Dániel Máté Kovács:

The role and application of fair value accounting in the Hungarian regulatory framework

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1 Introduction

One of the central problems of accounting theory and accounting regulation is accounting valuation, accounting as a value assignment aspect of the representation of economic phenomena. One of the fundamental issues of this value assignment is values with what characteristics in financial statements (accounting reports) prepared during the accounting records and on such basis representing the end-result of the accounting process are to be applied to ensure that the fundamental goal of financial reporting (i.e. the provision of relevant information in the decision making of users of the financial statement) is realized to the maximum extent possible.

Accounting regulation is traditionally built on the application of historical costs (past prices). However, the demand and efforts for the accounting use of current market values in addition to, or instead of, historical cost valuations is no new phenomenon. Fair value accounting, which is built on the use of fair values as defined in accounting, can be classified under this market-based accounting valuation trend.

In line with international tendencies, the Hungarian regulation also enables the valuation of certain assets at fair value, however, its choice in selecting the accounting policy is left up to the reporting entity itself. Fair valuation is a complex valuation model even from a methodology point of view, which implies a number of decision points, thus *the practical manifestation of the theoretical model is subject to a great deal of factors.*

The focus of examination of the dissertation is the accounting role of fair value, as well as its application. By the accounting role of fair value its capability to shape the actual accounting practice is understood, whereas its application is the practical aspect of the theoretical model: the extent to which the underlying assumptions of the accounting model of fair value are realized during the actual use.

The objective of the dissertation is therefore, on the one hand, to define the role that fair value accounting plays in the current Hungarian regulation and in the practice of entities operating in the Hungarian regulatory framework and, on the other hand, to examine the practical use of fair value accounting from certain perspectives.

Works directly preceding the research include international research projects addressing the application of fair value accounting, such as: (Brown, Izan, & Loh, 1992), (Whittred & Chan, 1992),(Cotter & Zimmer, 1995), (Barth & Clinch, 1998), (Aboody, Barth, & Kasznik, 1999), (Lin & Peasnell, 2000), (Missonier-Piera, 2007), (Christensen & Nikolaev, 2010), (Nobes, 2011), as well as the works dealing with the methodology of fair valuation, e.g.: (Hunt & Hilton, 1997), (Danbolt & Rees, 2008), (Song, Thomas, & Yi, 2010).

Among the preceding works of Hungarian accounting research, those addressing accounting policy decisions and the relationships of theory and regulation should be mentioned, such as: (Bosnyák, 2003), (Deák, 2006), (Lakatos, 2009), (Varga, 2009).

The dissertation is seeking to answer the following *research questions*:

- How can the area of manifestation of fair value accounting be defined in the current Hungarian regulation?
- In what scope and with what frequency do entities operating in the Hungarian regulatory framework apply fair value accounting in their financial statements prepared according to the relevant Hungarian rules?
- What are the factors that influence or determine the use of fair valuation in case of entities operating in the Hungarian regulatory framework?
- What are the measurement procedures and inputs based on which fair value is determined during the practical application of fair valuation?

In order to answer the above questions, the *research task* consisted of two parts. On the one hand, I had to expose the regulation, accounting theory, and economic background of fair value as an accounting concept based on professional literature sources and the currently valid regulations. On the other hand, based on an empirical study I had to outline the practical application, specifically the accounting practice concerning fair valuation of entities operating in the Hungarian regulation environment, in particular their accounting policy decisions, valuation methods, and the underlying assumptions, as well as the information used for such purposes.

Upon exposing the background of fair value accounting I was confronted with the fact that although the subject is fairly widely researched in the professional literature, the Hungarian literature is rather limited. As a result, *I had to primarily rely on foreign (Anglo-Saxon) sources* and I sought to contrast these with the findings of Hungarian accounting theory, as well as regulation and practical experience.

During the *empirical study* I conducted the analysis of data of accounts prepared according to the relevant Hungarian rules and of a self-made questionnaire survey using statistical methods, as well as the examination of valuation models used in fair valuations and appearing in the accounts.

Besides the present introduction, the dissertation is divided into eight chapters.

In the *second* chapter I define the area of research and outline the accounting research approach applied in the dissertation.

The *third* chapter presents the key relationships of accounting theory and regulation, as well as the theoretical and practical accounting models also underlying fair valuation as an accounting model. Although I touch upon certain main issues of the regulation of accounting I do not attempt to conduct a comprehensive analysis of the theory of accounting regulation.

The *fourth* chapter summarizes the basic norms present in accounting with the objective of presenting the analytical and valuation framework of the comparison of accounting models, their characteristics and the different alternative models.

Chapter *five* examines the conceptual system of accounting valuation and measurement, as well as its current realization in practice in order to introduce the concept of fair value as a measurement basis.

In the *sixth* chapter I present the conceptual framework serving as the direct basis of the research, and the concept of fair value and fair value accounting. The conceptual framework is understood not solely as a brief summary of the basic terms of the dissertation subject but instead the portrayal of the underlying accounting theory background with a detailed scope as required.

The *seventh* chapter sees to serve as a direct foundation of the empirical study, where I summarize the issues arising on the basis of the theoretical approaches, as well as the main findings of earlier empirical researches relevant from a research aspect, and I outline the paths to the hypotheses along with the definition of the research hypotheses.

In the *eighth* chapter I present the data and methods used for the empirical studies, the detailed process of verification of hypotheses, and the findings thus obtained.

In the *ninth* chapter I summarize the main findings of the research, the conclusions made, as well as the recommendations.

2 Definition of approach and area of research

In accordance with *White et al.* (1994), *Bosnyák* (2003) divides the main approaches present in accounting theory and empirical research into three groups.

Classical or normative theory focuses on the establishment of the optimum way of accounting reflections of economic phenomena (existing economic reality). Classical theory compares alternative accounting models to such ideal-typical reflection.

Market-based accounting research[1] considers economic reality as a given setting formed by market opinion and which *a priori* is not affected by accounting procedures. This research focuses on the examination of the relationships between accounting data and the respective answers given, accounting information and market phenomena.

In contrast, positive accounting theory[2] does not subscribe to the tenet of neutrality of accounting data and seeks to demonstrate that the different accounting alternatives not only describe but also influence the underlying economic reality (Bosnyák, 2003, pp. 22-25).

My dissertation and the approach of the empirical study *essentially rests on the ground of positive accounting:* I seek to examine the mutual interaction between real valuation as an accounting reflection and business reality.

> Yet the theoretical significance of market-based research representing a substantial part of the examinations concerning fair valuation cannot be neglected as their main findings have greatly contributed to the establishment and clarification of the concept of fair value. Although I shall cover such research findings during the discussion of the theoretical attributes of fair value,[3] these may not be regarded as direct research background for the dissertation.

[1] *Ball and Brown's An Empirical Evaluation of Accounting Income Numbers*, published in 1968, is often mentioned as the basic literature for market-based accounting research (Ball & Brown, 1968). For a review on the findings of market-based examinations see also (Kothari, 2001), (Meek & Thomas, 2004).
[2] Basic literature of positive accounting theories include: (Watts & Zimmerman, 1978), (Watts & Zimmerman, 1979), (Watts & Zimmerman, 1990).
[3] See 6.5.

Although it is pointed out in the clarification of the definition of fair value accounting, I should note that my dissertation deals with the examination of the financing accounting aspect of *accounting*[4] or, more precisely, that of mandatory financial reporting and as such my research is limited to this sub-section of accounting.[5]

The objective of my research is *twofold*: to determine based on the concept of fair value accounting – and the theoretical background of the concept – the role that fair value plays in current Hungarian accounting and to outline the main characteristics of the practice of fair value accounting based on such practice. As another explicit goal of my dissertation, I seek to obtain relevant findings that can potentially be useful in the development of accounting regulations and the conceptual system. To that end, I do not wish to be fully disengaged with how the regulations are actually applied and instead seek to present a more comprehensive overview of the theoretical background.

The dissertation has as its focus of examination the Hungarian accounting practice and as such the focus of the relevant *accounting regulations* and the empirical study is represented by the Hungarian Accounting Act (Act C of 2000, hereinafter: Aa.). Nevertheless, I cannot ignore the fact that international accounting norms, in particular – and in a direct manner – the International Financial Reporting Standards (IFRS)[6] as adopted to a large extent by the European Union have a significant influence on the Hungarian regulations and as a result of the economic environment (a small and open economy and an ownership structure of large enterprises dominated by foreign / international stakeholders) mostly on the accounting practice of large enterprises and on the requirements concerning accounting information.

[4] According to *Bosnyák et al.* (2010), financial accounting (in a broader sense) deals with the formation and communication of all *mandatory and standardized* accounting information (Bosnyák, Gyenge, Pavlik, & Székács, 2010, old.: 10).
[5] For details on the concept of accounting, see Hungarian literature such as: (Baricz, 1994), (Malasics, 2003), (Baricz & Róth, 2003), (Baricz, 2009), (Bosnyák, Gyenge, Pavlik, & Székács, 2010).
[6] For more information on accounting harmonization, see also: (Beke, 2009), (Beke, 2010).

Accordingly, when outlining the conceptual systems I use a basis a *double regulation framework*: I review the relevant rules of both the Hungarian and the IFRS system concerning fair value accounting.[7]

The importance of a double regulation framework also follows from the fact that fair value accounting traditionally has Anglo-Saxon roots[8], whereas the Hungarian regulation adopted and applies the conceptual system developed and widely used there. Consequently, I believe that the conceptual system of fair value accounting should be presented based on the international accounting standards and I therefore apply this approach in my dissertation by comparing this conceptual system to the Hungarian regulations. Thus from this aspect the approach is inverse: the Hungarian regulation environment, which is the focus of examination of the dissertation, is preceded by its international counterpart as I consider this more appropriate in view of the above.

The empirical study deals with profit-oriented and continuously operating business entities that are capable of sustaining their operations with revenues at a stable level and which are required by law to fulfil financial reporting supported by double-entry bookkeeping in accordance with Hungarian accounting rules and focuses on the financial statements (annual reports) of such business entities prepared in accordance with the relevant Hungarian regulations.

[7] Consequently, my dissertation does not cover other accounting systems. However, I cannot disregard the fact that as a result of the convergence (program) between the IFRS and the US GAAP (United States Generally Accepted Accounting Principles) certain elements of the two systems of rules have by now become uniform. In cases where such joint regulation is of significance – Chapter 4. and 6.4 – due references are made to certain US GAAP rules but the referred rules are fully identical with IFRS rules.
[8] Chapter 6 provides a brief overview of the history of fair value accounting.

3 Embeddedness of accounting

According to *Nobes and Parker* (2010) *"accounting is a technology which is practised within varying political, economic and social contexts"* (Nobes & Parker, 2010, p. 5). I find that this definition is rather restrictive in the sense that it attempts to interpret accounting solely as a technology (methodology). It does, however, also point out that during the examination of an accounting concept or an accounting research issue one cannot disregard the political, economic and social setting influencing (forming) the accounting system.[9] In my dissertation I call this phenomenon the *embeddedness of accounting* and as the starting point of the examination I highlight a few of the resulting consequences.

First and foremost, it should be stated that the (theoretical) economic basis of accounting concepts should in every case be exposed. Still, economic theories do not materialize automatically in accounting and precisely as a result of the embeddedness a *transformation of the underlying theory* can be observed for all accounting concepts. When discussing the theoretical grounds of accounting theory, *Demski et al.* (2002) point out that the findings of both the mathematical economic and management sciences exerted an influence on accounting theory.

Therefore, I believe that the examination of accounting from solely an economic theory aspect is rather ill-founded, although it would be equally misguided to study the different issues of accounting while ignoring the background of the underlying economic theory.[10]

Secondly, the interconnection of *accounting theory (research) and regulation*¸ more precisely that between the specific accounting rules and accounting theory should be clarified.

[9] The issue can also be approached from the aspect that as accounting seeks to reflect reality and the underlying system of phenomena, and since reality manifests itself in its complexity, all factors affecting reality have an effect on the accounting reflection.

[10] The analysis of interconnections of economics and accounting goes back a long time. One of the most basic pieces of literature is *Canning's* book entitled *The Economics of Accountancy*, published in 1929 (Canning, 1929), while among the later works the following articles should be mentioned: (Wheeler, 1955), (Mattessich, 1956), (Flanders, 1961), (Yu, 1966).

Demski (1973) Accounting theory primarily seeks to explain which accounting alternative (method of treatment, presentation, recording) should be applied under certain circumstances and upon the occurrence of certain correlations. However, the choice between the alternatives is mostly a decision of regulators and as a result, although theory can develop accounting principles (norms) that it considers the most appropriate, it is able to provide a full and transitive order[11] on an individual level to the different accounting alternatives, they can nonetheless only manifest themselves through a filter of the regulation. The final conclusion of the author is that *normative regulation is impossible* and, consequently, the specific accounting rules do not represent the forms of manifestation of the normative theory of accounting. Conversely, *Chambers* (1976) rejects the general theory of impossibility of Demski, although he does not deny that a specific system of applicable rules could be theoretically pure.

I believe that the raising of the issue essentially leads us back to the problem of embeddedness, namely that accounting regulation per se inherently involves numerous conflicts of interest, which is what gives rise to accounting rules. *Watts* (1977) considers accounting rules and the financial statements prepared on the basis of such rules as the result of *market and political processes*.[12] Similarly, (Sunder, 1988), (Zeff, 1999) and (Zeff, 2005) also emphasize – specifically, through the examination of the case of the United States – the impact of political processes on regulations while (Perry & Nölke, 2006), (Dye & Sunder, 2001), as well as (Königsgruber, 2010) assess it on through the examination of international regulations.

With respect to the relationship of theory and regulation, *Barth* (2000) states that although those researching accounting often have a keen interest in the outcome of research, it is not up to the researchers to choose between the possible regulatory solutions (accounting policies).

[11] If η and η' are two arbitrary elements of the set of possible accounting alternatives (H), the *criterion of completeness* requires that for all pairs of alternatives it can be decided that η is preferred to η', or η' is preferred to η, or if they are equally (not) satisfactory. Therefore, if *R* stands for the "*at least as good as*" relation, then in case of completeness for all $\eta,\eta' \in H$ at least one (or both) assumption(s) exist(s) out of $\eta R \eta'$ és $\eta' R \eta$. The *criterion of transitivity* requires that if $\eta,\eta',\eta'' \in H$, and $\eta R \eta'$ and $\eta' R \eta''$, then $\eta R \eta''$. (Demski, 1973, pp. 718-719)

[12] In one of his later works, Watts comes to the conclusion that "*Injudicious changes in reporting that do not consider economic and political forces will not survive or if they do, that reporting will be a mere formality and not be used for productive purposes."* (Watts, 2006, old.: 22)

The *theory* primarily has a function *to inform regulation* and not to make specific recommendations as the *regulation* has to have in consideration such *social factors* that often fall beyond the scope of research of scientists. The perspective of theory and regulation, as well as that of researchers and regulators is different: while regulation primarily deals with the different elements of financial statements subject to its regulatory authority (the recognition of the individual assets and liabilities, their valuation, presentation, any mandatory disclosure, etc.) researchers, on their part, assess these matters within a much broader scope and cover a much broader spectrum that financial statements.[13] To illustrate the above, Barth relies on the figure found in FASB CON5[14]:

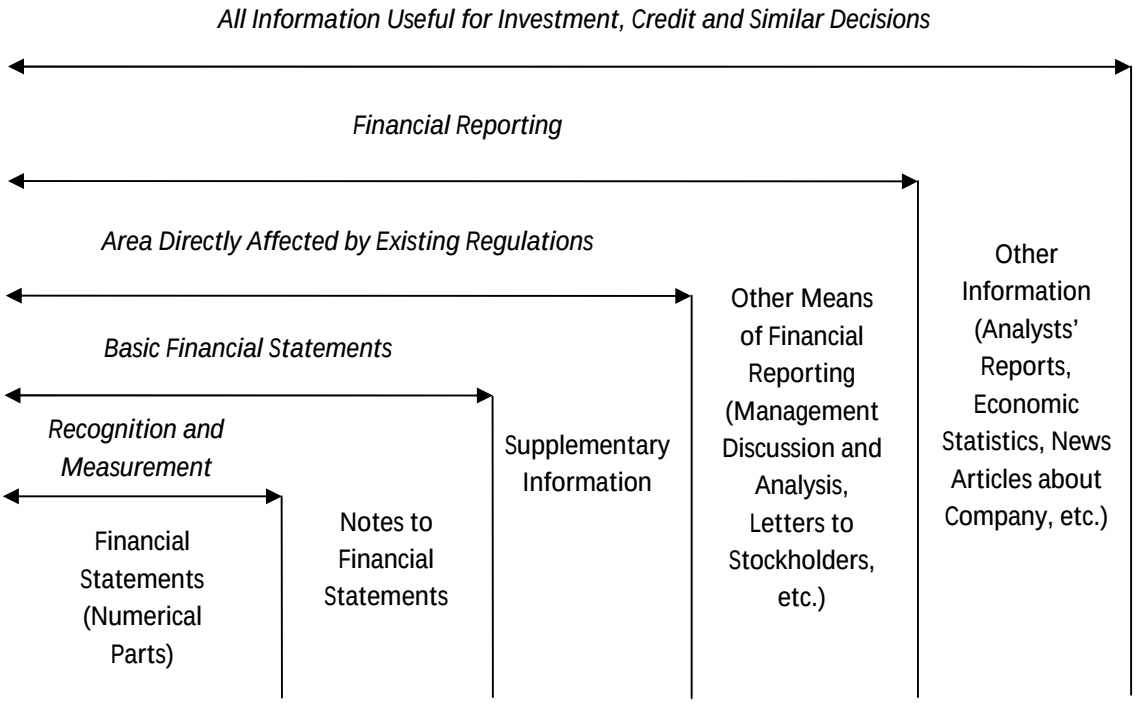

Figure 1: The different spectrums of accounting theory and regulation. Source: FASB CON5 (Barth, 2000, p. 9)

By virtue of its definition and its purpose, accounting regulation primarily covers the information within its scope, whereas accounting theory cannot fail to consider the additional domains also (the information environment of financial reporting) as the examination of the role of accounting information is only possible in this manner (Barth, 2000, p. 10).

[13] This logic manifests itself purely in case of the standards regulating the different sub-domains. However, the determination of the general principles (conceptual frameworks) defining the operation of the different system of rules has a crucial role in accounting regulation. In this case a higher level of abstraction is observed even at the regulatory level, although the basic principles do not regulate directly and their specific content is laid out in the particular rules.

[14] Concepts Statement No. 5 *Recognition and Measurement in Financial Statements of Business Enterprises*

When characterizing the system of relationships and the different approaches for theory regulation, *Liang* (2001) concludes that logical *cohesion and internal consistency* lies in the *focus of researchers* during the formation of regulation, whereas in case of *regulators* other (*macro)economic and political factors* play a more vital role. It can be said that accounting research elaborates theoretical models that are reflected in the practical models of regulation.

Therefore, overall I think that a specific accounting model in practice manifests itself in the specific regulation, albeit in case of examination of all models the accounting theory and the broader economic background should also be exposed. Yet this cannot mean that the models and concepts developed in accounting regulation can be directly related and attributed to the different theoretical models. In a certain sense, accounting models are "*artificial constructions":* owing to the embeddedness as outlined above they are impacted by several effects during their creation. Upon the examination of an accounting model (in this case, fair value) I thus think that one should take the specific regulation (definition) as a basis and should, in an inductive manner, expose the theoretical interrelations of the model. This in turn enables us to define another level of embeddedness: accounting models appear as embedded in regulation and can only be interpreted in such a (conceptual) framework.

Nonetheless, one should not ignore the fact that accounting regulation itself is not a constant thing as it develops continuously. When examining the social choices, *Bertomeu, Magee and Schneider* (2011) present the *special impossibility of positive accounting regulation* (as if paraphrasing Demski), whereby if the set of possible alternatives is unlimited, no system of rules exists that is stable in the sense that those seeking to change the system of rules would be overcome by the influencing intentions of those in favour of constancy. Although the analysis is admittedly restrictive, it does still highlight the fact that any accounting model can only be considered a station and the examination should also consider the direction of change (from where it is headed to where).

Thus the accounting models examined on the basis of the currently *valid regulation* may only be regarded as *snapshots* that record the current state of a longer process. Consequently, when applying the inductive approach as outlined above the earlier and the expected future stations of the process cannot be ignored even as early as at the starting point (the actual regulation).

4 Role of fundamental norms in accounting

An accounting model appearing in a specific regulation is therefore a construction based on economic and accounting theory grounds but one which is created as a result of the particular logic and operating processes of accounting. Yet even accounting regulation as such cannot be regarded as a completely uniform concept; as generally seen in all areas of regulation, accounting also involves *a system of norms of different levels built upon each other*.

The *assumptions underlying* a specific accounting system of rules and the *qualitative characteristics*, as well as the *constraints or accounting principles* can be regarded as the cornerstones of accounting.[15] The closely interrelated elements of this axiomatic system underlying accounting regulation are hereby referred to as the *fundamental norms of accounting*.

The underlying assumptions represent the general approach to the accounting system while the qualitative characteristics mean the main requirements pertaining to the content of financial statements and the information contained therein, whereas the constraints outline the validation limits of theoretical requirements. In case of the IFRS, the fundamental norms are defined in the Conceptual Framework[16] and IAS 1[17] and, with respect to the Hungarian accounting regulation, in the Accounting Act (more precisely in Sections 15 and 16.).

The role and significance of fundamental norms in accounting is clear based on the above: they serve as points of reference and represent a *framework for the evaluation of accounting models.* In a somewhat simplistic manner, *Gouws and van der Poll* (2004) state that accounting actually creates a simulated reality and in this simulated world fundamental norms represent the main interconnections.

[15] Although principles and qualitative characteristics are not synonymous concepts in the Anglo-Saxon accounting systems, accounting principles usually correspond with qualitative characteristics in common Hungarian practice. By fundamental norm is meant hereafter the set of underlying assumptions and qualitative characteristics. *Wolk et al.* (2008) refer to the fundamental norms as *concepts* while pointing out that the meaning of the term is known in accounting theory under different names such as *postulates*, *constraints, principles and standards* (Wolk, Dodd, & Rozycki, 2008, p. 121).

[16] Conceptual Framework for Financial Reporting 2010, the "new" Framework of IASB and FASB accepted in 2010. The Conceptual Framework continues to, at least partially, apply the rules of the "old" Framework accepted in 1989 (Framework for the Preparation and Presentation of Financial Statements). In the dissertation the reference of Framework denotes the Framework of 2010, except if indicated otherwise by specific reference to rules that have since been revoked.

[17] IAS 1 –Presentation of Financial Statements

While agreeing with the above with respect to its content but in a less simplistic approach I would point out the fact that fundamental norms are a kind of basic requirement: when assessing the applicability of all models one has to establish to what extent they correspond with the fundamental norms. The evaluation and comparison of the different accounting models can and should be conducted in the space of these norms underlying the system of accounting rules.

4.1 Fundamental norms in the system of IFRSs

4.1.1 Underlying assumptions

Within the system of IFRSs three underlying assumptions of fundamental importance determine the general perception of accounting. Such underlying assumptions reflected in the current (general purpose) financial reporting are as follows: *the separate entity concept, the going concern principle, and the accrual basis of accounting.*

The *separate entity concept* assumes that the entity and its owner are two separate business entities. The wealth of the owner is different from the wealth of the entity, whereas transactions administered with the owner are to be treated similar to arm's length transactions administered with a third (independent) party. This principle must be observed during the preparation of all financial statements.

> With respect to the idea of separate entity another concept has to be clarified. The underlying assumption specifies the borders of the subject of the financial reporting only partially: in other words, it fails to indicate where the border lies between the different reporting entities. According to the (rather succinct) definition of the Framework valid until 2010, reporting entity is "*an entity for which there are users who rely on the financial statements as their major source of financial information about the entity.*" (Paragraph 8 of Framework 1989).
>
> Conversely, according to Chapter 2 (existing only as a draft) of the Conceptual Framework (*The reporting entity)* reporting entity is a circumscribed area of economic activities whose financial information has the potential to be useful to existing and potential investors. The draft defines three conjunctive, necessary but insufficient requirements: (1) the existence of economic activities; (2) the ability to distinguish objectively such activities from the environment and other entities; and (3) the usefulness of financial information on economic activities in potential decision making. (IASB-FASB, 2010, pp. 12-13).

> In my understanding this definition does a better job of defining the concept, still I find it problematic that from the perspective of the users of the financial statements one of the most distinguished characteristics of the reporting unit is lost: the "ability to circumscribe" the business activities does not in and of itself describe what the relationship of such activities is vis-à-vis each other and how they interconnect to form a uniform whole. In my view the relationship, coordination, and presumption of goals among the business activities should be presented.

The *principle of going concern* starts from the assumption that the entity will be able to continue its operations in the foreseeable future and no major limitation of its operations is anticipated. If the entity intends to, or is forced to, liquidate itself or materially curtail the scale of its operations, the financial statements may be prepared based on other underlying assumptions as well (which must be disclosed).[18]

In case of the *accrual basis of accounting* the entity presents the different items as assets, liabilities, equity, incomes or expenses (as elements of financial statements) in the period when their actual in- or outflow occurred (in compliance with the definition and recognition criteria specified for the given items in the Framework) and not at the same time as the related monetary transfers. Therefore, the recording of changes in the different elements of financial statements is based on the actual economic phenomenon and not the financial transaction.[19]

> Thus the accrual basis of accounting serves as the basis for the judgment of the financial performance of the entity. *Bordáné* (1990) states that the accrual based accounting procedure (based on naturalistic processes) attempts to measure the incomes versus the expenses incurred in order to realize them and the purpose of such measurement is to determine the profit or loss of the period in question.
>
> To determine the performance (the accounting profit), it is therefore necessary to assess all the business benefits that have flowed in or out to/from the entity during the period in question. The technical implementation of this is presented in the principle of matching, which is essentially one of the consequences of the underlying assumption of accrual basis of accounting and not an underlying assumption in itself.

[18] Cf. Conceptual framework Para 4.1; IAS 1, Para 25
[19] Cf. IAS 1, Para 27

Of the underlying assumptions only one appears explicitly in the currently valid Framework (Conceptual Framework, Para 4.1), namely the principle of going concern. Nevertheless, the term of accrual basis of accounting is described with respect to the purpose of financial reporting (Conceptual Framework, OB17-19) while the self-explanatory term of the separate entity is clearly evident from the fundamental purpose of financial reporting: a clear distinction of the owners appearing between the reporting entity and the recipients of the information is already made at this level.

> In addition to the above, IAS 1 defines the requirements for *materiality and aggregation*[20] and *offsetting*. However, I do not classify these among the underlying assumptions as these are in my view (technical) requirements ensuring the manifestation of underlying assumptions instead.

4.1.2 Qualitative characteristics and the cost constraint

The Conceptual Framework identifies the hierarchically built system of qualitative characteristics:[21] they make a distinction between *fundamental* and *enhancing* qualitative characteristics and a restrictive factor (constraint) manifesting itself in, and with an impact on, the whole financial reporting, namely the principle of balance of costs and benefits *(cost constraint)*.

Fundamental qualitative characteristics are *relevance* and *faithful representation.*

Relevance ensures that the information is useful in the decision making and has a supporting (predictive or confirmatory) role in the economic decisions. Relevance is influenced by the materiality of information, which serves as a kind of threshold from the perspective of usefulness of information. Any information is considered useful if its omission or misstatement could influence the decisions of users with respect to a certain entity.[22]

[20] This requirement is not the same as the qualitative characteristic related to the relevance of materiality. Materiality as a qualitative characteristic is a constraint of relevant information and materiality as a presentation requirement is a determinant of the level of detailedness of financial statements. Evidently, the underlying principle is the same: any non-relevant information does not aid decision making, yet any relevant and material information (which should thus be recognized) should not necessarily be presented separately and can as a result be aggregated.

[21] See Conceptual Framework, Chapter 3 (QC1-QC39).

[22] The standard determines that materiality is an entity-specific concept: no general threshold may be set. In my view this principle is not overriden by materiality thresholds for errors contained in the former (before 1st January 2013) Hungarian regulation (AA. Sec. 3. Para (3) Point 5.), however, a kind of absolute threshold is necessary for the legal obligation of repeated publication. Therefore, the existence of an absolute threshold does not change the fact that the Hungarian regulation itself starts from the assumption of capability of decision influencing.

Faithful representation requires that financial statements reflect the underlying economic phenomenon according to reality. Representation is faithful if it is complete, neutral and it is free from error. Representation is complete if it provides to users all the information necessary for the understanding of the economic phenomenon. Representation is neutral if all the disclosed information is presented in an identical manner regardless of their potentially favourable or unfavourable effect or of the special recipient(s) of the financial statements (general purpose financial reporting). The free from error criterion does not mean perfect precision but it does require the uncertainty inherent in the estimate to be identifiable.

With respect to faithful representation one must raise the question whether representation pertains to what happened (reality) or what may happen (possibility). Needless to say, in case of representation of possibility, faithful representation can be realized to a lesser extent than in case of representation of reality.

Enhancing (secondary) qualitative characteristics include *comparability, verifiability, timeliness,* and *understandability.*

Comparability includes – implies – *consistency* and it ensures that financial statements be comparable in time (past, present, future) and with other entities. Nevertheless, comparability does not mean uniformity or the requirement of presenting all financial information in an identical way according to a "template" but instead the similarity of similar things and the difference of different things. Comparability can be regarded as a secondary characteristic given that the faithful representation of a relevant phenomenon by all reporting entities concerned during any period inherently implies comparability.

Verifiability requires that various well-informed and independent observers come to an at least partial consensus on the fact that the requirement of faithful representation is met.

Equally important is the fact that the information shall be timely, that shall be available without delay for decision making. It must also be considered that financial reporting is inevitably a time-consuming process. Timeliness does not mean that the most rapid provision of information must be attempted by dispensing with the required time allocation as such action may endanger fair representation.

Understandability ensures that the information provided in financial statements be comprehensible to users. To that end, information must be grouped, described and presented in a clear and concise manner. Understandability is a user-specific concept; however, it must be assumed that the users of reports have the required level of knowledge and that they study the information carefully by dedicating a reasonable amount of time to the task. Understandability is subordinate to the fundamental qualitative characteristics in that any relevant information presented faithfully cannot be left out or altered just because its understanding may be too difficult to some users owing to the complexity of the underlying phenomenon.

Reliability had a key role in the former system of qualitative characteristics, which meant that the information did not contain any material error or distortion and that users trust that the information is true and correct. Reliability requires faithful representation (and verifiability), priority of substance over form, neutrality, prudence, completeness and free from error state.

Any distortion of any of these jeopardizes the reliability of information. As a matter of fact, the concept of reliability sought to combine several concepts representing various qualitative characteristics, yet precisely as a result of this the exact definition of reliability (what is the extra significance compared to the other qualitative characteristics required for its realization) failed, thus the concept has been cancelled, although its substantive elements (save two elements) continue to be defined as qualitative characteristics.

Faithful representation implies the *priority of substance over form*: no phenomenon may be presented in a faithful manner if we tackle it based on a form that is not identical with the substance (content) of the phenomenon, thus it need not be named separately.

The principle of *prudence/conservatism* ties the statement of profit or loss to varying certainty, in simple terms: "*anticipate all losses but no gains*".[23] However, this approach, which can be regarded as protection against overvaluing, does not correspond with neutrality and, consequently, with the requirement of fair representation, therefore it has been deleted from the qualitative characteristics (and it had not been named in the US GAAP system).[24]

[23] According to *Basu* (1997), conservatism appears in financial statements such that accounting responds to "bad" news more quickly than to "good" news, thus representing a kind of assymetry in timing.
[24] Yet it is important to note that reliability as a concept is still used by the Framework with respect to recognition: it still speaks of the reliability of a certain measurement as a criterion of recognition (Conceptual Framework, Para 4.38). However, this is not to be confused with reliability as a qualitative characteristic.

> Although the basic principle was missing from US GAAP, *Watts* (2003ab) states that conservatism had also been manifest in the United States (too) (Watts, 2003a). As such, this effect is so transparent that even if there is any shift (progress) in the regulation in a less conservative direction it will still manifest itself (Watts, 2003b).[25]
>
> Although the change seems rather slight, it still represents a kind of shift of emphasis: the chief criterion of reliability was that of free from error, a certain precision in a statistical sense, whereas faithful representation has in its focus the tackling of substance of the underlying economic phenomenon (Whittington, 2008, old.: 157).

The principle of *balance of costs and benefits* appears as a constraint of financial reporting: the usefulness of any information must always exceed the costs of its generation. Both cost and benefit are subjective terms: they are based on subjective evaluation. Consequently, the relevant ratio and the system of requirements for financial reporting can vary from reporting entity to reporting entity depending on size, form of financing, user needs and other factors.[26]

4.1.3 Relationship between goal of financial reporting and qualitative characteristics

Qualitative characteristics stipulate what "*appropriate attributes*" (Joyce, Libby, & Sunder, 1982) and "*substantive elements of junction*" (Lakatos, 2009) financial statements must have in order to fulfil the goal of financial reporting. Therefore, so as to grasp the role of qualitative characteristics one must start from the fundamental goal of financial reporting. The various accounting systems define the fundamental goal with different words but essentially identical substance.

The conceptual framework of the IFRS and US GAAP outline the concept of decision usefulness. "*The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity*."[27] (Conceptual Framework, OB2).

[25] This is still true today on the level of specific rules: depreciation, write-offs, and the recognition of provisions are the most typical conservative accounting methods whose rules did not change even after the modification of the Framework (see e.g. IAS 36, IAS 2, IAS 37).

[26] It must be added, though, that the cost constraint can be superseded by the regulation that mandatorily orders the presentation of certain information without deliberation. As a Hungarian example, certain provisions of the government decree on the unique features of reporting and bookkeeping obligations of public sector entities may be quoted.

[27] Here a reference must be made to the fact already mentioned under accounting theory and regulation: accounting information cannot/do not represent the full information basis and in this sense the scope of accounting is limited.

In other words, the Framework focuses on the concept of usefulness of information, something that is measured through item-by-item correspondence: if certain information fulfils the requirements as stated in the qualitative characteristics "*that are likely to be most useful"* (Conceptual Framework, QC1).

> The underlying assumptions as presented in 4.1.1 have no correlation with usefulness as an accounting system on opposite or at least different grounds can also fulfil the requirements of qualitative characteristics and the sole compliance with underlying assumptions does not determine usefulness.

The objective of financial statements established as a result of financial reporting is "*to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions*" (IAS 1, Para 9). With respect to financial statements, IAS 1 lays down one additional general requirement: financial statements must present the financial position, performance and cash flows of the reporting entity in a fair manner (requirement of *fair representation*) (IAS 1, Para 15).

Concerning the general requirement of fair presentation IAS1 highlights that "*Financial statements shall present fairly the financial position, financial performance and cash flows of an entity. Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the Framework."* [28] (IAS 1, Para 15)[29] Therefore, fair presentation requires on the one hand a faithful representation and, on the other hand, compliance with the conceptual framework defined in the Framework. Evidently, the basis of interpretation of the conceptual framework and the underlying concept is represented by the complete system of qualitative characteristics. Consequently, fair presentation does not set any additional requirements and can instead be regarded as parallel explanation and is redundant from this aspect.

[28] It should be noted that while *faithful representation* refers to the reflection or representation of the underlying economic phenomenon *fair presentation* means the financial statements and the presentation of the information contained therein.

[29] Therefore, from a certain aspect faithful presentation means representation according to a specific framework (in this case the IFRSs), and as a result neutrality may only apply within such framework.

The core essence of fair presentation is highlighted by the rule of IAS 1 specifying that "*In virtually all circumstances, an entity achieves a fair presentation by compliance with applicable IFRSs*" (IAS 1 Para 17). Thus, fair presentation also means financial reporting in accordance with the rules. This raises problems from a theoretical aspect as the representation of economic phenomena cannot be restricted to pre-defined rules in all cases.

This controversy is solved by the provision stating that *"in the extremely rare circumstances in which management concludes that compliance with a requirement in an IFRS would be so misleading that it would conflict with the objective of financial statements set out in the Framework, the entity shall depart from that requirement"* (IAS 1 Para 19). This *overriding principle* can be viewed as one of the most crucial provisions of accounting regulation in the cases justified by rules due, in my view, to the above and the accounting regulation excluding the possibility of departure in the interest of realization of the underlying objective cannot fulfil its purpose and as such it is in conflict with, or at least adopts a relative approach toward, the requirement of faithful representation among others.

The following figure demonstrates the relationship between the goal of reporting and qualitative characteristics and the cost constraint:

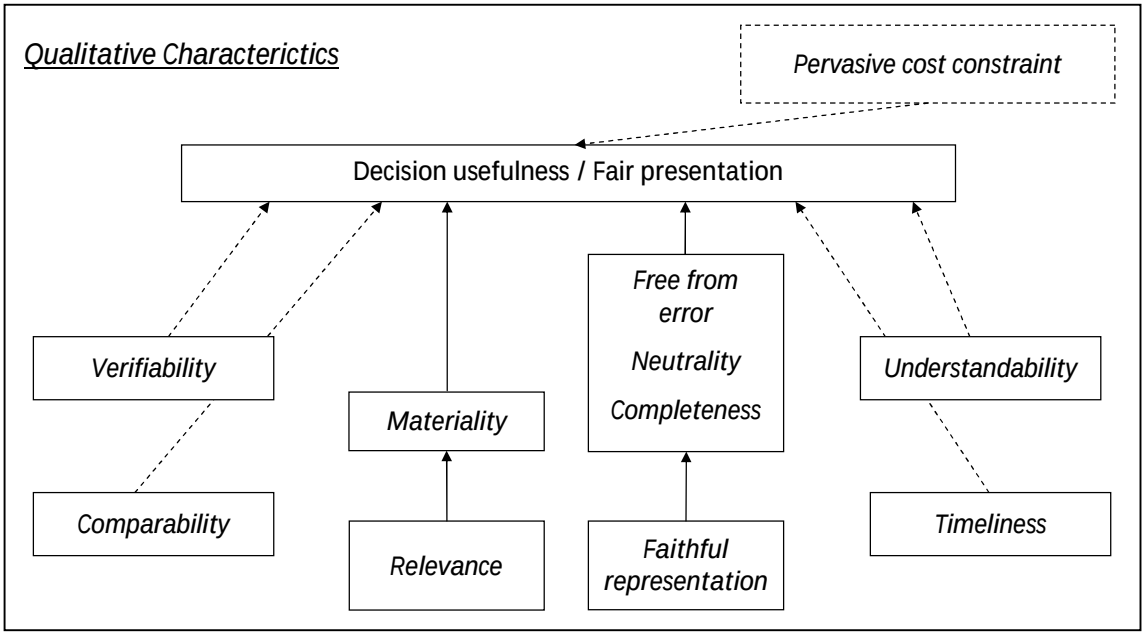

Figure 2: Qualitative characteristics of financial statements.
Source: (Bosnyák, 2006) with modifications of the author.

For information to be useful at all, *relevance* and *faithful representation* s fundamental qualitative characteristics must both be me at the same time given that any relevant information is completely useless if it does not reflect the underlying economic phenomenon in a faithful manner, which is also true the other way around: the presentation of any irrelevant economic phenomenon is completely useless, e.g. because of its insignificance. Information is also useful if although enhancing qualitative characteristics are observed but the criterion of relevance or faithful representation is compromised.

Barth (2011) points out that the cost constraint cannot be enforced to the detriment of realization of fundamental qualitative characteristics. This is because the cost constraint is to be examined from a fundamentally marginal perspective: if marginal costs exceed marginal benefits, the constraint is activated. Nonetheless, this is also true the other way around: if the compromising of fundamental qualitative characteristics results in a decrease of usefulness (with the information becoming useless) such that this decrease in usefulness necessarily exceeds the reduction of costs.

> While agreeing with the above I would add the comment that it is of course another issue that for the different individual reporting entities the realization of fundamental qualitative characteristics poses various specific requirements, which in an indirect manner also influences the level of costs. Generally speaking, though, the faithful representation of any relevant information cannot be dispensed with, and the information cannot be distorted, by referring solely to the costs.

From a certain perspective there is a *trade-off* between the fundamental qualitative characteristics as well: when capturing an economic phenomenon the potentially available information must be ranked from a relevance point of view. However, if the information is unavailable or it does not meet the requirement of faithful representation the level of relevance must be lowered by one degree, thus decreasing relevance for the sake of faithful representation. In other words, one must on the one hand find the right ratio between relevance and faithful representation in a given economic setting and on the other hand the expected ratio between the fundamental qualitative characteristics is not constant as it changes dynamically in parallel with the changes in the economic and social phenomena.

> *Dye* and *Sridhar* (2004) deems the trade-off between relevance and reliability (faithful representation necessary owing to the mere fact that financial statements are aggregated documents of a summarizing nature. "*If there were no limit to the length and detail of financial reports, many reliability-relevance trade-offs would become moot, as all data spanning the reliability-relevance spectrum could be disclosed and left for financial statement readers to assess."* (Dye & Sridhar, 2004, p. 52)[30]

In case of realization of the primary qualitative characteristics *the model could be expanded further*: secondary criteria and the cost constraint would appear as additional variables and the level of usefulness as evident at a certain moment of time (in the financial statement) would be established only as a result of this second phase. According to *Bosnyák* (2004), a certain combination means only the static point of equilibrium of a dynamic equilibrium path.

4.2 Fundamental norms of Hungarian accounting regulation

The Hungarian accounting regulation *names 13+1 principles*: the (underlying) going concern principle; the (substantive) principles of completeness, prudence, truthfulness, and matching; the (formal) principles of continuity, clarity and consistency; and the (auxiliary) principles of item-by-item valuation, offsetting, accruals, materiality, substance over form, and costs and benefits. (AA. Sec. 15-16.)[31]

> In addition, the professional literature also draws on the principles of timeliness, neutrality, reliability and accuracy, which are not named in the regulation (Garajszki, 2004, p. 156). Other authors also mention the principle of realization and that of time value (of money), as well as relevance (Róth, Adorján, Lukács, & Veit, 2009, p. 4).[32] Yet I would challenge the inclusion of realization and time value principles as accounting principles as these are much more related to the valuation and do not correspond to the system of fundamental norms.

[30] However, such full disclosure would seriously compromise e.g. understandability.
[31] The splitting of the principles into substantive, formal and auxiliary principles does not appear in the legislation as it does not explicitly distinguish between the principles based on their importance.
[32] *Róth et al (2008)* articulate the unique relationship between Hungarian accounting practice and the principles by stating that "*if any principle or the framework per se is in conflict with the legislation or any standard, the itemized rules shall prevail for the purposes of enforcement"*. (Róth, Adorján, Lukács, & Veit, 2008, p. 4). Essentially, this means none other than a fundamental difference in approach between the *principle based* IFRS and the *rule based* Hungarian regulation. Nevertheless, it is true even in case of the rule based systems that a departure from the principles is more the exception than the main rule.

The Hungarian accounting regulation relies on the hierarchization of principles to a limited extent only and does not distinguish between the qualitative characteristics, constraints and underlying assumptions. Evidently, though, it essentially *applies all the terms defined within the IFRS system.*[33]

> The underlying assumption of *the separate entity concept* is the only one not stated among the principles or which cannot be derived from them in a direct manner. However, upon examination of the personal scope (Section 2) of the Accounting Act it is clear that the legislative provisions refer to separate legal entities independent of their owners.
>
> With respect to the principles of *matching* and *the accruals* it should be noted that in the Hungarian regulation it is the principle of matching that corresponds to the underlying assumption of accrual basis of accounting. In contrast, the principle of accruals is of an auxiliary and technical nature only and it does not actually provide a lot more compared to the principle of matching as it only means more exact information of a special case.

