110	SECUNET SECURITY NETWORKS AG	DE0007276503	7	9	4
111	SGL CARBON SE	DE0007235301	3	12	4
112	SHS VIVEON AG	DE000A0XFWK2	7	10	4
113	SINGULUS TECHNOLOGIES AG	DE0007238909	3	11	2
114	SIXT AG	DE0007231326	7	9	2
115	SOFTING AG	DE0005178008	7	9	4
116	SOFTM SOFTWARE & BERATUNG	DE0007249104	7	10	3
117	SOFTWARE AG	DE0003304002	7	9	4
118	SOLON SE	DE0007471195	3	9	2
119	SPLENDID MEDIEN AG	DE0007279507	7	9	2
120	SUEDZUCKER AG	DE0007297004	2	11	1
121	SURTECO SE	DE0005176903	2	9	2
122	SYNAXON AG	DE0006873805	5	9	4
123	TA TRIUMPH-ADLER AG	DE0007495004	5	11	5
124	TAKKT AG	DE0007446007	5	9	2
125	TECHNOTRANS AG	DE000A0XYGA7	3	10	4
126	TELES AG INFORMATIONSTECHNOL	DE0007454902	7	10	6
127	TRIA IT-SOLUTIONS AG	DE000A0XYL53	7	9	4
128	TUI AG	DE000TUAG000	4	13	4
129	TV LOONLAND AG	DE0005348403	7	9	3
130	UMS UNITED MEDICAL SYS INTL	DE0005493654	8	9	3
131	VBH HOLDING AG	DE0007600702	5	13	4
132	VILLEROY & BOCH AG	DE0007657231	3	11	5
133	VOLKSWAGEN AG	DE0007664005	3	11	4
134	WASHTEC AG	DE0007507501	3	12	5
135	WEBER (GERRY) INTERNATNL AG	DE0003304101	2	13	3
136	WESTAG & GETALIT AG	DE0007775231	2	9	4
			Total	**1,440**	**424**