Concerning the Hungarian regulation the role of the *principle of prudence* should be assessed, which as presented earlier is deleted from among the qualitative characteristics of the IFRS. Traditionally, the Hungarian regulation has followed the approach of the continental, primarily German regulation based on prudence, although this seems to change with the development of the regulation. One of the stations of this change is the enabling of fair valuation, which runs counter the principle of prudence in that it also allows the recognition of unrealized profits with uncertain financial realization.[34] Of course the rate of uncertainty must be assessed in each case but the obligation of deliberation also means that uncertainty has an acceptable rate.

With respect to fundamental norms one must cover the purpose of financial reporting as well, the summary of which is stated in the Accounting Act as follows:
"*It is inevitable for the operation of the market economy that objective information on the financial position, financial performance and cash flows and their development of businesses and not-for-profit organizations, as well as other reporting entities, be available to market participants for the purpose of enabling their decision making.*

[33]For more details on the interrelationships between the qualitative characteristics of the Hungarian accounting principles and the IFRS, see (Lakatos, 2009), (Madarasiné, 2009).
[34] *"No profit or loss may be presented if the income or the financial realization of the income is uncertain. When determining the profit or loss for the year, any anticipated risk and presumed loss shall be taken into account by recognising a provision even if such risk or loss became known between the end of the reporting period and the date of preparation of the balance sheet. Depreciations, impairment losses, and provisions must all be booked, regardless of whether a profit or loss has been posted for the fiscal year (principle of prudence)."* (Aa. Sec. 15. Para (8))

This legislation specifies accounting rules (…) based on which a reliable and fair view may be provided on the income generating ability, assets, evolution of assets, financial position and future plans of those falling under its scope" (Preamble of Aa.).

The reports (financial statements) prepared in accordance with this legislation *"shall provide a reliable and fair view on the wealth of the entity, the composition of the wealth (assets, liabilities and capital), its financial position and the profit and loss of its activity." (Aa. Sec. 4. Para (2))*

Although the Hungarian regulation does not detail the concept of usefulness, it still prescribes compliance with the accounting principles (qualitative characteristics) in an indirect manner for the sake of fulfilment of the fundamental goal of financial reporting. In my view this can be deducted directly from the legislation by starting from the concept of usefulness (Part 1 of the Preamble), naming the criterion of a reliable and fair view (Part 2 of the Preamble, specifically for the financial statements: Section 4), prescribing financial reporting in accordance with accounting principles (Section 14).

> *Lakatos* (2009) argues in a similar manner: *"One may also make the argument that the named accounting principles, in line with the intention of the legislator, essentially lead to a reliable and fair view, thus incorporating in an indirect manner the criteria represented by usefulness."* (Lakatos, 2009, p. 106)

Paragraph (4) of Section 4 of the Hungarian accounting act specifically names the overriding principle while stating that if a reliable and fair overview cannot be ensured otherwise, departure from the itemized rules of the legislation is allowed.[35]

> At the same time attention one must take into account the fact that due to the intertwining of Hungarian accounting regulation and tax regulation the following provision of the Hungarian tax legislation assumes special importance: "*any departure from the provisions of the accounting act for the sake of ensuring a reliable and fair overview cannot result in any change of tax liability (Para (5) of Section 1 of Act on corporate income tax and dividend tax).* This puts the realization of the rule of principle into serious doubt.[36]

[35] Evidently, this is a very narrow course and the justified use of the legislation cited is possible only under very few circumstances. For more details see: (Lukács, 2002).
[36] About the relationship between accuonting and tax regulations see e.g.: (Kovács & Mohl, 2012).

5 Measurement and valuation in accounting

5.1 Concept of accounting measurement

Campbell (1952) defines the general term of measurement as "*assignment of digits for the representation of characteristics of material systems not made of digits"* (Campbell, 1952, p. 25). According to *Stevens* (1946), measurement is "*the assignment numerals objects or events according to rules*" (Stevens, 1946, p. 667). Although the two definitions differ in that the first one measures characteristics directly while the other one measures the object per se, they are nonetheless identical in the core essence of the measurement (which is more important in this case), namely the assignment of numbers to objects according to certain rules.[37]

As a result of the variation of the underlying systems of rules, different measurement scales and measurements arise. In case of any given measurement, three fundamentally important issues must be settled: (1) the rules of assignment as such; (2) the mathematical characteristics of the measurement scale (and the underlying structures); (3) the statistical transactions that can be carried out based on such scale.

Vehmanen (2007) has identified three steps of the measurement process:

1) *Drafting of concept*: First the goal of measurement should be defined exactly (the subject of measurement), i.e. the object to be measured (its characteristic) should be clearly specified and explicitly described using another conceptual system.

   Using the illustrative example of *Bródy* (1990): *"Before counting pebbles we must first specify what will qualify as pebbles. The 'theory of pebbles' involves e.g. the specifying of the smallest and the biggest size, otherwise dust grains and rocks could also be added to the counting. (…) Strictly speaking, therefore, it is not the pebbles that have a numerosity but what we consider as pebbles. (…) The measure is not independent of the perhaps previously stated but in most cases implicit conventions."* (Bródy, 1990, p. 522)

[37] It must also be noted that the purpose of measurement of characteristics is of course the capturing of the object, thus the final objective of the measurement is identical based on both definitions.

In case of accounting measurements *Vickrey* (1970) divides objects (phenomena) into 7 groups: (1) objects with a physical form (e.g. fixed assets, inventories, cash); (2) entitlements to future sums (e.g. receivables, securities); (3) entitlements to future services (e.g. advances paid); (4) rights related to the use of technological processes (e.g. rights of use, patents); (5) future economic benefits (e.g. capitalized R&D costs);[38] (6) promissory notes for the repayment of funds (liabilities); (7) promissory notes for the provision of services (e.g. advances received). The perception of equity as a residuum is clearly visible: the valuation of the equity in itself is not a question, it results as the difference between the value of assets and liabilities.[39]

2) *Quantification*. Secondly, it must be determined how we wish to assign numbers to the specific objects. This step does not mean assignment per se but the determination of the method of observation and the definition of the functional relationships.
3) *Execution of measurement.* This means the assignment itself using the observations and the appropriate measurement tools. [40]

Consequently, the underlying system of rules during the measurement is defined by the specific measurement goal (scientific domain). The measurement scale and its mathematical characteristics can be ascertained based on the underlying system of rules of the measurement.

According to F*üstös et al.* (2004) the numbers specified for the representation of events can have the following characteristics:

a) numbers are mutually exclusive;
b) numbers are ordered;
c) differences between numbers are ordered;
d) number series have a common starting point marked by 0.

Needless to say, it must be ensured during the measurement that the relationships between the numbers and the characteristics reflect the relationship between the events and things. Therefore, during the correspondence the characteristics of only those numbers may be regarded as valid that are relevant to the things.

[38] With respect to Group (5) it should be added that essentially all assets represent future economic benefits; the present case, as the example shows, actually involves a special group of accrued expenses.
[39] The grouping practically covers the full scope of assets and liabilities; nevertheless, other types of grouping are also possible (e.g. through a more detailed breakdown of liabilities).
[40] In contrast, for example *Kircher* (1959) divides the process of measurement into 5 steps: (1) goal setting, (2) definition of measurement object, (3) definition of characteristics to be measured; (4) specifying of the measurement method and the measurement unit, and (5) comparison of the measurement unit and the object. When comparing with the sections as cited by me it is clear that Kircher splits the first step of drafting of concept into several parts but its elements can still be identified. For more details see: (Lázár, 2002, pp. 30-31).

Depending on the realization of the above characteristics we distinguish a total of four basic types of scale, namely:

- nominal scale, in which case only a) is valid;
- ordinal scale, in which case a) and b) are valid;
- interval scale, in which case a), b) and c) are valid; and
- ratio scale, in which case all characteristics are valid.

If A and B denote two events (objects) while x stands for the measurement (variable) representing them, which in case of A is equivalent to x_A and in case of B is equivalent to x_B, then the *nominal scale* merely distinguishes between such objects and merely assumes a relationship of identity or difference between them. In other words, only the following may be stated on A and B: $x_A = x_B$ or $x_A \neq x_B$.

Ordinal scale defines the relative place of the objects and fulfils the ordering of objects. In other words, besides making a distinction between $x_A = x_B$ and $x_A \neq x_B$ we can also state that $x_A < x_B$ or $x_A > x_B$.

On the *interval scale* we can also interpret the extent of the differences. That is, in addition to the ordering $x_A < x_B$ or $x_A > x_B$ we can also state that A differs from B by a difference of $x_A - x_B$.

The *ratio scale,* besides the characteristics of an interval scale, also has a meaningful starting point (0), i.e. if $x_A > x_B$, then we can not only say that A is bigger by a unit of $x_A - x_B$ but also that it is x_A / x_B times bigger than B. (Füstös, Kovács, Meszéna, & Simonné, 2004, old.: 24)

Accounting measurement seeks to assign numbers to economic phenomena and events. The exact definition of accounting measurement, which is essentially still valid in the current regulation, was first drafted in 1971 in a report of the American Accounting Association stating that "*accounting measurement is an assignment of numerals to an entity's past, present, or future economic phenomena, on the basis of observation and according to rules"* (AAA, 1971, p. 3).

According to the currently valid definition of measurement in the Conceptual Framework, "*Measurement is the process of determining the monetary amounts at which the elements*[41] *of the financial statements are to be recognized and carried in the balance sheet and income statement."* (Conceptual Framework, Para 4.54)[42]

[41] Assets, liabilities and own equity are called wealth in the Hungarian accounting terminology, whereas incomes and expenses (costs) are referred to as changes in wealth in Hungarian.

[42] The revision of this part of the Framework is currently underway and as such a new draft has been drawn up concerning the new definition of measurement stating that "*Financial statement measurement is the numerical ordering or comparison of an asset or liability (or a change in an asset or*

Concerning this definition one must briefly mention that within accounting measurements a distinction must be made between the so-called initial measurement (measurement at recognition) and the subsequent measurement. Initial measurement implies the measurement of any asset or change in assets conducted upon their entry at the entity or upon the first recognition thereof in financial statements, whereas subsequent measurement means the determination of an amount appearing in a (subsequent) financial statement relative to the date after the recognition.

Based on the definition of the elements of financial statements (as per Para 4.4, 4.25 of the Conceptual Framework), which states that:

- assets represent future economic benefits,
- liabilities are future outflows,
- equity is the difference of the above, whereas
- incomes are present economic benefits,
- costs are present negative economic benefits,

it can be said that all these are the reflections of economic phenomena. Expression in monetary amounts is equivalent to the assignment of numbers to the elements of financial statements, which is considered self-explanatory in case of an accounting measurement while the underlying system of rules is considered as a given feature (as the definition itself is a part of the system of rules), therefore, it is plain to see that the two definitions are identical in content. This definition, and its underlying content, is hereafter followed in my dissertation.

As early as concerning the concept of accounting measurement the dangers of measurements resulting in the assignment monetary values (prices) should be mentioned. *Bródy* (1990) points out that "*Measurements that observe prices or calculate economic indicators using prices are especially fraught with danger and illusions. The prices observed are involuntarily considered as accurate as prices can be determined right up to the smallest amount of change. The chief accountant can ostensibly present and should present the costs of an investment in a fully accurate way: three-billion six-hundred thousand forints and 12 (not 11 and not 13) fillérs.*

liability) to other assets or liabilities (or changes in other assets and liabilities) with respect to a preconceived and defined basis in terms of a monetary unit that relates to that same basis, with the result that the asset or liability is properly placed in a monetary ratio scale." (IASB, 2007, p. 21). However, with respect to the above definition (plan) I agree with the comment by *Whittington* (2008), namely that although it stands strictly on measurement theory grounds it does not really seem like a better (not inferior) theoretical basis from the perspective of the makers and users of financial statements.Upon the drafting of the definition of measurement one should also start by considering the goal of financial reporting. In reality, measurement is only one of the components of the model of accounting relying on fundamental norms and embedded in a (widely interpreted) environment.

> *The measurement, surpassing the precision of scientist Eötvös, is however a mere illusion. What remains unclear is how much a fillér is worth and what it measures, how a forint-fillér compares with a pengő-fillér, a cent, a penny, or even its own value yesterday".* (Bródy, 1990, old.: 525)
>
> I believe that Bródy's statement equally applies to the current accounting systems. By adopting market prices as a system of reference they also adopt its inherent inconsistencies, whether they be past, present or future prices, or even a mix of these.

5.2 Relationship of measurement and valuation

The Hungarian accounting regulation does not use of the concept of measurement. Although it does not provide a definition for it, the concept of *valuation* that is used in the same sense as measurement has become common in both the regulation and the accounting theory.[43]

The current regulation speaks of "*valuation procedures in accordance with the accounting act"* without nonetheless defining the term. According to *Baricz* (1994) *the valuation involves, on the one hand, the conversion of material goods recorded in quantity into monetary value and, on the other hand, the potential modification of the monetary value of material and non-material goods not requiring recording of quantity"* (Baricz, 1994, p. 62). The *valuation procedure* is understood as „*the specific form of appearance of the valuation activity that is subject to change depending on how we approximate the objects of valuation and what specific prices or partial values we apply for the purpose of conversion into monetary value or the determination of the balance sheet value"* (Baricz, 1994, p. 63).

If we compare the above definition to the definition of accounting measurement set forth above it is clear that the two essentially involve the same: the goal is to determine the monetary value of the elements of the financial statements, that of the company wealth and the changes in company wealth; conversion is none other than the assignment of monetary amounts (numbers); monetary value and the underlying regulation is a given feature in this case as well. Consequently, the accounting valuation appearing in the Hungarian conceptual system (and the regulation) is identical in content with the accounting measurement used in the international terminology, with any difference being merely formal. We could even say that valuation in this sense is the measurement of the value.

[43] This is also the reason why the Hungarian translation of *measurement* as appearing in the IFRS is 'valuation'.

Nevertheless, *measurement* and *valuation*, or much rather *evaluation*, do not correspond in a wider and general sense. For example according to the Hungarian dictionary of words and idioms, valuation is understood as the "*evaluating assessment of something or somebody*", whereas according to another generally accepted definition it is "*the act of ascertaining the worth of a thing".*[44]

Vehmanen (2007) states that valuation is actually the allocation of a value symbol to an object that reflects its worth in a certain sense (based on a certain system). Precisely in what system this value symbol is to be interpreted is subject to the valuation in question. According to *Lázár* (2002), valuation is *"a goal-oriented activity in which the valuer determines the value of an element of reality. The purpose of this 'statement' is twofold: either the valuer makes a decision and assigns a value to the element in question himself/herself, or names and uses an already existing ('encountered') value."* (Lázár, 2002, p. 31). Therefore, valuation is equivalent to making a value judgment according to a pre-defined system of references, a system of references that can be the own system of the valuation or an adopted system, too. For example, *Cairncross* (1960) distinguishes five different valuation systems: moral goodwill, aesthetic beauty, usefulness, exchange value, ideal exchange value, but the list could be further extended.[45]

Therefore, if we regard valuation as an evaluating assessment and a value judgment, whereas measurement is the assignment of numbers that implies the relationships existing between the numbers and the takeover of judgments represented by such relations, then the two concepts are not the same. Yet an indispensable step of measurement is the selection of the value set. However, if we examine the choice between the individual alternative value sets, that is the internal relationships manifest in case of the alternative value sets, the picture is no longer so clear. From this perspective, measurement does contain the making of a value judgment and as such it cannot be taken apart.

Littleton (1929) argues that "t*he business man, the banker, the investor, may have many occasions to 'evaluate' a property, or prospect, or market, or stock of goods, but accounting never has. Accounting is a record function, not a valuation function."* (Littleton, 1929, p. 153).

[44] See e.g. http://definitions.dictionary.net/valuation

[45] The direct manifestation of the valuation system of accounting valuation involves monetary values but behind these is a reflection of the market opinion in every case.

According to *Peloubet* (1935) accounting does not evaluate in the above sense as it merely establishes as a "well-informed layman" the extent to which the evaluation done by others is appropriate for the purposes of accounting. Yet the evaluating assessment is not the task of accounting. According to *Berle and Fisher* (1932), while in a technical sense valuation is not the task of accounting, given that the different valuations often have to be taken into account it has become a part of accounting practice. Precisely speaking, it is accounting that has to check the valuations of others.

The above three definitions apparently restrict the functions of accounting, yet one should consider that they were written in the 1930s. In my view, they point out a rather important thing: accounting does not make a value judgment but instead represents something; therefore, in this sense it is true that it does not make a valuation. Nonetheless, it is in all cases the task of accounting to establish to what extent any valuation, no matter who is performing it, is in compliance with a given accounting system and the fundamental norms thereof.

The root of the measurement perspective evident in the Anglo-Saxon accounting thinking and the language of the regulation leads us back to the underlying assumptions described in 4.1.2, i.e. the issues of faithful representation. *Barth* (2000) states that "*Reliability* ('faithful representation' – note added by KDM) *refers to the ability of the measure to represent what it purports to represent. This is where the measurement perspective comes in. Questions appropriate to a measurement perspective include how well accounting income measures economic income and how well an accounting asset or liability measures the associated economic asset or liability."* (Barth, 2000, p. 16) Therefore, starting from the measurement perspective it does not value in the general sense as stated above but instead measures; the goal of accounting is to represent economic phenomena and present them in a faithful manner instead of making a value judgment.[46]

This neutrality of value is fully evident when assignment means the assignment of market prices, e.g. the investment value (acquisition cost), which are called *mark to market* measurements. However, it is less evident when using so-called general valuation procedures (models), called *mark to model* measurements.

[46] Although measurement perspective is present in the terminology, its dominance is increasingly questionable. For more details see Hiba! A hivatkozási forrás nem található..

Yet it should not be ignored that accounting valuation models do not "create a new world from nothing". In simple terms: they seek to ascertain the value judgment of the market for the date of the measurement. It is of course also an important issue how much these model-based valuations are actually able to anticipate future processes. At the same time, *Abdel-Magid* (1979) points out that conventional accounting values are essentially the result of two processes: (1) numbers assigned to fundamental events (e.g. sales transactions); (2) numbers based on calculations and measurement models. Strictly speaking, only the first process can be called measurement and in fact in this case *at the moment of the transaction*, owing to the use of monetary values, the measurement may be empirically justified and it occurs on a ratio scale. Model-based valuations and the choice of parameters used for the models has a crucial effect on the measurement output, which in turn outgrows this admittedly neutral approach that seeks to reflect the underlying content in the most faithful manner. Nor should it be ignored that faithful representation cannot be interpreted on its own, as described under 4.1.2. As a matter of fact, the choice of relevant phenomena itself is a kind of value judgment and, as a result, in this sense accounting measurement can never be neutral.

In summary, it should be stated that on the one hand the accounting valuation used in the Hungarian terminology is referred to as accounting measurement in the international terminology and, on the other hand, the common underlying content of concepts, assignment is a more relevant issue than the choice between measurement and valuation, which is much more an issue of approach (philosophy) than an issue of accounting theory. My dissertation uses the word 'valuation' for the ascertaining of value, although the term 'measurement' perhaps better emphasizes assignment; nevertheless, valuation as a term has become widespread in the Hungarian accounting terminology and I would find it inappropriate to replace the terms commonly used in accounting.[47]

Clarification of this problem is further made difficult by the fact that accounting currently uses the concept of value in a rather extensive manner. Yet the accounting value (book value)[48] is none other than the monetary amount ascertained as a result of the assignment process, i.e. the assigned number.

[47] However, I cannot consistently apply this in case of measurement of the fair value; see 6.4 and Footnote 135.

[48] Although in the English accounting terminology the term *carrying amount* does not contain the word *value*, we often encounter the term of value (net realizable value, fair value, residual value, value-in-use, etc.). In Hungarian accounting terminology the term *value* is in general use and it is widely recognized to refer to it through different terms using words other than that of *value* (recoverable amount, historical cost, etc.).

Referring back to the three steps of the measurement process it is clear that while the definition and the underlying terminology means the drafting of concept it says nothing on the rules of the assignment (quantification). Therefore, the terminology of accounting measurement is only one component of the theory of accounting measurement (although a crucially important one) but the rules of the assignment do not follow from the concept itself.

5.3 Valuation in the current accounting regulation

Thus the theory of accounting valuation (accounting measurement) has to provide an answer to the question of according to what rules the numbers should be assigned to the economic phenomena. One of the most important elements of the system of rules of assignment is the value set of assignment, i.e. the set(s) of numbers from which the choice is made. The value set of the accounting valuation is represented by the *measurement bases.*[49]

However, the definition of measurement bases is insufficient as a definition of the value set is necessary but not sufficient for the performance of the assignment. For this the rules of choice between the measurement bases must also be laid down. The measurement bases, along with the rules of choice of measurement bases, form the theory of accounting valuation.

5.3.1 Measurement bases in the current regulation

The currently valid Framework defines four measurement bases, namely *historical cost, current cost, realizable / settlement value* and *present value.* (Conceptual framework, Para 4.55.)

Upon assignment of the *historical cost* the assets are stated in the financial statements at the fair value valid on the date of the financial instrument paid (equivalent) or the price paid for the acquisition of the instrument, whereas the liabilities are stated in the monetary value obtained for the assumption of the obligation or, under certain circumstances (e.g. income taxes), are stated in the anticipated monetary value due during the normal course of business.

Upon assignment of the *current (replacement) cost* the assets are presented in the financial statements in the monetary value due for an identical or replacement instrument on the date of the valuation while liabilities appear in the current and undiscounted amount due in exchange.

[49] Although the Hungarian equivalent of *measurement base* is valuation base, I use the widespread international term in lieu of '*valuation base'* and in the same sense.

Upon assignment of the *realizable/settlement value* the assets appear in the financial statements in the monetary value that can be attained during their sale under current conditions in an arm's length transaction, whereas the liabilities appear in the (undiscounted) amount due during their settlement in a normal business transaction.

Upon assignment of the *present value* the assets appear in the financial statements at the discounted present value of the anticipated future cash flows generated by themselves, whereas the liabilities appear as the discounted present value of the anticipated future cash flows related to their settlement in a normal business transaction.[50]

The four measurement bases as described above cannot be considered fortunate in that they are actually *not uniform and atomic concepts of value* but are instead complex concepts, which are consequently difficult to delineate and define in an exact manner (hard to operationalize). As a basic problem, they use the complex concepts of cost and value, which themselves require a definition.

Historical cost as a past purchase price is only partially uniform given that, in case of exchange of non-monetary instruments, it speaks of the fair value of the exchange value without a definition provided for this term earlier. The definition of the term of historical cost can also be challenged on the grounds that although it covers the preliminary valuation (with the aforementioned constraints), it says nothing of the later valuation as historical value can only be understood for a single point in time concerning an asset.

Another complex concept is that of *present value* as by virtue of the future cash flows this can be a future sales price (cash flows resulting from a sale) or a value-in-use (cash flows resulting from use). Another problem is posed by the issue of what the exact content of the price is in case of price-based valuation bases (historical cost – past purchase price, present value – current acquisition value, realizable value – current purchase price, present value – future sales price). Is it adjusted or unadjusted, is it the specific price of a given instrument or does it also include other closely related outflows, etc.?

If we accept the above measurement bases as general categories or umbrella terms, then all values arising through any modification (accumulation, depreciation, allocation) based on a past/present price/discounted cash flow must be considered historical cost/current/present value.

[50] We could even say that present value seeks to capture "the future in the present".

Nevertheless, measurement bases highlight the *dual nature of accounting valuation*, for which *Ijiri* (1967) states: an asset has both a *benefit value* and a *sacrifice value*, therefore assets have to be measured with value pairs representing both benefits and sacrifices. After enabling the time plane, Ijiri determines four valuation models:

Time	Sacrifice value	Benefit value
Past	Historical cost	Realized value
Future	Replacement cost	Realizable value

Table 1: The dual nature of accounting valuation.
Source: Based on (Ijiri, 1967) (Bedford, 1968, p. 276)

In my view the quaternary division by Ijiri can be put in parallel with the above defined four measurement bases; historical cost has the same content, whereas in case of the replacement cost and the realizable value we can speak much more of a present time orientation while the equivalent of the future time horizon is the present value in the current regulation. Realized value (past benefit value) is problematic in the sense that the existence of benefits realized in the past presumes the use of the assets; however, this means that it is not applicable during the valuation of existing assets.[51]

With respect to Ijiri's system, *Bedford* (1968) also notes that for an exact definition of measurement bases a description of operations (valuation rules) is required. For example, historical cost could mean the cost (price) of the asset acquired or the cost of acquisition (sum of price and related items) but also a cost of use of the asset (an event separate from the purchase).

Ijiri, but from a certain aspect the current regulation itself, fails to address the issue of operationalization. The current regulation articulates on a level of individual standards (detail rules) what is meant by the content of a specific valuation base. Consequently, *the content of historical value* differs per asset, although not fundamentally. Albeit, given the uniqueness of the assets no fully uniform definition can be provided.

[51] The conceptual system can of course be extended to the liabilities as demonstrated in the valuation bases of the Framework.

The complexity of the historical cost is illustrated in the below table summarizing the elements of the historical value of fixed assets (property plant and equipment) (as per Para 16-22 of IAS 16[52]):

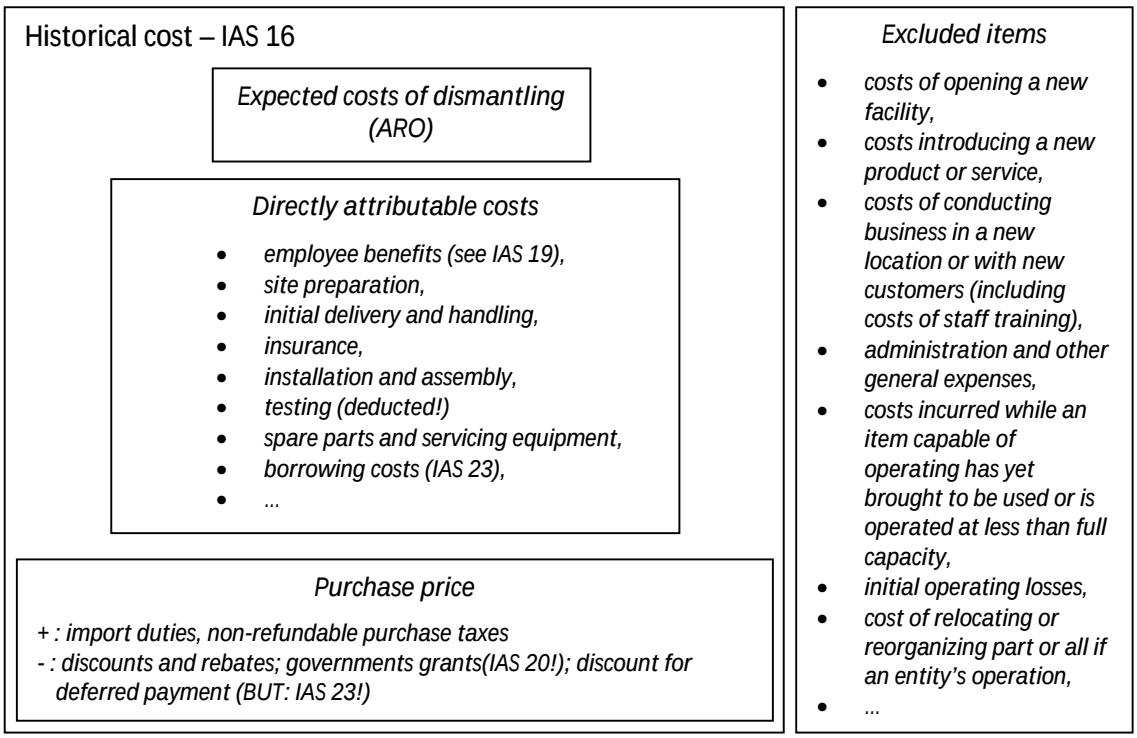

Figure 3: Content of concept of historical cost in IAS 16. Author's own version.

Based on the above, in a somewhat simplistic manner, we can say that although the IFRS framework defines the measurement bases this does not serve its primary purpose as it is incapable of serving as the foundation of accounting valuation theory given that if we look at just the elements of the value set the regulation already leaves a number of questions open.

> The question then arises: is the regulation meant to lay the foundations of the theory of valuation? The drafter of the standard adopts a more cautious attitude by stating as the goal the filling of the loopholes currently evident in the regulation and the drafting of a clear-cut and updated guide that can be used for establishing the general requirements of valuation in the different standards (IASB-FASB, 2008, p. 2). Nevertheless, I believe that in practice this means the laying of the foundation of valuation theory.

[52] IAS 16 – *Property Plant and Equipment*

Hungarian accounting regulation lacks the conceptual approach that is to some extent typical of the system of IFRS (the stating of the principles in the Framework). Although the accounting act regulates valuation as such under a separate heading (*"Valuation of assets and liabilities" – Aa. Sections 57-59.*), this does not include the definition of measurement bases, albeit one can trace it back to the item-by-item rules. An overview of the regulation is further made difficult by the fact that the rules of valuation are actually contained in the sections beyond the above mentioned subheading (Sections 46-68). Nevertheless, the criticisms raised against the rules of IFRS apply here all the same.

5.3.2 Planned new catalogue of measurement bases

Accounting regulation has recognized that the theory of accounting valuation is one of the least developed areas of the current regulation, therefore the future will see a review of the current rules of valuation as part of the joint conceptual framework project of the IASB[53] and the FASB[54]. This meant the *review of the measurement bases*, whereby the regulator defined nine possible new measurement bases. These are the *past entry price*, the *past exit price*, the *modified past amount,* the *current entry price*, the *current exit price*, the *current equilibrium price*, the *value-in-use*, the *future entry price*, and the *future exit price*.

As can be seen, the planned measurement bases can be divided along the time plane, i.e. the time horizon of the information carried; three refer to the past, four to the present and two to the future. Out of the nine "candidates", seven are prices, one is a value while another one is neither a price nor a value (the *modified past amount*). The distinction is important as, although both prices and values seek to capture the extent of economic benefits, prices are amounts determined by the market and thus they do not reflect even a single factor characterizing a given entity, in contrast with value (in use), which also includes entity-specific factors.

Within the draft the different measurement bases can be further split into sub-cases and, accordingly, a total of *21 measurement bases* have been defined. The price type of measurement bases have been all broken down depending on whether or not they include items related to the transaction (e.g. shipping and loading costs, various taxes, customs, spare parts, etc.).

[53] International Accounting Standards Board
[54] Financial Accounting Standards Board

In case of the current entry price (replacement cost) the draft also makes a distinction for the assets with respect to the type of replacement: purchase/reproduction of identical/replacement asset/capacity. In case of the modified past amount the basis of the breakdown is the type of modification: accumulation/allocation/depreciation, or a combination of these.

The following chart summarizes the planned system of measurement bases. Unlike the draft I divided measurement bases into two fundamental groups: as a first step I distinguish between market (price) based and model based measurement bases. Evidently, I classify among the market based measurement bases the different prices and the modified past amount as this can be derived from the past entry prices. Future prices are essentially an in-between area as future market information can only be predicted. The model based measurement basis is the current equilibrium price (general equilibrium theory model) and the value-in-use (model based on discounted cash flows related to the asset). The chart does not show a further breakdown of the current entry price and the modified past amount for the sake of transparency.

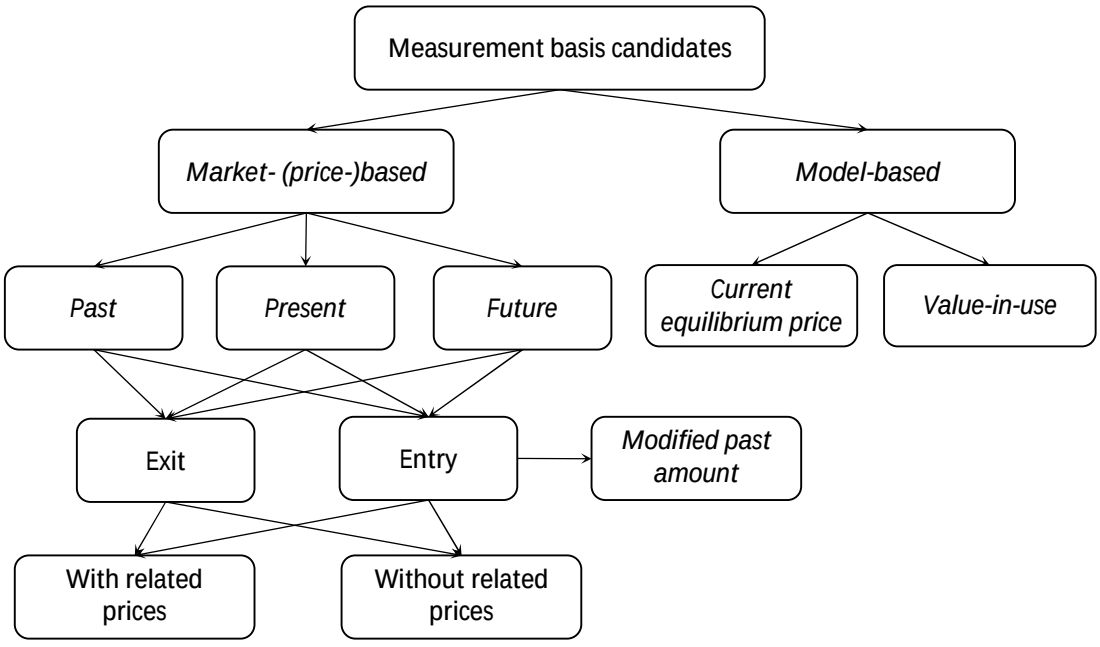

Figure 4: System of planned measurement bases. Author's own version.

The definition of the measurement bases in the draft is provided in the following table:

Measurement base	Definition
Past entry price - with related prices - without related prices	The price that an entity would have had to pay in the past in exchange for purchasing its *asset*, ignoring/plus the prices it would have had to pay for acquisition-related goods or services. (1) The price that an entity would have received in the past in exchange for incurring its *liability*, ignoring/less the prices it would have had to pay for incurrence-related goods or services, or (2) an amount imposed in the past for incurring a non-exchange *liability*.
Past exit price - with related prices - without related prices	The price that an entity would have received in the past in exchange for selling its *asset*, ignoring/less the prices it would have had to pay for disposition-related goods and services. The price that an entity would have had to pay in the past in exchange for extinguishing its *liability*, ignoring/plus the prices it would have had to pay for extinguishment-related goods and services.
Modified past amount *a) Accumulated* *b) Allocated* *c) Amortized* *d) Combined*	a) The sum of all entry prices paid in the past to assemble, construct, or augment an *asset* over an extended period of time, including the prices paid for acquisition-related goods or services. The sum of all prices received in the past in exchange for incurring multiple obligations within a single *liability* or incrementally increasing an existing single-obligation liability over an extended period of time, net of the prices paid for incurrence-related goods or services. b) The amount assigned to an *asset* after allocating a past entry price to multiple items. The amount assigned to a *liability* after allocating a past entry price to multiple items. c) The remainder of an *asset's/liability's* original past entry price or subsequent past exit price after assigning some of that price to subsequent accounting periods, according to an accounting rule for amortization or depreciation. d) The amount assigned to an *asset/liability* through a combination of accumulation, allocation, and/or amortization of past prices.

Measurement base	Definition
Current entry price - without related prices - with related prices *i. Identical replacement* *ii. Identical reproduction* *iii. Equivalent replacement* *iv. Production capacity replacement*	The price that an entity would have to pay currently in exchange for purchasing its *asset*, ignoring/plus the prices it would have to pay for acquisition-related goods or services. The current entry price with related prices is the current entry price of replacing (i) an existing asset with an identical one by purchase, *or* (ii) an existing asset with an identical one by reproduction, *or* (iii) an existing asset with an equivalent asset, *or* (iv) the productive capacity of an existing asset with the most current technology available. (1) The price that an entity would receive currently in exchange for incurring its *liability*, ignoring/less the prices it would have to pay for incurrence-related goods or services, or (2) an amount that would be imposed on an entity currently for incurring the entity's non-exchange *liability*.
Current exit price - with related prices - without related prices	The price that an entity would receive currently in exchange for selling its *asset*, ignoring/less the prices it would have to pay for disposition-related goods or services. The price that an entity would have to pay currently in exchange for extinguishing its *liability*, ignoring/plus any prices it would have to pay for extinguishment-related goods or services.
Current equilibrium price	The single equilibrium price for which an *asset/liability* could be exchanged currently between knowledgeable, willing parties in an arm's-length transaction conducted in an efficient[55], complete[56], and perfect[57] market.
Value-in-use	The value that an entity places on its own *asset*. In its most sophisticated form, the amount of discounted net cash flow that the entity expects to receive from using its asset, including cash flow from the asset's eventual disposition.[58] The value that an entity places on its own *liability*. In its most sophisticated form, the amount of discounted net cash flow that the entity expects to pay for having incurred its liability, including cash outflows for carrying costs and for the liability's eventual extinguishment.

[55] By effective market the standard means the classic *Fama* type of definition; see more in (Brealey & Myers, 1999)
[56] A market is complete if all possible transactions related to a given asset can be concluded.
[57] A market is perfect if all market players are perfectly informed and accepting of prices, there are no entry and exit barriers or transaction costs and the production technology is equally available to all.
[58] "*That which a given asset/liability is worth to an entity.*"

Measurement base	Definition
Future entry price - with related prices - without related prices	The price that an entity would have to pay in the future in exchange for purchasing its *asset*, ignoring/plus the price of any acquisition-related goods or services. (1) The price that an entity would receive in the future in exchange for incurring its *liability*, ignoring/less the price of any incurrence-related goods or services, or (2) the amount that an entity would have to pay in the future because of the imposition of a non-exchange *liability*.
Future exit price - with related prices - without related prices	The price that an entity would receive in the future in exchange for selling its *asset*, ignoring/less the price of disposition-related goods or services. The price that an entity would have to pay in the future in exchange for extinguishing its liability, ignoring/plus any prices it would have to pay for extinguishment-related goods or services.

Table 2: Planned measurement bases in the IFRS. Source: (IASB-FASB, 2008)

An indisputable advantage of the planned new measurement bases over the earlier regulation is that it seeks to establish a sufficiently atomic, operationalizable and seamless (complete) system. The drawback of the draft follows precisely from this seamlessness: the measurement bases become so divergent that their practical applicability is made questionable. Yet the IASB emphasizes that all measurement basis candidates must be tested in the later stage of standard drafting based on the qualitative characteristics presented earlier (in their respective field of usefulness). (IASB-FASB, 2008, p. 3)

It is clear that the draft carefully avoids the use of earlier measurement bases and even historical cost does not appear as an independent measurement basis. The reason for this is the above mentioned ambiguity. The current (present) entry price is special in the sense that unlike the past and future entry price it features the definition of several possible combinations (identical/replacement asset). The relevance of this in case of past prices is rather slight as we know precisely which asset has been transferred to the entity, whereas in case of future prices even an approximation cannot be provided due to technical development and the change in replacement products available in the market.

When looking at the relationship of the time horizon and qualitative characteristics the fundamental conclusion can be made that relevance increases through approximation from the past to the date of the valuation and in parallel faithful representation becomes increasingly difficult as it requires more underlying assumptions (estimations).

For example if we consider a tangible asset purchased years earlier, the past value of which has no relevance in decision making due to depreciation and changes in market circumstances. Yet if we want to ascertain the current value of the asset we usually start from a model calculation for which we need to rely on a number of assumptions with respect to future use, expected cash flows and risk relationships. This is also true if the valuation is based on the market prices observed as it is fairly unlikely that we should find a fully identical asset in the market, in which case any adjustment of market prices or the consideration of unique characteristics is subject to assumptions. Such assumptions, in comparison with past prices actually paid, are much more difficult to verify.

5.3.3 Rules of assignment in the current regulation

Perhaps the most important components of the theory of valuation are the rules of assignment that stipulate which elements of the value set defined earlier should be assigned to an economic phenomenon during the accounting representation.

Within the current regulation we can practically not speak of a uniform system of rules of assignment developed in full detail.

The IFRS Framework states only that: "*The measurement basis most commonly adopted by entities in preparing their financial statements is historical cost. This is usually combined with other measurement bases. For example, inventories are usually carried at the lower of cost and net realisable value, marketable securities may be carried at market value and pension liabilities are carried at their present value. Furthermore, some entities use the current cost basis as a response to the inability of the historical cost accounting model to deal with the effects of changing prices of non-monetary assets.* Conceptual Framework, Para 4.56). As a result of the above, by combining the measurement bases the system of IFRS implements a mixed valuation model.

With respect to mixed valuation models the danger exists that by covering up *economic matches* the accounting representation values heavily interconnected assets in a different manner. As a result of this *accounting mismatch,* in addition to the value of the wealth of the entity its equity and profit and loss are also distorted, thus "*even in case of positions with an economic equilibrium the profit and loss, as well as the equity, of entities may fluctuate."* (Boros, Bosnyák, & Kováts, 2006, p. 513)[59]

[59] The *fair value option* found in the current (IFRS) regulation of financial instruments (IAS 39/IFRS 9) are meant to resolve such valuation inconsistencies by allowing the fair valuation of assets that are otherwise carried at historical cost if this means that an accounting mismatch can be avoided. Cf. Para 9 of IAS 39 (definition of assets and liabilities carried at fair value through profit and loss),

The Hungarian accounting act also names historical cost as the general basis of valuation. "*Fixed assets and current assets (…) shall be carried at historical cost."* (Para (1) of Section 57 of the Aa.) Nonetheless, the continuation of the legislation cited above causes something of a confusion as it refers to depreciation write-offs and impairment losses (in the Hungarian terminology: accelerated depreciation) and its reversal as items modifying the (original) historical cost. While the (systematic) depreciation (amortization) does not outgrow the terminology framework, however, the impairment loss based on the current market value and essentially representing the current market/realizable[60] value, or the value created after its (partial) reversal, are from a terminology aspect not a historical cost.[61] Yet by enabling the idea of value adjustment and fair valuation the Hungarian regulation has shifted or, more precisely, taken another step in the direction of a mixed valuation model.

As a typical feature of the current Hungarian and IFRS accounting regulation, it essentially establishes the valuation (assignment) rules per asset. Nevertheless, in case of the different assets a distinction must also be made between the initial (historical) measurement (basis) and the subsequent (at the balance – preparation – sheet date) measurement (basis). Consequently, in a specific financial statement (such as the balance sheet forming a part of this) multiple measurement bases reflecting states at different dates appear.[62] For the different assets the measurement bases applied by the IFRS are summarized in the table below by presenting the most important[63] measurement bases, as well as their theoretical counterparts based on the currently valid and planned rules, named by the detail rules (specific standards) with respect to the different groups of assets and liabilities.[64]

subheading b); Para 4.1.5 and 4.2.2 of IFRS 9. The Hungarian regulation does not apply the fair value option.

[60] In case of tangible and intagible assets the regulation refers to market value while in case of self-manufactured inventories it speaks of realizable value in content. (Para 1 of Section 53 and Para 1-2 of Section 56 of the Aa.)

[61] More precisely: reversal is possible to a maximum extent of the original book value (and up to the impairment loss recognized earlier), however, rules do not prohibit that the reversal be partial. In case of full reversal we are back to the historical cost, yet in case of of a partial reversal we cannot refer to the historical cost as a Balance Sheet value.

[62] See: 5.1.

[63] The objective of the table is to provide a comprehensive overview of the currently valid regulation and not to collect all detail rules; therefore, the table does not include each and every standard.

[64] The value of equity as a residuum results as the difference of assets and liabilities valued in a proper manner. The individual equity instruments (equity elements) are to be presented at nominal (historical) value but this only influences the allocation between the equity elements and not the value of equity as a whole.

Within the table the current measurement bases are marked in normal letters while the planned measurement bases are marked in *italics* under the theoretical measurement base.

Item	Initial measurement		Subsequent measurement	
	Denoted measurement base	Theoretical measurement base	Denoted measurement base	Theoretical measurement base
Tangible and intangible non-current assets (IAS 16, IAS 38, IAS 36)	historical cost	historical cost *past entry price (with related prices) / modified past amount (accumulated/ allocated/ combined)*	depreciated / amortized historical cost	historical cost *modified past amount (amortized)*
			depreciated / amortized fair value	current cost / present value *modified past amount (amortized)*
			recoverable amount[65]	current cost / present value *value-in-use / current equilibrium price (modified)*
Inventories (IAS 2)	historical cost [66]	historical cost *past entry price (with related prices) / modified past amount (accumulated/ allocated/ combined)*	Measurement base at recognition without any modifications.	
			net realizable value	realizable value *current exit price (with related prices)*
Financial assets and liabilities (IAS 39/IFRS 9)	fair value	current cost / present value *current equilibrium price*	fair value	current cost / present value *current equilibrium price*
			amortized historical cost	historical cost *modified past amount (amortized)*
			present value (recoverable amount)	present value *value-in-use*

[65] The inferior one out of the value-in-use (for its definition see 6.3.3) and the fair value less costs to sell.
[66] In a general case. The table does not include special inventories (e.g. inventories of commodity broker-traders).

Item	Initial measurement		Subsequent measurement	
	Denoted measurement base	Theoretical measurement base	Denoted measurement base	Theoretical measurement base
Biological assets (IAS 41)	fair value less costs to sell	current cost / present value *current equilibrium price (modified)*	fair value less costs to sell	current cost / present value *current equilibrium price (modified)*
Investment properties (IAS 40)	historical cost	historical cost *past entry price (with related prices) / modified past amount (accumulated/ allocated/ combined)*	Depreciated historical cost in accordance with IAS 16.	
			fair value	current cost / present value *current equilibrium price*
Income tax assets and liabilities (IAS 12)	expected payable / receivable amount	historical cost *future exit price (without related prices)*	expected payable / receivable amount	historical cost *future exit price (without related prices)*
Leased assets and liabilities for leased assets (finance lease) (IAS 17)	fair value (of the leased asset)	current cost / present value *current equilibrium price*	Assets: in accordance with IAS 16.	
	present value (of minimal lease payments)	present value *value-in-use*	Liabilities: historical cost less capital repayments.	historical cost *modified past amount (amortized)*
Assets acquired through business combinations (IFRS 3)	fair value	current cost / present value *current equilibrium price*	The carrying amount in line with the applicable standard.	
Non-current assets held for sale (IFRS 5)	The carrying amount (in line with the applicable standard) without any modifications.			
	fair value less costs to sell	current cost / present value *current equilibrium price (modified)*	fair value less costs to sell	current cost / present value *current equilibrium price (modified)*

Table 3: Key measurement bases in the IFRS. Author's own version.

The above table also highlights what divergent meaning and specific content the four measurement bases currently named in the Framework carry in case of the unique balance sheet items. Concerning the planned new measurement bases the table also shows that these reflect the difference in the underlying content of the various specific values in a more unambiguous manner and that, accordingly, the similarity or difference in the valuation of the unique balance sheet items can be identified more easily.

5.4 Accounting valuation – theoretical approaches

5.4.1 The axiomatic model of accounting valuation

The current regulation thus determines historical cost as the general measurement basis, although it says nothing on the theoretical characteristics of historical cost. In accounting theory *Ijiri* (1965) (1967) (1975) developed an axiomatic model for accounting systems based on historical cost.[67] Ijiri drew up three axioms and deducted from these four valuation rules. The axioms established can be summarized as follows:

1) *Axiom of control:* A method exists with which the resources controlled and the obligations undertaken by an entity at a specific date can be clearly determined at such date or a subsequent date.
2) *Axiom of quantities:* A method exists with which all resources and obligations can be clearly divided into classes such that for each class a non-negative and additive physical measure[68] can be defined in a way that within a given class two selected units are the same if and only if their measures are identical.
3) *Axiom of exchanges:* A method exists with which the changes occurring in the resources controlled and the obligations undertaken by an entity at any date and identified at such date or at a subsequent date can be clearly grouped into increase-decrease[69] pairs, whereby the increase belongs to one and only one class.

[67] Ijiri's model itself was not without any precedents, see: (Mattessich, 1957), (Mattessich, 1964) and other at later times also attempted to develop formal measurement theories, such as: (Vickrey, 1970), (Mock, 1976).
[68] This can be a natural measurement unit or value, too, as certain assets (e.g. receivable-type and liability-type items) can only be expressed in value. In such case the "physical measure" is the value itself.
[69] To be precise, into movement pairs in the opposite direction (an increase of an asset is countered by the decrease of an asset or the increase of a liability (a negative asset), or the other way around).

Based on the axiom of control all assets and liabilities of the entity can be clearly identified and based on the axiom of quantities their quantity can be clearly identified, thus the only open problem is the assignment of values to quantities, the valuation itself. The axiom of exchanges is actually the basic rule of double capturing (in Ijiri's words the *causal* double-entry bookkeeping)[70]: a decrease occurring in a given asset is always accompanied by a movement in the opposite direction, all economic phenomena cause changes in two assets at the same time, thus affecting their respective asset side and liability side. However, this double side often remains hidden and only the asset change or the liability change appears in an explicit manner.

> If we consider basic business (accounting) transactions, in certain cases of an increase or decrease in assets the aspects of assets are explicit while the aspects of liabilities/equity are hidden: the increasing asset inherits the liability/equity aspects of the decreasing asset. The situation is exactly the opposite in case of liability-liability transactions; in case of asset increase – liability increase transactions both aspects are explicit, whereas in case of asset decrease – liability decrease transactions they are fictitious: another relationship assumes the place of the original (historical) asset-liability relationship. Asset-liability relationships could be made explicit, however, this would result in little extra information compared to their resource requirement.

The rules of the valuation process can be summarized as follows:

1) *Basic rule 1*: The value of any resource group within the basic class (cash) is the same as the quantity determined on the basis of the respective physical measure relative to such class.
2) *Basic rule 2:* The value of the empty set is 0.
3) *Value allocation rule*: Before any change the value of the class in question must be allocated between the outgoing resources and the remaining ones. The sum of values allocated for the outgoing resources will be equivalent to the value of the decrease. The value of the class in question is to be decreased with this value.

[70] Ijiri distinguishes between *classification* and *casual* double-entry bookkeping (capturing). The classification double-entry bookkeeping approaches the same object from two directions while causal double-entry bookkeeping links two objects based on the causal relationship (we could say: economic phenomenon) between them. However, I find this distinction rather artificial as the double capturing, even if it is looked at from "just" a classification perspective, inherently contains the causal process, as described quite graphically by the asset-source (means liability and equity) concept pair in the Hungarian terminology (that is the source of funding the assets already entails a causal relationship).

4) *Value imputation rule*: In case of increase of a resource outside the basic class the value of the resource increase is identical with the value of the resource decrease in parallel to it. This value of the class is to be increased with this value.
5) *Value comparison rule*: If the resource increase belongs in the basic class, the value of the gain or loss is the difference of the increase and decrease values.

In reality, the axioms of the model, as well as the basic rules and the rule of value comparison does not depend on the measurement basis, in this case the historical cost. This is essentially true for the value allocation rule, too, although the determination of the value of the decreases articulates the allocation of the historical cost and its recording as a decrease in an implicit manner, albeit this rule itself can be extended by means of a revaluation[71] before the recording of the decreases. The value imputation rule, although it is essentially based on historical cost as it assigns the value of the outgoing resource to the incoming resource, can also be extended if the outflow is not recorded at historical value. The value comparison rule applies not only to financial instruments but to assets "turning into cash" also (such as those relating to receivables or liabilities).

Although in a logical sense Ijiri's model is not fully closed, nor fully axiomatic (Tippet, 1978), and it could be argued that it much rather lays the foundation for the theory of measure than that of measurement (valuation) (Orbach, 1978), it is nonetheless beyond any doubt that it describes accounting systems based on historical cost in an illustrative manner.[72] Given that accounting systems today essentially rest on historical cost grounds, the principles of Ijiri's models still hold true today. Although the model is valid in its clearest form when historical cost is applied, it can be extended, thus allowing a multi-purpose valuation model to be implemented on the theoretical grounds of double capturing by means of the above described extension.

[71] Revaluation is equivalent to a fictitious pair of outflow and inflow, for which the value comparison rule shall apply.
[72] However, one has to agree with the remark by *Willet* (1987) that precisely due to its illustrative and descriptive nature the model does not reveal the basic elements of accounting structures in sufficient depth that would allow their strict examination. (Willet, 1987, p. 159).

5.4.2 Relationship between accounting valuation and income (profit)

Evidently, the valuation not only influences the value of the assets and liabilities appearing in the balance sheet but also the presented value of the profit and loss as a part of the change in equity. Just what valuation rules (valuation procedures) are applied to determine the balance sheet value of (all) the assets fundamentally influences the presented earnings as well.

With respect to the definition of accounting income (earnings) *Dichev* (2008) presents two contrary concepts: the income statement approach and the balance sheet approach.

Accrual basis of accounting and matching can be regarded as the underlying theoretical background of the *income statement approach* coined by Dichev. Accordingly, the emphasis is on the natural type of booking of realized incomes and expenses (costs), as well as their assignment to each other. The assets listed in the balance sheet can only be considered accrued expenses[73], thus income represents the difference between the revenues realized (in connection with actual outputs) and the related expenses calculated at a historical cost level (Dichev, 2008, p. 455). *Paton* and *Littleton* (1940) state that "*during the recognizing of revenues, realization is much more relevant than the origination process of income*" (Paton & Littleton, 1940, p. 49). According to *Liang* (2001), other than the operative definition of accounting income based on the principle of realization and matching and as described above, it has no general purpose (internal) definition in this approach.[74]

Conversely, the *balance sheet approach* considers as the main task of financial reporting the correct valuation of assets and liabilities.[75] Determining the value of assets and liabilities also determines the income, which under this approach is equivalent to the change in the value of net assets (equity), adjusted with the effect of transactions undertaken with the owners (Dichev, 2008, old.: 454).

[73] *Paton and Littleton* (1940) view assets as expenses that are awaiting their destiny: their allocation among the periods (matching to incomes).

[74] Although the realization principle itself becomes clear if we consider that the realization represents a moment in time. It is certainly a triviality (a tradition) that the accounting realization, taking as a basis the accrual based accounting approach, means the actual ("physical") fulfillment of a given transaction. Yet financial performance or any other date could also be a realization. See more in (Liang, 2001, p. 228).

[75] *Canning* (1929) interprets assets as expected future services. Consequently, it considers as the only logical valuation the appropriate discounting of the inflows from their future use.

Baricz (1994) names calls the theoretical interconnection between the valuation ("method of valuation of assets and liabilities") and the wealth, between equity and income, *valuation principle.* This interconnection signals whether during the valuation it is the value of wealth, the value of equity, or the earnings that have a priority. The *realization principle* puts in the focus the past (historical cost) valuation, i.e. the determination of the realized income, whereas the balance sheet value is of secondary significance only. This valuation principle is reflected in the income statement approach. In contrast, the *time value principle* results in an asset and liability valuation with daily prices, thus focusing on the value of the wealth. This principle is the basis of the balance sheet approach described above[76] (Baricz, 1994, pp. 75-79).

Based on the balance sheet objectives derived primarily from these principles several (material) *balance sheet theories* were developed in the early 20th century, which essentially present this dichotomy. The dynamic balance sheet theory[77] based on the principle of realization as developed by *Schmalenbach* can be classified under the income statement approach, whereas the static balance sheet theory based on the time value principle as marked by the names of *Rieger, Niklisch* and *Le Coutre* can be classified under the balance sheet approach. *Organic* balance sheet theories *(Schmidt, Sommerfeld)* can be considered to be a combination of the two approaches. (Baricz, 1994, pp. 141-160)

The note should be added to the above that essentially when using any kind of measurement basis the income can be defined as the change of net assets, albeit this is just a formal correspondence; the key aspect of the balance sheet approach consists in also measuring the effect of price changes of the value of assets and liabilities against the basis.

The economic background of the theory is represented by the income concept of Hicks[78,79], which from an accounting perspective was summarized by *Alexander* (1962) stating that "*a year's income is, fundamentally, the amount of wealth that a person, real or corporate, can dispose of over the course of a year and remain as well off at the end of the year as at the beginning"* (Alexander S. S., 1962, p. 127).

[76] In addition, the author mentions the principle of *operating estimate* (future price based valuation) and, as an auxiliary principle, the principle of *prudent estimate*.
[77] The pagatoric balance sheet theory of *Kosiol* can also be classified here.
[78] Nevertheless, *Brief* (1982) points out that while many argue in favor of the balance sheet approach by citing Hicks, Hicks himself found the historical cost based accounting more appropriate versus other valuations based on estimates. *Jameson* (2005) also points out that Hicks argued in favor of the adjustment of income understood on the basis of the balance sheet approach. According to Hicks the one-off *capital windfall effects* should be taken out of the income for the period and the income should thus be leveled out and reflected as constant expected future consumption. (Jameson, 2005a, p. 333), (Jameson, 2005b).
[79] It should also be noted that Hicks developed several definitions for income based on the above approach, termed income number 1 by him, which have various economic backgrounds. See: (Hicks, 1978, p. 209).

However, when applying the definition of Hicks it must be pointed out that it requires assets to be properly measured both at the beginning of the period and at the end of the period. If any of these is compromised (the valuation is inappropriate), then the profit and loss determined will fail to be a "Hicksian income" [80] (Dichev, 2008, p. 454).

> In the above I highlighted the similarities in approach of economic income and accounting profit and loss. Yet one of the differences is the fact that while accounting income primarily examines the business and measures the income for which equity is the residuum, economic science (Fisher and later Hicks) focuses on the individual and measures the equity while consider income as the residuum. Income in an accounting sense is equivalent to the equity increment from one period to another. (Bélyácz, 2002)

Therefore, owing to the identicalness of the balance sheet (assets = equity + liabilities) it is true for all measurement bases that the book value of equity (BV_t) corresponds with the opening book value (BV_{t-1}), the above described "Hicksian income" ($NICL_t$), and the owner transactions (the transactions with the owners in their capacity as owners): the sum of net equity payments ($NetCap_t$) and dividend payments (DIV_t). Formally (according to Wang, Buijink, & Eken, 2006, p. 5):

$$(1) \quad BV_t = BV_{t-1} + NICL_t + NetCap_t - DIV_t$$

In reality, the question is, on the one hand, what measurement basis is used for determining the book values and, on the other hand, how the accounting profit and loss is defined. If we examine the above relationship it is clear that in case of a pure historical cost model – based on the axiomatic model presented under the previous point – the realized profit and loss represents the above equation. In contrast, if we assign different measurement bases to the assets when determining the book value, then the realized profit and loss of the historical cost model does not correspond with the above income, thus the equation is not fulfilled by substituting the recognized profit and loss as the income.

> To illustrate with a simple example: if the we remove the conditions of the historical cost model and allow the revaluation of certain assets through equity, then the income recognized on the basis of historical costs do not consider the effect of such revaluations while the change due to the revaluation appears in the equity, thus the presented income explains only a part of the change of the equity beyond the effect of owner transactions.

[80] Cf.: "*… it would seem we ought to define a man's income as the maximum value which he can consume during a week and still expect to be as well off at the end of the week as he was at the beginning."* (Hicks, 1978, p. 207)

Following the work of *Peasnell* (1982) and *Ohlson* (1995) *Wang et al* (2006) named the profit and loss term fulfilling the above equation as *clean surplus* while giving the name *dirty surplus* to the elements that represent a change in equity by circumventing the accounting income.

In the regulation the problem of clean surplus accounting can be identified with the concept of *comprehensive income*.[81] The concept of comprehensive income essentially means that the full clean surplus and all non-owner transactions resulting in a change of the value of equity (*total comprehensive income)* are presented in the *statement of comprehensive income*. The total comprehensive income contains the income of a given period (primarily based on the realization principle), as well as *other comprehensive income*.

From a certain perspective I consider other comprehensive income to be no more than a presentation issue given that it is the measurement model used which determines whether the items above the realized income can appear in the equity, which itself is independent of the existence of comprehensive income. It is fundamentally up to the regulator to decide which of these surpluses above the realized income will qualify as income and as part of other comprehensive income.[82]

> According to the currently valid rules of the IFRS, other comprehensive income may contain the revaluation surplus of non-current assets (see IAS 16 and IAS 38), the actuarial gains and losses related to various employment benefits plans (see IAS 19), differences arising from the translation of financial statements prepared in foreign functional currencies (see IAS 21), changes of the fair value of financial instruments measured at fair value through other comprehensive income (see IAS 39/IFRS 9),[83] the sum of gains and losses related to the effective part of cash flow hedges (see IAS 39), as well as the change of fair value due to a change in credit risk (see IFRS 9)[84] (IAS 1, Para 7).

[81] Clean surplus accounting has an extensive research background. Many have studied the effects of the recognition of dirty surplus elements on management decisions, see e.g. (O'Hanlon & Pope, 1999) and the usefulness of income calculation based on clean surplus, see e.g. (Biddle & Choi, 2006). Yet many have highlighted the fact that the recognition of clean surpluses does not in every case serve the improvement of the quality of financial reporting, see e.g. (Wang, Buijink, & Eken, 2006). The basic idea of valuation models based on accounting income itself is clean surplus accounting, see (Ohlson, 1995), (Feltham & Ohlson, 1995), (Lo & Lys, 2000), (Ohlson, 2001), (Ohlson, 2005).

[82] For example the not realized changes in value of some financial instruments are to be recognized through net income while other ones are to be recognized through other comprehensive income. The current regulation partially leaves this up to the entity to decide (cf. IFRS 9, Para 5.7.5).

[83] According to the – current – rules of IFRS 9, only equity investments qualify as such, while IAS 39 allows the valuation of some debt instruments and which are *available for sale* to be recognized through the other comprehensive income.

[84] Items affecting the other comprehensive income may only be booked under such legal title if using IFRS 9. According to IAS 39 the complete change in fair value is to be booked against the net income.

> The Hungarian accounting regulation does not use the term of other comprehensive income, the items corresponding to the above, i.e. more precisely according to the currently valid regulation only the surplus arising during the revaluation (value adjustment) of non-current assets and the change in the fair value of financial instruments may appear in the financial statements, are to be booked directly against the equity. Any difference arising during the translation of financial statements (of foreign subsidiaries) are to be recognized on the income statement according to the current Hungarian regulation (Para (7) – (9) of Section 123 of the Aa.).

In my view the appearance of other comprehensive income in accounting regulation can be considered to be a compromise. The problem results from the fact that the regulation has started off toward the balance sheet approach while it is unwilling to give up the concept of realized income.[85] Realized income only holds true as clean surplus in case of a purely historical cost valuation model. As soon as we relax the boundary conditions of the model (the historical cost) in any direction (e.g. we allow discounting below the historical cost), the question immediately arises whether the (negative) surplus thus created can be a part of the net income.

For example, in case of the recognizing of impairment losses based on the principle of prudence, the solution that today seems quite evident was to extend the concept of net income even if as a matter of fact the losses due to impairment have not been realized (and, as mentioned in 5.3.1 concerning the measurement bases, the valuation is from this point forward not based on historical cost). The question is essentially the same when presenting other value changes (even in case of appreciation) as well: which are allowed to be recognized in net income and which may "only" appear in the other comprehensive income.

As the reason for the recognition of other comprehensive income, *Smith and Reither* (1996) examined the American data and found that although financial statements contained such information earlier as well, however, the presentation of surpluses hidden in the equity improves the transparency in the (comprehensive) income statement given that the components of other comprehensive income often appear in an inconsistent and aggregate manner. The question leads us back to what qualifies as performance for a given entity, or more precisely if other comprehensive income can be identified as a part of the entity performance, thus placing it in the (comprehensive) income statement presenting the performance.

[85] Doubts related to the balance sheet approach again resurfaced in the regulation during the review of the Conceptual Framework, see more details in (Bromwich, Macve, & Sunder, 2010).

As a personal opinion, I do not attribute too much significance to this issue as I believe that the mere "place" of presentation (income statement / statement of changes in the equity) does not distort the information carried and the choice of presentation solution itself does not influence the decisions of well-trained and prudent users. I believe that the underlying content does not change simply because of the presentation while it should be noted that the representation of the underlying economic content is the task of accounting. The concept of other comprehensive income is also meant to serve the fulfilment of this, although it should also be added that it is arguable to what extent this fundamentally presentation solution is a better representation.[86]

5.4.3 Criticisms of accounting valuation

The main criticisms levelled against accounting valuation concern the lack of justification of the accounting valuation and the lack of theory of the valuation while seeking to lay down a theoretical system of their own. These include for example the works of (Ijiri, 1975), (Orbach, 1978), (Staubus, 1985), (Willet, 1987), (Willet, 1988), (Chambers R. J., 1991), (Walker & Jones, 2003). At the same time *Musvoto* (2011b) notes that they often sought to address the problem of accounting valuation without even defining the problem itself (Musvoto, 2011b, p. 202) while it can be said that all of them took as a basis the classical theory of measurement as mentioned in 5.1. Conversely, the starting point of Musvoto is that accounting is essentially a social science, therefore a fundamentally different approach is required.[87] According to Musvoto this model is a *representational measurement (RTM)* model that consists in starting from an observable phenomenon (an empirical network), describing its measurable characteristics (attributes) and laying down qualitative axioms. The purpose of the representative measurement is to represent the empirical network of the underlying phenomenon as precisely as possible by starting from the qualitative axioms.[88]

[86] Whether the (other) comprehensive income is truly relevant is questioned by many. Although *Bartov* (1997) found a relationship between the foreign currency translation differences and yield, his findings were sensitive to the definition of yield. *O'Hanlon and Pope* (1999) found little evidence for relevance when examining United Kingdom data. With the exception of the financial sector, *Dhaliwal et al.* (1999) found no evidence to suggest that comprehensive income is in any close relationship with yields/market value, it better anticipates expected cash flows than the conventional income before taxes. They managed to detect a connection between yield and comprehensive income only in case of the valuation differential of securities available for sale. An illustration of the subject is provided by: (van Cauwenberge & de Beelde, 2010).

[87] *Homburger* (1961) stated that "*as the values measured in accounting are social rather than physical in character, a subjective element enters into almost all accounting measurements"* (Homburger, 1961, pp. 98-99).

[88] The model starts from an empirical system of relationships, which contains an object base that can be described with the interconnections and the related transactions. RTM focuses on describing the above

In case of the accounting valuation the target attributes of the underlying economic phenomenon are the measurement bases as defined in the Framework (value and cost), although in the opinion of Musvoto these cannot actually be observed and empirically tested. In reality, accounting represents a simulated reality[89] by the fundamental norms as described in Chapter 4, thus we generally cannot speak of the measurement of empirical phenomena but of their indicators only, which although they are easy to produce but cannot be validated (Musvoto, 2011b). As a matter of fact the value changes constantly and as a result the result of the valuation can only be expected values or their respective probability levels (*multi-valued logics*), in contrast with the assigned monetary values in case of accounting valuation (*mono-valued logics*) (Musvoto, 2011a, old.: 222).

Chambers (1998) reminds us that the current regulation of accounting valuation does not define the measurement scale and, as a result, the mathematical operations that can be carried out using the assigned numbers obtained after the valuation are not defined either. Therefore, the clarification of the concept of measurement unit would also be required by defining a "standard" unit.

According to *Abdel-Magid* (1979) during the acquisition we can in fact speak of a measurement along a ratio scale[90], although the same cannot be ensured during the valuations following the acquisition. This "loss of scale" is the consequence of calculations becoming excessive during the accounting valuations due to the underlying assumption of accrual basis of accounting. This in turn results in the valuation losing its empirical grounds, thus the operations to be performed can only be done on the basis of mathematical relationships, i.e. the characteristics of the measurement scale.[91] However, in order to justify the logic of the calculated value it is necessary that the mathematical representations used in the calculations be uniform, which is not provided by the historical cost model.

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empirical structure as concisely and precisely as possible. To that end, it lay down qualitative axioms than can be tested empirically and which provide an abstract description of the nature of the empirical structure. The main question of RTM is if the empirical (discernible) structure can be represented at all in some other abstract system (usually with numbers) based on the given qualitative axioms. The purpose of RTM is the unambiguous representation of the empirical structure. We can speak of representation if order preserving *f* representations (homomorphisms) exist between the two structures while assignment is unambiguous if it determines which $f \rightarrow f'$ transformations are admissible (how the the certain homomorphisms relate to one another). If the empirical tests justify the axioms established, then at least one homomorphism can be selected as the measurement scale of the given relevant characteristic (Decoene, Onghena, & Janssen, 1995, p. 234), (Boumans, 2007, p. 26).

[89] *Gouws and van der Poll* (2004) highlights the matching principle, the accrual basis of accounting, prudence, and the going concern principle, which can nevertheless be understood in a general sense as well, see Chapter 4 on the role of fundamental norms.

[90] For more details see 5.1.

[91] The operations tha can be performed for fundamental measurement scales were described in 5.1.

This is because the historical cost model is a mixed one: it uses various representations for the quantification of e.g. depreciation, impairment losses, as well as income. Another problem is that the values appearing in financial statements are in reality aggregates. Such aggregates are created as a multiplication of physical quantities and prices. Accounting valuation considers physical quantity to be a given (measure reflecting a past state) while it enables the use of past, present, and future variables for prices. Yet on an aggregate level this leads to inconsistency: *"it is not unlike the fallacy of concluding that 2=4 on the ground that 2×0=4×0"* (Chambers R. J., 1998, p. 39). While this is of course mathematically absurd it illustrates well, albeit in a simplistic manner, the questionableness of the additivity of accounting values.[92] In case of mixed valuation models this statement does not require an explanation and it is even true in case of a historical cost model as the different asset and liability values represent various time stages depending on when they entered the financial statements of the entity.

> Chambers starts from the assumption that "*in common usage, to measure means to discover, by the use of an appropriately calibrated scale, the magnitude of a specified property of an object, under specified conditions"* (Chambers R. J., 1994, p. 85). Aggregation, for its part, is the summary of individual measurements of objects with a common characteristic performed under identical circumstances. This in turn has its limits, namely: careful observation, a certain characteristic, an identical measurement scale and identical circumstances. Under these constraints a monetary amount available on a given day and the historical cost of a non-monetary asset on the same day cannot be added up as the monetary amount measures *spending power* while the historical cost does not. Nor can we add up historical costs of different dates and a monetary amount available on a given day, unless the scale reflects the spending power differential between the two dates. Historical cost based accounting systems infringe on all the constraints, whereas if the balance sheet value is obtained from *sales prices for the same date*, such *constraints are not compromised.*

If we approach the issue from another perspective the interpretation of aggregates also becomes questionable in case of joint use of purchase prices and sales prices: although (again in a simplistic manner) we can conclude that these cannot be aggregated as their underlying characteristics (economic attributes) are completely different. The problem also exists for a "conservative" accounting valuation model as well: the yield value descriptions actually mean valuation at (modified) sales prices while historical cost primarily means a purchase price.

[92] In a general sens, *Campbell* (1952) states that assignments not fulfilling the axiom of additivity cannot be called measurements. From this point of view, by accepting the statement of Chambers, accounting valuation cannot be called a measurement in a theoretical sense.

Advancing one level higher even the meaning of wealth appearing in the balance sheet becomes questionable as the aggregation of prices of not only varying dates and different characteristics but the value of assets significantly differing from each other (the amounts assigned to them expressed in monetary terms) is questionable from every aspect: *"diverse valuations of diverse things are added to find an asset total that, dollar for dollar, cannot have a common significance"* (Chambers R. J., 1998, p. 42). This approach practically questions the justification of the balance sheet, at least on the level of balance sheet values. Nonetheless, I think that the fact should be considered that a valuation based on uniform principles would require a number of additional assumptions that would also deteriorate the quality of balance sheet values base on the criterion of fair presentation.

> *Barlev and Haddad* (2007) call the value term used in accounting as *common monetary denominator (CMD)*, which allows mathematical operations to be performed with different balance sheet and income statement data. Depending on what specific content the equivalent carries, i.e. what measurement basis is chosen, different operations may be performed. Accordingly, the authors distinguish between a "*basic*" CMD corresponding with the pure historical cost model, a *price level adjusted* PLA-CMD, a *price-structure denoted* PSA-CMD, and on an international level a *fully adjusted* CMD corrected with the effects of currency changes and (in case of non-current assets) the effects of different capacity preservation samples. Aggregation, as well as any operation performed with the aggregates can only be interpreted in case of full adjustment, which are not ensured by historical cost or mixed valuation models, unlike a valuation based on current market prices.

Eventually, the issue leads us to the question: what is the task of accounting valuation? According to *Beaver and Demski* (1979) in a world of imperfect and incomplete markets[93] the task of accounting valuation and income measurement is to provide information and accounting is a "*cost-efficient communication procedure"* (Beaver & Demski, 1979, p. 38). This so-called "information content approach" (Christensen & Demski, 2002) is actually nothing new as the task of accounting is primarily to provide information service.

[93] *" The market structure is complete in the sense that all consumption goods as well as all factors of production are traded in organized markets. And each such market is perfect in the sense that prices are known by all agents, no transactions costs of any form are present, all agents behave as strict price takers, and the transaction technology is convex (fractional quantities of all factors and commodities are available).."* (Beaver & Demski, 1979, p. 39)

However, as *Shortridge and Smith* (2009) pointed out the underlying (mostly economic) system of phenomena and the resulting problems to be solved, as well as the demand for information, has changed.[94] As a consequence, the accounting system has (had) to change also: accounting has progressed from an industrial paradigm to an information content paradigm. *Liang* (2001) calls this change of paradigm a shift from measurement perspective to information content perspective, whereby contrary to the earlier item (asset, income, etc.) approach the issue is now the usefulness of accounting information in decision making subject to an uncertainty factor.

With the information content approach we have essentially got back to the primary purpose of financial reporting (usefulness in decision making), thus in the regulation this approach is manifest at least on a level of principle. It is nonetheless beyond any doubt that the system of fundamental norms determines its content, so we can even speak of simulated reality. At the same time it should be noted that when examining a valuation model which can/should be used in a general purpose financial statement certain *constraints* are present, therefore models that are theoretically pure cannot in all cases be applied (in a feasible manner) in practice. In this sense "simulated reality" cannot be circumvented while the above criticisms highlight the restrictions of accounting valuation and the fact that establishing an absolute scale is not necessarily recommended. More specifically, the examination of the model of fair valuation from a theoretical aspect itself does not necessarily highlight the strengths and weaknesses of the model, and the given framework in which the model is embedded and to be applied cannot be ignored. I believe that precisely due to the embeddedness, the unavoidable and tight intertwining of theory and practice the accounting representation, and as a part of it the accounting measurement, can in all cases be optimal in an approximating manner, a compromise which is nonetheless indispensable to the realization of the underlying objective.

[94]According to *Hitz* (2007) the information content pertains to the "novelty value" of accounting information and presumes information (1) that are first published in the not fully efficient markets by means of financial statements, (2) that of relevance in decision making, i.e. they are capable of changing/reinforcing the expectations of investors concerning the value of the given entity.

6 The conceptual system of fair value accounting

When addressing the concept of fair value (FV) I take as a basis the assumption drawn up in Chapter 3. Fair value is, on the one hand, an accounting term: although its economic background can be identified[95], it is primarily a particular accounting structure: an accounting measurement basis. Consequently, on the other hand, I apply the "inductive" approach when presenting fair value: after outlining the currently valid regulation I present the characteristics of fair value.

> Concerning the "fairness" of fair value one must make a short detour. Fair value, as such, is a rather awkward name as it inherently conveys connotations that are not actually justified. As *Sunder* (2008) states, "*Fairness is a personal judgment, not a valuation rule. Affixing a new, loaded label to a well-researched and well-discussed method of valuation may amount to playing the old game of policy rhetoric: using clever labels to put the opponents of your proposal on the defensive before the debate even starts. Who would want to defend the use of 'unfair' values in accounting? It is perhaps best to put the 'fair' aside and discuss current values."* (Sunder, 2008, p. 112) I agree with the above argument with the addition that it would be best to understand and to examine the term itself, rather than arguing over its "fairness" in an inconclusive manner. Consequently, I consider the idea of calling fair value "fair" as completely irrelevant with regard to the theoretical nature and the accounting justification of the term.

The conceptual framework of fair value is represented by IFRS 13[96] in the currently accepted regulation, as well as its predecessor, basis and pair, the FASB ASC 820[97] (formerly SFAS 157)[98] *fair value measurement* standards. The Hungarian regulation of fair valuation, which is generally in compliance with the currently still valid IFRS (IAS 39), is essentially represented by Sections 59/A-59/F of the Accounting Act.[99]

[95] The economic background of the concept is outlined in 6.3.2.
[96] International Financial Reporting Standard 13 – Fair value measurement. Although IFRS 13 only enters into force on 1st January 2013, the regulation of the fair value is presented on the basis of the new standard. The reason for this is that several standards, in particular IAS 39 (and IFRS 9 fully adopting it) also contain rules with respect to fair valuation, see for example: (Boros, Bosnyák, & Kováts, 2006) –, although the rules of IFRS are not in contradiction with these and present the conceptual system of fair value in a much more elaborate manner.
[97] FASB Accounting Standards Codification Topic 820 – Fair value measurements and disclosures
[98] Statement of Financial Accounting Standards No. 157 – Fair value measurements
[99] In addition, reference should be made to government decree no. 250/2000. (XII. 24.) on the unique characteristics of financial reporting and bookkeeping obligations of lending institutes and financial entities, although this serves more as a source of technical rules.

The concept of fair value, in an explicit manner, appeared in the IFRS in 1982 (Cairns, 2007, old.: 11), in the US GAAP in 1985 (Alexander D. , 2007, p. 76), and in the Hungarian accounting regulation in 2004, [100] albeit the term has much deeper roots.

According to *Walton* (2007b) market value acquired a special meaning in Anglo-Saxon economic and legal thinking at the end of the 19th century, or quite possibly even earlier from the 17th century onwards, although this idea was discarded in the 20th century. Upon the examination of the German and French regulation *Richard* (2005) concluded that a special form of fair valuation had a significant role in continental accounting regulation from the 1800s on.[101]

According to *Sunder* (2008) accounting valuation rules can be distinguished from each other in how they adapt historical costs to current prices. Sunder speaks of the "huge space" of valuation procedures, which itself has an enormous linear section, whereby in a somewhat simplified way three main directions can be identified: the two end-points, the historical cost and the current value,[102] as well as the general price level adjustment between these (GPLA).[103] Fair value amounts to a relabeling of the application of current value accounting ("the old bottle of wine") (Sunder, 2008, p. 112) Although the final conclusion is compendious, I believe it casts light on the "family tree" of fair value and how the theoretical considerations (and debates) concerning fair valuation are not recent.

At the same time the concept of fair value itself is not static if we just look at the latest, and in this case the most crucial, period.[104] One of the declared goals of SFAS 157 and later of IFRS 13 was to draft a "new", uniform definition for fair value. In this sense I would instead emphasize uniformity given that the definition is not new but it was not consistently applied in all standards.[105]

[100] Precisely speaking, it was enacted in Act LXXXV of 2003, date of entry into effect: 1st January 2004, fair valuation could first be used in fiscal years starting in 2004.
[101] In its depth this also involves the difference in approach of the dynamic and static balance sheet theory while the elaboration of balance sheet theories and in parallel the focus on valuation in accounting thinking can be dated to the early 20th century, see more in (Baricz, 1994).
[102] A brief summary of the recent history of current cost accounting (CCA), which can be regarded as the precursor of fair valuation, can be found in (Walton, 2007a) and on the development of the fair value paradigm: (Barlev & Haddad, 2003, pp. 388-393).
[103] General Pricel Level Adjustment. For more details see e.g.: (Watts & Zimmerman, 1978), (Abdel-Magid, 1979), (Tweedie & Whittington, 1984), (Boussard, 1984), (Bosnyák, 2003).
[104] For an overview of the subject, see e.g. (Georgiou & Jack, 2008), (Georgiou & Jack, 2011) and (Alexander D. , 2007).
[105] In the currently still valid regulation of IFRS (prior to IFRS 13), fair value has 6 different definitions, which do not differ from each other in the basic idea, yet are rather divergent in their details. (Alexander D. , 2007, p. 74)

6.1 The concept of fair value in the system of IFRSs

According to the definition of IFRS 13, *fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date* (IFRS 13, Para 9).[106,107]

The definition applies to *unique assets or liabilities* (these may be stand-alone assets or liabilities, but also a homogeneous group, entity or even a whole branch), thus when measuring the fair value we must also consider the characteristics of the instruments, such as their state, their location, any relevant restrictions ("*as is*"). During the course of measurement of fair value the (measurement) *units of account* of the assets, which are generally used in accounting settlements, must be taken as the basis. This can be a unique asset/liability (e.g. a financial instrument), or a group of assets and/or liabilities (e.g. cash generating unit).

> The problem of unit of account raises particular questions in case of financial instruments managed as a portfolio. Fair value can primarily be interpreted in case of unique assets and liabilities, as well as a group of these, broken down to assets and liabilities even in case of a group. Through the portfolio approach we artificially create an asset (a net long position) or a liability (a net short position) and we measure these. Nevertheless, this can only be done if a portfolio is managed based on a given market risk exposure or credit risk exposure, i.e. there is data provision on the portfolio and all of its components are carried at fair value. (IFRS 13, Para 48-49.)

Transaction is a *hypothetical transaction* starting from the going concern principle, which must be looked at from the perspective of the asset's owner or the obligant of the liability, thus when determining the fair value one must always start from the *exit prices* as this reflects the expectations of market players concerning assets and future cash flows.

> Entry price and exit price often do not differ ("*the prices of the same asset quoted in the same market at the same date are usually the same"* (Barth, 2011)), however, if e.g. the sale and the purchase occur in different markets, the two prices may vary.

[106] *The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.*

[107] Although IFRS 13 is a standard of universal effect, special measurement rules prescribed by the given standard for fair value are to be used for IFRS 2 and IAS 17 and for determining the net realizable value akin to fair value (IAS 2) and the value-in-use (IAS 36). In these cases IFRS 13 cannot be applied.

When determining the transaction one must take as a basis the price of the asset in question in its principal market, or in the absence of such market, the price formed in the most advantageous market for a *given reporting entity. Principal market* is where the subject asset or liability could be traded in the largest volume and at the highest level of turnover; *most advantageous market* is where the biggest profit could be attained.

The fair value of assets and a (hypothetical) market transaction related to an asset are much easier to "capture" than a liability. However, for a given (mostly not financial) instrument a number of uses are observable, and for each use various market transactions and price (including the values determined on the basis of valuation procedures) are observable or are theoretically possible as the fair value of the given asset. In case of financial instruments IFRS 13 does not consider this distinction necessary as we cannot speak of alternative uses in case of financial instruments given that if the cash flow structure of an asset changes this practically means the creation of another asset instead of another use.[108]

In contrast, the measurement of the fair value of non-financial assets assumes that out of all the *physically possible, legally admissible and financially feasible* (in a wide sense) uses market participants choose the most lucrative one (*highest and best use).*

In case of an asset, the *highest and best use (utilization)* can be of two types: further use (in-use valuation premise) and sale (in-exchange valuation premise).

> When applying the *in-use valuation premise* we presume that market participants are seeking to use the asset in conjunction with other assets, thus the fair value of the asset is influenced, typically increased, by the synergies between the assets.[109] (This assumption mainly holds true in case of non-financial instruments.)
>
> Use of the *in-exchange valuation premise* is justified if it can be assumed that the asset itself can be used on its own and this allows market participants to maximize profits. In such cases the fair value of the asset will be the assumed income originating from its prompt sale as a typically unique and independent asset. (This assumption is generally true in case of financial assets.)

[108] See more under IFRS 13 BC63-67.

[109] The fair value determined by applying this premise is not identical with the *value-in-use*defined in IAS 36. Value-in-use reflects the own activity of the entity and uses the actually anticipated numbers in the calculations while fair value relies on the more general use that can be attained by market players. For more details see 6.3.3.

The definition points out the in case of *liabilities* we are dealing with a *transfer* and not a settlement, regardless of whether the entity wishes to transfer the liability/equity instrument at any point. In case of a transfer it must be assumed that the liability/equity instrument will continue to exist, therefore the other party shall:

- undertake the obligation and does not wish to settle it on the day of the valuation, and
- it will maintain the rights and obligations represented by the equity instrument without any change and does not wish to eliminate them (e.g. through a capital reduction) at the date of valuation.

A During the measurement of fair value it must always be assumed that the probability of default is the same before and after the transaction (i.e. in the obligation only the obliged person changes while the liability itself persists with the same conditions and probability of performance) and, as a result, fair valuation considers the unique *non-performance risk* of the entity as well. Although the risk of non-performance depends on it but it is not restricted to the credit risk typical for the entity. In addition to the credit rating, other factors may also affect the probability of default, such as the nature of the liability (financial or non-financial), as well as the terms and conditions of *credit enhancement* agreements.

The standard defines *market participants* as well-informed, motivated sellers and buyers but not under duress (e.g. undergoing liquidation) who are independent of the reporting unit and are capable and willing to conclude a transaction. Therefore, the measurement of fair value must reflect all the assumptions of market participants that would be considered during the pricing of a given asset or liability.

During the identification of the assumptions of market players it is not the specific actors that are to be identified but the *general characteristics of market participants* instead, for which one must of course consider the characteristics of the given asset or liability, the principal (or most advantageous) market, as well as the characteristics of potential market participants.

The *price* is a *sales price established during an orderly market transaction prior to the measurement*, thus when measuring the fair value the effect of the usual information disclosure and marketing activities must also be considered, which contribute to the forming of the most advantageous prices. When determining the fair value one can never take as a basis value relationships formed as a result of ownership change under duress (e.g. when the seller was in financial difficulty, etc.).

When measuring fair value one must ignore the *transaction costs* as these do not form part of the fair value and may consequently not be used to adjust market prices (they are not to be deducted from the market price). The reason being that the transaction cost much rather characterizes the actual transaction that the given asset or liability. Fair value, in turn, never starts from a specific but from a hypothetical transaction: the purpose is not to present a specific transaction but the value reflecting the characteristics of a given asset ("*as is*").

Nevertheless, transaction costs should never be confused with transport costs that are *ordinarily* incurred during the transport to the principal (or most advantageous) market, therefore they characterize not the specific transaction but the given asset. In other words, in cases where the *fundamental characteristic of the asset* is where it is located (e.g. in case of a retail item) the market price must be adjusted with such costs (this is less likely in case of a production assembly line).

When an entity acquires an asset or assumes a liability, it has a price that is typical of the value relationships of the sales transaction in question. However, this is an *entry price* and it follows clearly from the definition of fair value that the basis of measurement of fair value must always be the exit price. The two prices conceptually differ from each other but in practice they are often the same, therefore this acquisition price will be the fair value of the asset.[110]

In some cases, though, the price applied during the sales transaction is not identical with the fair value. For this , one must consider the unique characteristics of both the asset or the liability, as well as that of the transaction. In particular, such cases may be (as can be deducted from the definition of fair value itself): transactions between related parties; if the seller was forced to accept a disadvantageous price; if the unit of account used during the transactions differs from the one applied when measuring the fair value;[111] and if the market in which the transaction was concluded differs from the principal or most advantageous market of the entity.[112]

[110] Generally speaking, the sales price and the purchase price are the same for transactions of identical assets at the same date between parties having the same information in the same markets.
[111] For example if the asset to be valued at fair value was only one element of the transaction.
[112] For example *interdealer* and *retail* markets in case of stockbrokers.

6.2 The concept of fair value in the Hungarian regulation

According to the definition of the accounting act "*fair value is the amount for which an asset could be exchanged (sold or purchased) or a liability settled, between properly informed parties declaring their intention to conclude a deal as part of a transaction (contract) agreed under orderly market circumstances."* (Point 12 of Para (9) of Section 3 of the Aa.)