* ISIN = International Securities Identification Number

France - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	AIR FRANCE - KLM	FR0000031122	4	12	5
2	ALCATEL-LUCENT	FR0000130007	3	13	4
3	ALSTOM SA	FR0010220475	1	10	4
4	ALTEN SA	FR0000071946	7	9	2
5	ALTRAN TECHNOLOGIES SA	FR0000034639	8	9	1
6	ASSYSTEM SA	FR0000074148	7	9	3
7	ATARI	FR0000052573	7	9	3
8	ATOS ORIGIN	FR0000051732	7	13	3
9	BENETEAU SA	FR0000035164	3	9	1
10	BOIRON SA	FR0000061129	2	12	4
11	BOLLORE	FR0000039299	4	12	4
12	BONDUELLE	FR0000063935	2	11	4
13	BONGRAIN SA	FR0000120107	2	11	2
14	BOUYGUES SA	FR0000120503	1	13	6
15	BULL SA	FR0010266601	3	11	5
16	CANAL PLUS SA	FR0000125460	4	11	4
17	CAP GEMINI SA	FR0000125338	7	13	3
18	CASINO GUICHARD-PERRACHON SA	FR0000125585	5	9	2
19	CATERING INTL SERVICES	FR0000064446	5	9	2
20	CEGID GROUP	FR0000124703	7	9	2
21	CGG VERITAS	FR0000120164	1	13	4
22	CHARGEURS INTERNATIONAL SA	FR0000130692	2	13	5
23	CIE GEN DES ETABLIS MICHELIN	FR0000121261	3	11	5
24	CLUB MEDITERRANEE SA	FR0000121568	7	13	4
25	COMPAGNIE DES ALPES	FR0000053324	7	10	3
26	CS COMMUNICATION & SYSTEMES	FR0007317813	7	12	5
27	DANONE	FR0000120644	2	10	3
28	DASSAULT SYSTEMS SA	FR0000130650	7	9	2
29	EIFFAGE	FR0000130452	1	10	1
30	ERAMET	FR0000131757	1	13	6
31	ETABLISSEMENTS MAUREL & PROM	FR0000051070	1	11	3
32	ETAM DEVELOPPEMENT SCA	FR0000035743	5	11	4
33	EURO DISNEY SCA	FR0010540740	7	9	5
34	EUROFINS SCIENTIFIC	FR0000038259	8	10	2
35	EXEL INDUSTRIES	FR0004527638	3	11	3
36	FAIVELEY SA	FR0000053142	3	13	4
37	FAURECIA SA	FR0000121147	2	11	6
38	FIMALAC SA	FR0000037947	7	9	2
39	FINANCIERE DE L'ODET SA	FR0000062234	4	12	4
40	FLEURY MICHON	FR0000074759	2	9	2
41	FRANCE TELECOM	FR0000133308	4	11	4
42	GAUMONT SA	FR0000034894	7	13	5
43	GDF SUEZ	FR0010208488	4	10	3
44	GFI INFORMATIQUE SA	FR0004038099	7	10	2
45	GIFI	FR0000075095	5	9	2
46	GL EVENTS	FR0000066672	7	10	1
47	GROUPE CENTRE RECHERCHES IND	FR0000036675	7	9	3
48	GROUPE FLO SA	FR0004076891	5	11	4
49	GROUPE GASCOGNE	FR0000124414	2	11	6
50	GROUPE LDC	FR0000053829	2	12	4
51	GROUPE NEURONES	FR0004050250	7	9	1
52	GROUPE OPEN SA	FR0004050300	7	9	3
53	GROUPE PSB INDUSTRIES	FR0000060329	2	9	3
54	GUERBET SA	FR0000032526	3	11	2
55	GUYENNE ET GASCOGNE SA	FR0000120289	5	9	2
56	HAVAS	FR0000121881	7	13	4
57	HERMES INTERNATIONAL	FR0000052292	3	13	1
58	HIGH CO SA	FR0000054231	8	11	5
59	IMERYS	FR0000120859	3	13	3
60	IMS-INTL METAL SERVICE SA	FR0000033904	5	13	5
61	INGENICO SA	FR0000125346	3	9	4
62	IPSOS SA	FR0000073298	8	10	2
63	LACIE GROUP SA	FR0000054314	3	10	3
64	LAFARGE SA	FR0000120537	3	11	3
65	LAGARDERE (GROUPE)	FR0000130213	2	13	4
66	LAURENT-PERRIER & CO	FR0006864484	2	9	4
67	LE CARBONE-LORRAINE	FR0000039620	3	13	4
68	LECTRA	FR0000065484	7	13	6
69	LISI	FR0000050353	3	13	3
70	L'OREAL SA	FR0000120321	2	13	2
71	LVMH MOET HENNESSY L VUITTON	FR0000121014	2	13	2
72	MANUTAN INTERNATIONAL SA	FR0000032302	5	13	5
73	METROPOLE TV-(M6)	FR0000053225	4	12	3
74	NICOX SA	FR0000074130	2	10	6
75	NORBERT DENTRESSANGLE	FR0000052870	4	13	3
76	PARTOUCHE	FR0000053548	7	10	3
77	PERNOD RICARD SA	FR0000120693	2	12	4
78	PEUGEOT SA	FR0000121501	3	13	6
79	PHARMAGEST INTERACTIVE	FR0000077687	7	9	1
80	PIERRE & VACANCES	FR0000073041	7	9	1
81	PLASTIC OMNIUM SA	FR0000124570	2	11	4
82	PPR SA	FR0000121485	5	11	3
83	PUBLICIS GROUPE SA	FR0000130577	7	9	1
84	RECYLEX SA	FR0000120388	3	9	3
85	REMY COINTREAU	FR0000130395	2	13	6
86	RENAULT SA	FR0000131906	3	13	6
87	REXEL GROUP	FR0010451203	5	11	2
88	RHODIA	FR0010479956	2	9	3
89	ROBERTET SA	FR0000039091	2	10	2
90	RUBIS & CIE	FR0000121253	5	13	4

* ISIN = International Securities Identification Number

France - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
91	SAFRAN SA	FR0000073272	3	9	2
92	SAINT-GOBAIN (CIE DE)	FR0000125007	5	13	3
93	SANOFI-AVENTIS	FR0000120578	2	12	1
94	SCHNEIDER ELECTRIC SA	FR0000121972	4	13	1
95	SEB SA	FR0000121709	3	11	4
96	SECHE ENVIRONNEMENT SA	FR0000039109	4	10	2
97	SEQUANA	FR0000063364	2	10	5
98	SODEXO	FR0000121220	5	9	3
99	SOITEC	FR0004025062	3	10	2
100	SOPRA GROUP	FR0000050809	7	9	3
101	SPERIAN PROTECTION	FR0000060899	3	13	5
102	SPIR COMMUNICATION SA	FR0000131732	2	9	2
103	SYNERGIE SA	FR0000032658	7	13	3
104	TECHNIP COFLEXIP SA	FR0000131708	1	11	2
105	TELEVISION FRANCAISE 1	FR0000054900	4	13	5
106	THALES	FR0000121329	3	13	3
107	THOMSON	FR0000184533	3	10	3
108	TONNELLERIE FRANCOIS FRERES	FR0000071904	2	10	2
109	TOTAL	FR0000120271	2	13	3
110	TOUAX SA	FR0000033003	4	12	3
111	TOUPARGEL GROUPE	FR0000039240	5	9	1
112	TRANSGENE	FR0005175080	2	9	4
113	UBI SOFT ENTERTAINMENT SA	FR0000054470	7	11	4
114	VALEO SA	FR0000130338	3	13	6
115	VILMORIN CLAUSE & CIE SA	FR0000052516	0	9	2
116	VIRBAC SA	FR0000031577	2	11	1
117	VIVENDI SA	FR0000127771	4	10	2
			Total	**1,282**	**380**