> With regard to the Hungarian regulation it should be noted that fair valuation and fair value itself appeared during the amendment of the accounting act in 2003[113] with the goal of ensuring compliance with the Directive 78/660/EGK (4th directive) as amended by the Directive 2001/65/EK of the Council of Europe.[114]

At this point reference should be made to the fact that in the Hungarian regulation the term fair value is only encountered in case of financial instruments: measurement at fair value is only allowed in case of financial instruments,[115] which in itself does not cause any difference of interpretation of the term. The differences in meaning mainly result from the fact that the conceptual system appearing in the Hungarian accounting has not been modified since its introduction and it essentially reflects the IFRS regulation valid in 2003. By comparing IFRS 13 and the Hungarian regulation we can thus obtain a picture of the direction in which the international regulation is headed.

The definition of IFRS 13 substantially differs from its Hungarian counterpart on three points.

On the one hand, IFRS 13 clearly speaks of sales price *(exit price)* while in the Hungarian regulation both sales price and purchase price ("*for which an asset could be sold or purchased"*) are state in an explicit manner.[116] This poses a problem in the sense that the two terms are mixed up and the accounting act fails to provide an answer on which term is used for the measurement in which situation.

[113] To be precise, it was enacted in Act LXXXV of 2003, entry into effect: 1 January 2004, although fair valuation could be used as early as in reports covering the year 2003.
[114] The principle states that "*member states must allow or require for all corporations or any of their groups the recognition of financial instruments, including derivatives, at fair value."* (Directive78/660/EGK, Article 42/a. Enacted in Directive 2001/65/EK, Article 1)
[115] The volume of fair valuation is covered in detail under 6.6.
[116] Exit price and entry price are much more precise and "universal" definitions and can be better interpreted for liabilities.

On this point the Hungarian accounting act differs from the underlying definition stated in IAS 39 prior to the entry into effect of IFRS 13, in which only the tem "exchangeable" is stated.[117] In my view there was no theoretical reason for such variation during the drafting of the Hungarian definition and instead the authors sought to just provide further explanation and clarification for the term. However, this solution is rather unfortunate due to the above described confusion, although it is much more an error in codification that wilful deviation from the IAS 39 concept.

Behind fair value determined as the exit price is the assumption that exit prices represents, under the assumption of profit and gain maximizing market participants, the maximum amount obtainable for a certain asset and the minimum amount payable for the transfer of a liability, the future (cash) flows. This approach is, on the one hand, in line with the general concept of assets and liabilities, which basically means that the assets to be represented in the financial statements result in the inflow and outflow of economic benefits (Conceptual Framework, Para 4.4).[118] On the other hand, fair value should always be ascertained from the perspective of the owner of an asset or liability, so applying exit prices is logical from this aspect, too.[119]

In contrast, according to *Lennard* (2002), *Baxter* (2003), v*an Zijt and Whittington* (2006), as well as *Horton et al.* (2011), purchase (entry) prices are in line with the concept of assets (and liabilities). If we start from the cash flows obtainable from assets and presume a simple entity with a single product and a single production factor (asset) in a balanced state/level, then the asset in question can be a value assigned to a given marginal unit, the cost of capacity increase (purchase price) or the possible saving through capacity decrease (the purchase price saved).

By applying the same to liabilities: if an entity was to be released from an obligation in any way the resources thus freed up could be used to assume and perform another (substituting) obligation. Consequently, the value of marginal obligation is the exchange value obtained for assuming the substituting replacement, again a purchase (entry) price.

[117] *"Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction."* (IAS 39, Para 9)

[118] With respect to liabilities (too), authors arguing in favor of the use of exit prices include (Nobes, 2003).

[119] Nevertheless, this assumption implicitly conveys that markets are, to some extent anyway, efficient. In case of less efficient markets the prices, whether they be sales or purchase prices, do not necessarily reflect the expected development of future gains.

> Nevertheless, I believe that the above approach is by no means in line with the concept of fair value in that fair value must be established by considering the going concern principle, and as the actual transfer of the given asset/liability does not occur, we cannot speak of substitution even at a conceptual level. [120]

The second difference between the definitions is that while the IFRS 13 refers to *market participants* the accounting act mentions well-informed parties with a transactional will and orderly market conditions.

IFRS 13 places a major emphasis on making clear that fair value is a measurement on a market basis it can by no means be defined as the result of some sort of entity-specific valuation procedure reflecting the expectations of the given entity and not those of the market participants. Yet the standard later explains in detail that market participants are to be understood as well-informed sellers and buyers independent of the entity, able and willing to participate in the transaction, i.e. under no duress or external influence. So the difference in this case is essentially formal.

Finally, another conceptual difference is that when determining the fair value of the liability the IFRS 13 refers to the transfer of liability (the receiving party assumes the original obligation[121]) and not the settlement of the liability, whereas the definition in the accounting act clearly states the term 'settlement'.

An entity does not necessarily seek to transfer a liability at prevailing market conditions as certain unique conditions may be tied to the liability that may be more favourable than can be enforced in the market or the entity could otherwise be at a disadvantage by transferring the asset to a third party.

[120] This approach proposes that instead of 'fair value' the *value to business*, which is often referred to with the synonim of *deprival value*, be used in accounting. When determining the value represented by an asset to a company the following question must be answered: "*how much worse off (how much would it cost) would the business be if it were deprived of it?*" While in case of liabilities: "*how much better off the business (how much would it save in costs) would be if it were relieved of it?"* (ICAEW, 2006, pp. 24-25). When assuming profit maximixing players the deprival value is equivalent to the lower one of the *recoverable amount* and the *replacement cost* given that in a simple manner if an asset with identical characteristics can be purchased at less cost we perceive the loss to be minor. At the same time the recoverable amount is the higher one of the value-in-use and the net realizable value, which is quite logical since as long as the value-in-use is higher it will use the asset and as soon as the net realizable value is higher it will sell the asset in question. Consequently, the deprival value is much more a decision rule than a measurement basis, thus it is purpose not listed in the catalog presented in 5.3.2 (cf. (IASB-FASB, 2008, p. 7)).
Nevertheless, V*an Zijt and Whittington* (2006) point out that such difference can be resolved by reconsidering fair value and deprival value (van Zijt & Whittington, 2006, pp. 22-23).

[121] Needless to say, one should have in mind not just factoring transactions in a legal sense.

Nevertheless, such advantages or disadvantages, the relative effectiveness compared to the market, will only appear in the net assets of the entity after the settlement of the liability. Therefore, the fair value based on market conditions can serve as a good basis of comparison for the quantification of such specific attributes and conditions.

Evidently, when market participants are considering the amount that would be worth assuming the obligation they also take into account the expected cash outflows related to the performance of the obligation. Conversely, when examining how much an entity would be willing to pay for the settlement of a liability, immediately the aforementioned specific factors come to the forefront, whereas fair valuation is a market-based measurement that is conceptually free of such effects. From this perspective *transfer* does in fact describe the fair value of liabilities more precisely, thus enclosing the concept of fair value.

> This difference between the two definitions is not only formal while in my view it does not pose practical problems in the sense that the scope of liabilities carried at fair value is rather narrow. We can essentially speak of fair valuation in case of financial liabilities for trading purposes, where the "trading purpose" implicitly involves a transfer, and derivatives with liability content, where transfer and settlement are not distinct concepts.[122] From this perspective, too, the difference is not fundamental.

[122] Cf. IAS 39, Para 9; IFRS 9, Para 4.2.1; Para 6 of Section 59/A of the Aa.

6.3 The underlying content of the concept of fair value

6.3.1 Assumptions behind fair value

Bromwich (2007) identified the following assumptions behind the definition (SFAS 157 but due to their identity, according to IFRS 13) of fair value (Bromwich, 2007, pp. 51-54):

Group	Underlying assumption
1) Prices	a) The prices used during the measurement of fair value are based on a market approach, regardless of the trading objective of the entity. b) Price means the sales price. c) Prices do not include the transaction costs.
2) Market	a) Transactions are conducted in ordinary (principal) markets. b) If multiple markets exist, the most advantageous one shall be chosen for the purpose of profit maximization.
3) Market participants	a) Not related, therefore independent parties. b) They are knowledgeable and have a sound understanding of the characteristics of the asset and the transaction. c) When acquiring their knowledge they act with reasonable prudence and make the required efforts to understand the available information. d) The transaction is not forced/imposed. e) The individuals have the ability and willingness to conclude the transaction.
4) Assumed use	a) In case of financial instruments: determined by the cash flow structure b) In case of non-financial assets: highest and best use at the date of valuation under the assumption of: • the same use as the current one (highest and best use) in case in-use valuation, • other use in case of in-exchange valuation. c) Of the prices mentioned in b) the highest price shall be the fair value (profit maximization). d) Use is physically possible, legally admissible and financially feasible. e) Liabilities: transfer under same credit risk.
5) Accounting assumptions	a) The measurement shall be performed for all stand-alone assets and their respective aggregated groups. b) The measurement shall take into account the state and location of the asset, if relevant.

Table 4: Underlying assumptions behind fair value. Source (Bromwich, 2007, p. 53), with author's own modifications.

The previous underlying assumptions shown in the Table Hiba! A hivatkozási forrás nem található. can actually be deducted directly from the definition, however, they identify the building blocks of the concept of fair value.

Whittington (2008) summarized the key characteristics of the *fair value view* as follows (Whittington, 2008, pp. 157-158):

- *Usefulness for economic decisions* is the sole[123] objective of financial reporting.
- *Current and prospective investors and creditors* are the reference users for general purpose financial statements.
- *Forecasting future cash flows*, preferably as directly as possible, is the principal need of those users.[124]
- *Relevance* is the primary characteristic required in financial statements.
- *Reliability* is less important and is better replaced by representational faithfulness, which implies a greater concern for capturing economic substance, and less with statistical accuracy.
- Accounting information needs ideally to reflect the *future*, not the past, so past transactions and events are only peripherally relevant.[125]
- *Market prices* should give an informed, non-entity specific estimate of cash flow potential, and markets are generally sufficiently complete and efficient to provide evidence for representationally faithful measurement on this basis.

The following consequences result from this approach (Whittington, 2008, p. 159):

- *Stewardship* is not a distinct objective of financial statements, although its needs may be met incidentally to others.
- *Present shareholders have no special status* amongst investors as users of financial statements.
- *Past transactions and events* are relevant only insofar as they can assist in predicting future cash flows.
- *Prudence* is a distortion of accounting measurement, violating faithful representation.
- *Cost (entry value)* is an inappropriate measurement basis because it relates to a past event (acquisition) whereas future cash flow will result from future exit, measured by fair value.

[123] Perhaps it would be more appropriate to call it primary.
[124] Direct manner in this case means that the values appearing in the financial statements must be based on the discounted present value of expected future cash flows.
[125] The comparison of the future-oriented nature of accounting information and the definition of assets and liabilities poses an interesting question, namely, the assets are in all cases represented as the profit and loss of past events (present liabilities originating from past events) in the financial statements. *Barth* (2006) makes a clear distinction between the criteria of *recognition* based on past events and the future-oriented nature of valuation.

- Fair value, defined as *market selling (exit) price.*
- *The balance sheet* is the fundamental financial statement, especially if it is fair valued.
- *Comprehensive income* is an essential element of the income statement: it is consistent with changes in net assets reported in the balance sheet.

Although Whittington outlines the main characteristics of an extreme and purely fair value based accounting system in a purposely simplistic manner, he also points out that fair valuation enforces the balance sheet approach as described in 5.4 and the current price valuation model of fair value, although such prices are formed in the course of hypothetical transactions.

It should also be noted that the ideas raised here are partially revisited concerning the transformation of the quality characteristics of the Conceptual framework presented in 4.1.2 In their paradigm change model as described under 5.4.3, it is no coincidence that *Shortridge and Smith* (2009) highlight fair value as the measurement basis of the information paradigm, contrary to historical cost typical of the industrial paradigm.

> Nevertheless, I believe that concerning the simplistic model it should be noted that the direct anticipation of future cash flows, as well as the exclusive future-oriented nature of the information presented as the purpose of financial reporting is highly arguable. With respect to the purpose of financial reporting the Framework clearly states that the current financial situation and its change allows the estimation of expected future cash flows from the financial statement and the goal of financial reporting is not to anticipate them directly. Certain cash flows do of course directly result from the current resources and needs (assets and liabilities), however, this can never be full precisely owing to the going concern principle. In my opinion this will not fundamentally change even if fair value accounting is used, so in this sense I would have certain reservations to the ideas stated in the above model.

6.3.2 The economic background of fair value

Fair value is thus a price formed in a hypothetical market during a hypothetical transaction. Although the regulation does not clarify the content of the "orderly" transactions and market conditions arising in connection with the term, the underlying economic consideration is a Walras-type general equilibrium theory model.

By applying the theory of general equilibrium, *Yuan and Liu* (2011) draw up the formal model of fair valuation according to the following while assuming ideal markets (Yuan & Liu, 2011, pp. 8-11):

There is a given entity, which has at the balance sheet date N types of (non-financial) assets $(x_1 \dots x_N)$ and financial assets (m), liabilities understood as negative assets. If u denotes the full utility expected from the assets, then the full utility of an entity acting as a seller in a transaction can be specified as follows:

(2) $u = U_s(x_1, x_2 \dots x_N, m)$, where U_S is the monotonously increasing utility function of the seller as the function of *q*.

Considering that this is an accounting valuation, the measurement of utility is done in monetary value for the sake of simplicity, therefore the model assumes that the utility units can be expressed in monetary value.

Suppose s_1, s_2 … s_N, m_s denote the elements of assets before a specific transaction while *q* means the quantity sold of the *N* asset at the price of *p*, then the change in full utility as a result of the transaction can be described as follows:

(3) $f_S(p, q) = U_s(s_1, s_2 \dots s_N - q, m_s + pq) - U_s(s_1, s_2 \dots s_N, m_s)$

Equally, the change in buyer utility, if b_1, b_2 … b_N, m_B stand for the elements of buyer's assets before a specific transaction while *q* means the quantity sold of the *N* asset at the price of *p*, the formula is the following:

(4) $f_B(p, q) = U_B(b_1, b_2 \dots b_N + q, m_B - pq) - U_b(b_1, b_2 \dots b_N, m_B)$

The core of the model is given by three interconnections termed *fair value conditions* by the authors, which states that the unit price *P* obtainable during the sale of a given *N* asset in a *q* (q>0) quantity is the fair value if, and only if, the following are true:

1) *Condition for total utility:*

   $f_S(P,q) \geq 0$, $f_B(P,q) \geq 0$, therefore full utility does not decrease for either party as a result of the exchange.[126]

2) *Condition for marginal utility:*

   $\left.\frac{\partial U_S}{\partial x_N}\right|_{x_N=q} \leq P, \quad \left.\frac{\partial U_B}{\partial x_N}\right|_{x_N=q} \geq P,$

   thus nor does the replacement of the last unit cause any loss in utility for either party.

3) *Condition for transactions*:

   In case of any price higher than P the seller cannot sell the whole *q* quantity, whereas in case of prices below P the buyer cannot purchase the whole *q* quantity, therefore fair value is a price that is optimal from the perspective both parties.

To determine the fair value (the equilibrium price), by assuming utility maximizing market participants and taking into account the above conditions, we do the following:

On the one hand, from the perspective of the sellers the task is to calculate a conditional extreme value for a given *p* price, where the target function is:

(5) $\max_{0 \leq q} f_S(p,q)$, provided that:

(6) $f_S(p,q) \geq 0$

If $\breve{q}$ is a non-negative and optimal solution, then it must follow that:

(7) $\frac{\partial f_S(p,q)}{\partial q} = 0$, and therefore:

(8) $\left.\frac{\partial U_S}{\partial x_N}\right|_{x_N=\breve{q}} = P$

The above, no. (8) relationship describes the *optimal selling curve* and the market supply function can be obtained by adding up the optimal selling functions of the individual sellers.

[126] This does not mean that the direction of change of the fair value could only be non-negative. The condition represents the utility relationship between the current utility of the asset and that of the exchange value. This condition is indispensible if we want to obtain equilibrium prices given that no transaction occurs if negative utility is anticipated.

If we define the task in a similar fashion from the point of view of buyers:

(9) $\max_{0 \le q} f_B(p,q)$, provided that:

(10) $f_B(p,q) \ge 0$

If $\breve{q}$ is a non-negative and optimal solution, then it must follow that:

(11) $\frac{\partial f_B(p,q)}{\partial q} = 0$, and therefore:

(12) $\left.\frac{\partial U_B}{\partial x_N}\right|_{x_N=\breve{q}} = P$

The no. (12) relationship describes the *optimal buying curve* and the market demand function can be obtained by adding up the optimal buying functions of the individual buyers.

If the intersection of the supply function and the demand function exists, the related quantity will be the market equilibrium volume while the related price will be the market equilibrium price. If the supply function is $q = S(p)$, while the demand function is $q = B(p)$, and their respective inverses are in turn $p = P_S(q)$ and $p = P_B(q)$, it can be thus proven based on the fair value assumptions that if the equilibrium $\bar{p}, \bar{q}$ price-quantity pair exists, then the fair value in case of an exchange volume of $Q \le \bar{q}$ for any *N* asset is $P_B(Q)$, whereas in case of $Q > \bar{q}$ the fair value does not exist (the result obtained does not fulfil the conditions of fair value), so in this case the market price will not be a fair value. (Yuan & Liu, 2011, pp. 12-15)

The above deduction casts light on two crucial facts: it shows that fair value rests on a general equilibrium model while its very existence, on a theoretical level, is not self-explanatory and not without any condition in case of a given asset. This ties in with the notion of *Bromwich* (2007) that, in case of non-ideal (real) markets, market prices imply a distortion that prevent no-arbitrage and inevitable become far removed from the selling price approach.

Whittington (2010) also emphasizes the general equilibrium theory background of fair value, in particular the shift of accounting valuation in the direction of the general equilibrium theory while pointing out that the idealistic notion on full and perfectly competing markets does not hold true in reality. Accordingly, the theory of fair valuation and the measurement practice of fair value become separate even on a regulation level. Therefore, the clarification of the concept of fair value itself is not sufficient for the measurement of fair value and the establishment of assignment rules.

6.3.3 Fair value, (current) market value, value-in-use

With respect to the concept of fair value one must cover the relationships between fair value and the other two concepts (measurement bases) closely connected to fair value: market value and value-in-use.[127]

As can be seen from the definitions, although it is closely related to fair value it is nonetheless not identical with the *market value* deducted from the actual prices, which reflects the value relationships of a sale actually transacted on the given day.

Firstly, in case of fair value this is a hypothetical transaction only and although it is based on the market conditions prevailing at the date of the valuation but it is examined from the perspective of the owner of the asset or liability while assuming a rational decision, which may not necessarily be (and in certain cases it is most likely not) the immediate sale of a given asset or liability. It considers the underlying going concern principle and is thus the basis for the definition of fair value in determining "*how much is a given asset or liability worth on a given day while we do not seek to actually sell or settle it* (transfer it – author's remark, KDM)*"* (Bosnyák, 2004, p. 436).

Secondly, a price obtainable in a given market transaction is influenced by a number of other factors relative to the transaction itself and the transacting parties other than just the expectations of market participants, besides the fact that fair value can never be the result of an entity-specific valuation and as a result it may vary from such price as indeed it typically does.

Hague (2007) highlights three important characteristics of fair value: firstly, fair value does not take into account the "past" of the asset or liability (when, at what price and how the entity acquired it); secondly, it does not consider the unique attributes of the owner of the asset (e.g. what business branch it is active in, what market share it commands); thirdly, it does not contemplate the planned future use of the asset (at its current owner).

In other words, fair value is an amount estimated using a valuation procedure based on market expectations, where the underlying basis is the market prices and its appropriate estimate, albeit fair value is not identical with market value.

[127] While the choice of market value and value-in-use may seem arbitrary, the distinction of these value terms and fair value are indispensible both from a practical perspective and the point of view of research focus. For more on the relationship of other value terms and fair value see: (Whittington, 2007).

When establishing the fair value of assets we can start from the in-use valuation premise or from the in-exchange valuation premise; however, it should be noted that regardless of which valuation premise is applied, fair value rests on a market basis.

When measuring fair value the highest and best use of the market participants must be determined, which may differ from the current use of the asset by the entity. Therefore, fair value, even if it rests on a premise of use valuation, is not identical with *value-in-use* typical of the entity.

If we consider the definition of value-in-use as laid down in IAS 36, the difference is clearly visible. According to IAS 36, during the measurement of value-in-use "*cash flow projections on reasonable and supportable assumptions that represent management's (!) best estimate of the range of economic conditions that will exist over the remaining useful life of the asset"* (IAS 36, Para 33). Therefore, measurement must reflect the own assumptions of the management and not those based on the expectations of market participants, albeit this cannot be reconciled with the concept of fair value.

Let us suppose that both the fair value ascertained based on the in-use valuation premise and the value-in-use have been determined on the basis of realistic assumptions, so they truly reflect the volume of inflows that can be realized in the future for the given asset. Fair value shows what value the asset in question represents for the market participants having other auxiliary resources key to its use by considering the incomes generated from the use of the asset; meanwhile, value-in-use shows essentially the same from the point of view of the entity.

> Accordingly, the difference (either positive or negative) between fair value and value-in-use may mean two things. Firstly, if the entity and the market participants relied on the same assumptions concerning the future "life path" of the asset (period, type and place of use, etc.), then the difference is relative to the entity market participants and shows the relative efficiency and profit-generating ability of the asset by incorporating a kind of (positive or negative) internal goodwill in the asset value.
>
> The other possibility is that the highest and best use of the entity and the market participants is different, so they applied completely different assumptions during the calculation of the value-in-use. In this case the value-in-use reflects the specific intentions of the entity that are different from those of the market participants concerning the given asset (or its acquisition).

> If such difference is significant on must contemplate from a theoretical point of view which value recognition carries more relevant information for the users of the report. Value-in-use reflects a host of specific factors but, precisely as a result of this, its objectivity and comparability is poor, whereas concerning the entity-specific value concepts doubts as to the reliability of the valuation are increasingly evident given that such assumptions reflecting the own ideas of the entity concerning its future are hard to verify.[128]

6.3.4 Income from the perspective of fair value accounting

By following Marshall, *Diewert* (1996) defines income of a given period as the sum of the operating income (contribution), the cost of financing, and the change in net assets (with the right plus or minus sign). Although he does not explicitly state this, income is understood as a kind of sustainable income: it does not include the one-off, "extraordinary" effects.

> The model assumes an entity operating with fairly simply boundary conditions and divides the resources used into two groups: (primarily non-monetary) non-current assets and those for intermediate consumption. Operating income is understood as the difference of the value of the output performance of a given period and the resources used for the output during such period.
>
> However, the concept of output performance can be expanded: the conditions of the model can be lifted by considering not solely the revenues of the core activity but the exchange value of sacrificing any resource (e.g. income from the sale of a financial asset). Taking into account the operating income primarily assumes a historical cost valuation and, although for the sake of simplicity Diewert speaks of average prices, this practically means historical cost model.
>
> By virtue of its definition, the operating income in the model does not contain e.g. depreciation or any other adjustments (impairment losses, etc.). So this is equivalent to a kind of contribution (gross profit) by essentially, and simplistically, interpreting the contribution at a variable cost base (i.e. it is not only the direct costs that form a part of the contribution).
>
> The financing cost is essentially the net interest expense of a given period, not based on its legal title but its actual economic content.
>
> On the subject of change in net assets Diewert originally speaks of non-current assets but this can be extended: if we include all assets available (not used) at the end of the period, save the changes in assets considered during the calculation of the operating income (change in net working capital).

[128] According to *Whittington* (2010), value-in-use represents relevant information especially in situations where the sale of a given asset is unlikely and use (retention) means the most profitable type of use for the entity in question (for example the retention of a debt instrument until its maturity in case of illiquid markets).

Formally, if I denotes the income of the period in question and *p* represents the vector of the different output and factor prices, whereas *y* stands for the vector of the net output volume (where in case of a given *n* product $y_n > 0$, then *n* output sold, while if $y_n < 0$, then *n* input (expense), and *NA* stands for the net assets (assets minus liabilities) (Diewert, 1996, p. 6 (64)):

(13) $I^0 = p^0 \cdot y^0 - financing + NA^1 - NA^0$

The model should be further specified in that the effects of the owner transactions should be deducted from the change of net assets as this cannot be a part of the income (capital increase and capital reduction, including dividend payments).

By assuming a historical cost valuation and introducing the average (net) interest rate of the period($\mathrm{r_D}$), the debt ratio, or more specifically, the financing ratio of non-current assets with debt (f), the volume vectors of (non-current) assets (k) and their price vectors (P), and an average asset amortization ratio (δ),[129] the model can be given as follows:

(14) $I_{HC}^0 = p^0 \cdot y^0 - r_D^0 f^0 P^0 k^0 + [(1 - \delta^0) P^0 k^0 - D^0] - [P^0 k^0 - D^0] =$

(15) $p^0 \cdot y^0 - [(r_D^0 f^0 + \delta^0) P^0] k^0$

A restructured form of the model (relationship no. (15)) points out that in case of historical cost valuation the income is essentially the sum of the operating income and the (non-current) asset financing and amortization.

> In case of a simple production company this model manifests itself very clearly: the accounting income is in fact obtained as the difference of the revenues (the exchange value of the output performance), the resources used for the output (variable costs), and the capacity expense (depreciation and net financing). If more complex monetary assets are included this requires greater abstraction.

When applying a current value (in our case fair value) valuation the model is slightly changed such that during the assessment of the change in asset value the assets at the end of the period are recognized at fair value taking into account the fact that fair valuation means the valuation of the given net assets at sales prices.

[129] In the original model this is essentially equivalent to a depreciation rate; however, by expanding the model it can be understood as an arbitrary amortization ratio.

The fair value of net assets at the end of the period can be given as follows according to (Diewert, 1996, p. 19 (77)):

(16) $NA_{FV}^{1} = (1 - \delta^{0})P^{1}k^{0} - D^{0}$

If i denotes the vector of fair value changes (with a plus or minus sign), the net asset value at the end of the period can be changed to the following:

(17) $NA_{FV}^{1} = (1 - \delta^{0})(1 + i^{0})P^{0}k^{0} - D^{0}$

Based on the above, in case of fair valuation income is obtained as per the following (based on relationship no. (14)):

(18) $I_{FV}^{0} = p^{0} \cdot y^{0} - r_{D}^{0}f^{0}P^{0}k^{0} + [(1 - \delta^{0})(1 + i^{0})P^{0}k^{0} - D^{0}] - [P^{0}k^{0} - D^{0}] =$

(19) $p^{0} \cdot y^{0} - [\{r_{D}^{0}f^{0} - i^{0} + \delta^{0}(1 + i^{0})\}P^{0}]k^{0}$

Relationship no. (19) points out that in case of fair valuation the effects of prices changes appear in the income and such price effects, on the one hand, appreciate the amortization (since amortization itself was recognized at the re-valued prices) and, on the other hand, the effect of the full price change relative to the unused part appears as an income, which effectively reduces the equity cost. Nevertheless, it should be point out that fair valuation does not apply adjustments for the effects of changes in the general price level, which results in significant overpricing of the income in case of a high inflation rate.

> The above income concept corresponds to the theory known as *financial capital maintenance* in the professional literature.[130] This basically means that the (exchange rate gain type) items above the nominal value of the equity (net assets) form a part of the income. The income concept (no. 1.) of Hicks as presented in 5.4.2 is akin to this approach.

The recognition of the income thus defined in the financial statements primarily depends on what assets may be the subject of fair valuation as permitted/prescribed by the relevant regulation and also on what accounting model of the recognition of changes in fair value is assigned to the individual assets.

[130] For more on the relationship between equity preservation concepts and valuation, see: (Break, 1954), (Shwayder, 1969), (Revsine, 1981), (Baricz, 1994).

The recognition of changes in fair value features two basic models that are currently used in the regulation: any differential may be settled versus the income (*fair value model)*[131] or the other comprehensive income[132] (*revaluation model*).

By referring back to the statements made in 5.4.2 it can be said concerning the concept of other comprehensive income that the concept of fair valuation and comprehensive income are closely connected and thus the conclusion made in 6.3.1 becomes clear, namely that comprehensive income is an element of key importance of the income statement as this creates the link with the change in net assets presented in the balance sheet (Whittington, 2008, p. 158).

With regard to the income from the perspective of fair value accounting one must refer back to the unique characteristics of balance sheet accounting as described in 5.4.2, also underlying fair value accounting, namely that the underlying assumption of accrual basis of accounting and the realization principle (in its conventional form) are not realized. This is because the realization of income is not determined by the output of the related performance but by the (price change in the) market.[133] This *revenue recognition conundrum* (Horton, Macve, & Serafeim, 2011) is based on uniform theoretical grounds in a pure fair valuation model, i.e. it leads to the declared unique manifestation (or surrendering) of the above mentioned principles, although in mixed valuation models such as the current regulation[134] it determines the (comprehensive) income as the consequence of realized and not realized items with different theoretical backgrounds. This, in turn, conceals the value generation process as the current (realized) income and the not realized capital gains and losses are mixed (Kothari, Shu, & Wysocki, 2009), (Biondi, 2011). Nevertheless, fair value based income also points out the relative performance of the entity during the exit of a given asset compared to the expectations of market participants: if the exchange value obtained was higher than the fair value carried in the books, i.e. a profit was realized in the transaction, then market participants had inferior income expectations (Barth, 2006).

[131] It is thus important to disinguish between the fair value appearing in the regulation and the concept of the fair value model: while the former is the measurement basis itself, the latter is one of the (recording) methods of fair valuation.
[132] Also versus directly the equity itself, in case of dirty surplus accounting (see 5.4.2.), e.g. in the Hungarian regulation.
[133] Current value accounting is actually not based on the realization principle but on the time value principle as explained in 5.4.2. This, however, does not explicitly appear in the current regulation of the fundamental norms.
[134] The mixed valuation model nature of the current regulation is also evident from the assignment rules presented in 5.3.3. The scope of fair valuation (the range of assets and liabilities recognized at fair value) is covered in detail in 6.6.

6.4 The framework of fair value measurement

The framework of the measurement[135] of fair value is presented by starting from the IFRS 13 rules. The presentation is of an appropriate depth for the purposes of the dissertation and it does not seek to introduce each rule of detail of the standard, nevertheless I consider it vital to conduct a more thorough analysis than just presenting the headwords as the conceptual system described in the previous section only lays the foundation for the accounting model of fair value, whereas its practical application and consequently the manifestation of the model is subject to, and determined by, measurement rules. The unique features of the Hungarian regulation is covered in a separate sub-heading.[136]

6.4.1 The approach types of fair value measurements

The valuation procedures used during the measurement of fair value must be compatible with the market approach, the income approach, and/or the cost approach.

- The *market approach* primarily builds on the prices (the price of the product in question or the price of similar products). These include for example the different market indicators (P/E rates, etc.) in accordance with the expectations resulting from the measurement characteristics, as well as other, more complex valuation procedures, such as the matrix pricing models.
- The *income approach* starts from the different future cash flows and income flows that are directly associated with the asset or liability in question and are clearly distinguishable and it ascertains the present value based on the discounted value of these using a certain model.
- The *cost approach*, which is often referred to as replacement cost, is based on how much it would cost market participants to replace, substitute, or find alternative capacity for, an asset[137] in its current place and state.

  Evidently, the costs would have to be adjusted with the physical, technical, and economic depreciation of the asset, which is a broader concept than the accounting or taxation (accumulated) depreciation. [138]

[135] The measurement of fair value, or simply put, fair valuation. However, I think the concept of measurement is more appropriate here as the measurement of fair value and fair valuation are not fully identical concepts; fair valuation is broader as it means the entire valuation model while the measurement of fair value, as explained under 5.2, means the assignment itself, the determination of fair value.
[136] See 6.4.4.
[137] The cost approach is not relevant in case of liabilities.

The choice between the different valuation procedures (technics) and approaches is determined by the availability of data. The standard does not regulate in an in-depth manner which procedure is to be followed in certain special cases; its guiding principle is "*the more, the better*", therefore if data are available for various valuation procedures, such procedures shall be used to estimate the fair value. The results give a scale of the possible fair values and of the fair value measurements and when assessing these first the rationale and reliability of the range itself must be examined, along with the question of which of these best represents fair value under the given circumstances.[139]

During the use of valuation procedures *consistency* must be applied: the valuation procedures applied may be changed if such change ensures a higher quality of the measurement of fair value (e.g. reliability or better adaptation to the circumstances). Such cases may include the identification of a new market or new information, the unavailability of earlier information, and the development of valuation techniques.

6.4.2 Inputs used during the measurement; the fair value hierarchy

With regard to the measurement of fair value we distinguish between *observable* inputs originated from a source *independent* of the entity and *unobservable* inputs reflecting the *own* assumptions of the entity about the assumptions of the market participants originating from the best information available under the given circumstances.

An input observable for a given asset may be a closing price in the stock exchange, or *bid* and *ask* prices forming in other non-stock exchange (trade and mediation) markets,[140] as well as various negotiated prices, although these are less known publicly. In addition, such negotiated prices can rarely be regarded as representing market assumptions as they often arise under special terms typical of the given case only but of course one by assessing the other characteristics of a given asset or the circumstances of a transaction one can ascertain how reliable and relevant an input might be (in this case from the point of view of market assumptions).

[138] Since this is equivalent to the redistribution of the earlier historical cost based on a certain consideration.
[139] This does not, however, mean that in some cases fair value could not be properly measured using a single valuation procedure or a single estimate. It may also occur that the most reliable valuation procedure is also the most costly and requiring the most efforts, nevertheless, the mere costliness of the acquisition of information cannot be a basis of choice among the different valuation procedures.
[140] Stock exchange bid and ask prices are not identical with *entry* and *exit* prices as defined by the standard given that the bid price is a purchase price from the buyer's (broker's) perspecttive and a sales price from the point of view of the owner (not the broker) of the asset. The same is true for the ask price, only the other way around.

The general principle articulated concerning the inputs is that *the measurement techniques applied during the measurement of fair value shall maximize the observable and minimize the unobservable inputs used.*

The standard defines a triple-level hierarchy with a pyramid structure. The bases of the grouping is the inputs used during the measurement of fair value but since the availability and reliability of the inputs influences the valuation technics to be applied, the hierarchy may also be extended to the technics as well.[141]

The reliability level of a specific fair value measurement is determined by the *lowest* level input applied, or if an input with a specific level is adjusted for any reason based on a certain assumption, the fair value measurement shall be classified one level lower. Although this downgrading rule is logical, I believe it carries the inherent danger of merging the levels: the downgradings as a result of adjustments may lead to the majority of the measurements being of an inferior level while the lower levels (primarily level 3) will come to host a number of widely divergent measurements, which will make the assessment of the reliability of measurements more difficult.

6.4.2.1 Level 1 inputs

The uppermost level of the hierarchy are represented by the *prices quoted in active markets*[142] of a given asset or liability. With regard to the asset or liability, a market can be considered active if trading is done with a sufficient frequency and in a sufficient volume to continuously provide information on the development of prices.

Another criterion concerning the market and prices is that:

- the prices forming in the principal market as described earlier (or in the absence of such market, the most advantageous market) shall mean the fair value, *AND*
- such prices shall be accessible to the entity at the date of the measurement, thus allowing it to enter the market at that price at the date of the valuation.

[141] However, this is not clear: a certain technique may also be applied in case of inputs classified under different levels.
[142] Markets shall be understood not only as stock exchanges but also non-stock exchange markets (see 6.4.1.).

The various market prices, without any adjustment, in most cases provide the best estimate of fair value, therefore, as long as they are available such prices shall be used for fair value measurements. However, there are special situations when quoted prices require adjustment for some reason. In these cases the standard makes an exception and does not recommend the use of unadjusted market prices and does not regard it as the fair value of the asset or liability in question. Nevertheless, it should be pointed out that only unadjusted quoted prices may be regarded as level 1 inputs, so in such case the measurement can no longer be considered level 1 after the adjustment.

6.4.2.2 Level 2 inputs

The inputs classified under this level may, directly or indirectly, continue to be considered as observable data but contrary to level 1 inputs they are in a less direct relationship with the market valuation of the asset or liability in question.

- These include the prices of *similar* assets and liabilities quoted in active markets, and
- the prices of a given instrument or similar instruments quoted in *inactive* markets, where from a certain aspect the prices quoted do not perfectly reflect the judgment of market participants at the date of the measurement.
- This also includes all other, not price related data observable in markets (yield curves for normally quoted maturity, interest rates, credit risks, default rates, volatility data, etc.),[143] and
- data not directly observable which can be derived from observable market data or *market-corroborated inputs.*[144]

Level 2 inputs continue to be a part of the observable inputs, although it is also true that if they are adjusted for any reason the measurement can no longer be considered level 2.

[143] For example if a given asset or liability is booked for a special maturity other than quoted in the market, one must take as a basis the price of instruments with an ordinary maturity when determining the fair value.

[144] Such corroboration may be for example the correlation between market prices and the input to be utilized.

6.4.2.3 Level 3 inputs

The lowest level of the hierarchy hosts the unobservable inputs and the measurements utilizing such inputs. As already mentioned about the unobservable inputs, these are the own assumptions of the entity concerning the assumptions of market participants and the *concept of fair value remains the same* even when using such inputs.
One of the basic principles of the measurement of fair value is that the use of unobservable inputs shall be minimized, therefore these *may only be used in cases* where observable data are unavailable (e.g. in the absence of active markets).

> It often happens that the best information on the assumptions of market participants are the own data of the entity. Considering the principle of cost and benefit analysis[145], as long as no information is available that would suggest any substantial deviation of the market participants from the conduct that can be deducted from the own data of the company during the establishment of the price of a specific asset or liability, such data may be used when measuring the fair value. However, if there are data to that effect, the entity shall modify its own assumptions based on the market information available.

Nevertheless, models which ignore information concerning the risks inherent in the valuation procedure or the inputs and do not account for their effects during the valuation *may not be used for the measurement of fair value.*[146]

In respect of level 3 measurements there is also a "downgrading requirement" but this is the general rule of fair valuation as pointed out several times earlier: if any information arises that would put in doubt the reliability of the measurement, the specific asset or liability may not be valued at fair value and one must return to the use of historical costs.

6.4.3 Operation of the hierarchical measurement model

The following graph presents a summary of the fair value hierarchy and "its operation controlled by inputs". As the graph shows, no matter what level of measurement is involved, it must be checked in all cases if there are signs suggesting that a reasonable level of reliability (of the measurement) is not fulfilled. If there are such signs, one must return to the use of historical costs.

[145] It also follows from this principle that information with a utility higher than the costs of acquistion must not be ignored. For more details see 4.1.2.
[146] Except if market participants also ignored such risks.

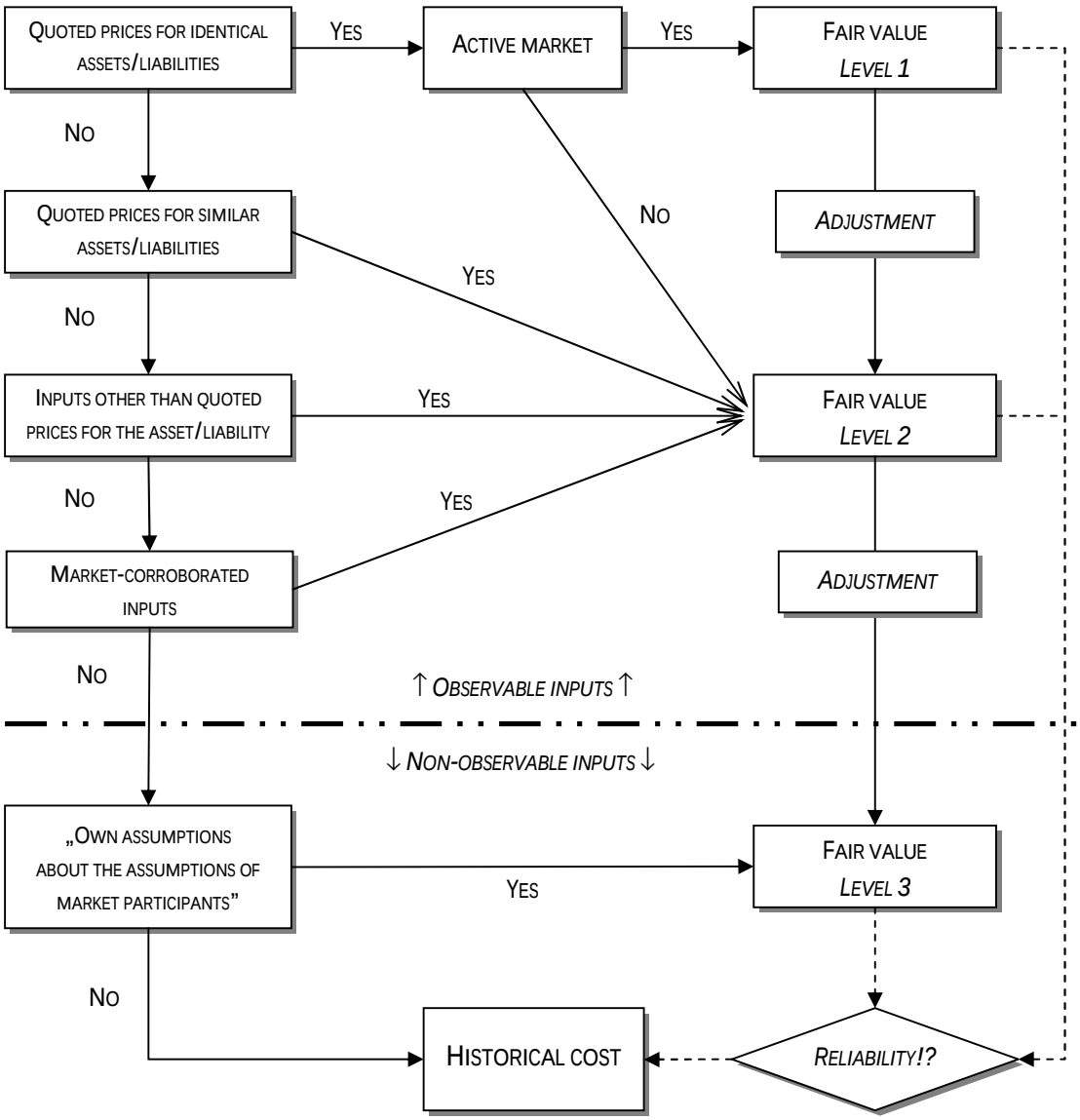


Figure 5: The operation of fair value hierarchy. Author's own version.

The operation of the fair value hierarchy highlights the fact that fair valuation is actually not a uniform measurement model: in case of the level 1 and level 2 inputs the measurement is *mark to market*[147], whereas level 3 measurements are *mark to model*. The theoretical characteristics of the two underlying measurement (sub)models themselves are fairly diverse.[148]

[147] Level 2 measurements can be also be understood as a transition between mark to market measurements and mark to model ones, although it is more appropriate to call level 2 measurements as mark to market measurements given that, by definition, they use (observable) market inputs.

[148] The empirical research work of *Gassen and Schwedler* (2010) also highlighted this two-facedness: based on the findings of surveys done among investment consultants they have shown that the (perceived) utility of mark to model measurements in decision making is greatly inferior to that of mark to market ones.

From a practical perspective it should also not be overlooked that the costs of mark to market measurements are also different (lower) than those of mark to model ones. Consequently, in case of a mark to model measurement the balance between costs and benefits arise more frequently as a problem.