* ISIN = International Securities Identification Number

United Kingdom - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
1	AEGIS GROUP PLC	GB0009657569	7	13	2
2	AGGREKO PLC	GB0001478998	7	11	3
3	AMEC PLC	GB0000282623	1	13	8
4	ANGLO AMERICAN PLC	GB00B1XZS820	1	12	4
5	ANTOFAGASTA PLC	GB0000456144	1	13	4
6	ARM HOLDINGS PLC	GB0000595859	3	10	3
7	ARRIVA PLC	GB0002303468	4	13	4
8	ASHTEAD GROUP PLC	GB0000536739	7	13	5
9	ASSOCIATED BRITISH FOODS PLC	GB0006731235	2	13	6
10	ASTRAZENECA PLC	GB0009895292	2	13	6
11	ATKINS (WS) PLC	GB0000608009	8	13	5
12	AVEVA GROUP PLC	GB00B15CMQ74	7	12	2
13	BABCOCK INTERNATIONAL GROUP	GB0009697037	8	13	5
14	BAE SYSTEMS PLC	GB0002634946	3	13	7
15	BALFOUR BEATTY PLC	GB0000961622	8	13	7
16	BARR (AG) PLC	GB0000803477	2	13	3
17	BARRATT DEVELOPMENTS PLC	GB0000811801	1	13	1
18	BAT-BRITISH AMER TOBACCO PLC	GB0002875804	2	13	4
19	BBA AVIATION PLC	GB00B1FP8915	4	13	5
20	BELLWAY PLC	GB0000904986	1	13	2
21	BERKELEY GROUP HLDGS PLC	GB00B02L3W35	1	13	3
22	BG GROUP PLC	GB0008762899	4	12	5
23	BHP BILLITON GROUP (GBR)	GB0000566504	1	11	2
24	BIG YELLOW GROUP PLC	GB0002869419	4	9	2
25	BODYCOTE PLC	GB00B3FLWH99	3	13	3
26	BOVIS HOMES GROUP PLC	GB0001859296	1	11	1
27	BP PLC	GB0007980591	2	13	5
28	BRITISH AIRWAYS PLC	GB0001290575	4	13	6
29	BRITISH POLYTHENE INDS PLC	GB0007797425	2	13	7
30	BRITISH SKY BROADCASTING GRP	GB0001411924	4	13	4
31	BROWN (N) GROUP PLC	GB00B1P6ZR11	5	13	4
32	BSS GROUP PLC	GB00B09BY452	5	13	3
33	BT GROUP PLC	GB0030913577	4	13	6
34	BTG-BRITISH TECHNOLOGY GROUP	GB0001001592	2	13	8
35	BUNZL PLC	GB00B0744B38	5	12	5
36	CABLE & WIRELESS PLC	GB0001625572	4	13	6
37	CADBURY PLC	GB00B2PF6M70	2	12	4
38	CAIRN ENERGY PLC	GB00B1RZDL64	1	12	6
39	CARILLION PLC	GB0007365546	1	10	3
40	CARPETRIGHT PLC	GB0001772945	5	13	3
41	CARPHONE WAREHOUSE GROUP PLC	GB0008787029	5	10	2
42	CENTRICA PLC	GB00B033F229	4	11	3
43	CHARTER INTERNATIONAL	JE00B3CX4509	3	13	5
44	CHEMRING GROUP PLC	GB0001904621	2	12	3
45	CHLORIDE GROUP PLC	GB0001952075	3	12	3
46	CITY OF LONDON GROUP PLC	GB0001991685	8	13	6
47	COBHAM PLC	GB00B07KD360	3	13	2
48	COMPUTERLAND UK PLC	GB0001500353	7	10	2
49	CONNAUGHT PLC	GB00B139BQ35	8	9	1
50	COOKSON GROUP PLC	GB00B3WK5475	3	12	5
51	CRANSWICK PLC	GB0002318888	2	12	3
52	CRODA INTERNATIONAL PLC	GB0002335270	2	13	8
53	DAILY MAIL & GENERAL TRUST	GB0009457366	2	12	5
54	DAIRY CREST GROUP PLC	GB0002502812	2	12	5
55	DANA PETROLEUM PLC	GB0033252056	1	11	3
56	DAVIS SERVICE GROUP PLC	GB00B0F99717	7	13	5
57	DE LA RUE PLC	GB00B3DGH821	2	12	5
58	DIAGEO PLC	GB0002374006	2	12	4
59	DOMINO PRINTING SCIENCES PLC	GB0002748050	3	13	2
60	DSG INTERNATIONAL	GB0000472455	5	12	6
61	EASYJET PLC	GB0001641991	4	9	1
62	ELECTROCOMPONENTS PLC	GB0003096442	5	13	7
63	EMERALD ENERGY PLC	GB00B01NJN34	1	12	5
64	ENTERPRISE INNS PLC	GB00B1L8B624	5	13	2
65	EUROMONEY INSTITUTION INVEST	GB0006886666	2	13	5
66	FIDESSA GROUP PLC	GB0007590234	7	12	5
67	FILTRONIC PLC	GB0003362992	3	13	6
68	FIRSTGROUP PLC	GB0003452173	4	12	6
69	FISHER (JAMES) AND SONS PLC	GB0003395000	1	13	5
70	FORTH PORTS PLC	GB0003473104	4	12	4
71	G4S PLC	GB00B01FLG62	7	12	4
72	GALIFORM PLC	GB0005576813	2	13	6
73	GAME GROUP PLC (THE)	GB0007360158	5	12	3
74	GENUS PLC	GB0002074580	2	10	4
75	GKN PLC	GB0030646508	3	12	5
76	GLAXOSMITHKLINE PLC	GB0009252882	2	13	5
77	GO-AHEAD GROUP PLC	GB0003753778	4	13	5
78	GREENE KING PLC	GB00B0HZP136	5	12	2
79	GREGGS PLC	GB00B63QSB39	5	13	1
80	HALMA PLC	GB0004052071	3	13	5
81	HAYS PLC	GB0004161021	7	13	4
82	HOMESERVE PLC	GB0034321165	1	13	2
83	HUNTING PLC	GB0004478896	2	13	5
84	IMI PLC	GB0004579636	3	12	5
85	IMPERIAL TOBACCO GROUP PLC	GB0004544929	2	13	2
86	INCHCAPE PLC	GB00B10QTX02	5	13	7
87	INFORMA	JE00B3WJHK45	2	11	6
88	INTERCONTINENTAL HOTELS GRP	GB00B1WQCS47	7	9	5
89	INTERNATIONAL POWER PLC	GB0006320161	4	10	6
90	INTERSERVE PLC	GB0001528156	1	13	4

* ISIN = International Securities Identification Number

United Kingdom - constituent firms APE sample

No.	Firm name	ISIN code *	SIC category	No. firm-years	No. loss-years
91	INVENSYS PLC	GB00B19DVX61	7	13	5
92	ITV PLC	GB0033986497	4	13	4
93	JKX OIL & GAS PLC	GB0004697420	1	12	4
94	JOHNSON MATTHEY PLC	GB0004764071	2	13	4
95	KELLER GROUP PLC	GB0004866223	8	12	2
96	KINGFISHER PLC	GB0033195214	5	13	5
97	LADBROKES	GB00B0ZSH635	7	13	6
98	LOGICA PLC	GB0005227086	7	13	1
99	LONMIN PLC	GB0031192486	3	13	6
100	MARKS & SPENCER GROUP PLC	GB0031274896	5	13	4
101	MARSTONS PLC	GB00B1JQDM80	2	13	7
102	MCBRIDE PLC	GB0005746358	2	12	5
103	MEGGITT PLC	GB0005758098	3	13	4
104	MELROSE RESOURCES PLC	GB0009354589	1	9	3
105	MILLENNIUM& COPTHORNE HOTELS	GB0005622542	7	12	3
106	MISYS PLC	GB0003857850	7	13	6
107	MITIE GROUP PLC	GB0004657408	8	13	1
108	MORGAN CRUCIBLE CO PLC	GB0006027295	3	13	6
109	MORRISON (WM) SUPERMARKETS	GB0006043169	5	13	1
110	MOTHERCARE PLC	GB0009067447	5	13	7
111	NATIONAL GRID	GB00B08SNH34	4	13	4
112	NATIONWIDE ACCIDENT REPAIR	GB00B15RR673	7	10	5
113	NEXT PLC	GB0032089863	5	13	1
114	NORTHERN FOODS PLC	GB0006466089	2	13	8
115	PACE PLC	GB0006672785	3	13	5
116	PEARSON PLC	GB0006776081	2	13	5
117	PENNON GROUP PLC	GB00B18V8630	4	13	5
118	PERSIMMON PLC	GB0006825383	1	13	1
119	PREMIER OIL PLC	GB0033560011	1	13	3
120	PZ CUSSONS PLC	GB00B19Z1432	2	13	4
121	RANDGOLD RESOURCES LTD	GB00B01C3S32	1	12	5
122	RANK GROUP PLC	GB00B1L5QH97	7	13	6
123	RECKITT BENCKISER GROUP PLC	GB00B24CGK77	2	13	6
124	REDROW PLC	GB0007282386	1	13	2
125	REGUS PLC	JE00B3CGFD43	7	9	2
126	RENISHAW PLC	GB0007323586	3	13	3
127	RENTOKIL INITIAL PLC	GB00B082RF11	7	13	4
128	REXAM PLC	GB0004250451	3	13	6
129	RIO TINTO GROUP (GBP)	GB0007188757	1	12	4
130	ROBERT WISEMAN DAIRIES PLC	GB0007442014	2	12	4
131	ROLLS-ROYCE GROUP PLC	GB0032836487	3	13	3
132	ROTORK PLC	GB0007506958	3	13	1
133	RPS GROUP PLC	GB0007594764	8	12	1
134	SABMILLER PLC	GB0004835483	2	13	4
135	SAINSBURY (J) PLC	GB00B019KW72	5	13	6
136	SCOTTISH & NEWCASTLE PLC	GB0007839698	2	13	6
137	SCOTTISH & SOUTHERN ENERGY	GB0007908733	4	13	3