It is an issue from a theoretical perspective to what extent the conceptual differences between market prices and fair value, as portrayed in 6.3.3, manifest themselves in case of a level 1 measurement. *Yuan and Liu* (2011) coined the term *fair value trap* for cases when market prices do not at all reflect fair value. As described in 6.3.2, behind fair valuation there is a general equilibrium model. Nonetheless, in this model the existence of fair value, the equilibrium price, is not immediately evident. Yet markets can be active even if fair value does not exist. In such case, however, the difference between market prices and theoretical market value as the embodiment of gains that may be realized in the future represents not only not realized but not realizable income. If $P_B(Q)$ continues to denote the theoretical fair value, whereas p_m denotes the current market value, then the fair value trap (FVT) can be described as follows (Yuan & Liu, 2011, p. 15):

(20) $$FVT = [p_m - P_B(Q)]Q$$

If $P_B(Q) < p_m$, then the assets in the balance sheet are overvalued, or in an opposite case, they are undervalued.[149] Concerning the model defined by the relationship no. (20) two things must be pointed out. Firstly, as highlighted by the authors themselves, the fair value trap is the indicator of a static state and it changes constantly along with the change in market prices and the theoretical market value. Secondly, however, the quantification of the trap is practically unfeasible as the theoretical fair value cannot be exactly determined.[150] The model does point out, though, that in the event of any compromising of the underlying assumption(s) reflected in the fair value concerning the markets the market prices quoted are not necessarily proper approximations of fair value.

[149] Under a prudent approach this is a minor danger, although fair representation is inevitably damaged.
[150] The theoretical fair value can be approximated using model calculations; yet if quoted prices are available the fair value presented in the financial statements must be based on these.

In practically all cases, mark to model measurements mean cash flow calculations (DCF models). DCF models may be based for example on anticipated dividends (Gordon, 1962), *free cash flows* (Cornell, 1993), *capital cash flows* (Ruback, 2000), and accounting yields (Ohlson, 1995). *Cornell* and *Landsman* (2003) state that if clean surplus accounting is used and if appropriate discount rates in line with the respective model are chosen the different models will yield the same result.

The general logic of DCF models based on accounting information can be summarized as follows:

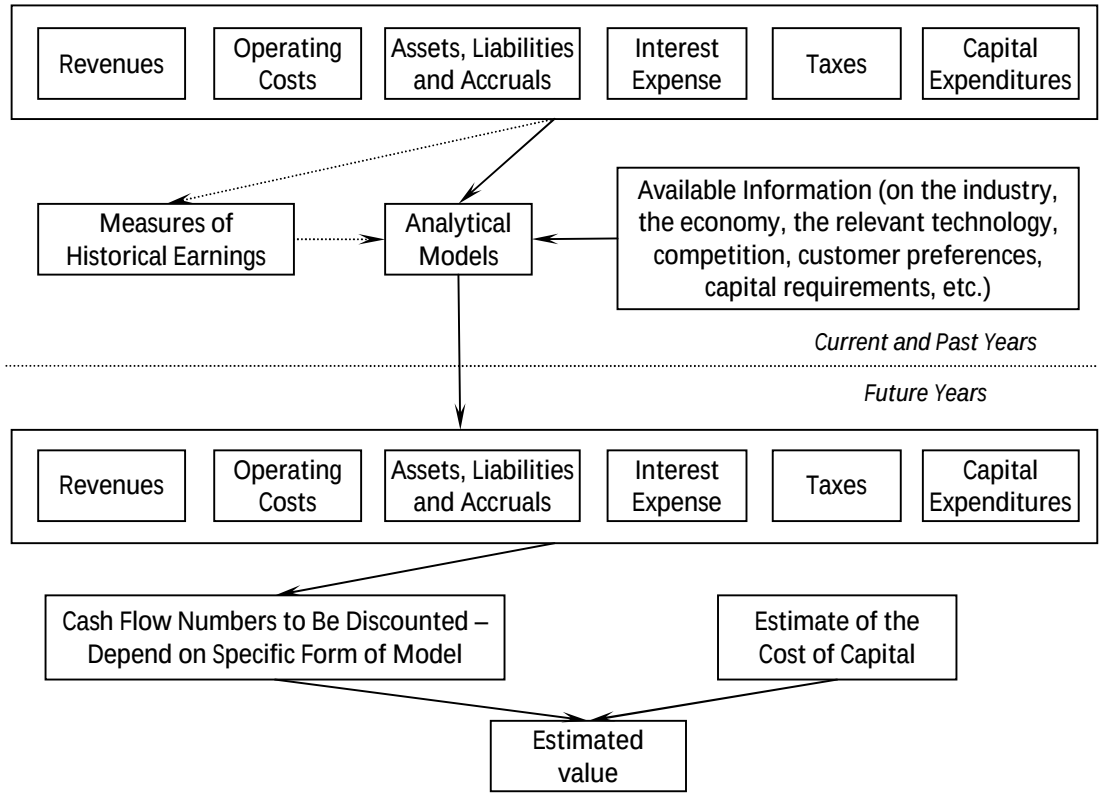


Figure 6: The general logic of DCF models based on accounting information.
Source: (Cornell & Landsman, 2003, p. 22)

Therefore, in all cases the models start from the projection of past information adjusted with expectations. In case of fair valuation the fundamental measurement issue is if such expectations should be the expectations of not the specific entity but the market participants. The practical feasibility of this, i.e. the foreseeable nature of market expectations, is doubtful.

According to *Benston* (2008) this practically has as a consequence that mark to model measurements mean an estimation[151] of the (entity-specific) value-in-use and the purchase prices (how much another entity would be willing to pay for the asset/how much it would charge for assuming a liability[152]). In case of "realistic" market assumptions (incomplete state of information) mark to model measurements inevitably incorporate ("private") information available only to the entity performing the actual valuation, thereby shifting the results obtained in the direction of the value-in-use from a conceptual aspect. (Barth & Landsman, 1995), (Peasnell, 2005)

Yet adding to the two-facedness of fair valuation the divergent nature of the models it can be stated that the measurement of fair value incorporates several approaches based on the estimation of sales prices. (Laux & Leuz, 2009), (Power, 2010)

6.4.4 Measurement of fair value in the Hungarian regulation

According to the rules of the accounting act: "*Based on the information available on the market judgment, fair value may be:*

a) the market value which

aa) is the price quoted on the stock exchange if the financial instrument is traded on the stock exchange and it has a quoted price or rate on the stock exchange,

ab) is the price negotiated by the two parties in an arm's length transaction if the financial instrument has no price quoted on the stock exchange but price offers forming in over the counter markets and properly reflecting the trend of the market price exist, or sales data of transactions made during the fiscal year are available, which properly characterize the market judgment prevailing at the date of the valuation,

ac) in the absence of the above, is the value determined based on the market price of components of the financial instrument or similar financial instruments (calculated market value),

b) a value determined using general valuation procedures and properly approximating the market price" (Article 12, of Para (9) of Section 3 of the Aa).

[151] Benston analyzes the illustrative examples of the standard (found in SFAS 157 but also adopted in IFRS 13) highlighting that based on these as well under certain circumstances one can obtain a result contrary to the sales price valuation.

[152] From the point of view of the seller entity this is much more the value-in-use rather than the hypothetical sales price stated in the definition.

Therefore, in terms of its principles the Hungarian regulation is in line with IFRS 13 rules and it distinguishes three fundamental valuation procedures ((quoted) market prices – Points aa) and ab))[153]; comparative prices[154] – Point ac); sales models – Point b); however, it does not contain the details and the strict and explicit hierarchy of these, albeit a kind of hierarchy is reflected in the regulation. The reason being that comparative prices may only be applied in the absence of quoted prices and freely negotiated prices (together: the market price of the given instrument), whereas freely negotiated prices may be applied in the absence of quoted prices and subject to the fulfilment of special conditions only. Yet the relationship of sales models and prices is unclear, although from the logic of the regulation the lowest hierarchical level of these can be concluded.[155]

With regard to the framework of the measurement it should be noted that the "*general downgrading criterion"* is also laid down in the Hungarian regulation: this excludes the use of fair valuation and specifies the return to historical cost in cases where the fair value cannot be measured in a reliable manner (cf. Point i) of Para (7) of Section 59/A of the Aa.).

Nevertheless, the Hungarian regulation is fairly restrained in terms of the methodology of the measurement of fair value. Other than the rules of the accounting act as quoted above it does not provide any guidelines for the definition of fair value. This is partly due to the fact as mentioned in 6.2 that in the Hungarian regulation we can only speak of fair value in case of financial instruments, thus the issue of non-financial instruments cannot be clarified.

Concerning the measurement of the fair value of derivatives, some relevant provisions of the *Government Decree no. 250/2000 on the unique aspects of the reporting and bookkeeping obligation of banks and financial enterprises* must be mentioned.[156] In case of these special instruments the government decree specifies the concept of *general valuation procedures.*

[153] I thus classify here the „*freely negotiated price of two parties"* as mentioned in the accounting act as well, although this is considered to be a unique definition and which are to be applied under certain special circumstances only (reflection of market tendencies and judgment). Yet the regulation does not provide an explanation as to the exact meaning and scope of application of these and the criteria of fulfillment of circumstances.

[154] Comparative prices mean prices of similar (comparable) instrumensts.

[155] The professional literature also adopt a position in favor of this hierarchical interpretation. Cf. (Garajszki, 2004, p. 115), (Róth, Adorján, Lukács, & Veit, 2010, p. 159).

[156] Although the intended recipients of the government decree are banks and financial enterprises, the accounting does state that *"Entrepreneurs may apply as appropriate the provisions of the government decree on the unique aspects of the reporting and bookkeeping obligation of banks and financial enterprises, issued on a legal mandate, concerning fair valuation in matters not regulated in this Section and Sections 59/B-59/F during the fair valuation.*" (Para (3) of Section 59/A. of the Aa.). Consequently, the provisions of the government decree apply to all business entities.

„(3) According to the rules of the accounting policy, the fair value determined by means of a general valuation procedure as per Point 12 of Para (9) of Section 3 of the Act applied during the valuation of derivatives may be for example:

a) in case of futures/forwards

aa) the difference of the prompt market price (rate) of the subject of the transaction at the valuation and the exercise price (rate), or the differential of the prompt market price and the discounted value of the exercise price (rate) from the date of the maturity until the date of valuation,

ab) the discounted value from the date of maturity to the date of valuation of the differential of the futures price (rate) of the subject of the transaction prevailing at the date of the valuation (and related to the maturity date of the transaction) and the exercise price (rate);

b) in case of options

ba) the value established in Point a) as a value established using a simplified valuation procedure in which for the caller of the option (beneficiary) the lower limit of the market value is zero (it cannot be a negative value), whereas for the putter of the option the upper limit of the market value is the sum of the option fee received (it cannot be a market value higher than that),

bb) is the result of the multiplication of the market value of the option subject and the option delta;

c) in case of an interest swap transaction, the value of the differentials of the variable interest and the fixed interest to be settled during the remaining maturity discounted for the date of the valuation;

d) in case of a currency swap transaction for the forint and a currency the futures part of the swap transaction is to be valued separately according to Point a), whereas the prompt transaction part is settled according to the general rules;

e) in case of a swap transaction for different currencies the futures part of the swap transaction is to be valued separately according to Point a), whereas the prompt transaction part is settled according to the general rules.

(4) "In the absence of market rates required for valuation procedures as per Para (3), other market valuation models defined in the accounting policy and accepted by the auditor may also be used as the general valuation procedure for transactions specified in Points a)-e) of Para (3)." (Section 9/C of Government Decree no. 250/2000.).

The cited rules essentially lay down the fundamental rules of valuation of futures, option and swap transactions as known from corporate finance (see e.g. (Brealey & Myers, 1999)) and they do not actually mean special valuation requirements.

Only "simplified valuation procedures" (Sub-points aa) and ba) of Para (3)) provide extra information in the sense that they declare the applicability of these approximation methods.

Yet it is an important provision of the government decree that other valuation models may only be applied in the absence of market prices, thus the hierarchy of valuation models and market prices is explicitly stated here. Regrettably, though, the regulation does not specify what is meant by "*market valuation models"* but it is presumed to mean models characterized by level 2 inputs according to IFRS 13. A verbatim interpretation of the regulation excludes models building on level 3 inputs given that these are not market based models while their use in futures is less likely.

Again it is regrettable that the concept of fair value and market value is mixed in the regulation but luckily the government decree clarifies this: "*The market value of the subject of the derivative transaction as per Paragraph (3) is the fair value according to Point 12 of Paragraph (9) of Section 3 of the Act and during the establishment of such value the amounts of the values stated in Paragraph (6) of Section 22 prevailing at the date of the valuation are to be taken into account."* (Para (6) of Section 9/C of the government decree no. 250/2000). The system deployed here is thus closed and in all cases the fair value is stated.

> According to the legislation cited in the previous paragraph (Para (6) of Section 22): *At the the balance sheet date the following shall be considered market values:*
>
> *a) in case of stock exchange transactions the settlement price or rate of a financial instrument or other merchandise determined by the clearing house for the last day of stock trading within the subject year;*
>
> *b) in case of non-stock exchange futures currency trading or currency swap transactions the official foreign exchange rate of the Hungarian National Bank or the futures market rate prevailing at the effective date of the balance sheet;*
>
> *c) in case of non-stock exchange interest rate transactions (interest based futures and swap transactions) the standard interest rate specified in the contract, or in the absence of such rate the BUBOR relative to the period of the contract last published in the fiscal year or the interest rate of prevailing in the futures market at the effective date of the balance sheet;*
>
> *d) in case of other non-stock exchange transactions the price forming in a regulated market, also reflecting the trends of the market price and which is justified with sales data of actual transactions during the fiscal year and which properly characterizes the market judgment at the end of the fiscal year."* (Para (6) of Section 22 of Government Decree no. 250/2000).
>
> The above rules serve as a clarification only concerning the meaning of "market value" (Point 12/a of Para (9) of Section 3 of the Aa.) as laid down in the legislation.

6.5 Fair value in the scope of fundamental norms

Concerning the "(e)valuation" of fair value, the conversion between relevance and reliability (fair representation) are most often in the forefront of discussion. As presented in 5.3.3, the current accounting regulation is traditionally historical cost based, so the discussions as to the role of fair value start from the comparison with historical cost and, in a simplistic manner, contrast the relevance of fair value versus the reliability of historical cost. This, however, is only the tip of the iceberg as the assessment of the accounting model of fair valuation is, based on the fundamental norms outlined in Chapter 4, is much more complex.

6.5.1 Value relevance research concerning fair value

As described under 4.1.2, relevance is the degree of usefulness of information in decision making, whereas reliability means fair representation and justifiability.

Barlev and Haddad (2003) consider as the main objective of value relevance research the examination of the interaction between accounting data and the information used of capital investment decisions. According to *Barth et al.* (2001), the concept of value relevance essentially means that "*an accounting amount is defined as value relevant if it has a predicted association with* – or corroborates (own comment – KDM) – *equity market values"* (Barth, Beaver, & Landsman, 2001, p. 79).[157] The authors do not identify value relevance with the relevance named among the qualitative characteristics of financial statements; instead, it is understood as a possible operationalization of the concept of relevance and reliability.[158] This is explained by the fact that an accounting value can be anticipatory relative to stock prices if it carries relevant information for the investors and their measurement is sufficiently reliable for it to be reflected in the stock prices.[159]

[157] A formal definition of the concept of value relevance is provided by (Amir, 1993), (Beaver, 1998), (Ohlson, 1999), and (Barth, 2000). A joint element of the definitions is that an accounting value has value relevance if it is in a significant relationship with the capital market values (Barth, Beaver, & Landsman, 2001).

[158] A case in point: a piece of accounting infromation may have value relevance (it is related to stock prices) but has no decision relevance as some other information is much more timely.

[159] Value relevance research belong to the group of market based accounting group mentioned in Chapter 2.

This combined meaning provides the theoretical advantage of value relevance research: it allows the joint examination of relevance and reliability (fair representation). Again referring back to the conversion between the qualitative characteristics as mentioned under 4.1.2, the ratio of relevance versus reliability (faithful representation), as well as their absolute level (independent of each other) are key issues concerning the quality of information generated by the accounting models.

Value relevance research related to fair valuation is fairly diverse and goes back a long time. Generally speaking, as a result of the embeddedness referred to before one cannot ignore the fact that they examine the characteristics of a present value based model in an accounting system dominated by historical cost, therefore their findings should be interpreted on a relative scale (compared to historical cost) instead.

> We can also distinguish among the different value relevance research work according to the asset group that each research focuses on.[160]
>
> Accordingly, one should mention the examination of the valuation of assets and liability related to the different pension payments and other pension type payments, for example: (Landsman, 1986), (Barth, 1991), (Barth, Beaver, & Landsman, 1992), (Amir, 1993), (Amir, 1996).
>
> Additionally, there has been substantial research dealing with the value relevance of derivatives, as well as of debt instruments and equity instruments appearing in the financial statements of banks, for example: (Barth, 1994), (Ahmed & Takeda, 1995), (Bernard, Merton, & Palepu, 1995), (Barth, Landsman, & Wahlen, 1995), (Cornett, Rezaee, & Tehranian, 1996), (Barth & Beaver, 1996), (Eccher, Ramesh, & Thiagarajan, 1996), (Nelson, 1996), (Venkatachalam, 1996), (Wong, 2000), (Beaver & Venkatachalam, 2000).
>
> The main focus of research related to intangible assets was mostly the examination of the value relevance of historical costs, partly owing to the fact that value relevance research is most common in the United States but the US GAAP does not allow the revaluing of intangible assets.

[160] *Holthausen and Watts* (2001) divide the value relevance research into *relative association studies* – which examines the the relationship between stock prices adn the different (alternative) accounting valuations –*, incremental association studies* – which starts from the rationale between the accounting value examined and stock prices/yields (usually based on a regression estimate) –, and *marginal information content studies* – how the inclusion of a given accounting data can affect the quality of information available to investors.

Such research work includes: (Jennings, Robinson, Thompson, & Duvall, 1993), (Aboody & Lev, 1998), (Chambers, Jennings, Thompson, & B., 1999). The fair valuation of intangible assets has been examined in accounting systems other than the US GAAP by: (Barth, Clement, Foster, & Kasznik, 1998), (Barth & Clinch, 1998), (Higson, 1998), (Muller, 1999), (Kallapur & Kwan, 2004).

Value relevance examinations of tangible assets have highly extensive literature. This is also important from the aspect that, similar to intangible assets, tangible assets generally do not have prices quoted in active markets (they are hardly suitable for standardization, so a mark-to-market measurements is not really possible even if markets exists). Works dealing the value relevance of fair valuation of tangible assets include: (Sharpe & Walker, 1975), (Brown & Finn, 1980), (Beaver & Landsman, 1983), (Emanuel, 1989), (Bernard, 1993), (Easton, Eddey, & Harris, 1993), (Barth & Clinch, 1998), (Easton, 1998), (Aboody, Barth, & Kasznik, 1999), (Dietrich, Harris, & Muller, 2001), (Ismail, Kamarudin, & Mohamed, 2003), (Danbolt & Rees, 2008), (Paik, 2009), (Christensen & Nikolaev, 2010), (Muller, Riedl, & Sellhorn, 2011).

One of the key driving forces of value relevance research is thus the historical cost model and the closely related prudent (conservative) valuation. Due to the manifestation of the principle of prudence both undervalued and overvalued assets appear in the balance sheet and as a result the value of equity is deformed (Barlev & Haddad, 2003, p. 387), thus causing a decrease in the value relevance of financial statements (Francis & Schipper, 1999), (Lev & Zarowin, 1999). The research by *Kousenidis et al.* (2009) provides further insight, who based on Greek data demonstrated that as conservatism grows, so does value relevance grow in parallel until a certain level, after which it decreases. Thus the demand by those drafting and researching the standards for such an examination of fair value partially arose as criticism against the historical cost based (conservative) accounting systems.

By grouping the measurements based on the fair value hierarchy as presented in 6.4.2, *Song et al* (2010) demonstrated the value relevance of measurements at all three levels, whereas in case of measurements at level 3 the value relevance is significantly lower. Upon examining bank data, *Khurana and Kim* (2003) came to a similar conclusion stating that in case of measurements lacking market inputs the value relevance of historical costs is higher compared to mark to market measurements.[161]

[161] Evidently, the hierarchy of fair value could not be used in such form by the authors (in 2003 before SFAS 157) but their conclusions can be interpreted in this conceptual framework as well.

The main questions of value relevance research works related to fair value is to what extent (1) fair values explain stock prices as a function of the book value based on historical cost; (2) changes in fair value are reflected in future performance; (3) the existence of intangible assets not recognized in financial statements affects analysts or the financing activities of companies; (4) fair value accounting changes investment strategies (is accounting neutral)? (Barth, 2000, pp. 19-20)

Generally speaking, it can be said that value relevance manifests itself better for financial instruments in case of measurement based on quoted prices and is less manifest in mark to model measurements for tangible and intangible assets, although even in case of these one cannot speak of the complete absence of relevance and reliability (Amir, Harris, & Venuti, 1993), (Barth, 2000) (Barth, Beaver, & Landsman, 2001), (Gassen & Schwedler, 2010). Overall, fair values are informative for investors but this depends on the (estimated) degree of measurement errors[162] and distortions, and also in this aspect on the source of the assumptions used for the measurement (management or outside experts) (AAA FASC, 2000), (Cotter & Richardson, 2002), (Landsman, 2007), (Dichev, 2008).

Regarding value relevance research *Holthausen and Watts* (2001) do note, however, that although they are quite widespread their contribution to the foundation of accounting regulation is more limited. The core problem is seen in the fact that although research efforts set as the objective the examination of the information background of investment decisions, they tend to focus on the valuation of the equity. Another problem mentioned is that by overemphasizing the information supply of investors the other tasks of accounting are put on a back burner, i.e. reduced in priority.

Biondi (2011) proposes a relative measurement of the concept of relevance and reliability as depending on the purpose of a financial statement the terms carry different meanings and convey both mutually complementary and substitutive content.

[162] *Barth and Landsman* (1995) distinguish between two types of measurement errors. The first, so-called non-systematic error originates from general uncertainty (one can only speak of probability measurements), whereas the second, so-called systematic error is based on the assumption that management has a certain influence on measurements (this does not necessarily mean accounting fraud as certain strategic decisions also have an impact on the value of assets or on income).

The content of the terms of relevance and reliability can be summarized in the fair value and historical cost models as follows:

	Fair value	Historical cost
Relevance, to	Value of the firm	Incomes actually generated
Reliability, through	Current values (market or discounted)	Actual economic and monetary process

Table 5: Relevance and reliability in the fair value model and the historical cost model. Source: (Biondi, 2011, p. 32)

According to Biondi, the "pure logic" of accounting is much more in line with the historical cost approach and the underlying dominant assumptions than the going concern principle, matching (accrual based accounting), or the measurement of revenues from investments "*the accounting system is then a mode of representing, organizing, and regulating the special economic and monetary process of the firm as an enterprise entity"* (Biondi, 2011, p. 39). Therefore, the task of accounting is not solely the provision of information for the measurement of the company value from an investor's perspective.

In contrast, *Barth et al* (2001) emphasize that value relevance research are in line with the general approach of legislators (from a capital investor point of view) and they help us understand the effect of conservatism on the relationship between accounting values and market value while exposing to what extent a specific accounting value carries information for investors, as well as enabling the accounting regulation to adapt to the ever more complex financial markets.

Value relevance research also leads us back to the embeddedness of accounting: a basic condition of the examination of any valuation model is that we specify the system of objectives in which the valuation is to be carried out. Fair valuation is built on the grounds of a different paradigm than historical cost and its relevance and reliability can be assessed from the perspective of this paradigm. To what extent the paradigm is acceptable is a completely different question.

6.5.2 Fair representation reflected in market imperfections

Theoretical criticisms do not merely highlight reliability problems in terms of the practical application of fair valuation but express reservations concerning the market approach underlying the valuation itself and as such raise the question of having to review the scope of assets measured at fair value.

Fair value is based on market prices but there are certain situations where market prices do not properly reflect the "real" value of an asset or liability, the underlying economic phenomenon, and fair representation is thus compromised.

> On the one hand, market prices properly reflect changes in value only if a sufficiently extensive and liquid secondary market exists for the asset or liability in question. Even in such cases, fair value reflects the market circumstances of the date of the valuation while in a dynamic environment it may happen that the prices observable at the date of the valuation and the publishing of the statement, and thus the fair values, are a long cry from each other.
>
> On the other hand, the credit institution issuing the instrument in question (this is the most common in case of debt instruments) may have background information that the market would never be able to factor in. The risk management methods based on the principle of *value-at-risk* of financial enterprises are often not in line with the risk perception of fair value and the standards which are based on these. While the banks do of course seek to establish models best reflecting economic realities, given the above the valuation of these models, and thus the value of the instruments, may differ from the fair value appearing in the financial statements influencing investor decisions.

Another problem concerning market valuation is that it builds in the volatility of market prices in the financial statements, thus increasing the changes in asset value recognized by the enterprises, as well as the changes in the (comprehensive) income. Nevertheless, this volatility was not reflected in the development of risks (and prices), at least according to a survey conducted in the mid-1990s (Barth, Landsman, & Wahlen, 1995).[163] Conversely, according to *Hirst et al.* (2004) for example the measurement of income, the gains and losses due to changes in fair value do in fact have an impact on the estimated risk of banks and on prices, at least in case of banks exposed to an interest rate risk.

[163] The increased volatility is also evident concerning mark-to-model measurements as well; a minor change in the underlying assumptions (variables) may produce a big change in the value (Bignon, Biondi, & Ragot, 2004).

If the change in market prices is attributable to fundamental reasons, this volatility is not inherently damaging and does actually reflect the changes occurring in the value of the assets and liabilities. However, as a result of the imperfections of market, cases may occur where price changes cannot be justified with fundamental factors and are instead attributable to the short-term interests of market participants, which in turn originate from some kind of market imperfection.

In such cases the accounting valuation based on market prices may further strengthen these effects and it might even occur that accounting considerations start to control the business decisions[164] and "***we have come across instances of people choosing to avoid transactions that make economic sense because the accounting treatment is*** – in short term (own comment by KDM) – *unfavourable"* (Wood, 2004, p. 2.). As a possibility, I agree in theory with the cited statement while adding that I am not fully convinced of the ability of short-term (!) unfavourable accounting effects to directly influence decisions.

The problem arises especially in case of illiquid markets that due to a major sales transaction market prices start to decline sharply. In accounting systems based on historical cost, market participants play a strategic substitution role: because a sale is economically unviable they do not give up their assets (registered at historical cost). Conversely, in mark-to-market measurement systems market participants strategically complement each other: due to the market value of the asset which is expected to be even lower in the valuation, its retention is less desirable.

Therefore, the accounting system may amplify the effects of these price fluctuations not justified by fundamental reasons, thus creating a kind of "artificial volatility" of prices differing from the fundamental value (Platin, Sapra, & Shin, 2008).[165] The concept of *contagion effect* caused by fair valuation has come to the forefront during the financial crisis, namely that if a bank sells its financial assets below their actual value, as a result all banks holding such assets incur losses as a result of the price drop (Bignon, Biondi, & Ragot, 2004), (Allen & Carletti, 2008), (Platin, Sapra, & Shin, 2008).

[164] Accounting or, to be more precise, profitability considerations have always plaed a role in business decisions since, in theory, stakeholders always see the company through the financial statements.

[165] Although due to the principle of prudence, impairment losses shall be booked even when using historical costs. In case of an asset with a lower historical cost which later appreciates in value the theory works clearly. Yet it should also be borne in mind that the accounting regulation usually assumes fundamental reasons behind any impairment loss. A decrease in market value is a sign suggesting impairment loss but it does not in itself constitute impairment loss (cf. the "enduring and significant" criterion appearing in the Hungarian regulation).

The effect may also be in the opposite direction: during a rise in prices fair valuation may lead to the forming of bubbles (Penman, 2007). Nonetheless, it should be added that the existence of such bubbles cause by fair valuation has not been proven through empirical studies to date, and in my view the different effects would be hard to separate in a reliable manner, even on a theoretical level.

> During an analysis of the financial crisis the question inevitably arises: to what extent fair value accounting played a role in the forming of the crisis? Although this dissertation does not purport to provide an answer to this question, it cannot be fully avoided owing the issue of market imperfections.
>
> The (critically understood) relationships mentioned concerning fair valuation and the crisis essentially suggest that fair valuation causes a procyclicality. Namely: due to the downgradings as a result of credit losses, banks are forced to sell their assets in order to uphold their capital adequacy ratios, which in turn leads to a drop in prices. Fair values will then be based on the (depressed) prices, resulting in further downgradings. (Barth, 2011, p. 19)
>
> *Barth* (2011) does point out, however, that the crisis was essentially formed not as a result of losses not realized but due to impairment losses, i.e. besides (and behind) the market movements there were fundamental reasons (this is well indicated by the fact that banks had to value their assets below their fair value). Nevertheless, she fundamentally considers the ensuring of the prudent operation of banks a (bank operating) regulation issue (as it is, prudential filter have usually neutralized not realized income effects so far).
>
> By starting from Keynes' notions on the formation of cycles (the spontaneous optimism well surpassing the mathematical expectations of human nature)[166], *Ryan* (2008) emphasizes the dual role of accounting. Firstly, accounting periodically informs the relatively rational and well-informed market participants to enable them to avoid such damaging effects. Secondly, it serves as a general information basis to allow market participants to reassess their expectations and risk exposure when the economic cycle unveils itself. Fair value enables a faster recognition of this information compared to historical cost. However, this is not to say that fair valuation worked perfectly during the crisis, which is a message to the regulation as well that the measurement framework of fair value to be implemented in illiquid market needs to be improved.

[166] *"Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than mathematical expectations, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as the result of animal spirits - a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities."* (Keynes, 1965, pp. 183)

> Overall, the advantages and risks of fair value accounting must be seen clearly, along with the shortcomings of the regulation but in agreement with the statements made by *Lukács* (2009), *Magnan* (2009), *Bonanci et al.* (2009) I believe that (fair value) accounting was much more a precursor of the crisis, rather than being its cause. However, it could not properly fulfil its role as a precursor (users did not recognize the unveiling of the crisis behind the presented data), thus contributing to the crisis itself.[167]

6.5.3 Comparability and international harmonization

Comparability is based on the similar presentation of similar phenomena and on the different presentation of different phenomena, all of them conducted in a consistent manner. One of the most important goals of international accounting harmonization is to enhance the comparability of accounting information by standardizing accounting as the "*common language of communication*" (Beke, 2010, p. 82). The issues concerning accounting harmonization and comparability are thus closely interconnected.

> Several definitions exist for international accounting harmonization. *Barlev and Haddad* (2007), *Choi and Levich* (1997), as well as *Radebaugh et al.* (1997) distinguish between 5 levels. Level 1 is "shared knowledge": users are capable of understanding the various foreign financial statements. Level 2 means that the disclosures of the various accounting systems enable users to perceive the national differences and to bridge these through the relevant adjustments. On Level 3, the financial statements must be prepared according to both national and international rules (double reporting). On Level 4, a group of nations apply identical accounting rules, whereby during the first use they define the differences along the relevant rules (principles). Finally, on Level 5 uniform accounting rules are applied throughout the world. (Barlev & Haddad, 2007, pp. 497-498)[168]

[167] *Glover et al* (2005) suggested that in the financial statements *facts* and *forecasts* be distinguished and the balance sheet value determined as a sum of these. The fair values appearing in the financial statements are to be regarded as forecasts in all cases (whether they be mark-to-model or mark-to-market measurements) versus the historical costs called facts. The distinction would clearly highlight the values with different theoretical characteristics to users of the financial statements. Essentially the same is proposed by *Barker* (2004), who presented separately (per row) the effect of *remeasurements* on wealth and income.
The idea is actually not new as the current Hungarian regulation also follows a similar path (by distinguishing the measurement difference), although it is uncertain if it can accomplish the desired objective on its own. Much more important is the quality of the numerical and descriptive disclosures, which in pinciple ensure that users can reconstruct the fair value measurement itself.

[168] For more on the different approaches of the international harmonization of accounting see e.g.: (Somogyiné, 2008, pp. 26-32).

The valuation models based on historical cost may distort both similarities and differences merely due to the effects of price changes: the same asset may have a varying price at two different dates, thus the historical cost of two economically identical assets purchased at different dates may vary also. Secondly, it may also happen that a completely different asset is acquired by the entity at an identical price, thus their historical cost will be the same despite their difference in content. International comparison is further made difficult by the fact that conversion using the current exchange rates (at the effective date) may even deflect identical historical costs simply because of the effect of the change in the foreign exchange rate.[169] We could even say that "*when an asset is said to be stated 'at cost' without a purchase date, 'cost' is not interpretable"* (Chambers R. J., 1987, p. 105)

In case of fair valuation, presuming the reliability of the valuation, the above problem is solved on the level of principles, albeit *Herrmann et al.* (2006) do note that if fair valuation is only optional, only one value will be added to the diverse set of values and it is also far from certain that the different valuation models will yield results that are comparable to each other.

Upon examining the comparability of valuation based on sales prices, *Parker* (1975) concluded that their comparability measured against the book value based on historical cost is higher. However, the examination covers a relatively narrow scope of tangible assets. Parker notes that the difference in the book value calculated based on the historical cost was partly due to the difference in the original historical cost. Yet this is irrelevant in the sense that the basis of similarity, also as the testing of comparability, can only be physical identity (which presumes identical economic potential). Starting from the general purpose of financial reporting, namely the provision of information required for future and not past business decision, "*history* – i.e. historical cost (author's own comment – KDM) *–for the sake of history cannot be deemed a relevant attribute in deciding what constitutes 'like' assets"* (Parker, 1975, p. 520)

[169] This phenomenon is well illustrated with examples by (Herrmann, Saudagaran, & Thomas, 2006) and (Schuetze, 2001).

According to *Barlev and Haddad* (2007) national and international comparability is attainable along the fair value paradigm. Fair value carries accounting data valid at the date of the comparison, which are not influenced by *time* (and space) *differences* such as the change in the strength of national currencies and the local price structure, the different capacity preservation principles, and the place of the original acquisition.[170] In theory, nor does fair value depend on the place and time of the valuation, nor on the person conducting the valuation, thus ensuring – in theory – full comparability.

> *Cairns et al.* (2011) studied the relationship between fair valuation and comparability understood at an international level based on financial statements prepared according to the IFRSs. Their findings pointed in a direction that mandatory fair valuations (derivatives and share-based payments) enhanced comparability (and relevance) both on a national and an international level. Conversely, in case of optional fair valuation (tangible assets), comparability increased during a return to the historical cost model (to the detriment of relevance), and simultaneously in case of financial instruments the choice of fair value[171] led to a decrease in comparability (given that instruments with the same content were carried at different values at the different entities).
>
> Upon examining the use of IFRS, *Nobes* (2006) points out that even in case of a unified reporting system, national differences persist, thus undermining comparability. For example, Anglo-Saxon countries opt for fair value much more often in cases where it is proposed as an alternative measurement basis by the standards (e.g. IAS 16, IAS 40) than countries with a continental (featuring German roots) accounting system. [172]

[170] Fair value is thus a fully adjusted common monetary denominator (CMD), see more under 5.4.3. However, this is true under ideal market circumstances (completeness, efficiency) only, which are not manifest in practice.
[171] The fair value option for instruments to be recognized at historical cost, see more in Footnote 58.
[172] These findings were backed up by later research of Nobes, see (Nobes, 2011).

6.6 Scope of fair valuation in current regulation

The scope of fair valuation is understood as the scope of assets and liabilities recognized at fair value, along with the mandatory or optional nature of fair valuation, as well as the recording (model) dimension of fair value changes through profit or loss (net income) or other comprehensive income (OCI). The purpose of the subsection is to highlight the role of fair valuation in the current regulation while not aiming to cover the detail rules.

6.6.1 Fair value in the system of IFRSs

The scope of fair value is summarized in the table below based on the current IFRS rules. The table features the *most important* asset and liability groups for which the regulation allows the subsequent (after the acquisition, at the balance sheet date/end of the reporting period) valuation at fair value.

Item	Mandatory / optional	Accounting model	*Remarks*
Properties, plants and equipments (IAS 16)	Optional	OCI	*To be depreciated*
Intangible assets (IAS 38)	Optional	OCI	*To be amortized*
Investment properties (IAS 40)	Optional	Net income	-
Biological assets (IAS 41)	Mandatory	Net income	*Less costs to sell*
Financial assets and liabilities (IAS 39/IFRS 9)[173]	Mandatory	Net income / OCI	*In general mandatory, but in certain circumstances forbidden (except of fair value option).*
Share-based payments (IFRS 2)	Mandatory	Net income	*Revaluation only in case of cash-settled payments.*
Assets arising from employee benefit plans (IAS 19)	Mandatory	Net income	-

Table 6: The scope of fair valuation in the system of IFRSs. Author's own version.

Among the above, financial instruments and tangible (and intangible) assets, including investment properties, should be highlighted. These assets can be considered as the assets carried at value appearing most frequently in the financial statements.

[173] The valuation rules of financial instruments is substantially changed by IFRS 9, although such changes do not affect the fact of fair valuation. Nevertheless, by adopting IFRS 9 the measurement basis of certain assets may come to change.

Although it is not stated in the table, but cash and cash equivalents are practically carried at fair value, albeit in their case the measurement as a recognition in monetary value does not pose a special task. Additionally, certain special inventories (IAS 2) are to be recognized at fair value and, subject to the fulfilment of special conditions, interests in related companies (IAS 27/28/31) can also be carried at fair value. Assets under finance lease (IAS 17) are to be valued during their acquisition at the lower one of the present value of minimum lease payments and the fair value of the leased asset.

In addition, assets acquired in certain transactions shall also be recognized at fair value, such as assets acquired in a business combination during their acquisition (IFRS 3) and assets acquired as part of an exchange transaction (see e.g. IAS 16). Assets held for sale are to be recognized at fair value less costs to sell (IFRS 5), and when booking impairment losses the fair value (less costs to sell) comes to play a role in the quantification of the recoverable amount (IAS 36).

6.6.2 Fair value in the Hungarian regulation

6.6.2.1 Fair valuation of financial instruments (Sections 59/A to 59/F of the Aa.)

In the Hungarian accounting act, *fair valuation* appears in an explicit manner only concerning financial instruments, whereas the term of fair value is not used by the legislation for other assets.

A basic and crucial characteristic of the Hungarian regulation is that it makes fair valuation optional: when adopting its accounting policy, the entity can decide at its discretion whether to apply fair value accounting or not. This fact in itself determines the role of fair value in the Hungarian regulation.

In terms of the detailed rules of fair valuation, the accounting act and the rules of the IFRSs (specifically, IAS 39)[174] are mostly in line with each other; as such, I would only point out three major differences. Firstly, the explicit measurement hierarchy as already mentioned in 6.4.4, secondly, the lack of the fair value option as touched upon in 5.3.3, and, thirdly, that within the optional rules themselves the Hungarian regulation offers a choice: in case of available for sale assets it does not mandatorily prescribe the use of fair value while according to IAS 39 the remeasurement through other comprehensive income is mandatory.

[174] Upon the entry into effect of IFRS 9, the rules of financial instruments have substantially changed, although the Hungarian regulation did not adopt the rules of IFRS 9, thus a comparison with IFRS 9 is not relevant. This is mainly due to the fact that the European Union itself has not adopted IFRS 9, so this would also not be justified in case of the Hungarian regulation seeking harmonization with the EU legislation.

Also in case of this asset group, the remeasurement is done for a value not at the balance sheet date but at the date of preparing the balance sheet. However, this is even more questionable from a theoretical point of view as this means that fair values themselves reflect different time stages, thus leading back to the problem of aggregation mentioned in 5.4.3. One could even say that "*this situation is almost like basing the foundation on historical cost, which itself reflects the value relationships at various dates"* (Deák, 2006, p. 85).

As a technical type of difference, in the Hungarian regulation we cannot speak of recognition through other comprehensive income as this term is not used by the regulation and instead the valuation surplus is transferred directly to the equity (valuation reserve), although this is just a formal difference.

6.6.2.2 Value adjustment (Para (5) to (9) of Section 58 of the Aa.)

Value adjustment is a rather unique term in the Hungarian regulation, which is basically equivalent to the revaluation model[175] according to IAS 16 and IAS 38.[176]

Value adjustment was entered in the accounting regulation by Act XX of 1995 upon the amendment of the "old" accounting act (Act XVIII of 1991) effective at the time, but the rules, except for some legal-technical changes, were essentially adopted in their original form in Act C of 2000. The reasoning of Act XX of 1995 expounds that the enabling of the use of value adjustments primarily serve inflation accounting purposes: it was meant to counter the effects due to the high inflation characterizing the Hungarian economy at the time. Nevertheless, contrary to the rules of IAS 29[177] for example, it did not allow a general price level adjustment but the revaluation of certain non-current assets only. (It should be added that there was no hyperinflation during that time.)

In the Hungarian regulation, the scope of value-adjustable assets practically corresponds with the assets revalueable according to the IFRS. The following are classified as value-adjustable items: tangible assets (except of tangible assets under construction, and – of course – advances for tangible assets), among intangible assets the rights and intellectual properties, as well as – and this is the difference – long term equity investments (Para (5) of Section 58 of the Aa.).

[175] In case of equity investments (shares) presented as non-current financial assets, value adjustment is also allowed, although regarding content this is closer to financial instruments, even though according to Hungarian rules no correlation exists between value adjustment and the choice of fair valuation.
[176] This is basically equivalent to the optional fair valuation through other comprehensive income as shown in Table 6. Cf. IAS 16, Para 31-42; IAS 38, Para 75-87.
[177] IAS 29 – Financial reporting in hyperinflationary economies

> From a certain perspective, the value adjustment of *long term equity investments* is alienated: among such assets, in case of *long term equity investments in non-related companies* could be chosen in the same manner and since according to this definition they are not for trading purposes, nor do they have a maturity, they can only be classified available for sale financial assets. For their part, the recognition and measurement rules of available for sale financial assets fully coincide with the rules of value adjustment (cf. Para (9) of Section 59/B of Aa.). A problem is posed by *long term equity investments in related companies* as the fundamentally separate-financial-statements-oriented approach of the Hungarian accounting act is in conflict with the consolidated approach of the IFRS: given that in the consolidated financial reports, whether they be prepared according to the Hungarian rules or those of the IFRSs, such investments have either been eliminated and their measurement is thus not an issue, or they have been presented using the equity method are thus to be measured on a completely different principle basis. The parent company can decide in its separate financial statements prepared according to the IFRS whether to present such investments (IAS 27[178] Para 10) at historical cost or according to IFRS 9 (IAS 39), which is basically equivalent to fair value. The Hungarian regulation follows a unique, and in my view a rather awkward solution from a methodology perspective, in obtaining the same result: although it rules out the fair valuation of investments in related companies (Point c) of Para (7) of Section 59/A of the Aa.), irrespective of this it still allows adjustment as an option in their case.[179]

Besides technical differences (including the treatment of the depreciation)[180] and differences in terminology (value adjustment vs. revaluation, valuation reserve vs. revaluation reserve), only a single difference is found in the two system of rules, namely that in the Hungarian regulation the adjustment is done for a *market value known at the date of preparing the balance sheet* and not for the *fair value at the balance sheet date*. Yet the Hungarian regulation fails to provide a definition for the term of market value and to determine the rules of measurement, or to provide guidelines for the measurement.

[178] IAS 27 – Separate financial statements

[179] To be quite exact, it should be noted that saleable financial assets are to be mandatorily recognized at fair value according to IAS 39 while in the Hungarian regulation fair value as such is an option only (cf. Para 46 of IAS 39). IFRS 9 has already eliminated this category and has not changed the rules in the sense that it continues to prescribe mandatory fair valuation for securites at equity (cf. Para 4.1.1 to 4.1.5 of IFRS 9).

[180] However, this difference should not be underestimated as, in the system of the IFRS, remeasurement may have an effect on the income through depreciation contrary to the Hungarian rules, where any adjustment never affects the income.