138	SDL PLC	GB0009376368	7	10	2
139	SEVERN TRENT PLC	GB00B1FH8J72	4	13	8
140	SHANKS GROUP PLC	GB0007995243	4	13	5
141	SHIRE LTD	JE00B2QKY057	2	9	2
142	SIG PLC	GB0008025412	5	12	1
143	SMITH & NEPHEW PLC	GB0009223206	3	13	6
144	SMITH DS PLC	GB0008220112	2	13	6
145	SMITHS GROUP PLC	GB00B1WY2338	3	13	3
146	SOCO INTERNATIONAL PLC	GB0000394469	1	11	3
147	SPECTRIS PLC	GB0003308607	3	11	4
148	SPIRAX-SARCO ENGINEERING PLC	GB0008347048	3	13	4
149	SPIRENT COMMUNICATIONS	GB0004726096	3	13	6
150	SSL INTERNATIONAL PLC	GB0007981128	2	13	4
151	STAGECOACH GROUP PLC	GB00B1VJ6Q03	4	13	4
152	TATE & LYLE PLC	GB0008754136	2	13	5
153	TAYLOR WIMPEY PLC	GB0008782301	1	13	3
154	TESCO PLC	GB0008847096	5	13	1
155	THE RESTAURANT GROUP	GB00B0YG1K06	5	13	4
156	THOMSON REUTERS PLC	GB00B29MWZ99	2	13	5
157	TOMKINS PLC	GB0008962655	3	13	5
158	TRAVIS PERKINS PLC	GB0007739609	5	13	1
159	TULLOW OIL PLC	GB0001500809	1	12	3
160	UNILEVER PLC	GB00B10RZP78	2	13	4
161	UNITED BUSINESS MEDIA	JE00B2R84W06	2	13	5
162	UNITED UTILITIES GROUP PLC	GB00B39J2M42	4	13	8
163	VICTREX PLC	GB0009292243	2	12	3
164	VODAFONE GROUP PLC	GB00B16GWD56	4	13	5
165	VT GROUP PLC	GB0031729733	8	13	3
166	WEIR GROUP PLC	GB0009465807	3	13	6
167	WETHERSPOON (JD) PLC	GB0001638955	5	13	5
168	WH SMITH PLC	GB00B2PDGW16	5	12	7
169	WHITBREAD PLC	GB00B1KJJ408	5	13	4
170	WILLIAM SINCLAIR HLDGS PLC	GB0009665661	2	13	8
171	WOLSELEY PLC	GB00B5ZN3P43	5	13	4
172	WPP PLC	JE00B3DMTY01	7	13	1
			Total	**2,132**	**721**

* ISIN = International Securities Identification Number

Appendix C: PPI Manufacturing-index

Country / PPI * Manufacturing	Germany	France	United Kingdom
1995	96.7	103.9	94.8
1996	96.8	101.1	97.2
1997	97.4	100.5	98.1
1998	97.2	99.6	98.1
1999	97.0	98.0	98.5
2000	100.0	100.0	100.0
2001	101.3	101.2	99.7
2002	101.5	101.0	99.8
2003	102.1	101.3	101.3
2004	103.9	102.5	103.8
2005	106.8	104.3	106.7
2006	109.7	106.9	109.4
2007	109.9	107.1	109.6

* PPI = Producer Price Indices

Source: Organisation for Economic Co-operation and Development (OECD), OECD.StatExtracts http://stats.oecd.org/Index.aspx