Although in Act XX of 1995 we can find a reference to the measurement of market value using price indices, the legislator considers item by item valuation as the appropriate solution without specifying the rules.[181] In my view, the applicability of general price indices does not even follow from the specific rules and item by item valuation is necessary in all cases. In the Hungarian literature[182] again only a reference is made to measurement procedures. Regard the methods to be applied in value adjustments, *Lukács* (2002) states that an entity can use any of the generally accepted asset valuation methods. The approaches of the methods presented by the author are essentially equivalent to the principles of IFRS 13 as described in 6.4.1.

6.6.2.3 Other differences in terminology between the IFRS and the Hungarian regulation

Concerning fair valuation and tangible assets one must mention the valuation of investment properties. This category, i.e. this grouping within the properties, is not used by the accounting act, so we cannot speak of separate valuation principles as such (because of the general rules, value adjustment can be applied in this case as well). Among the biological assets, the value adjustment of animals kept for breeding purposes (breeding stock) is an option and they are to be recognized at historical cost in a general case.

No special rules exist for stock payments and assets originating from employee benefits programs (and as a result, the general measurement model applies in our case also).

Assets acquired during a business combinations can be recognized at the market(!) value as at the date of acquisition or the balance sheet date, an option available in consolidated statements (Para 5 to 7 of Section 124 of the Aa.), in case of exchange of assets the value of the new asset is to be recognized at the value according to the exchange contract (Para 2 of Section 50 of the Aa.), whereas assets held for sale are to be recognized as inventory (at the inferior one of market value and historical cost (net book value)), and the historical cost of assets in finance lease is the nominal value of the lease liability.

Concerning impairment loss (accelerated depreciation) the difference, similar to value adjustment, is that when determining the impairment loss the Hungarian regulation applies the term of market value, which lacks an exact definition.

[181] "*Global and special price indicies can also be used in the measurements if such indices are available during the period of preparing the annual report (in January and February) with a sufficient level of details. However, given that the measurement has no direct effect on the income it seems more appropriate for the entity in question to conduct the measurement based on the information available and for the auditor to verify the data thus obtained.*" (Act XX of 1995, reasoning of minister)

[182] See also: (Lukács & al., 2002), (Garajszki, 2004), (Róth, Adorján, Lukács, & Veit, 2008).

6.6.2.4 Fair value as an accounting policy decision

Concerning the Hungarian regulation it can be said as a summary that fair value as a measurement basis plays a role under a relatively narrow scope and is optional in accounting policy while its meaning is mixed with market value during its application. The area of application of fair valuation and value adjustment as allowed by the legislation is the groups of financial instruments and non-current assets, primarily tangible assets. The reason why fair valuation and value adjustment was entered in the Hungarian regulation as an option only is not evident from the reasoning of Act XX of 1995 and of Act LXXV of 2003. Although a reference is made to the extra efforts involved with fair valuation but no other reason can be quoted for the legislation. Upon examining the structure of the Hungarian economy from a general perspective, a number of possible and interrelated explanations seem evident.

On the one hand, it is well-known about the Hungarian structure of enterprises that it is fairly fragmented even in comparison to the average of the European Union. Hungary has an average of 55 small and medium enterprises (SME) per 1,000 residents, which is well in excess of the EU average (40 SMEs/1,000 residents). Of course this can partly be justified by the fact that in Hungary the number of enterprises, including SMEs, compared to the population also exceeds the EU average, thus the proportion of SMEs versus all enterprises is similar to that of other EU member states. Yet micro-enterprises play a much more dominant role in Hungary.

The Hungarian SME sector accounts for an employment share well above the EU average. This is especially true for micro-enterprises, whereas in terms of generation of added value the SME sector is below the EU average.[183]

The following table presents the main characteristics of the Hungarian SMEs in comparison with the 27 member states of the EU (based on an estimate of 2010).

[183] See more here: (European Commission, 2011)

	Enterprises			Employment			Value added		
	Hungary		*EU-27*	Hungary		*EU-27*	Hungary		*EU-27*
	Number	%	*%*	Number	%	*%*	bn€	%	*%*
Micro	516 092	94,2	*92,1*	917 258	35,6	*29,8*	8	18,0	*21,6*
Small	26 370	4,8	*6,6*	500 905	19,4	*20,4*	7	16,5	*18,9*
Medium-sized	4 432	0,8	*1,1*	430 770	16,7	*16,8*	9	20,0	*17,9*
SMEs total	*545 894*	*99,9*	*99,8*	*1 848 932*	*71,7*	*66,9*	*25*	*54,6*	*58,4*
Large	806	0,1	*0,2*	730 334	28,3	*33,1*	21	45,4	*41,6*
Total	547 700	100	*100*	2 579 266	100	*100*	45	100	*100*

Table 7: The differentiation of Hungarian enterprises according to size
Source: (European Commission, 2011, p. 1)

As shown in the table, over 90% of Hungarian businesses classify as micro-enterprises, which also has an impact on financial reporting.[184] For such enterprises the gains attainable through fair valuation/value adjustment would greatly vary from the related costs.

On the other hand, concerning the financing of Hungarian enterprises it is a well-known fact that, starting from the typology of *Zysman* (1983), Hungary is an economy mostly financed through banks and not through the stock exchange.[185] In particular, fair value is useful information for investors who are unable to obtain sufficient information beyond the financial statements for their own purposes, these investors typically being shareholders and/or bondholders. This, in turn, is another drag on fair valuation/value adjustment.

Thirdly, the research conducted by *Lakatos* (2009) also highlighted the fact that for a significant part of the businesses no creditor stakeholder (not owner) in a classical sense exists. It is typical especially for smaller enterprises not to have any funding other than those of the owners but also for a great portion of the enterprises not to have any creditor stake other than those of business partners (suppliers). Meanwhile, in most cases suppliers do not make use of the reports of their partners.

[184] For more details see for example: (Bosnyák, 2003), (Lakatos, 2009), (Kovács & Mohl, 2011).
[185] For more on the business financing structure in Hungary see: (Csubák, 2003)

While I do not claim that any of the above factors served as a reason for the statement of fair valuation and value adjustment as an option in the regulation, I believe that the balance between costs and benefits, even for a reason other than those quoted above, was a fundamental influencing factor in the codification solution. Therefore, at this point I can only state that although the exact legislating reason could not be exposed, the decision can be considered as justified having in mind the structure of the Hungarian businesses, the financing sources, as well as the information needs of the different stakeholder groups that play a dominant role.

The scope of fair valuation is summarized in the following table – for the sake of comparability in the same structure as Table 6 containing the IFRS rules. ("VA" refers to value adjustment and "FV" to fair valuation.)

Item	Mandatory / optional	Accounting model	*Remarks*
Properties, plants and equipments	Optional (VA)	Equity	*Non-depreciable*
Intangible assets	Optional (VA)	Equity	*Non-amortizable*
Investment properties	Optional (VA)	Equity	*No specific regulation, according to the rules of PPE.*
Biological assets	Optional (VA)	Equity	*Only for animals (breeding stock), according to the rules of PPE.*
Financial assets and liabilities	Optional (FV)	Net income / Equity	*For long term equity investments value adjustments is also an option.*
Share-based payments	*No specific regulation.*		
Assets arising from employee benefit plans	*No specific regulation.*		

Table 8: The scope of fair valuation in the Hungarian regulation. Author's own version.

7 The foundation of empirical study and the research hypotheses

7.1 Former empirical studies

One of the main directions of empirical studies related to fair value accounting, the examination of fair relevance has been described in 6.5.1, which provided an overview of the main international examinations. Although this research domain has long been crucial with respect to fair value, its examination in a Hungarian regulatory framework as the focus of the dissertation is greatly restricted by the limited nature of market (stock) information and the fact that companies listed on the stock exchange are mandatorily required to disclose financial statements according to the IFRS.

However, from the point of view of role and application as the focus of my research, the review of two other research angles is necessary.

The importance of the first research angle has been outlined in 6.6.2: the *role* of fair value accounting is essentially determined by the fact that the choice of fair value is an accounting policy decision in the Hungarian regulation. This raises at least two questions. One is *in what ratio* do entities opt for fair valuation? The other one is *can certain indicators* having an impact on the outcome of the choice *be identified*? The utility of international research findings is enabled by the fact that although fair valuation is mandatory in several accounting systems for a specific scope of assets (typically financial instruments), in general it can be said that for tangible and intangible assets, similar to the Hungarian regulation, it is up to the entity to decide on its use.[186]

The second research angle involves the issue of *application*. As described in 6.4.3 and 6.4.4 concerning the Hungarian regulation, fair valuation is not a uniform valuation model; measurements done at different levels have entirely different characteristics. While Level 1 and Level 2 measurements are mark-to-market measurements, Level 3 measurements are mark-to-model ones. Consequently, the question of *which hierarchical level measurements dominate* the fair value measurements for a specific group of assets or, in a broader perspective, for a given regulation setting, greatly influences the fair value appearing in the financial statements.

[186] This is also true in the system of IFRSs as well. See 6.6.1.

7.1.1 Choice of fair value

Based on the relevant (foreign) research, the picture is starting to emerge that fair valuation is chosen at a relatively low level, mostly for properties, in particular during the revaluation of investment properties. Yet even in these cases fair value cannot be regarded as a dominant measurement basis, especially in countries with roots of continental accounting.[187]

> *Nobes* (2011) performed the grouping of accounting systems based on several criteria, including fair value. He established that for tangible assets (properties) the choice of fair value was relatively low (0-15%), it was somewhat higher in case of investment properties (5.6% to 70.8% excluding the extreme values but with a significant spread), whereas for financial instruments – in cases where fair valuation is only an option – it is again lower (11% to 52.6% without extreme values). The research has also highlighted that the choice of fair valuation is significantly lower for all the examined cases in countries with roots of continental accounting than in the Anglo-Saxon systems.[188]
>
> Upon examining the practice of Anglo-Saxon countries, *Aboody et al* (1999) (United Kingdom, data between 1983 and 1995) found that fair valuation of tangible assets was chosen by 43% of the companies while *Barth and Clinch* (1998) (Australia, data between 1991 and 1995) encountered this choice among 45% of the companies. For the intangible assets the respective ratio was negligible in the United Kingdom (Aboody, Barth, & Kasznik, 1999), (Lin & Peasnell, 2000) while in Australia it was a mere 21% (Barth & Clinch, 1998). Upon examining United Kingdom and Australian data, *Cairns et al.* (2011) compared fair valuation based on national rules and IFRS rules and found a further decrease (5% to 10%) of the formerly low ratio of choice in case of tangible assets. With regard to intangible assets and investment properties, the utility of the findings is made difficult by the fact that largest portion of entities included in the sample did not have such assets, although in case of investment properties the choice of fair valuation was significantly higher. It is a relevant conclusion for financial instruments that in cases offering the possibility of choosing, i.e. the measurement of financial assets available for sale according to national rules, the use of the historical cost model is significantly higher. The fair value option was used only in case of a negligible portion of the financial instruments.

[187] Comparison with the Hungarian practice is made more difficult by the fact that the Hungarian regulation does not delineate the investment properties and, consequently, it does not contain any special requirements concerning their measurement (their fair valuation through profit and loss is not permitted – for more details see 6.6.2.).
[188] This fact is also reinforced by the research findings of *Paik* (2009).

> Upon examining German and English data between 2005 and 2006, *Christensen and Nikolaev* (2010) found a relatively low ratio of choice of 3% for tangible assets, while the respective figure of investment properties was much higher at 47%. Another research study (Danbolt & Rees, 2008) put this ratio even higher at 75% for business involved in real estate management (United Kingdom, data from 1999).

Based on earlier (foreign) research findings, I would highlight two of the factors explaining the choice of fair value and the motivations behind it: firstly, the size of the business (fair valuation is also an issue involving economies of scale, whereas in case of a small company costs most certainly exceed the benefits); secondly, the degree of leverage (companies with a higher capital leverage apply revaluation more frequently in order to present a more realistic picture of/improve their credit standing). It should be noted that the examinations were based on the data of businesses choosing fair valuation, thus the findings cast light on the reason of the fair valuation chosen as the volume and the high capital leverage alone do not entail the choice of fair valuation.[189]

> *Brown et al.* (1992)*, as well as Whittred and Chan* (1992) observed the data of Australian companies between 1974 and 1977, 1984 and 1986, and 1980 and 1984 and found that fair valuation was chosen by larger[190] businesses with both a high capital leverage and a larger pool of properties. In addition, revaluation also served signalling purposes: it was used in order to avoid hostile takeovers. It also emerges from the data that revaluation is most commonly done for properties. *Cotter and Zimmer* (1995) (using the sample of Whittred and Chan) add to the analysis that the need for external financing arising as a result of the decline in internal financing sources (declining operative cash flow) also encourages revaluations. Yet according to another Australian study conducted later, with the change in financing methods and an ever closer relationship (and monitoring) between banks and loan applicants the role of revaluations decreased (Cotter, 1999).[191]

[189] As pointed out in the research of *Demaria and Dufour* (2007) (France, 2005 data), fair valuation did not automatically result from size and capital leverage and, in general, historical cost remained dominant.

[190] Size was measured using a natural logarithm of the value of the net assets (equity) prior to revaluation.

[191] *Henderson* (1992) does, however, consider revaluations to be damaging as they merely enable compliance with the credit terms while through the deterioration of the various performance indicators (poorer profit and loss due to increased depreciation, decreasing return on assets and return on equity due to appreciation) they compromise fair representation.

Aboody et al. (1999) (United Kingdom, 1983-1995 data), as well as *Lin and Peasnell* (2000) (United Kingdom, stock exchange companies between 1989 and 1991) attributed the choice of fair value to the ratio of equity and liability and presumed compliance with equity requirements as a motivation factor.

In addition, they also demonstrated the existence of a correlation with size and available assets, as well as a negative relationship with the liquidity status. A study by *Black et al.* (1998) (Australia, United Kingdom and New Zealand, data between 1985 and 1995) also reinforced the existence of a relationship between equity status (equity depletion) and revaluation.

Christensen and Nikolaev (2010) (United Kingdom and Germany, data between 2005 and 2006) once again demonstrated a strong link between the choice of fair valuation and the rate of capital leverage. However, this is attributed not so much to the opportunism of management as to the fact that for creditors fair value better indicates the liquidation value of the entity and its credit standing.[192] As for the relationship between capital leverage and fair valuation it was demonstrated that entities which measure their investment properties at fair value are much more likely to issue bonds in the future.

Upon analysing other markets, *Jaggi and Tsui* (2001) (Hong Kong, data between 1991 and 1995) also demonstrated the explanatory power of signalling (anticipation of future performance), the (perception of the) credit standing, and improvement of compliance with lending terms. *Ismail et al.* (2003) (Malaysia, data between 1998 and 2001) observed a tendency to opt for fair value in case of companies with a higher profitability, a bigger size[193] that pay lower dividends and have a lower liquidity and lower risks. The research findings of *Missonier-Piera* (2007) (Switzerland, data from 1994, 1997, and 2000) explain the reasons behind choosing revaluation as a signal to creditors and foreign owners on the financial status of the company, the objective of which is to improve the credit standing of the business.[194]

Bosnyák (2003) examined in detail the Hungarian practice of establishment of the accounting policy and the choice of valuation procedures. Of the research findings it should be mentioned that it pointed out its attempts to influence the economic value of businesses by means of choosing the accounting procedures and it separated the motivations of businesses according to the size of the enterprise. It established that, in case of smaller businesses, considerations involving taxation have a significant effect while in case of large enterprises that are more

[192] Equally, not "window-dressing" but the better communication of actual economic outlooks is considered as the main driving force by: (Easton, Eddey, & Harris, 1993), (Healy & Palepu, 1993), (Bernard, 1993).

[193] The variable of size in this case is the volume of the assets (total assets).

[194] *Nichols and Buerger* (2002) made an interesting conclusion upon comparing the attitudes of German and American banks toward assets recognized at fair value: German banks attribute more importance to fair value. (This could have something to do with the fact that the US GAAP does not allow the revaluation of assets by alleging verifiability complaints.)

indebted and enjoy corporate income tax benefits and which have a profit-oriented executive bonus system the income maximizing strategy is more manifest.

Based on a sample of 100 businesses, *Deák* (2006) examined, among other things, the use of value adjustments and found that only a negligible portion of the entities applied this method. In all cases, the use of value adjustments was related to properties.

Based on the data of 47 listed companies and other major companies ("Top 100") between 2000 and 2007, *Varga* (2009) found that value adjustments could be observed for 12 companies (25.5%) and value adjustment involved tangible assets in 83.2% of the cases, with the majority of such cases concerning value adjustment of properties. In contrast, the measurement of financial instruments at fair value was used by a total of 4 companies only.

7.1.2 Methodology of fair value measurement

Empirical studies concerning the methodology of measurement of fair value are relatively fewer. One of the reasons could be that the main criteria of the fair value measurement (the levels of fair value measurements) can be deducted from the financial statements while more detailed examinations require a review of the specific valuation reports, which are usually more sensitive data. Generally speaking, it can be said based on earlier examinations that in case of fair value measurements the lower measurements (Level 2 and 3) are dominant. This ties in with the theoretical problem involving the merging of the hierarchical levels of fair value measurements raised in 6.4.2.

> Upon examining the data of financial institutes, *Song et al.* (2010) (United States, data between 2007-2008) observed Level 2 measurements as being in the highest ratio among financial assets and liabilities. *Kolev* (2008), also examining the financial sector (United States, 2008 data), obtained similar findings, i.e. the dominance of Level 2 measurements.
>
> Research studies dealing with the revaluation of tangible assets do not specifically name the measurement levels used or the data on which the measurement level could be identified, however, upon examining the case of investment properties *Danbolt and Rees* (2008) conclude that in a theoretical sense one cannot speak of a Level 1 measurement as under this scope we cannot speak of the price quoted in an active market of unique or identical assets. Regarding property measurements, *Hunt and Hilton* (1997) highlight that the measurement should not reflect the current use but instead it estimates the expected cash-flows based on an "investment curve" forming on the grounds of similar transactions. Nevertheless, current market transactions can usually not be observed, thus the measurement often engages subjective factors as well in order to adjust the data originating from not fully comparable market transactions.

7.1.3 A summary of the empirical studies presented

The following table summarizes the main features of the empirical studies presented earlier (sample, research questions, key findings). Among the research questions and findings I shall only cover the items relevant from the point of view of the dissertation.

Author(s)	Sample	Relevant research questions	Main findings
Brown, Izan, Loh (1992)	Based on the financial statements of Australian listed companies, data for the years between 1974 and 1977 (204 companies), and 1984-1986 (206 companies)	Which factors are influencing the choice of fair value?	Companies revaluing their fixed assets are larger, and highly levered (closer to violating their debt covenant constraints). Real estates are most often revalued.
Whittred, Chan (1992)	Based on the financial statements of 200 Australian listed companies, data for the years between 1980 and 1984.	Which factors are influencing the choice of fair value?	Fair valuation was chosen by larger businesses with both a high capital leverage and a larger pool of properties. In case of revaluer companies the growth opportunities are higher.
Cotter, Zimmer (1995)	100 companies chosen from the sample of Whittred and Chan (1992), data between 1980-1984	Which factors are influencing the choice of fair value?	The need for external financing arising as a result of the decline in internal financing sources (declining operative cash flow) also encourages revaluations.
Black, Sellers, Manly (1998)	Research in 3 countries (Australia, New Zealand an UK), Global Vantage database, data between 1985 and 1995 (223 A+NZ, 527 UK firms)	Which factors are influencing the choice of fair value?	Acceptance of equity-liability hypothesis: positive relationship between equity status and revaluation.
Barth, Clinch (1998)	The 100 largest, and 250 other Australian listed company, data from 1996	How often is fair valuation chosen (where applicable)? Is there any connection between revaluation and stock-exchange prices (value relevance)?	The ratio of fair valuation of tangibles is higher (45%), fair valuation of intangibles is definitely lower (21%). Value relevance is demonstrable.

Author(s)	Sample	Relevant research questions	Main findings
Cotter (1999)	Financial statements of Australian listed companies operating in defined areas (171 firms), data between 1993-1995	Are managers using fair valuation in order to decrease cost of capital? Is there any change comparing to the study of Cotter and Zimmer (1995)?	The change in financing methods and an ever closer relationship (and monitoring) between banks and loan applicants the role of revaluations decreased.
Aboody, Barth, Kasznik (1999)	Data of UK firms between 1983 and 1995 (Datastream International, 1 236 firms)	How often is fair valuation chosen (where applicable)? Which factors are influencing the choice?	The ratio of fair valuation of tangibles is higher (45%); fair valuation of intangibles is negligible. The equity-liability ratio is a relevant factor influencing the choice.
Lin, Peasnell (2000)	UK firms, data between 1989 and 1991 (Datastream International, 1,106 / 1,083 firms)	Which factors are influencing the choice of fair value?	High positive association with equity depletion, positive association with size, leverage and asset intensity, negative with liquidity.
Jaggi, Tsui (2001)	Hong Kong, listed companies, data between 1991 and 1995 (EXTEL Database), 466 observations (cca. 90 firms)	Which factors are influencing the choice of fair value?	Association with the expected profitability (signalling purposes), positive relationship between revaluation and leverage.
Ismail, Kamarudin, Mohamed (2003)	100 Malaysian listed companies, data between 1988 and 2001	Which factors are influencing the choice of fair value?	Observed a tendency to opt for fair value in case of companies with a higher profitability, a bigger size that pay lower dividends and have a lower liquidity and lower risks.

Author(s)	Sample	Relevant research questions	Main findings
Bosnyák (2003)	Multi-level sample (larger, smaller, and large companies), data between 1997-2001, 140-170 observations	Which factors are influencing the accounting policy choices of the companies in connection with measurement procedures?	In case of smaller businesses, considerations involving taxation have a significant effect while in case of large enterprises that are more indebted and enjoy tax benefits and the income maximizing strategy is more manifest.
Deák (2006)	100 Hungarian companies, data from 2006	How often revaluation is used?	Only a negligible portion of the entities applied In all cases, the use of value adjustments was related to properties
Demaria, Dufour (2007)	200 France listed companies, data from 2005 (ECOFINDER Database)	Does the choice of fair valuation result from size and capital leverage?	Fair valuation did not automatically result from size and capital leverage and, in general, historical cost remained dominant.
Missonier-Piera (2007)	Swiss listed companies, data from financial statements for the years 1994, 1997, and 2000 (96,95, and 103 firms)	Which factors are influencing the choice of fair value?	Companies choosing fair valuation are more indebted, have more limited financial possibilities. The fair value is functioning as a signal to creditors and foreign owners on the financial status of the company.
Kolev (2008)	Large financial institutions and insurance companies listed in the USA, data from 2008: 2nd quarter, 177/172 firms	Which levels of fair value measurements are dominant?	Level 2 measurements are dominant; in the case of Level 1 and Level 2 measurements the investors reliance not differs significantly, but the reliability of Level 3 measurements are significantly lower.
Danbolt, Rees (2008)	UK real estate management (754), and investment (2,226) companies, data between 1993-2002 (Company Analysis Database)	How often is fair valuation chosen in the case of investment properties?	General phenomena of the fair valuation (real estate management companies: 75%), but the measurements themselves are more difficult to be verified.

Author(s)	Sample	Relevant research questions	Main findings
Paik (2009)	Global data (Compustat Global Database), of listed companies from 2005	Is there any connection between revaluation and stock-exchange prices (value relevance)?	Value relevance observed in the common-law system (Anglo-Saxon countries), but not observed in the code-law system (continental countries).
Varga (2009)	All Hungarian listed companies, and a sample of the 100 largest companies, altogether 47 firms, data from financial statements between 2000-2007	How often is fair valuation / value adjustment chosen?	Low ratio of value adjustment (25.5%), tangible assets in 83.2% of the cases, with the majority of properties. Fair valuation of financial instruments: even lower (8.5%)
Christensen, Nikolaev (2010)	German and UK listed companies, stepwise sampling, in the final sample: 605/703 firms, data between 2005-2006	How often is fair valuation chosen (where applicable)?	Relatively low ratio of choice of 3% for tangible assets, while the respective figure of investment properties was much higher at 47%. For intangibles the results were not interpretable.
Song, Thomas, Yi (2010)	Banks listed in the USA, data between 2007-2008, 3rd quarter, 405/398/392 firms. (Compustat Bank Fundamentals Quarterly Research File)	Which levels of fair value measurements are dominant?	Level 2 measurements are dominant; the value relevance is decreasing in line with the hierarchy levels.
Cairns, Massoudi, Taplin, Tarca (2011)	114 Australian and 114 UK listed companies, stock-exchange reports, business periods starting: UK: 31/12/2005, Australia 30/06/2006	How often is fair valuation chosen (where applicable)? Has the rate of application changed in line with the application of IFRSs?	Further decrease (5% to 10%) of the formerly low ratio of choice in case of tangible assets, except of investment properties. The ratio of fair valuation of financial assets available for sale increased.
Nobes (2011)	8 countries (7 EU members, and Australia), large companies' data from 2008/2009, altogether 261 IFRS financial statements	How often is fair valuation chosen (where applicable)? Are there any significant differences between the countries/country-groups?	The choice of fair valuation is low in general, and significantly lower in countries with roots of continental accounting than in the Anglo-Saxon systems.

Table 9: The key features of the empirical studies presented. Author's own version.

7.2 The path leading to the hypotheses

When establishing the hypotheses *I started from the research questions* outlined in the introductory chapter, namely:

- How can the area of manifestation of fair value accounting be delineated in the current Hungarian regulation?
- Under what scope and with what frequency do entities operating in a Hungarian regulation setting use fair value accounting in their financial statements prepared according to the Hungarian rules?
- What factors influence or determine the use of fair valuation in case of entities operating in a Hungarian regulation setting?
- During the practical use of fair valuation what valuation procedures and inputs are used to establish the fair value?

In Chapter 2 I defined *positive accounting theory* as the approach used, so during the examination I focused on the examination of the mutual effects of accounting and reality on each other. The examination of the *multi-level problem of embeddedness* outlined in Chapter 3 made me aware of the fact that accounting problems and research questions are inseparable from the economic and social environment, thus the examination should be conducted along the trio of accounting theory, regulation, and practice.

Accounting is essentially a normative system, whose *fundamental norms* are represented by the underlying assumptions, qualitative characteristics, and principles as presented in Chapter 4: these provide the framework of interpretation and valuation of accounting models as the representation of reality. *Accounting measurement and valuation* means the value function of this representation. As pointed out during the examinations in Chapter 5, the two basic concepts of valuation models is the measurement basis applied (the elements of the value set), as well as the rules of assignment. The dissertation has in its focus of examination a special measurement basis, which is fair value.

Based on the examination of the *concept of fair value*, in Chapter 6, the market approach founded on the basis of hypothetical transactions is highlighted as the main and unique conceptual characteristic of fair value as an accounting measurement basis. The theoretical basis of the concept is the balance sheet approach, the general equilibrium theory, as well as the comprehensive income concept.

However, the fair value appearing in financial statements follows only partly from the theoretical concept itself, thus in terms of the operationalization of the concept the *measurement framework of fair value* plays a key role, based on a which a hierarchical model controlled by inputs used in the measurement can be drawn up.

Nevertheless, as referred to earlier in this section, the valuation model *should be placed in the sphere of fundamental norms.* Its examination provided an answer to the strengths and weaknesses of the model and its application, as well as the related opportunities and threats.

Therefore, the starting point of answering the research questions and establishing the hypotheses was the above theoretical considerations and the international research angles identified in 7.1, along with the scope of fair value present in the current regulation, in particular the Hungarian accounting regulation and practice as the focus of the examination. Scope as a blanket term comprises three sub-areas: the scope of assets that can be recognized at fair value, the alternative nature of fair valuation, and the settlement model applied.

Upon examining the Hungarian regulation I have established in general that fair value as an alternative measurement basis permitted for certain assets is a part of the Hungarian regulation environment, although the difference between the possibility enabled by the regulation and the actual role of fair value is fundamentally influenced by the fact that the use of fair value is subject to the own decision of the entity. Among the unique characteristics of the Hungarian accounting regulation I highlighted the rather restricted choice of fair value, the concept of value adjustment, as well as the related joint presence of, and unclear relationship between, the concepts of fair value and market value. The need for a deeper examination of these characteristics directly led to the hypotheses established.

7.3 Establishment of hypotheses

The hypotheses established have been grouped around the concepts of *role and application* as appearing in the title of the dissertation as well.

- The hypothesis related to *role* starts from one of the identified characteristics of the Hungarian regulation: I sought to clarify the place of value adjustment within the system and its relationship with fair valuation.
- *Role and application* appear as inseparable terms in case of the hypotheses concerning the frequency of choice of fair valuation and the scope of assets recognized at fair value.

- In case of the hypotheses dealing with the motivations behind choosing fair valuation and the measurement methodology of fair value I sought answers to the questions concerning *application*.

Concerning value adjustment appearing as a unique feature of the Hungarian accounting regulation, as explained under 6.6.2.2 the regulation does not provide an answer to the questions of measurement of market value. Given that the scope of assets concerned affected by value adjustment does not feature prices quoted in active markets, expert estimates are required in order to determine the market value. Consequently, the actual content of market value is formed not by the regulation but by the practice itself, i.e. the valuation. It was according to this that I established Hypothesis no. 1.

H1: During practical application the value adjustment laid down in the Hungarian legislation and the market value defined in case of the value adjustment are understood as being equivalent to fair valuation and fair value, respectively.

Hereafter, *fair valuation* as the focus of the examination is understood as recognition at the fair value defined in the Hungarian legislation and value adjustment, which is in line with the focus of international research studies presented in 7.1.1 that examine the fair valuation of financial instruments, tangible and intangible assets as a whole.

The fragmentation of the Hungarian enterprise structure as presented in 6.2.4.2 in and of itself determines the application environment of fair valuation as below a certain size the costs and benefits related to the fair valuation cannot balance each other. The restriction of fair valuation to certain assets carries another inherent restriction: the asset structure (the types of assets and liabilities held by an entity) has a fundamental influence on the choice of fair valuation. If an entity does not have assets (and liabilities) available for fair valuation, then fair valuation is ruled out (both in theory and in practice).

In light of the above, a marginal role of fair value appeared to emerge in the Hungarian accounting practice – in line with the international trends outlined in 7.1.1.[195]

[195] This statement, the use of fair valuation according to the Hungarin regulation being something of a rarity, is a well-known assumption in the accounting profession, although it has not been subjected to a thorough empirical analysis.

Accordingly, I established Hypotheses no. 2, 3, and in part Hypothesis no. 4. Hypothesis no. 2, as well as its 2 sub-hypotheses directly relate to the actual use of fair valuation while Hypothesis no. 3 concern the implicit restriction inherent in the asset structure.

H2: Of entities operating in the Hungarian regulatory framework:

a) only a negligible portion opt for fair valuation in their financial statements prepared according to the Hungarian rules, and
b) apply fair valuation primarily for tangible assets, in particular for real estates.

H3: The asset structure of businesses operating in the Hungarian regulatory framework determines that fair valuation may only be used for a smaller portion of the businesses.

Upon examining the entities that opted for fair valuation the question arose as to what the motivations behind the choice of the measurement basis were. The international research findings presented in 7.1.1 highlight the variables of size and leverage. In case of leverage it was found that capital adequacy indicators relating to the credit application, essentially administrative barriers, also carry explanatory power. Leverage was measured as the ratio of equity versus total assets, whereby the negative equity value (and ratio) specifically appears as an extreme value, which also raises questions concerning the long-term operating ability of the business. When examining the Hungarian accounting practice, besides the question of leverage, I consider appropriate to include in the examination the compliance with equity requirements[196] according to the act on business entities as an explanatory variable. Its function is similar: it represents an administrative barrier.[197]

The dimension of size, in line with current practice in the European Union[198], has been defined according to net revenues and total assets of the trio of these two and the average statistical headcount.

[196] The equity of entities operating in a structure as determined by the rules of the Act on business entities cannot fall below a certain ratio of the share capital (1/2 for limited liability companies and 2/3 for incorporated companies) and below the value of minimum share capital stipulated for the form of entity in question. Cf. Section 143 and 245 of Act IV of 2006. For more details, see e.g.: (Kisfaludi, 2007).

[197] Evidently, the two values are not independent of each other: the equity of two companies with identical assets but different liabilities will also be different, whereby for companies with a higher capital leverage the equity requirement is more likely to be breached.

[198] The EU principles of typification of companies based on size are set forth in the committee recommendation 2003/361/EK and Act XXXIV of 2004 (Act on SMEs) based on this.

The reason for this, as pointed out in several studies[199] earlier, is that headcount is a heavily distorting factor due to primarily administrative and taxation reasons: a significant portion of businesses (over 90%) operate with an average statistical headcount of less than 10, thus entities are not distinguished according to this variable.

Upon a comparison of the Hungarian regulation and IFRS rules I pointed out in 6.6 that the fair valuation of financial instruments is mandatory in the IFRS system. I also highlighted that in case of the tangible assets and intangible assets the two systems of rules permit the choice of fair valuation in the same manner. Accordingly, the harmony of valuation procedures according to different accounting systems of entities obliged to fulfil dual reporting (i.e. according to the IFRS and the Hungarian accounting act) arises as a question. In order to expose a part of the motivations behind the choice, I established Hypothesis no. 4, along with its 3 sub-hypotheses. The hypothesis is not complete in the sense that I only seek to examine the effect of the 3 factors it contains, albeit a number of other motivational factors may also play a role in choosing fair valuation.

H4: Among entities opting for fair valuation:

a) size and
b) leverage and the related compliance with requirements pertaining to the minimum volume of equity are explanatory factors for the use of fair valuation,
c) however, even in case of entities obliged to fulfil dual reporting the frequency of choosing fair valuation is not higher in the financial statements prepared according to the Hungarian rules.

Concerning the measurement of fair value I highlighted in 6.4.3 that fair value cannot be determined based on a uniform measurement model. Mark-to-market and mark-to-model measurements can be distinguished according to their theoretical characteristics as well. Just what types of measurements dominate a given regulation environment is a key feature of the use of fair valuation in a specific regulation. I established Hypothesis no. 5 based on these methodology questions concerning the measurement of fair value.

H5: The majority of fair value measurements conducted in the Hungarian regulation environment are mark-to-model measurements.

[199] See for example: (BCE Pénzügyi Számvitel Tanszék, 2008), (Lakatos, 2009).

8 Verification of the hypotheses

8.1 Scope of examination; data sources

In Chapter 2 I defined as the focus of the empirical analysis the continuously operating, profit-oriented entities obliged to fulfil double-entry bookkeeping according to the Hungarian accounting rules, as well as the financial statements (annual reports) of these entities prepared according to the Hungarian rules. Such entities thus represent the population of the examination and the observation units of the population.

The sources of the data used for the verification of the hypotheses can be divided into four (3+1) groups.

8.1.1 Data of corporate income tax returns (DB1 database)

The first group is comprised by the data of corporate income tax returns of 2010 mandatorily submitted by entities operating in Hungary (tax returns 1029)[200]. Among the data featured in the tax returns I used the following during the analysis:

- data related to the income statement (sheets 1029-07-01,02),
- data related to the balance sheet (sheet 1029-A-01),
- detailing data related to the tangible assets (sheet 1029-A-02-01),
- the main activity of the entity (based on the NACE code).

The choice of the period was justified by the fact that 2010 data were the latest available information and the survey primarily sought to assess the current situation. The data originating from these were made available in an anonymized form for exclusive research purposes by NAV[201]. The utilization of the database is based on the fact that the use of fair value is also represented in the quantitative parts of the annual report: the presence of the valuation differentials and the valuation reserve themselves prove the use of fair valuation.

Except for identification data, the data pool contains all the main data of the tax returns of a total of 392,640 businesses, which means data provision of 268 variables by each company. The database contains, without any restriction, the data of all businesses falling under the scope of the act on corporate income tax and dividend tax which fulfil double-entry bookkeeping and which submitted a tax return for the year 2010. By contrasting this number with the data of Table 7 it is clear that the sample can be considered as representative.

[200] The relevant parts of the template of Tax return 1029 are attached as Annex I.
[201] National Tax and Customs Administration

> In addition to imprecisions of the estimations, the difference between all businesses and the businesses included in the database is the result of entities classified under a special taxation group (e.g. simplified entrepreneurial tax), those using a fiscal year different from the calendar year, as well as entities that fail to submit their tax return due to inactivity or omission.

Given the high number of observations and variables and prior to the use of the data for purposes of analysis, I have done the following to ensure that the data pool be manageable:

- I have removed any obviously flawed observations from the data pool;
- I applied a filter for variables which are not relevant from the point of view of the analysis (the observations remained a part of the data pool but by applying a filter variable I have excluded these from the analysis);
- I have extended the data table with new (established) variables required for the analysis.

During the cleaning of the data as a first step I thus filtered the obviously flawed observations. I classified as obviously flawed observations those where the sum of assets, liabilities and equity do not match. Thanks to the verification mechanism of the tax return this only occurred in a single case.

As a second step I excluded certain taxpayers that would distort the analysis results (their ratio is relatively small and their data are not comparable in every respect):

- non-profit organizations (based on their special declaration rows) as I dealt with profit-oriented entities only[202];
- cooperatives and legal entities of the church (also based on their special declaration rows) as the analysis was restricted to business entities only;
- the Hungarian branches of foreign businesses (as the analysis was limited to Hungarian enterprises only);
- companies whose total assets is 0 (these are essentially inactive companies or wrong data provisions).

[202] Although these are not included in the tax return data themselves as such entities are not obliged to fill out this part of the declaration, I included this filter criterion in the analysis for the purpose of verification.

After applying the filter a total of 379,673 companies remained in the database and 12,997 entities were excluded; this ratio is not excessively high (3.3%), thus leaving a sufficient number of observations to enable conclusions to be drawn.

The variables established for purposes of analysis are described in 8.3-8.7 concerning the testing of the hypotheses.

8.1.2 Data of auditor questionnaire survey (DB2 database)

As a second source I used the data of an own questionnaire survey. The target group of the questionnaire survey was auditors registered in Hungary and with an active membership in the professional chamber. The questions related to the *practice of the last completed auditing period (2011)*. Although the DB1 database is based on 2010 data, since I am not examining the specific administration data of the year in question but accounting policy choices and general characteristics that can be considered relatively stable, the changes between the years do not fundamentally affect the comparison of data of the two databases.

The reason behind the selection of the *target group* is that pursuant to Paragraph (2) of Section 59 and Paragraph (15) of Section 59/A of the Aa. the conformance of the determination and recognition of the value adjustment and the fair valuation must be checked by the auditor as part of the mandatory auditing. If pursuant to Paragraph (3) of Section 155 of the Aa. the auditing is not mandatory, an independent auditor shall be appointed to conduct a review of the valuation.

In order to economize with the resources and to improve the response ratio we have prepared a joint questionnaire with another research project dealing with auditing risk and instead of sending out paper-based questionnaires we used electronic mail and a related online form to conduct the survey. In case someone wanted to complete the questionnaire in paper form we also arranged the option of postal return, however, no such need arose.

The questionnaire was compiled in June and July 2012 and the first draft was sent out to a small group of auditors also lecturing at the Corvinus University of Budapest in early July 2012. Based on the experience thus gained we sent out the final version of the questionnaire on 25 June 2012 with the help of the Chamber of Hungarian Auditors (MKVK) for all auditors included in the target group (the Chamber had a total of 3152 active members in August 2012). Except for any missing data due to wrong data entries, the survey involved a full scope.

The deadline for completing the survey was 15 September 2012. This was meant to provide sufficient time for responding and also took into account the end of the summer vacations. The questionnaire sent out and the cover letter is attached in Annex II.

To enable the statistical analysis of the data we considered necessary a large sample composed of at least 100 elements. This goal seemed attainable even in view of the relatively low response rate (a maximum of 5%) generally experienced in similar research projects. The number of responses received was mostly in line with this preliminary expectation as a total of 104 properly completed answers were submitted, which represents information based on 1619 audits when aggregating the number of audits conducted by the respondents in 2011.

The questionnaire can be divided into three parts. The first part (Questions 1-7) is relevant for both research projects and it contains general information concerning the person of the respondent, the auditing clients, and the financial statements audited; the second part (Questions 8-19 and Question 27) relate to the practice of risk estimates by auditing; the third part (Questions 20-26) addressed the Hungarian practice of fair valuation. (In addition, the last question (Question 28) concerned a possible way (credit points) of enhancing the willingness to respond to questionnaire surveys.)

The *third part* of the questionnaire that is relevant to this research addressed the practice observed during the auditing of fair valuation and value adjustment of financial statements specifically prepared according to the Hungarian rules. To facilitate the completion of the form and to enable unambiguity , as well as to enhance the willingness to respond, I applied closed questions in every case by stating answer options for each question, which had to be ranked on a frequency scale ranging from 1 to 6 (1: not encountered at any client… 6: encountered at every client). Evidently, this solution entailed some data loss, however, in my view this is counterbalanced by the higher number of relevant responses, along with the fact that the purpose of a questionnaire survey is to highlight tendencies rather than to record fully accurate data. (In view of the low response rate as previously anticipated and actually seen, conclusions can only be drawn from robust results.) The statistics of the database variables are attached in Annex III.

The questions covered the following topics:

- the frequency of value adjustment per asset (Question 20);
- the frequency of fair valuation per asset (Question21);

- the frequency of use of value adjustment and fair valuation as a function of net revenues (Question 22);
- the frequency of value adjustment and fair valuation as a function of the total assets (Question 23);
- the reasons for using or not using value adjustment and fair valuation (Questions 24 and 26);
- the methods of determining fair value (Question 25).

Both Questions 22 and 23 addressed the fair valuation practice of banks, state budgetary entities and other organizations, thus this data was redundant. Following an examination of consistency of data I decided to record in the database only the answers given to Question 22.

Of the general questions I included the following in the database (to serve as weight variables):

- the number of audits conducted by the respondent (Question 3);
- the composition of clients (Question 4);
- the breakdown of client enterprises according to revenues (Question 5).[203]

With respect to the composition of clients, as well as the breakdown of client enterprises according to revenues we opted for a breakdown according to bands instead of percentage figures due to technical reasons on the website by setting up bands of 10% between 0% and 100%. In my view the 12 bands thus created carry sufficient detail to prevent the distortion of the data. During the processing the band was approximated by using a mid-range and in cases where the sum did not add up to 100% I applied a proportionate correction for the mid-ranges.

Thanks to the electronic method of completion, missing data occurred in relatively few cases only (as the program did not allow the respondent to progress without completing the relevant fields), so there was no need to replace the data, other than faults/incomplete information that could be resolved in a logical manner. It happened in case of 9 respondents that although they signalled the occurrence of value adjustment/fair valuation of assets they provided a negative answer to the question of whether they encountered such models during their audits in 2011. I did not exclude these observations from the table as I assumed as the reason for the inconsistency that the persons responded to the first group of questions in a general sense and to the second one based on the experience of 2011. However, from the point of view of frequency of fair valuation according to assets these data are also relevant.

[203] The breakdown of banking clients and insurance company clients (Question 6) is not relevant as this group was not sub-divided in case of questions relating to fair valuation, either.

8.1.3 Data of financial statements of listed companies (DB3 database)

Concerning dual reporting a third (and smaller) database was formed using the data of the financial statements of entities listed on the Budapest Stock Exchange (BSE) prepared in accordance with the Hungarian rules and the IFRS. Clearly, the group of listed companies is not the same as the entities obliged to fulfil dual reporting, however, in my judgment the main features of dual reporting can be tested on this sample.

When creating the database I took as a basis the data of all listed companies whose shares and/or corporate bonds were quoted on BSE in 2012. Accordingly, a total of 55 companies were added to the database, although an important criterion in establishing the sample was to ensure that the data of the 2011 reports be available according to both Hungarian and IFRS rules. As a result, companies that lacked either of these reports had to be removed from the database. When cleaning the sample, 22 enterprises had to be removed as they did not submitted financial statements in accordance with the IFRS; 1 entity has not had a closed fiscal year until 2011; 1 entity had a foreign seat and did not disclose a report prepared in accordance with the Hungarian rules.

Based on the above, the data of a total of 31 companies were entered in the cleaned sample, or 62 companies when taking into account the period of comparison, their composition being shown in the following table. A listing of companies included in the final sample, or those removed from it, are stated in Annex IV.

Instrument	Number of companies – original sample	Number of companies – cleaned sample
Share „A”	12	12
Share „A” and bond	4	3
Share „B”	34	14
Share „B” and bond	2	1
Corporate bond	2	1
Total	54	31

Table 10: Companies included in the DB3 database

In the course of processing the financial statements I sought an answer to whether companies invoke fair valuation or value adjustment when they are available as an option.

As described in 6.6, this means the *following group of cases*:

- financial instruments in the Hungarian regulation only (as fair valuation is mandatory pursuant to the rules of the IFRS);
- tangible assets according to both systems of rules (investment properties separated in the IFRS)
- intangible assets in both regulations;
- long-term equity investments in the Hungarian regulation only (special value adjustment).

To collect the data I reviewed the *quantitative and descriptive* parts of the reports, in particular the additional comments summarizing the main *accounting policies*. The comparison of the reports prepared according to the two systems are aggravated by the fact that financial statements prepared according to the IFRS contain *consolidated* data in all cases, whereas according to the Hungarian rules only *separate/individual* reports are available. To enable the comparability of the data I have reviewed the IFRS financial statements of all enterprises available on the BSE website, as well as the separate/individual reports of entities belonging to the same group (parent companies, subsidiaries, joint ventures), which I downloaded from the website of the Company Information and Electronic Company Administration Service of the Ministry of Public Administration and Justice (e-beszamolo.kim.gov.hu).

Needless to say, consolidated reports mean not just the consolidation of separate reports, yet it is important to note that with the exception of long-term equity investments (save any adjustments due to intragroup profit and loss) the consolidation does not usually affect the assets relevant from the perspective of fair valuation. In case of the financial instruments, the payables and receivables versus each other cannot be recognized at fair value either according to the IFRS or the accounting act, therefore, these are not affected by the consolidation. As a theoretical possibility it may occur that a security incorporating a lending relationship within the group is held by another intragroup company that recognizes it at fair value, but this occurs relatively seldom. Nonetheless, I verified this possibility for each of the financial instruments recognized at fair value in the separate reports (3 companies) but found no such problem. Consequently, the assets in question appearing in the separate reports of companies consolidated eliminating the intragroup assets (parent company, subsidiary, joint venture) are also stated in the consolidated report (they have not been eliminated), thus enabling the comparison of separate/individual data and consolidated data.

The relevant data of the database are attached in Annex V.

8.1.4 Other data sources

The in-depth interviews conducted with auditors and valuation experts served as the auxiliary data source of the empirical analysis. The structure of the interviews was provided by the questions relating to the measurement of fair value of the auditor questionnaire survey constituting the basis of the DB2 database, as well as the joint interpretation of the answers.

I sought to answer the following about the fair value/market value measurements implemented in practice:

- what methods are used;
- whether there is any generally accepted professional guidance;
- what the special Hungarian features of the valuation of the different assets are;
- to what extent there is a difference between the valuations according to the IFRS and those made for Hungarian reporting purposes;
- whether the theoretical differences between value adjustment and revaluation according to the IFRS are of any practical significance.

Obviously, the survey cannot be considered representative, therefore it has an auxiliary role only and is meant to corroborate or refute data originating from other data sources and to aid in their interpretation. Still, professional standards have a fairly important role, so the results obtained reflect well the generally observed principles.

8.2 Methods and procedures used for verifying the hypotheses

Hypothesis H1 is unique in the sense that it is hard to examine using statistical methods. The analysis of this methodological hypothesis requires its comparison versus the theoretical relationships of the Hungarian practice as described in Chapter 6, and under 6.6 in particular. To that end, I assessed the theoretical considerations underlying the Hungarian regulation of value adjustment and compared these to the provisions of the accounting act pertaining to fair value, the underlying principles of the IFRS, as well as the conclusions made following the in-depth interviews with experts.

Hypotheses H2, H3 and H4 can be examined using statistical methods. Their testing was partly based on the *DB1 database* and the results obtained from the DB1 database were verified by means of a comparison with the results of the *DB2 database*.[204]

[204] The *professional literature background* of the statistical methods used were works of (Füstös, Kovács, Meszéna, & Simonné, 2004), (Hunyadi & Vita, 2002), (Kovács E. , 2006), (Ketskeméty & Izsó, 2005), (Székelyi & Barna, 2002), while the *IBM SPSS Statistics 20* program was used to execute the analyses.

Concerning the variables of the *DB1 database,* a relatively large spread was generally evident as a result of the unique features of the Hungarian enterprise structure as described under 6.6.2.4, so of the descriptive statistics of the variables I used quantiles (primarily deciles) that are less sensitive to spread. In order to further fine-tune the examinations I layered the population according to size categories, for which I used the variables of total assets and the revenues, whereas for the establishing of categories I took as a basis the bands applied in the research of the CUB Financial Accounting Department in 2008.

The reason for adopting the categories used there is that this enables comparability with the results of earlier studies and the fact that I previously presumed no major change in the structure of the population in the past 3 years. To verify this pre-assumption I compared the breakdowns according to categories. The results obtained are summarized in these tables.

	Total assets categories (mHUF)	Distribution of entities (%)		Distribution of assets (%)	
		2007	2010	2007	2010
#1	0 – 10	57.1	59.4	0.5	0.4
#2	10 – 50	24.5	23.1	1.6	1.4
#3	50 – 100	6.7	6.4	1.3	1.2
#4	100 – 250	5.5	5.3	2.4	2.1
#5	250 – 500	2.5	2.4	2.5	2.2
#6	500 – 2,500	2.7	2.5	7.7	6.8
#7	2,500 – 12,500	0.7	0.7	10.3	9.1
#8	12,500 –	0.2	0.2	73.8	76.8

Table 11: Development of total assets categories 2007-2010

	Revenue categories (mHUF)	Distribution of entities (%)		Distribution of revenue (%)	
		2007	2010	2007	2010
#0	No revenue reported	17.6	17.6	–	–
#1	0 – 10	37.9	40.8	0.7	0.7
#2	10 – 50	24.2	23.4	2.9	3.0
#3	50 – 100	7.1	6.7	2.6	2.6
#4	100 – 250	6.5	5.8	5.3	5.0
#5	250 – 500	2.9	2.6	5.2	5.0
#6	500 – 2,500	2.8	2.4	15.0	13.5
#7	2,500 – 12,500	0.6	0.6	16.8	15.6
#8	12,500 –	0.2	0.1	51.5	54.7

Table12: Development of revenue categories 2007-2010

As can be seen in the tables, there is no significant discrepancy between the two data rows; the share of the uppermost bands slightly increased while the other bands decreased somewhat, however, this cannot be considered significant, so I accepted the pre-assumption.

When defining the metrics of size, in 7.3 I justified the exclusion of the number of employees by invoking the findings of earlier studies that also examined the data of corporate income tax returns of 2007. The comparison of the 2007 data and the 2010 data yielded a similar conclusion as in the case of total assets and revenues: no major discrepancy between the distributions of the data of the two years. This fact reinforced the soundness of the earlier decision to ignore the headcount information. The comparative data are shown in this table.

Average headcount (employees)	Distribution of entities (%)		Distribution of headcount (%)	
	2007	2010	2007	2010
No employee	28.9	30.8	–	–
1 – 2	41.1	41.7	8.1	9.3
3 – 10	21.6	20.2	16.0	17.0
11 – 50	6.7	5.9	21.0	20.7
51 – 250	1.4	1.1	20.9	19.6
250 –	0.3	0.2	34.0	33.4

Table 13: Development of headcount categories 2007-2010

Sub-hypothesis H2/a) was tested based on the examination of the representation in the balance sheet (valuation reserve) earlier mentioned by conducting a separate examination of the reliability of data using the internal relationships of the *DB1 database* (balance sheet rows and their detailing data). The results obtained were compared to the frequency tables of the data resulting from the *DB2 database.*

For testing Sub-hypothesis H2/b) I examined the balance sheet weights (the ratio of the different asset groups versus total assets) calculated from the *DB1 database* using cluster analysis. Given the relatively large size of the sample, I opted for a two-stage procedure: I estimated the clusters to be established using hierarchical cluster analysis and then ran a non-hierarchical analysis (K-means method). The stability of the clusters thus established was checked using discriminant analysis and their interpretation was conducted according to their asset structure.

Subsequently, I compared the results obtained with the respective data of the *DB2 database*. To enable a better interpretation of the differences between the assets in case of the frequencies, as a first step I rescaled the data: I changed the classification according to frequencies of 1 to 6 stated on the original questionnaire to a range of 0 to 5, thus ensuring that the cases involving no value adjustment/fair value be assigned a value of 0.

Upon aggregating these recoded frequencies I assigned scores to the different asset groups. As a next step I applied the number of audits conducted by the respondents and allocated weighted scores to the asset groups (number of audits × frequency) and then added up the scores thus obtained per asset group. Although the results based on scores are relatively easy to interpret, their statistical explanatory power is smaller. Therefore, I applied the *Friedman test* for the verification and, in cases where the examination of the ranking order was required, I applied a separate *Wilcoxon signed rank test* for the unweighted variables and for the variables weighted with the number of audits, respectively.

Hypothesis H3 was tested using the *DB1 database* in two stages: firstly, it was done for the whole population in general and, secondly, based on the layering described earlier separately for each band. The method applied involved the analysis of deciles: I examined for which part of the entities the weight of the given asset group, available for fair valuation, deviates significantly from 0. For assets subject to depreciation I extended the examination to both the net value and the gross value in order to prevent the distorting effect of the degree of depreciation. The results obtained were again compared to the data of the *DB2 database* also using the point totals calculated on the basis of the answers provided.

The testing of Sub-hypothesis H4/a) was done according to the categorization of the data of the DB1 database according to size as presented earlier by comparing the distribution of the full population, those choosing and not choosing fair valuation among the different categories. The correspondence of the two sub-samples, following the Kolmogorov-Smirnov test of the examination of normality, was tested using a non-parameter procedure, the Mann-Whitney test, as well as two Kolmogorov-Smirnov tests using independent samples. Since the DB2 database also contained data relative to the entities choosing fair valuation, I again contrasted the results of the two databases (also using the point totals calculated on the basis of frequencies).

The testing of Sub-hypothesis H4/b) was based on the ratio of two indicators of leverage, namely equity versus total assets and equity versus registered capital. Due to the effect of fair valuation which distorts (increases) equity and balance sheet value, both indicators were established from data calculated without the valuation reserve. Firstly, using the *DB1 database* I examined to what extent the indebtedness indicators of those choosing and not choosing fair valuation vary, again using a Mann-Whitney test and a Kolmogorov-Smirnov test, and for the purpose of exposing the relationship of cause I examined the change in the indicators upon including the valuation reserve in the analysis.

As a next step, I chose a sample out of those not opting for fair valuation with a size and asset structure similar to those opting for fair valuation and compared the indicators of those opting for fair valuation to the sample thus established. In order to assess the explanatory power of the capital situation I applied logistical regression using binary variables. The factors not included in the examination but affecting the choice of other fair valuations were examined using the *DB2 database*.

The basis of testing for the Sub-hypothesis H4/c) was the *DB3 database* and besides the examination of the data thus collected the fair valuation practice of entities with a foreign majority stake listed in the *DB1 database* was also examined (the separation of sub-samples were once again checked using a Mann-Whitney test and a Kolmogorov-Smirnov test), along with the answers given as the reasons for choosing fair valuation of the *DB2 database*.

Hypothesis H5 can be tested using statistical methods similarly in a rather restricted manner and as the *DB1 database* contained no relevant data for verification the backbone of the examination was formed by the *DB2 database* using the auditor survey and *in-depth interviews*.

8.3 Verification of Hypothesis H1

H1: During practical application the value adjustment laid down in the Hungarian legislation and the market value defined in case of the value adjustment are understood as being equivalent to fair valuation and fair value, respectively.

Upon verifying the hypothesis, I took as a basis the two major substantive differences between value adjustment and the IFRS, namely– as described in 6.6.2.2 – the *date of the valuation* (preparation of balance sheet vs. balance sheet date) and the *value relationships represented* (market value vs. fair value). I assessed the extent to which they represent different valuation approaches in practice and the extent to which the methodology of the measurement of fair value differs from the principles of the determination of fair value laid down in the Aa.

Thus, one of the differences between the Hungarian regulation and the IFRS is the *date of the valuation* (*the value known at the date of preparing the balance sheet vs. the effective date*). The original rules of value adjustment also prescribed valuation at the balance sheet date (cf. the wording of Para 2/a of Section 41/A of Act XVIII of 1991 and Para 2 and 5 of Section 58 of Act C of 2000 valid until 31 December, 2001).

However, Act LXXIV of 2001 amended this provision for the purpose of uniform regulation of impairment and reversal of impairment loss: in both cases the value of the asset at the balance sheet date(!) known at the date of preparing the balance sheet shall be taken as the basis.

In my view those drafting the regulation connected the rules of value adjustment with the rules of reversal in a rather awkward solution, thus the change occurring in the rules of the reversal of the impairment loss automatically entailed a change in the rules of value adjustment. In a theoretical sense, it would have been more appropriate to name a value at the balance sheet date similar to fair valuation, making it fully independent of the rules of reversal as these are two fundamentally different concepts: value adjustment is a mark-to-market valuation model at the balance sheet date, whereas the reversal of impairment loss means the (partial) restoration of historical cost. The difference between the dates is also evident for the rules of impairment loss: the recoverable amount specified in IAS 36[205], although this is not stated explicitly in the standard, is a category relative to the balance sheet date.[206]

Nonetheless, I believe that the root of the difference between the two approaches is due to the fact that the Hungarian accounting regulation does not clearly specify the issue of how to handle the effect of events after the reporting period (the subject of "*cutoff*", see IAS 10).[207] While it is not expressed precisely, the underlying rule of the Hungarian regulation is the same: all information available until the date of preparing the balance sheet, *as long as they prove the effect of past events*, should be taken into account when preparing the financial statements, i.e. also during the valuation of a given asset. This is what is meant by the wording "known at the date of preparing the balance sheet" and the same principle is manifest in the IFRS concerning the valuation at the effective date as the IAS 10 applies in all such cases as well.[208]

This shortcoming of the Hungarian regulation can also lead to different solutions. Specifically, in the case of value adjustment if data both as at the balance sheet date and as at the date of preparing the balance sheet are available, then by interpreting the rules literally and applying them in practice we can end up using the rate valid at the date of preparing the balance sheet as specified in the accounting policy, although the law only speaks of "information known until the date of preparing the balance sheet".

[205] IAS 36 – Impairment of assets
[206] Cf. (Boros, Bosnyák, & Kováts, 2006, old.: 341)
[207] IAS 10 – Events after the reporting period
[208] Cf. (Boros, Bosnyák, & Kováts, 2006, old.: 97-98)

In my view, the correct interpretation is to examine the origin of the information in line with IAS 10, although a contrary interpretation can also be deducted from the law, by also taking into account the principle of prudence that continues to be present and exert a heavy influence in the Hungarian regulation.

I believe that in case of mark-to-model measurements the difference between the two approaches does not cause a discrepancy in the actual balance sheet value as the valuation is never finished by the balance sheet date and the effects between the preparation of the balance sheet and the balance sheet date are essentially built into the model parameters inseparably from the effects of the balance sheet date.[209] Comparing this to the fact that, except for long-term equity investments the market price of a separate asset can hardly be observed, for tangible and intangible assets the IFRS valuation *at the balance sheet date* in these cases most likely coincides with the valuation according to the Hungarian rules *at the date of preparing the balance sheet.*

> In terms of the rules of impairment loss, further tone is added to the picture in that *indications of impairment* are not specified. The law describes such cases using the terms "enduring" and "significant", however, in case of the reversal instead of examining the existence of the reasons of impairment loss (indications referring to the need of reversal) it solely applies the criterion of significance (cf. Para 1 of Section 54 and Para 2 of Section 58 of the Aa.). This deficiency may in turn, and one must again refer to the principle of prudence, lead to the above differences of interpretation.

As a result of the possible difference between *fair value* and *market prices*, as described in 6.6.3, the value determined according to the market value may theoretically differ from the fair value, thus the value adjusted value as per the Hungarian regulation and as per the IFRS are not necessarily the same. This phenomenon may occur in case of a unique, less ordinary non-current asset with a higher degree of probability. Yet this is more of a theoretical possibility as the interpretation of market price in case of these assets is rather difficult: since they are not standardized, the quoted price of an asset is usually not available, thus requiring comparative prices and in most likelihood expert estimates using these (as well), often mark-to-model measurements, when establishing the current market value.

[209] The question can put this way also: which are the information and assumptions that were available to the person conduction the valuation even at the effective date and which are the ones that reflect the effect of events strictly between the balance sheet date and the date of preparing the balance sheet. In case of "extreme events" the separation is clear, however, effects that manifest themselves in the improvement of the precision of the estimate are practically inseparable.

In-depth interviews pointed out that even in case of long-term equity investments one can only speak of market value in the rarest of circumstances as the revaluation typically involves non-stock exchange trading, thus the various equity/general corporate valuation methods (based on the calculation of discounted cash-flow) are of greater importance.

The experience concerning the valuation methodology showed that, on the one hand, the use of valuation experts in establishing the value adjustment is common practice and, on the other hand, given that no uniform Hungarian regulation system is available, the internationally accepted valuation standards mean the methodological background of real estate appraisals.[210] The other assets have no standardized valuation methodology. Concerning the standards of real estate appraisal it can be said in general that they are in line with the provision of IFRS 13 both in terms of the terminology[211] and in terms of their methodology as well.

> The Hungarian legal background of real estate appraisals is represented by Agricultural Ministry Decree no. 54/1997 on the methodological principles of establishing the credit guarantee value of arable lands, as well as Finance Ministry Decree no. 25/1997 on the methodological principles of establishing the credit guarantee value of non-arable land properties. Although these lay down the principles of establishing the credit guarantee value (based on the principle of prudence estimate), thus in a sense using a different approach, the methods specified in the annexes of the legislation (comparative prices, income approach, cost approach) can be understood as being equivalent to the methods of measurement of fair value as described in 6.4.1.

For entities with a foreign-based mother company it is standard practice to adopt the methodology determined by the mother company, which is in accordance with international regulation.

At this point it is clear that in case of value adjustment the methodology of establishing the market value as applied in practice is in accordance with the rules of measurement of fair value set forth in the Accounting Act (Point 12 of Para 9 of Section 3 of the Aa. – see 6.4.4) and according to the content manifest in practice the market value established corresponds with the concept of fair value stated in the legislation.

[210] These include: RICS Valuation Standards, RICS Rules Of Conduct For Members, Hungarian Real Estate Alliance: Recommendation for conducting appraisals, Code of Conduct of the Hungarian Real Estate Alliance, TEGOVA – EVS (European Valuation Standards); IVSC – IVS (International Valuation Standards).

[211] The definition of market value according to the RICS Valuation Standards: *" the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion."*(RICS VS 2008 PS. 2.3.) In terms of principles (hypothetical transaction, hypothetical price), this is fully identical with the concept fair value.

It was generally seen that in *valuations according to the IFRS and the Hungarian rules* it was much more the technical rules that caused a discrepancy in the actual balance sheet value rather than the basic valuation model, namely:

- Although the valuation is to be conducted "with the required frequency" according to the IFRSs and every year according to the Hungarian rules, it often occurs that a new valuation is made only if signs of changes in value are perceived.
- It also happens in several cases that although the valuation is taken into account in the IFRS financial statements, it is ignored in the statement made according to Hungarian rules.
- In the IFRS system, the basis of depreciation of tangible assets and intangible assets is the revalued value, whereas in the Hungarian system of rules it is the original historical cost.
- Conversely, no depreciation is to be applied to investment properties (IAS 40) and animals kept for breeding purposes classified as biological assets (IAS 41), whereas the Hungarian rules prescribe the booking of depreciation (based on the original historical cost) according to the general rules pertaining to tangible assets.
- Non-current assets involving a new use and recognized at fair value continue to be carried (and presented) at fair value (IAS 40) or at fair value less costs to sell (IFRS 5, IAS 41) while the revaluation surplus accumulated is derecognized during the sale of the asset, whereas according to the Hungarian rules they are to be reclassified under the inventory by means of derecognizing the value adjustment.[212]

Therefore, in practice there is no difference in methodology between the valuations made according to the two systems of rules: in cases where a financial statement is prepared according to both systems of rules, the same valuation report is used for establishing the balance sheet value. Nevertheless, there may be a discrepancy in the actual balance sheet value due to the above technical differences.

> For the enterprises contained in the *DB3 database* and which contain both Hungarian and IFRS financial statements and which apply fair valuation/value adjustment according to both systems, I examined the reasons of divergence of the balance sheet values. Such divergences were found to be the result of depreciation and derecognition due to reclassifications.

[212] Although the Accounting Act says nothing on the subject of reclassifications (Para 9 of Section 58), no value adjustment may be related to inventories, thus elimination in conjuction with reclassification seems to be a consistent solution.

It should be added, though, that a certain amount of inconsistency was discerned in the accounting settlements of the enterprises examined: one of the enterprises declared a value adjustment and no valuation reserve; in case of another enterprise the amount presented as a "value adjustment" is the same in the two reports both at the beginning and at the end of the period although the increases and decreases systematically vary, albeit there was no depreciation booked according to the Hungarian rules. Needless to say, the sample cannot by any means be regarded as representative but it is not contrary to the unique Hungarian characteristics found earlier.

Based on the above I accept Hypothesis H1.

8.4 Verification of Hypothesis H2

H2: Of entities operating in the Hungarian regulatory framework:
a) only a negligible portion opt for fair valuation in their financial statements prepared according to the Hungarian rules, and
b) apply fair valuation primarily for tangible assets, in particular for real estates.

8.4.1 Sub-hypothesis H2/a

8.4.1.1 Verification based on the data of DB1 database

The testing of the sub-hypothesis was first done based on the data of the DB1 database. As a starting point I examined the complete sample to see in which cases valuation reserve was not 0. *The results show a fairly extreme picture: this value was other than 0 in a total of 4811 cases only (1.3%).* The frequency of fair valuation through profit and loss cannot be examined based on the database and such conclusions can only be drawn using the DB2 database.[213]

Yet the question arises at this point: to what extent are the data distorted by the effect of the economic crisis, namely: based on the data of the valuation reserve is a significant discrepancy evident in terms of the choice of fair valuation compared to earlier data? Although a comparative analysis is beyond the goal and the limits of the dissertations I found that a comparison with earlier data from 2007 was necessary. The results did not signal any trend of change as the ratio of entities with a valuation reserve other than 0 was also 1.3% in 2007, which was equivalent to a total of 4672 entities (the full net sample consisted of 349 999 elements at the time).

[213] Certain indirect conclusions are enabled by the examination of the asset structure using the DB1 database, which are presented in 8.5.2.

The picture became somewhat less unequivocal when the choice of fair valuation was examined according to the *total assets and revenues categories* as described in 8.2. In order to filter out total assets increasing effect of fair valuation I classified the entities under categories according to total assets less valuation reserve (VR). The number of entities choosing fair valuation in the different bands, as well as *their respective proportion* within the given band, are summarized in the following table.

Total assets and revenue bands (mHUF)	Total assets (less VR)		Revenue	
	Number of entities	Distribution (%)	Number of entities	Distribution (%)
0	*Excluded from analysis*		353	0.5
0 – 10	595	0.3	911	0.6
10 – 50	921	1.0	989	1.1
50 – 100	607	2.5	507	2.0
100 – 250	795	4.0	705	3.2
250 – 500	573	6.4	469	4.8
500 – 2 500	908	9.7	658	7.2
2 500 – 12 500	335	13.5	180	8.5
12 500 –	77	9.8	39	7.1

Table 14: Frequency of choice of fair valuation as a function of size.

Thus the choice of fair valuation is much more frequent among larger entities, though this itself does not mean a high ratio (no more than 13.5%), besides the fact that the proportion of major entities within the whole population is fairly low (see Table 11-12).

The other possibility of testing the frequency of fair valuation is the *comparison of the balance sheet value of intangible and tangible assets, as well as the net values (Sheet 1029-A-02-01, Rows 01-06) of the detailing data of the declaration:* the difference between the balance sheet value and the analytical value is theoretically represented by value adjustment and the relevant advances. Yet the theoretical relationships are distorted by the fact that the tax declaration contains no mechanisms verifying this relationship, so the danger of errors in completion and other deficiencies is higher.

When performing the test I used variables established from the different between balance sheet values and analytical values. Where this value was negative (the analytical value was higher than the balance sheet value), I excluded it as an evidently deficient observation.

The following table summarizes the main data of the difference variables:

Category	Intangible assets		Tangible assets	
Deficient (negative)	3,915	1.03%	16,364	4.31%
Fair value not possible (= 0)	370,864	97.68%	327,211	86.18%
Fair value possible (positive)	4,894	1.29%	36,098	9.51%
TOTAL	379,673	100%	379,673	100%

Table 15: The difference between the balance sheet value and analytical value of intangible and tangible assets.

Although in case of the intangible assets the ratio is about the same as that seen for the valuation reserve, this does not mean that the reason of the difference is the revaluation as there is no evidence to suggest that the companies opting for fair valuation in all cases report a valuation reserve concerning intangible assets as well. The results obtained for tangible assets highlight the restrictions of interpretation in a much better way: the ratio of positive differences is relatively high (9.51%):

- firstly, it may signal completion errors (if a symmetry is presumed, i.e. the same number of errors in both negative and positive direction, then approximately half of these are due to completion errors);
- secondly, it may result from advances for tangibles (this ratio cannot be deducted from the database);
- thirdly, the difference may be due to value adjustment.

To enable a comparison with the valuation reserve, I examined the number of cases in which the valuation reserve is other than zero in case of observations involving a positive difference:

Value of valuation reserve	Intangible assets		Tangible assets	
Zero	4,682	95.7%	33,206	92%
Positive	212	4.3%	2,892	8%
TOTAL	4,894	100%	36,098	100%

Table 16: The value of the valuation reserve in observations involving a positive difference variable.

As can be seen from the table, the reporting of the valuation reserve can be observed in a relatively small ratio of the positive differences only, which suggests that fair value accounts for only a smaller portion of the positive differences.

For verification purposes, I examined the development of difference variables in case of entities with a valuation reserve (a total of 4,811 observations), the result of which is shown in the following table:

Category	Intangible assets		Tangible assets	
Deficient (negative)	99	2,06 %	236	4,91 %
Fair value not possible (= 0)	4 500	93,54 %	1 683	34,98 %
Fair value possible (positive)	212	4,41 %	2 892	60,11 %
TOTAL	4 811	100 %	4 811	100 %

Table 17: The difference between the balance sheet value and the analytical value of intangible and tangible assets of entities with a valuation reserve.

The test pointed out that the data do actually correlate: for entities with a valuation reserve the ratio of positive differences is significantly higher (with about the same rate of error detected). Yet the valuation reserve may also originate from non-current assets not listed in the table, as well as other financial instruments, however, no further such examination can be carried out for the data.

Overall, the conclusion can be made that although in case of the tangible assets the analytical data indicate the possibility of fair valuation in a ratio higher than that signalled according to the valuation reserve, the difference between the balance sheet data and the detailing data can most likely be attributed to the advances given and errors in completion in a high percentage of the cases.

8.4.1.2 Verification based on the data of the DB2 database

The DB2 database presents a similar picture. Of the 104 respondents, a total of 55 persons (52.88%) indicated that they did not encounter fair value during the audits of 2011. When also taking into account the consistency pointed out in 8.1.2 (despite indicating that they did not encounter fair value, in the frequency of fair valuation of assets field they entered a value other than 1), this number grows to 58 persons (55.77%). More important, though, are the information that can be gathered from the responses given to questions concerning the frequency of fair valuation of the different asset groups.

In the responses one had to indicate on a scale ranging from 1 to 6 the frequency with which the respondent encountered fair valuation in the audits conducted relative to the given asset. In the following tables I present the distribution of responses by adding up the answers given without applying any weight and with the weight of the number of audits conducted by the given auditor.

	Intan-gibles	Real est.	Techn. equip.	Other equip.	Ani-mals	LT invest.	Shares	Bonds	Rec.	Deriv.
1	*88%*	*53%*	*82%*	*87%*	*94%*	*79%*	*91%*	*91%*	*84%*	*95%*
2	9%	22%	11%	12%	1%	13%	5%	6%	4%	2%
3	2%	13%	7%	2%	4%	4%	2%	1%	2%	0%
4	0%	9%	1%	0%	1%	2%	0%	0%	3%	1%
5	1%	2%	0%	0%	0%	1%	1%	1%	2%	1%
6	0%	1%	0%	0%	0%	1%	1%	1%	6%	1%

Table 18: Frequency of fair valuation of assets – unweighted ratios (N = 104 respondents).

	Intan-gibles	Real est.	Techn. equip.	Other equip.	Ani-mals	LT invest.	Shares	Bonds	Rec.	Deriv.
1	*86%*	*37%*	*73%*	*82%*	*96%*	*81%*	*85%*	*85%*	*83%*	*88%*
2	11%	36%	19%	17%	1%	13%	12%	13%	12%	11%
3	1%	16%	7%	1%	3%	3%	2%	1%	1%	0%
4	0%	8%	2%	0%	1%	2%	0%	0%	1%	1%
5	2%	3%	0%	0%	0%	1%	0%	1%	1%	0%
6	0%	1%	0%	0%	0%	1%	1%	0%	3%	0%

Table 19: Frequency of fair valuation of assets – weighted ratios (N = 1619 audits).

As can be seen from the tables, respondents most frequently selected the option of "did not encounter at all" for all the assets (Option 1). With the exception of real estate, the first 2 categories cover over 90% of the responses in all cases, but even for real estate the first 3 categories ("rather no than yes") mean a coverage of app. 90%.

It is clear from the data that for all asset groups where the Accounting Act allows the choice of fair value the frequency of fair valuation is fairly low: it is usually between 1 and 2 and when considering the scale (1=never encountered it) it practically leads to the same conclusions as seen from the DB1 database. Only in case of real estates can one speak of a slightly higher frequency of fair valuation but even this signals the marginal role of fair value.

> The reliability of data concerning the fair valuation of financial instruments (shares, bonds, receivables, derivatives) is somewhat questioned by the fact that the average value was the highest in case of the receivables. This is because fair valuation is quite rare in case of receivables (except for financial institutes) given that they are usually classified in the group of loans and receivables (generated by the entity), the fair valuation of which is ruled out as an option (cf. Point b of Para 7 of Section 59/A of the Aa.).

> My view is that in this case the settlement of impairment losses and the use of fair valuation might have been mixed up and it is possible that even when selecting fair valuation the receivables recognized at historical cost might have been identified at fair value, which can be attributed mainly to the low uptake of fair valuation of financial instruments and the resulting lack of information implied.

Based on the above I accept Sub-hypothesis H2/a).

8.4.2 Sub-hypothesis H2/b)

As pointed out in the verification of Sub-hypothesis a), the ratio of fair valuation is much higher for tangible assets than for intangible ones, although based on the examination no conclusions could be drawn for the other asset groups and the distribution within the tangible assets.

8.4.2.1 Verification based on the data of the DB1 database

In order to verify the sub-hypothesis in question, I once again took as a basis the data of the DB1 database to examine the weights of which assets in the balance sheet are crucial for entities whose valuation reserve is other than zero.

Given that the data concerning the total assets which in indicate the volume feature a relative large spread (average: HUF 4,098,669,000; spread: HUF 78,205,725,000), I divided (normalized) the balance sheet data with the total assets in order to filter out such effects of volume, thus obtaining a distribution coefficient ratio between 0 and 1 for all asset groups, and I proceeded to examine these ratios further.

As a first step of the examination, I calculated the measures of central tendency. Accordingly, the average weight of tangible assets was around 60% but upon examining the distributions it was clear that the variable of tangible assets is bimodal: at both ends of the scale the values become denser, thus preventing any conclusions to be drawn from the average. The results are presented in Point 1 of Annex VI.

To establish the grading system I applied a cluster analysis by including in the model the distribution coefficients (balance sheet item weights) of the following asset groups available for fair valuation: intangible assets (MO_IJ), tangible assets (MO_TE), non-current financial assets (MO_BPU), and securities (MO_EP)[214].

[214] Fair valuation may also occur for receivables, though this is more the exception than the rule. Conversely, the receivables excluded from fair valuation is generally present for all companies, thus the differences resulting from this weight could have distorted the analysis. To avoid this, I did not include the receivables in the analysis.

Based on the hierarchical cluster analysis it seemed appropriate to establish 6 clusters (see Point 2 of Annex VI), so I took this as a basis for non-hierarchical cluster analysis.

The results showed that all variables were significant, whereby 3 minor clusters and 3 major ones were formed. The final cluster centers are presented in the following table (the detailed data of the analysis are found in Point 3 of Annex VI).

Item weights	Cluster					
	1	2	3	4	5	6
MO_IJ	0.01	0.01	0.01	*0.71*	0.02	0.00
MO_TE	*0.57*	0.08	0.12	0.06	*0.17*	*0.90*
MO_BPU	0.02	0.05	*0.70*	0.01	0.02	0.00
MO_EP	0.01	*0.32*	0.01	0.00	0.00	0.00
Number of items	1,545	99	132	102	859	2,074

Table 20: Clusters of entities with valuation reserve.

In order to verify the stability of the clusters I ran a discriminant analysis with the variables of the cluster model, where the discriminant variable was the variable indicating the cluster membership.

The *discriminant analysis* estimated 4 discriminant functions, of which the first one accounts for 51.5%, the second one for 24%, the third one for 14.7%, and the fourth one for 9.8%, respectively; all variables were found to be significant. Upon comparison of the group memberships indicated by the function and the clusters it is clear that the classification can be considered stable. The detailed data are contained in Point 4 of Annex VI.[215]

		Group based on discriminant analysis						TOTAL
		1	2	3	4	5	6	
Group based on cluster analysis	1	*1,471*	*12*	*4*	*2*	–	*56*	1,545
	2	–	*86*	–	–	*13*	–	99
	3	–	*1*	*128*	–	*3*	–	132
	4	–	–	–	*102*	–	–	102
	5	*51*	–	–	*2*	*806*	–	859
	6	–	–	–	–	–	*2,074*	2,074
TOTAL		1,522	99	132	106	822	2,130	4,811

Table 21: Verification of the stability of clusters – discrimant analysis.

Based on the above the 6 clusters established were *considered as stable*, so I proceeded to analyse the asset structure using these.

[215] The purpose of the analysis was solely the verification of the clustering, whereas the conditions of the model (the identity of the covariances) do not apply (the value of the Box M indicator was high), thus the interpretation of the functions of the model encounters difficulties, albeit in this case it was not the objective in the first place.

I performed the examination of the *asset structure within the different clusters* based on the deciles of the variables (item weights) by expanding the analysis (where applicable) with the variables of the distribution within the tangible assets: real estate (TE_ING), technical equipments (plants, machineries etc.) (TE_MUSZ), other equipment (TE_EBER), animals kept for breeding purposes (TE_TA), tangible assets under construction (TE_BER).

When interpreting the data, one must take into account the fact that the distribution within the tangible assets indicates historical cost data. Therefore, conclusions can only be drawn from such data as to the revaluation of which asset group is likely based on its weight represented in historical cost (the revaluation of an asset group with a bigger weight is more likely). However, the usability of the results is deteriorated by the fact that the average historical cost of the properties is usually higher while their lifetime is longer, thus their net value is presumably higher. To avoid such distortion, the examination was performed for both net values and gross values.

It should also be borne in mind that in some cases the distribution coefficient cannot be determined as the entity in question does not have tangible assets, or has only tangible assets booked at zero value. In this case the denominator would be 0, so these cases have to be omitted from the analysis. (However, this is not an excessively high figure for either cluster.)[216]

Cluster #1 data, number of items: 1,545

	Intan-gibles	*Tangib-les*	N-C fin. assets	Inven-tory	Recei-vables	Securi-ties	Cash	Prepay-ments
D1	.0000	*.4228*	.0000	.0000	.0242	.0000	.0010	.0000
D2	.0000	*.4672*	.0000	.0003	.0572	.0000	.0031	.0000
D3	.0000	*.5055*	.0000	.0213	.0907	.0000	.0064	.0001
D4	.0000	*.5434*	.0000	.0642	.1254	.0000	.0113	.0006
D5	.0000	*.5798*	.0000	.1079	.1606	.0000	.0192	.0014
D6	.0003	*.6129*	.0000	.1477	.1956	.0000	.0288	.0036
D7	.0011	*.6480*	.0007	.1910	.2397	.0000	.0435	.0086
D8	.0042	*.6759*	.0071	.2436	.2950	.0000	.0761	.0201
D9	.0151	*.7081*	.0723	.3290	.3708	.0000	.1490	.0564

Table 22: The asset structure of Cluster #1.

[216] Given that entities with a total assets of 0 were excluded from the sample in the first place, no such problem arises for the asset group weights. The number of elements excluded are indicated for each cluster.

Among the assets revalued, the ratio of one group, namely that of tangible assets varies sharply while besides tangible assets the inventories and receivables also represent significant weight. Yet this does not affect the fact that the *revaluation of tangible assets is considered as likely.*

Upon further examination of the distribution within the tangible assets (number of items excluded: 35 and 31)

Net	*Real estates*	*Techn. equip.*	Other equip.	Animals	Tang. u.contsr.
D1	*.1160*	*.0000*	.0000	.0000	.0000
D2	*.3689*	*.0000*	.0017	.0000	.0000
D3	*.5243*	*.0160*	.0068	.0000	.0000
D4	*.6522*	*.0502*	.0149	.0000	.0000
D5	*.7519*	*.1020*	.0237	.0000	.0000
D6	*.8257*	*.1757*	.0384	.0000	.0000
D7	*.8976*	*.2725*	.0581	.0000	.0045
D8	*.9501*	*.3994*	.0948	.0000	.0231
D9	*.9911*	*.6484*	.1801	.0000	.1026

Table 23: Distribution within tangible assets for Cluster #1 (net values).

Gross	*Real estates*	*Techn. equip.*	Other equip.	Animals	Tang. u.constr.
D1	*.0848*	*.0000*	.0013	.0000	.0000
D2	*.2261*	*.0132*	.0138	.0000	.0000
D3	*.3454*	*.0785*	.0308	.0000	.0000
D4	*.4395*	*.1603*	.0499	.0000	.0000
D5	*.5296*	*.2444*	.0698	.0000	.0000
D6	*.6365*	*.3424*	.0991	.0000	.0000
D7	*.7251*	*.4419*	.1347	.0000	.0034
D8	*.8236*	*.5629*	.1937	.0000	.0166
D9	*.9391*	*.7386*	.3267	.0000	.0769

Table 24: Distribution within tangible assets for Cluster #1 (gross values).

Again, a general picture emerges quite clearly indicating that for the majority of the entities the weight of real estate is crucial. Although technical equipments represent a smaller ratio, they have a key role for some of the entities (for app. 20% according to the net value and for app. 30% according to the gross value). The weight of other equipment is also significant, however, these account for a weight of over 50% in less than 10% of the cases only.

Based on the examination the revaluation of the real estates is considered as likely while the revaluation of technical equipment cannot be excluded either, although its likelihood is perceived to be lower.

The revaluation of other equipment, based on their weight, exists as a theoretical possibility, although it should also be noted that technical and other classification is applied in a rather random manner by a large portion of the companies. Despite the clear wording of the Accounting Act, the basis of the partition how closely they are related to a given activity and in many cases technical equipment are also classified under other equipment, which may distort the distribution.

Cluster #2 data, number of items: 99

	Intan-gibles	Tangib-les	N-C fin. assets	Inven-tory	Recei-vables	*Securi-ties*	Cash	Prepay-ments
D1	.0000	.0130	.0000	.0000	.0367	*.1523*	.0132	.0000
D2	.0000	.0210	.0000	.0000	.2684	*.1902*	.0211	.0022
D3	.0001	.0265	.0031	.0001	.3805	*.2173*	.0234	.0074
D4	.0002	.0328	.0049	.0003	.4543	*.2547*	.0269	.0099
D5	.0003	.0372	.0083	.0010	.5074	*.3014*	.0308	.0113
D6	.0005	.0432	.0223	.0028	.5499	*.3479*	.0380	.0124
D7	.0011	.0507	.0399	.0051	.5795	*.3709*	.0494	.0150
D8	.0021	.0833	.1246	.0083	.6280	*.4059*	.0761	.0182
D9	.0085	.2451	.1893	.0253	.6886	*.4807*	.1931	.0242

Table 25: Asset structure of Cluster #2.

Cluster 2 is special in terms of its asset structure: the proportion of non-monetary assets is fairly low, whereas receivables and other financial assets have a major share in the balance sheet. Out of the assets available for fair valuation only securities represent a bigger weight (their weight is above 30% for app. half of the entities).

Based on the above, the fair valuation of financial instruments (in a possible direct link with the valuation reserve, primarily securities or perhaps certain receivable items such as receivables related to cash-flow hedges) is perceived as likely in the cluster. Although it is not evident from the data, the fair valuation through profit and loss of financial assets is also presumed as likely in this scope (if fair valuation was chosen for securities, than other financial assets must also have been recognized at fair value).

Cluster #3 data, number of items: 132

	Intan-gibles	Tangib-les	*N-C fin. assets*	Inven-tory	Recei-vables	Securi-ties	Cash	Prepay-ments
D1	.0000	.0000	*.4417*	.0000	.0005	.0000	.0001	.0000
D2	.0000	.0000	*.4947*	.0000	.0055	.0000	.0005	.0000
D3	.0000	.0000	*.5347*	.0000	.0137	.0000	.0024	.0000
D4	.0000	.0034	*.5883*	.0000	.0258	.0000	.0049	.0000
D5	.0000	.0233	*.6647*	.0000	.0462	.0000	.0091	.0001
D6	.0000	.0741	*.7967*	.0000	.0845	.0000	.0136	.0006
D7	.0000	.1497	*.8844*	.0001	.1177	.0000	.0214	.0028
D8	.0003	.3044	*.9433*	.0124	.2181	.0000	.0419	.0078
D9	.0044	.3945	*.9825*	.0442	.3231	.0262	.0817	.0293

Table 26: Asset structure of Cluster #3.

Within this cluster the dominant asset group is the non-current financial assets as this accounts for a ratio of over 50% for nearly 80% of the entities included in the cluster. The database does not lend itself to a more in-depth analysis of the non-current financial assets and as described in 6.6.2 this could either be the effect of the value adjustment of long-term equity investments or the fair valuation of equity investments and debt instruments classified as available for sale.

Nevertheless, it seems likely that the fair valuation of non-current financial assets is dominant in this cluster.

Cluster #4 data, number of items: 102

	Intan-gibles	Tangib-les	N-C fin. assets	Inven-tory	Recei-vables	Securi-ties	Cash	Prepay-ments
D1	*.4361*	.0000	.0000	.0000	.0013	.0000	.0004	.0000
D2	*.4997*	.0000	.0000	.0000	.0090	.0000	.0019	.0000
D3	*.5472*	.0036	.0000	.0000	.0245	.0000	.0032	.0000
D4	*.6288*	.0132	.0000	.0000	.0526	.0000	.0069	.0000
D5	*.6965*	.0193	.0000	.0000	.0816	.0000	.0129	.0000
D6	*.7730*	.0269	.0000	.0010	.1181	.0000	.0279	.0006
D7	*.8588*	.0501	.0000	.0143	.1788	.0000	.0480	.0024
D8	*.9198*	.0904	.0007	.0400	.2201	.0000	.0831	.0087
D9	*.9864*	.2213	.0339	.1247	.3213	.0000	.1595	.0269

Table 27: Asset structure of Cluster #4.

As shown clearly in the table, intangible assets represent the biggest weight among the assets, whereas the weight of other asset items available for fair valuation is negligible (tangible assets represent a weight of less than 22% in 90% of the cases). *Accordingly, the revaluation of intangible assets is considered as likely in this cluster.*

Cluster #5 data, number of items: 859

	Intan-gibles	*Tangib-les*	N-C fin. assets	Inven-tory	Recei-vables	Securi-ties	Cash	Prepay-ments
D1	.0000	*.0000*	.0000	.0000	.0245	.0000	.0019	.0000
D2	.0000	*.0190*	.0000	.0000	.0980	.0000	.0071	.0000
D3	.0000	*.0637*	.0000	.0007	.1779	.0000	.0159	.0000
D4	.0000	*.1300*	.0000	.0291	.2728	.0000	.0296	.0000
D5	.0000	*.1876*	.0000	.1027	.3661	.0000	.0457	.0008
D6	.0002	*.2291*	.0000	.1791	.4519	.0000	.0780	.0031
D7	.0010	*.2655*	.0008	.3013	.5376	.0000	.1383	.0085
D8	.0049	*.3068*	.0121	.4427	.6501	.0000	.2542	.0177
D9	.0398	*.3467*	.0970	.6247	.7898	.0002	.5431	.0535

Table 28: Asset structure of Cluster #5.

In terms of its asset structure, Cluster #5 is somewhat similar to Cluster #1 (this was also indicated by the proximity of cluster centers). Among the revalued assets, tangible assets emerge as a group but unlike in Cluster #1 their weight is nowhere near dominant.

In addition to tangible assets, inventories, receivables and cash items also carry significant weight. Although their weight is not dominant, *the revaluation of tangible assets is considered as likely given that other assets available for fair valuation represent negligible weight.*

Upon further examination of the distribution within tangible assets (number of items excluded: 151 and 122):

Net	*Real estates*	*Techn. equip.*	*Other equip.*	Animals	Tang. u.contsr.
D1	*.0000*	*.0000*	*.0000*	.0000	.0000
D2	*.0000*	*.0000*	*.0029*	.0000	.0000
D3	*.0282*	*.0108*	*.0179*	.0000	.0000
D4	*.3079*	*.0573*	*.0418*	.0000	.0000
D5	*.5238*	*.1114*	*.0681*	.0000	.0000
D6	*.6502*	*.2051*	*.1154*	.0000	.0000
D7	*.7624*	*.3298*	*.2150*	.0000	.0000
D8	*.8804*	*.5666*	*.3841*	.0000	.0068
D9	*.9487*	*.9583*	*1.0000*	.0000	.0817

Table 29: Distribution within tangible assets for Cluster #5 (net values).

Gross	*Real estates*	*Techn. equip.*	*Other equip.*	Animals	Tang. u.contsr.
D1	*.0000*	*.0000*	*.0000*	.0000	.0000
D2	*.0000*	*.0000*	*.0264*	.0000	.0000
D3	*.0031*	*.0670*	*.0751*	.0000	.0000
D4	*.1326*	*.1671*	*.1203*	.0000	.0000
D5	*.2697*	*.2723*	*.1746*	.0000	.0000
D6	*.3999*	*.3817*	*.2574*	.0000	.0000
D7	*.5094*	*.5043*	*.3400*	.0000	.0000
D8	*.6412*	*.6839*	*.5339*	.0000	.0044
D9	*.8032*	*.9049*	*.9512*	.0000	.0487

Table 30: Distribution within tangible assets for Cluster #5 (gross values).

Here a relatively clear general picture also emerges with real estates and technical equipment dominating the balance sheets of the different entities in similar ratios. Although other equipment represent a much lower ratio, they are important for some of the entities (for 10 to 15% of them based on net value and for app. 20% based on gross value).

In view of the above the revaluation of real estates and technical equipment is considered as likely while one cannot rule out revaluation for other equipment as well, although this is considered to be less likely.

However, a reference must again be made to the inconsistencies evident in practice concerning the classification of technical and other equipment as mentioned for Cluster #1.

Cluster #6 data, number of items: 2,954

	Intan-gibles	*Tangib-les*	N-C fin. assets	Inven-tory	Recei-vables	Securi-ties	Cash	Prepay-ments
D1	.0000	*.7778*	.0000	.0000	.0009	.0000	.0002	.0000
D2	.0000	*.8176*	.0000	.0000	.0033	.0000	.0009	.0000
D3	.0000	*.8523*	.0000	.0000	.0066	.0000	.0019	.0000
D4	.0000	*.8882*	.0000	.0000	.0117	.0000	.0035	.0000
D5	.0000	*.9198*	.0000	.0000	.0207	.0000	.0060	.0001
D6	.0000	*.9421*	.0000	.0004	.0320	.0000	.0100	.0007
D7	.0000	*.9626*	.0000	.0087	.0508	.0000	.0169	.0018
D8	.0002	*.9790*	.0000	.0325	.0765	.0000	.0282	.0065
D9	.0018	*.9909*	.0034	.0848	.1236	.0000	.0596	.0249

Table 31: Asset structure of Cluster #6.

Among the revalued assets, tangible assets once again emerge as being clearly dominant. The weight of other assets is practically negligible (the ratio of the highest receivables is above 20% in only app. 10% of the cases). Accordingly, *the revaluation of tangible assets is presumed with a fair degree of likelihood.*

Upon further examination of the distribution within tangible assets (number of items excluded: 71 and 63):

Net	*Real estates*	Techn. equip.	Other equip.	Animals	Tang. u.contsr.
D1	*.3694*	.0000	.0000	.0000	.0000
D2	*.7018*	.0000	.0000	.0000	.0000
D3	*.8700*	.0000	.0000	.0000	.0000
D4	*.9307*	.0000	.0007	.0000	.0000
D5	*.9636*	.0005	.0029	.0000	.0000
D6	*.9851*	.0076	.0074	.0000	.0000
D7	*.9955*	.0319	.0152	.0000	.0000
D8	*.9998*	.0911	.0325	.0000	.0077
D9	*1.0000*	.2857	.0726	.0000	.0866

Table 32: Distribution within tangible assets for Cluster #6 (net values)

Gross	*Real estates*	Techn. equip.	Other equip.	Animals	Tang. u.contsr.
D1	*.2628*	.0000	.0000	.0000	.0000
D2	*.5399*	.0000	.0000	.0000	.0000
D3	*.7210*	.0000	.0017	.0000	.0000
D4	*.8191*	.0002	.0075	.0000	.0000
D5	*.8857*	.0117	.0175	.0000	.0000
D6	*.9349*	.0461	.0341	.0000	.0000
D7	*.9714*	.1044	.0580	.0000	.0000
D8	*.9949*	.2242	.0931	.0000	.0075
D9	*1.0000*	.4604	.1634	.0000	.0782

Table 33: Distribution within tangible assets for Cluster #6 (gross values).

The dominance of real estates is also evident here but to a greater extent than seen for Cluster #1. In this cluster the weight of technical equipment is significantly lower in this cluster while the other equipments carry any relevant weight practically in only extreme cases. *Accordingly, in this cluster the revaluation of real estates is considered as likely.*

The following table summarizes the findings made using the DB1 database.

	No. of items	Distri-bution	Assets carried at fair value
Cluster #1	1,545	32.1%	Real estates, maybe technical equipments
Cluster #2	99	2.1%	Financial assets
Cluster #3	132	2.7%	Non-current financial assets
Cluster #4	102	2.1%	Intangible assets
Cluster #5	859	17.9%	Real estates and technical equipments maybe other equipments
Cluster #6	2,074	43.1%	Real estates

Table 34: Verification of Sub-hypothesis H2/b) using the DB1 database – summary

The *examination of the classification of clusters into the different categories according to economic activities (based on NACE codes)* has yielded interesting additional information and, although the data are quite diverse, certain dominant categories can be observed. (The full cross-table is found in Point 5 of Annex VI.)

In case of the *first cluster*, real estate services (13%), agriculture, animal husbandry, etc. (12%), as well as retail and wholesale trade (10% and 9%) carry a significant weight. These category classifications further reinforce the likelihood of revaluation of the real estates.

The *second cluster*, as evident from the asset structure itself, was that of financial representation (67%), which again reinforces the conclusion drawn according to the balance sheet structure: the fair valuation of financial assets.

The *third cluster* is also easier to categorize. Again, in the first place are real estate services (24%) while management consultancy (17%) and financial services (16%) are also typical. Another sign referring to the presence of entities with a stake in companies owning real estate and to the revaluation of such long-term equity investments is that in this cluster the ratio of real estates and all tangible assets is low despite the fact that the activity is typically related to real estates. Management consultancy as an activity also signals equity investments (holding companies) as do, in part, financial services, too, although this is a very broad category that does not exclude the presence of other financial instruments recognized at fair value, either.

> Here the question of accumulation of data may arise: a revalued real estate may appear in the database also as a revalued equity investment, behind which is the same real estate. However, due to the low number of items of the cluster (132 entities) this is not a serious problem and does not refute the existence of the previous Sub-hypothesis H2/a) and instead reinforces it, albeit the effect in this case is also insignificant.

The *fourth cluster* is again more diverse. The three major categories are IT service (15%), sports, entertainment, and leisure activities (10%), and publishing activity (8%). As a common characteristic, all categories have special intangible assets (software, player's licences, utilization rights, etc.).

In case of the *fifth cluster*, retail and wholesale trade (14% and 10%)[217] and real estate transactions (9%) rank in the first three places while the category ratio of construction of buildings, special construction services and financial services (including holdings) are not far behind (5%, 4%, and 4%, respectively.) Due to the spread it is hard to draw conclusions but real estates tend to dominate these categories as well.

The *sixth cluster* is less diverse. Real estate services play a clearly dominant role (39%) while agriculture, animal husbandry, etc. are also important, along with catering and accommodation services and retail and wholesale trade (6%, 5%, 5%, 5%). This also supports the significant weight of the real estate in the cluster with the highest number of items.

> *Overall, in terms of the category distribution it can be said* that 24% of entities reporting a valuation reserve is active in real estate services, 8% in wholesale, 7% in agriculture, animal husbandry, etc., and 7% in retail trade. The remaining 45% can be classified under other categories with a weight of less than 5% each.

Therefore, based on the DB1 database the dominance of real estate emerges. Nevertheless, one must take into account the fact that assets recognized at fair value through profit and loss cannot be examined using the database. Conclusions could only be drawn relative to the practice of fair valuation through profit and loss using the DB2 database.[218]

8.4.2.2 Verification using the data of the DB2 and DB3 database

For the purpose of verification of the data of the DB1 database and the examination of their distribution within tangible assets, additional information was gained from the data of the *DB2 database*. For this, I relied on the answers given in the questionnaire survey concerning the practice of value adjustment (VA)/fair valuation (FV) of the different asset groups (including the assets recognized at fair value through profit and loss). The following table presents the scores (unweighted/weighted total of the answers given) established using the method presented in 8.2.

[217] A sign of commercial activity was the bigger weight of inventories, receivables and cash items within the assets.

[218] The examination of the asset structure using the DB1 database also allows indirect conclusions to be made. One of these was the conclusion concerning the fair valuation of financial instruments in case of Cluster #2 (if it was chosen for financial instruments available for sale, it had to be chosen for those for commercial purposes as well.) Further conclusions are presented in 8.5.2.

Asset group	Scores	Weighted scores
Intangible assets (VA)	17	319
Real estates (VA)	91	1,720
Technical equipments (VA)	28	592
Other equipments (VA)	16	321
Animals (VA)	12	145
Long term equity investments (VA)	37	501
Equity investments (FV)	18	340
Debt instruments (FV)	17	322
Receivables (FV)	55	544
Derivatives (FV)	14	257

Table 35: Scores allocated for the frequency of fair valuation of asset groups using the DB2 database.

When interpreting the data one must be mindful that the frequencies are measured on an ordinal scale, thus the ratio of scores cannot be interpreted as they signal a ranking order (and, to a limited degree, order of magnitude) only.

Yet it is clear from the data that fair value can most often be observed (scores: 135 and 2633, respectively) in case of fair valuation of tangible assets (not including animals kept for breeding purposes). Within the tangible assets the dominance of real estates is also clear (scores: 91 and 1720) with the remark that the frequency of fair valuation is generally rather low.[219]

The *Friedman test* conducted with variables also yielded similar results with the highest rank being assigned to real estates in both weighted and unweighted cases. The medians varied only in weighted cases and only for the real estates (the median of real estates being 2 while those of all other assets being 1). The *Wilcoxon signed rank test* conducted per pairs indicated a significantly higher frequency for the real estates than for all other assets, however, the ensuing ranking order is not significant in each of its element, especially in case of the unweighted data. The detailed data have been enclosed in Point 6 of Annex VI.

Albeit the *DB3 database* cannot be considered as representative for the whole of Hungarian entities as a population, the only value adjustment observed among the Hungarian reports of the listed companies in question was related to real estates itself. (In addition, three other listed companies applied fair valuation of financial instruments.)

Based on the above I accept Sub-hypothesis H2/b).

[219] Essentially, the data presented in 8.4.1.2 underscore the same but thanks to the rescaling the differences are easier to perceive.

8.5 Verification of Hypothesis H3

H3: The asset structure of businesses operating in the Hungarian regulatory framework determines that fair valuation may only be used for a smaller portion of the businesses.

8.5.1 Examination of the asset structure in general

As a first step of verifying the hypothesis, I quantified the main statistical data of the asset groups available for fair valuation (intangible assets, tangible assets, non-current financial assets, securities). I continued to use the distribution coefficients and I sought to find an answer, now using the complete population, to this question: for what ratio of the entities do assets available for fair valuation carry a substantial weight?

During the first run a fairly unambiguous picture emerged: all distributions are extremely slanted and the ratio of entities without the asset in question is rather high; the picture is less clear-cut only in case of the tangible assets. The deciles of the variables and the ratio of entities themselves having the asset classified under the given asset group are presented in the following table. The detailed statistics are shown in Point 1 of Annex VII.

	Intangibles	Tangibles	Non-curr. fin. assets	Securities
Zero: no. ratio	324,499 (85.5%)	127,333 (33.5%)	350,112 (92.2%)	362,302 (96.7%)
D1	.0000	.0000	.0000	.0000
D2	.0000	.0000	.0000	.0000
D3	.0000	.0000	.0000	.0000
D4	.0000	.0219	.0000	.0000
D5	.0000	.0836	.0000	.0000
D6	.0000	.1852	.0000	.0000
D7	.0000	.3352	.0000	.0000
D8	.0000	.5336	.0000	.0000
D9	.0015	.7806	.0000	.0000

Table 36: The main data of the distribution of assets available for fair valuation.

It is clear from the above that with the exception of tangible assets the majority of the entities do not even have the types of assets in question. This data is hardly surprising in view of the structure of the Hungarian economy as described in 6.6.4.2 and it raises three additional questions as well.

The *first question* is due to the fact that in case of the tangible assets and intangible assets the net values stated in the balance sheet do not necessarily indicate whether an entity has the asset in question as it can occur that the asset is written down to zero but is still stated in the books and, theoretically anyway, could be recognized at fair value. In order to clarify this problem I examined the *relationship between net value and gross value*: to see how the gross value changes when net value is zero.

The results are shown in the following table; the values here are not distribution coefficients but absolute numbers measured in thousand Hungarian forints. (P95 and P99 indicate the relevant percentiles while the full ratio indicates the ratio within all observations, i.e. a total of 379 673.)

	Gross value of intangibles	Gross value of tangibles
Zero: ratio full ratio	274,329 (84.5%) (72.3%)	98,453 (77.3%) (25.9%)
D1	.00	.00
D2	.00	.00
D3	.00	.00
D4	.00	.00
D5	.00	.00
D6	.00	.00
D7	.00	.00
D8	.00	43.00
D9	50.00	357.00
P95	197.00	1 046.00
P99	1775.00	5 957.30

Table 37: Development of the gross value of non-current assets written down to 0.

It emerges from the table that the ratio of 0 values did not decrease substantial on a full population level. However, it is also apparent that a large portion of entities with assets written down to 0 have assets with negligible gross value: in terms of intangible assets the gross value is higher than HUF 1 million for just a few percent of the entities and the respective ratio is not far above 5% for tangible assets, either. *Accordingly, the fair valuation of assets written down to 0 is considered unlikely.*

The *second question is related to the distribution within the tangible assets.* As can be seen from the data of Table 36, tangible assets are the only group of assets where values significantly vary from 0 for a substantial group of entities. Yet this group itself is not very extensive as the median is around a mere 8% and a weight of over 50% can be observed for just over 20% of the entities.

Hypothesis H2 also shows that within tangible assets the fair valuation of real estates is the most common, therefore I have examined real estates both according to gross value and net value, respectively. (The numbers here are also absolute numbers in thousand HUF.)

	Gross value of real estates	Net value of real estates
Zero: ratio	275,326 (72.5%)	277,892 (73.2%)
D1	.00	.00
D2	.00	.00
D3	.00	.00
D4	.00	.00
D5	.00	.00
D6	.00	.00
D7	.00	.00
D8	2 000.00	1 416.00
D9	20 000.60	16 645.60
P95	65 038.60	55 093.00
P99	515 262.12	431 973.10

Table 38: Development of gross value and net value of real estates.

The table shows that only a small portion of companies, i.e. less than 20% has a significant real estate value (even the value of the 8th decile is rather low and a significant values are only seen upwards of the 9th decile). Essentially the same observation is made for both gross value and net value.

The *third question* is related to the frequency of fair valuation of financial instruments through profit and loss as mentioned in 8.4.1.1 and 8.4.2.1. As can be seen from Table 36, the weight of non-current financial assets and securities within the whole population is low (it is 0 even in the 9th decile) and the ratio of entities with financial instruments available for fair valuation is practically negligible.

Owing to the regulation itself, the scope of financial liabilities available for fair valuation is rather narrow, therefore one can make the general conclusion that the frequency of fair valuation through profit and loss, merely due to the lack of financial instruments available for fair valuation, is negligible.

In my view the above serve sufficient evidence for accepting the hypothesis, yet once again I consider necessary to conduct the analysis according to size category also.

8.5.2 Examination of asset structure per volume category

When examining the asset structure one cannot ignore the enterprise structure: given that the ratio of smaller enterprises is rather high, the above are worth examining per volume category also. For this I divided the enterprises into volume categories according to total assets and revenues as described in 8.2 and I examined the variation of the asset group weights from 0 per category.

The results are summarized in the tables shown on the next page, where distribution means the breakdown of the number entities classified per category. (The detailed data have been enclosed in Point 2 of Annex VII.)

The band limits of the categories were the following in HUF and in approximate EUR terms:

Category	Total assets/revenues band (tHUF)	Total assets/revenues band (€)
#0	0	0
#1	1 – 10,000	1 – 35,000
#2	10,001 – 50,000	35,001 – 175,000
#3	50,001 – 250,000	175,001 – 875,000
#4	250,001 – 500,000	875,001 – 1,750,000
#5	500,001 – 2,500,000	1,750,001 – 8,750,000
#6	2,500,001 – 5,000,000	8,750,001 – 17,500,000
#7	5,000,001 – 12,500,000	17,500,001 – 43,750,000
#8	12,500,001 –	43,750,000 –

Table 39: Categories of total assets and revenues used in the analysis in HUF and EUR

In the tables, letters indicate the variance of the weight of each asset group from 0 (I = intangible assets, T = tangible assets, B = non-current financial assets, É = securities), and an asterisk was used to denote cases where an asset group appears but its weight is negligible (below 1%).

Differs form 0 in the decile below	Total assets categories							
	#1	#2	#3	#4	#5	#6	#7	#8
D1 (10 %)	-,-,-,-	-,-,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-	-,-,-,-
D2 (20 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,-,-,-
D3 (30 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T*,B*,-
D4 (40 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-
D5 (50 %)	-,T*,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B,-
D6 (60 %)	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I*,T,B,-
D7 (70 %)	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I*,T,B,-	I*,T,B,-
D8 (80 %)	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I*,T,B*,-	I*,T,B,-	I*,T,B,É*
D9 (90 %)	-,T,-,-	I*,T,-,-	I*,T,B,-	I*,T,B,-	I,T,B,É*	I,T,B,É*	I*,T,B,É	I,T,B,É

Distribution (%)	59,4	23,1	6,4	5,3	2,4	2,5	0,7	0,2
Aggregated (%)	59,4	82,5	88,9	94,2	96,6	99,1	99,8	100

Table 40: Occurrence of assets available for fair valuation per category of total assets.

Differs form 0 in the decile below	Revenue categories								
	#0	#1	#2	#3	#4	#5	#6	#7	#8
D1 (10 %)	-,-,-,-	-,-,-,-	-,-,-,-	-,-,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-	-,T*,-,-
D2 (20 %)	-,-,-,-	-,-,-,-	-,T*,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-
D3 (30 %)	-,-,-,-	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-
D4 (40 %)	-,-,-,-	-,T*,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-	I*,T,B*,-
D5 (50 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-
D6 (60 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-
D7 (70 %)	-,-,-,-	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I*,T,B,-
D8 (80 %)	-,T,-,-	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I,T,B,-	I,T,B,-
D9 (90 %)	-,T,-,-	-,T,-,-	I*,T,-,-	I*,T,B*,-	I*,T,B*,-	I,T,B,-	I,T,B,-	I,T,B,É*	I,T,B,É

Distribution (%)	17,6	40,8	23,4	6,7	5,8	2,6	2,4	0,6	0,1
Aggregated (%)	17,6	58,5	81,9	88,5	94,3	96,9	99,3	99,9	100

Table 41: Occurrence of assets available for fair valuation per category of revenues.

The table shows that essentially none of the asset groups in question carry a significant weight besides tangible assets while the proportion of tangible assets is also negligible for a substantial portion, app. 30%, of the companies (a greater part of the entities ranked in the lower categories do not have such assets at all). Other assets available for fair valuation represent a significant ratio for an insignificantly low portion of the entities.

> In terms of total assets, the ratio of entities not having such assets is nearly 50% in the lowermost category comprising 59.4% and one should add to this 10% of the 2nd category. In terms of revenues, this ratio is above 70% in Category 0 while it is around 40% in Category 1 and up to 20% of the entities of Category 3 and 10% of Category 4 do not have such assets, either. Overall, it can be said that app. 30% of the entities do not have such assets at all.

It is also visible from the data that according to both variables there is a relationship between the asset structure and size: the asset structure of bigger companies lends itself better to the use of fair value.

Given that tangible assets are the dominant asset group I conducted further analysis of the different categories based on gross values to assess in which cases gross value exceeds 5 million HUF (cca. 17 500 EUR) as a value limit.

When choosing the value limit the consideration was that below a certain value there is no return for the costs associated with fair valuation. In a certain sense the choice of the band limit is arbitrary and perhaps even too low but in this way the results enable more general conclusions to be drawn.

Yet one must state three assumptions relative to the value limit:

- it is a aggregated, gross value and not an individual asset value; consequently, the scope of entities with individual assets of significant value may be even more narrow;
- it also includes tangible assets under construction, the revaluation of which is not allowed; still, these could not be excluded from the examination as they are potential future assets available for revaluation;
- gross value in itself is always a nominal value and it does not reflect the effects of inflation; nevertheless, I consider that the scope of assets where this is of significance is rather narrow.

The results are shown in the tables on the next page, whereas the detailed data are presented in Point 3 of Annex VII.

Exceeds 5 MHUF in the decile below	Total assets categories							
	#1	#2	#3	#4	#5	#6	#7	#8
D1 (10 %)	û	û	û	û	û	û	û	û
D2 (20 %)	û	û	ü	ü	ü	ü	ü	û
D3 (30 %)	û	û	ü	ü	ü	ü	ü	ü
D4 (40 %)	û	ü	ü	ü	ü	ü	ü	ü
D5 (50 %)	û	ü	ü	ü	ü	ü	ü	ü
D6 (60 %)	û	ü	ü	ü	ü	ü	ü	ü
D7 (70 %)	û	ü	ü	ü	ü	ü	ü	ü
D8 (80 %)	û	ü	ü	ü	ü	ü	ü	ü
D9 (90 %)	ü	ü	ü	ü	ü	ü	ü	ü

Distribution (%)	59,4	23,1	6,4	5,3	2,4	2,5	0,7	0,2
Aggregated (%)	59,4	82,5	88,9	94,2	96,6	99,1	99,8	100

Table 42: Occurrence of assets available for fair valuation per category of total assets.

Exceeds 5 MHUF in the decile below	Revenue categories								
	#0	#1	#2	#3	#4	#5	#6	#7	#8
D1 (10 %)	û	û	û	û	û	û	û	ü	ü
D2 (20 %)	û	û	û	û	û	ü	ü	ü	ü
D3 (30 %)	û	û	û	û	ü	ü	ü	ü	ü
D4 (40 %)	û	û	û	ü	ü	ü	ü	ü	ü
D5 (50 %)	û	û	û	ü	ü	ü	ü	ü	ü
D6 (60 %)	û	û	ü	ü	ü	ü	ü	ü	ü
D7 (70 %)	û	û	ü	ü	ü	ü	ü	ü	ü
D8 (80 %)	û	û	ü	ü	ü	ü	ü	ü	ü
D9 (90 %)	û	ü	ü	ü	ü	ü	ü	ü	ü

Distribution (%)	17,6	40,8	23,4	6,7	5,8	2,6	2,4	0,6	0,1
Aggregated (%)	17,6	58,5	81,9	88,5	94,3	96,9	99,3	99,9	100

Table 43: Occurrence of assets available for fair valuation per category of revenues.

As can be seen from the tables, a distinction must be made even among entities with tangible assets, thus leading to the conclusion that the scope of entities potentially able to use fair valuation is even more narrow, at app. 40%.

In terms of total assets, albeit here the effects of volume are naturally evident, this ratio is around 80% in the lowermost category and is at 30% even in the second category, where besides tangible assets there is no other asset available for fair valuation, either. In terms of revenues the data of the first 3 categories are the most important: here the ratios are nearly 100%, 80%, and 50%, respectively. In overall terms this covers app. 60% of the entities.

8.5.3 Possible conclusions using the DB2 database

Although the hypothesis highlights only one of the reasons of ignoring fair valuation (namely the lack of assets), the data of the DB2 database can be used to surmise other reasons as well. Based on the responses given to the questionnaire the reasons of for not using fair valuation feature the following weights for the entities (here I use the point totals as presented in 8.2 also).

Reasons for not using fair valuation	Scores	Weighted scores
It would have been too costly (administration, external expert etc.)	196	3,489
More relevant information is not provided	204	2,286
The value of item cannot be measured reliably	165	3,620
Has no item to which these could have been applied	146	2,564
The company is member of a group and the group does not apply these	75	1,238
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied, so it is not relevant in the Aa. based financial statements	34	955
Because of the potential tax losses	15	233
As it had no effect on taxation	93	1,791
No or unknown reason	245	3,359

Table 43: The scores assigned for the reasons of not using fair valuation based on the DB2 database.

Although the responses with “unknown reason” carry a relatively high weight, it is clear from the weighted scores that the lack of assets available for fair valuation represents a significant weight even for bigger companies listed in the DB2 database typically with revenues of HUF 100+ million (revenue categories 4 and above).

The relatively high scores of costliness as a quoted reason is an important signal, one which justifies the need for establishing the value limit used in the previous section.[220] The questionnaire also allowed other reasons to be selected but no such reasons were specified by the respondents.

According to the unweighted *Friedman test,* "unknown reason" is the most common (median = 3.5), followed by the non-relevant and costly options (median = 2-2.5). Based on the weighted data the medians are as follows: no relevant = 4, costly = 3, no such asset = 3, unknown = 2, albeit due to the narrow nature of the scale no ranking order is applicable.

However, this does not affect the statement concerning the hypothesis, namely that the lack of assets available for fair valuation is among the main reasons also. The detailed data are available in Point 4 of Annex VII.

Overall, therefore, these statements are in no contradiction with the conclusions made using the data of the DB1 database.

Based on the above I accept Hypothesis H3.

8.6 Verification of Hypothesis H4

H4: Among entities opting for fair valuation:

a) size and
b) leverage and the related compliance with requirements pertaining to the minimum volume of equity are explanatory factors for the use of fair valuation,
c) however, even in case of entities obliged to fulfil dual reporting the frequency of choosing fair valuation is not higher in the financial statements prepared according to the Hungarian rules.

8.6.1 Sub-hypothesis H4/a)

8.6.1.1 Verification using the data of the DB1 database

As described in 8.4.1.1, the increase in the frequency of fair valuations in conjunction with size referred to the fulfilment of the hypothesis of size. To examine the hypothesis I first compared the categorization of entities with a valuation reserve (and using fair valuation) in terms of total assets and in terms of revenues versus the distribution of the whole population as described in 8.2.

[220] Evidently, it does not say anything on the value limit itself.

The values obtained are shown in the following tables according to the distribution of the entities classified under the different categories and in a cumulative manner.

Total assets bands (MHUF)	Distribution of entities (%)					
	Whole database (N=379,673)		NOT using fair valuation (N=374,862)		Using fair valuation (N=4,811)	
0 – 10	59.4	*59.4*	60.0	*60.0*	7.0	*7.0*
10 – 50	23.1	*82.5*	23.2	*83.2*	14.4	*21.4*
50 – 100	6.4	*88.9*	6.3	*89.5*	11.8	*33.2*
100 – 250	5.3	*94.2*	5.2	*94.7*	18.0	*51.2*
250 – 500	2.4	*96.6*	2.3	*97.0*	14.2	*65.4*
500 – 2,500	2.5	*99.1*	2.2	*99.2*	23.4	*88.8*
2,500 – 12,500	0.7	*99.8*	0.6	*99.8*	9.0	*97.8*
12,500 –	0.2	*100*	0.2	*100*	2.2	*100*

Table 44: Categories of total assets for entities using and not using fair valuation.

Revenue bands (MHUF)	Distribution of entities (%)					
	Whole database (N=379,673)		NOT using fair valuation (N=374,862)		Whole database (N=379,673)	
No revenue reported	17.6	*17.6*	17.6	*17.6*	7.3	*7.3*
0 – 10	40.8	*58.4*	40.8	*58.4*	18.9	*26.2*
10 – 50	23.4	*81.8*	23.4	*81.8*	20.6	*46.8*
50 – 100	6.7	*88.5*	6.7	*88.5*	10.5	*57.3*
100 – 250	5.8	*94.3*	5.8	*94.3*	14.7	*72.0*
250 – 500	2.6	*96.9*	2.6	*96.9*	9.7	*81.7*
500 – 2,500	2.4	*99.3*	2.4	*99.3*	13.8	*95.5*
2,500 – 12,500	0.6	*99.9*	0.6	*99.9*	3.7	*99.2*
12,500 –	0.1	*100*	0.1	*100*	0.8	*100*

Table 45: Categories of revenues for entities using and not using fair valuation.

It is clear from the tables that *both in terms of total assets and in terms of revenues bigger entities feature among those using fair valuation in a significantly higher ratio compared to all the entities contained in the database and versus those not opting for fair valuation.*

Nearly half of those opting for fair valuation rank in Total assets category 5 or higher (entities with total assets above HUF 250 million) while this ratio is around 5% for those not using fair valuation. In terms of revenues the ratio of entities over HUF 100 million (Category 5 or higher) is more than 40% while the respective ratio of those not using fair valuation is around 12%.

Nevertheless, total assets are not independent of fair valuation, thus it cannot be used to guess at the direction of the relationship (total assets are higher only because of the use of fair valuation or the entities opting for fair valuation are bigger in the first place). In order to filter out this effect I performed the categorization for the total assets decreased with the valuation reserve (VR), i.e. the value of the revaluation, as well.

Total assets without valuation reserve bands (MHUF)	Distribution of entities (%)					
	Whole database (N=379,673)		NOT using fair valuation (N=374,862)		Using fair valuation (N=4,811)	
0 – 10	59.4	*59.4*	60.0	*60.0*	12.4	*12.4*
10 – 50	23.1	*82.5*	23.2	*83.2*	19.1	*31.5*
50 – 100	6.4	*88.9*	6.3	*89.5*	12.6	*44.1*
100 – 250	5.3	*94.2*	5.2	*94.7*	16.5	*60.6*
250 – 500	2.4	*96.6*	2.3	*97.0*	11.9	*72.5*
500 – 2,500	2.5	*99.1*	2.2	*99.2*	18.9	*91.4*
2,500 – 12,500	0.7	*99.8*	0.6	*99.8*	7	*98.4*
12,500 –	0.2	*100*	0.2	*100*	1.6	*100*

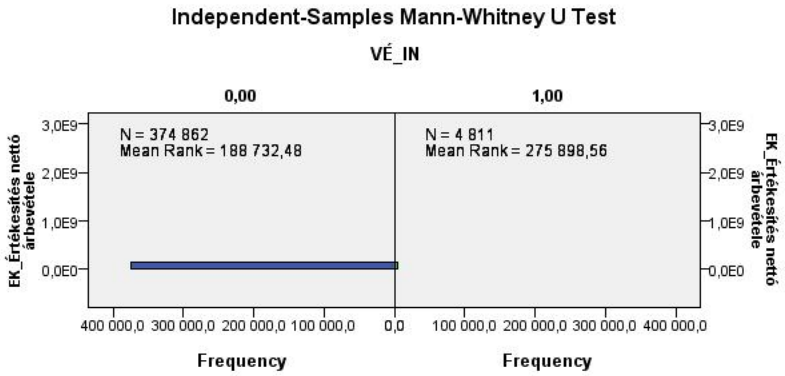
Table 46: Categories of total assets for entities using and not using fair valuation.

Evidently, although the entities using fair valuation were classified in somewhat lower categories, the difference is still significant: *almost 40% of the entities opting for fair valuation have total assets of over HUF 250 million (calculated at historical cost) while the respective ratio continues to be a mere 5% for all those opting for fair valuation* (needless to say, in their case the exclusion of the valuation reserve had no effect whatsoever).

Given that during the examination of the correspondence of the two sub-samples neither the distribution of the total assets adjusted for revenues nor that adjusted for the valuation reserve was found to be normal,[221] I conducted a Mann-Whitney test. The results showed that the samples significantly varied from each other. The results for the 5% level of significance are indicated in the following graphs (the group denoted by 0 means those not using fair valuation while the one denoted by 1 means those that opted for fair valuation).

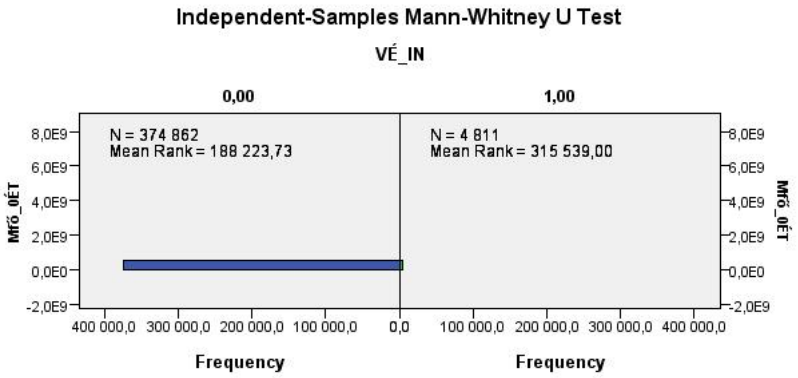
The Kolmogorv-Smirnov tests using two independent samples, executed to verify the Mann-Whitney test, also showed the variation of the distributions (the test results have been enclosed in Point 2 of Annex VIII.

[221] The results of the normality study are enclosed in Point 1 of Annex VIII.



Total N	379 673
Mann-Whitney U	1 315 772 692,500
Wilcoxon W	1 327 347 958,500
Test Statistic	1 315 772 692,500
Standard Error	7 533 115,157
Standardized Test Statistic	54,963
Asymptotic Sig. (2-sided test)	,000

Figure 7: Results of the Mann-Whitney test of revenues.



Total N	379 673
Mann-Whitney U	1 506 482 874,500
Wilcoxon W	1 518 058 140,500
Test Statistic	1 506 482 874,500
Standard Error	7 553 842,121
Standardized Test Statistic	80,059
Asymptotic Sig. (2-sided test)	,000

Figure 8: Results of the Mann-Whitney test of total assets.

Based on the average ranks it can be seen that for the entities using fair valuation both revenues and totals assets are significantly higher. This is further reinforced by a comparison of the deciles of the two groups.

	Total assets		Revenues	
	Fair valuation		Fair valuation	
	NO	YES	NO	YES
D1	375	7,080	0	619
D2	845	22,660	120	5,098
D3	1,875	45,926	1,215	13,263
D4	3,367	81,818	3,012	30,548
D5	5,749	135,794	5,725	62,510
D6	9,980	240,605	10,680	118,588
D7	18,141	433,479	19,590	217,375
D8	37,429	838,059	40,810	439,413
D9	105,547	2,061,375	115,035	1,127,258

Table 47: Volume of variation of total assets and revenues as a function of choice of fair valuation.

It is visible from the table that the deciles according to both variables of the entities choosing fair valuation are significantly higher than the values observed in the sub-sample of entities not using fair valuation.

8.6.1.2 Possible conclusions using the DB2 database

In order to process the questions of the auditor survey relating to the size of the entities using fair valuation I chose the assignment of point totals presented in 8.2 while weighting them with the ratio of entities within the auditor survey for this group of questions.

> Although within the entity clients the distribution according to revenue categories was available, given that entities with lower revenues were severely overrepresented in the sample I ignored this during the weighting of the scores. Nevertheless, in my view this does not mean the ignoring of the information as the respondents were inherently influenced by the fact of what entities with what volume of revenues they were auditing, thus this effect is reflected in the answers given to the questions concerning the frequency of fair valuation. Yet during the evaluation of the results the slanted nature of the sample could not be ignored.

I have only requested auditors to answer the related questions who encountered fair valuation during their audits for 2011. This meant a total of 49 auditors and a total of 976 audits. When articulating the question I separated the topics of value adjustment (VA) and the fair valuation (FV) of financial instruments and I applied a categorization other than the one used by the DB1 database.

Since auditors typically encounter companies with revenues of HUF 100+ million and the ratio of entities with revenues above HUF 2 billion is relatively low, I have established the band limits accordingly by taking as a basis half of the band limits of the revenues. The results obtained are summarized in the following tables.

Total assets categories	Scores		Weighted scores	
	VA	FV	VA	FV
Below 100 million HUF	35	8	480	124
100 – 250 million HUF	27	17	407	206
250 – 500 million HUF	36	19	829	482
500 – 1,000 million HUF	31	22	615	489
Above 1,000 million HUF	24	13	506	407

Table 48: Frequency of fair value as a function of total assets based on DB2 database.

Revenue categories	Scores		Weighted scores	
	VA	FV	VA	FV
Below 200 million HUF	13	11	233	129
200 – 500 million HUF	26	11	251	141
500 – 1,000 million HUF	40	21	741	331
1,000 – 2,000 million HUF	31	20	557	296
Above 2,000 million HUF	39	13	697	256

Table 49: Frequency of fair value as a function of revenues based on DB2 database.

As can be seen from the results of the examination, the higher categories of total assets and revenues were assigned significantly higher points despite the fact that the trend is non-linear; however, this is likely to do with the skewed nature of the sample.

The *Friedman test* yielded a similar result and in the unweighted cases the distorting effect of the skewedness of the sample emerged in a quite visible manner. (Detailed results Annex VIII Point 3).

Based on the above I accept Sub-hypothesis H4/a).

8.6.2 Sub-hypothesis H4/b)

8.6.2.1 Verification using the data of the DB1 database

As a first step of verifying the sub-hypothesis I divided entities into different categories according to two *leverage indicators:* based on the ratio of equity relative to total assets and to share capital *calculated without the valuation reserve*.[222] I established 4+1 categories relative to the total assets as follows: negative, 0-25%, 26-50%, 51-75%, over 75%, and 3+1 categories relative to share capital along the value limits specified in the Act on business entities: negative, 0-50%, 51-66%, over 66%.

> In terms of the categories, companies not reaching a share capital ratio of 50% can be clearly considered companies in a problematic capital situation (lower 2 categories) while those with a ratio above 66% can be considered to be essentially problem-free (Category 4). Given that the database does not contain data relating to the company form, Category 3 is unclear (for limited liability companies it is problem-free while for incorporated companies it is problematic).

When comparing the entities using and not using fair valuation, the results obtained illustrate the ratio of entities featuring in the different categories and the cumulated ratio in the following tables.

Distribution of entities (%)	Equity (without VR)/Total assets (without VR)			
	Fair valuation			
	NO 374,857		YES 4,811	
Negative	23.7	*23.7*	32.8	*32.8*
0% – 25%	17.0	*40.7*	22.7	*55.5*
26% – 50%	14.3	*55.0*	18.1	*73.6*
51% – 75%	15.6	*70.6*	13.5	*87.1*
76% –	29.4	*100*	12.9	*100*

Table 50: Equity/total assets ratio as a function of choice of fair valuation.

[222] Due to 0 value being specified for share capital some observations (a total of 12, out of which 7 used fair valuation and 5 did not) had to be excluded when establishing the share capital ratio indicators.

Distribution of entities (%)	Equity (without VR)/Share capital			
	Fair valuation			
	NO, N = 374,857		YES N = 4,804	
Negative	23.6	*23.6*	33.1	*33.1*
0% – 50%	6.7	*30.3*	6.0	*39.1*
51% – 66%	2.6	*32.9*	2.2	*41.3*
67% –	67.1	*100*	58.7	*100*

Table 51: Share capital/equity ratio as a function of choice of fair valuation.

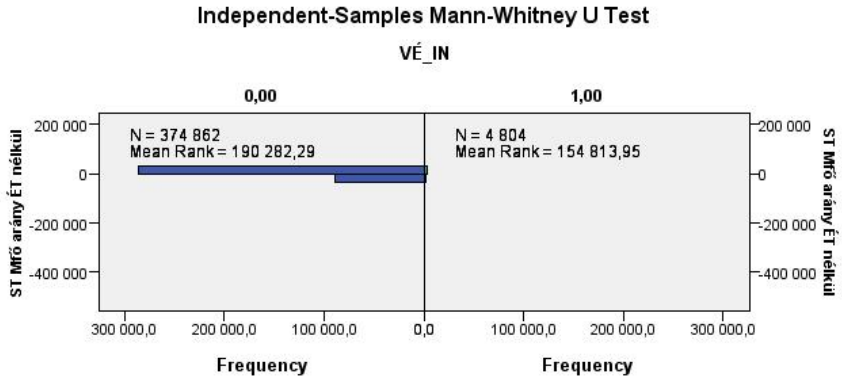
As can be seen from the tables a greater portion of entities using fair valuation have a lower ratio of equity (higher leverage indicators) than those not using fair valuation: the ratio of entities with liabilities below 50% (understood in a broad sense) is therefore app. 20% higher. At the same time it is also evident that companies are distinguished slightly along the categories of the Act on business associations, although the difference can be clearly considered inappropriate and it amounts to nearly 9% for the group of entities with an equity/share capital ratio of not more than 50% (23.6% vs. 33.1%).[223]

> However, it is also visible from the tables presenting the share capital ratio that the equity requirement variable is essentially binary: the middle two categories represent an unusually low weight, thus leading to the conclusion of whether or not a given entity fulfils the equity requirement. This is also due to the fact that the equity requirements are relatively soft: the share capital can basically be decreased to the otherwise not high minimum level specified by the legislation and as a result the positive equity fulfils the requirements relatively easily, at least for a bigger company. (It is somewhat broader weight for the lower size categories but the middle two categories do not represent a weight above 15% in any of the bands.) The detailed data are available in Point 4 of Annex VIII.

It follows from the foregoing that it is rather difficult to separate compliance with the equity requirements as motivation from the variable of the general equity situation.

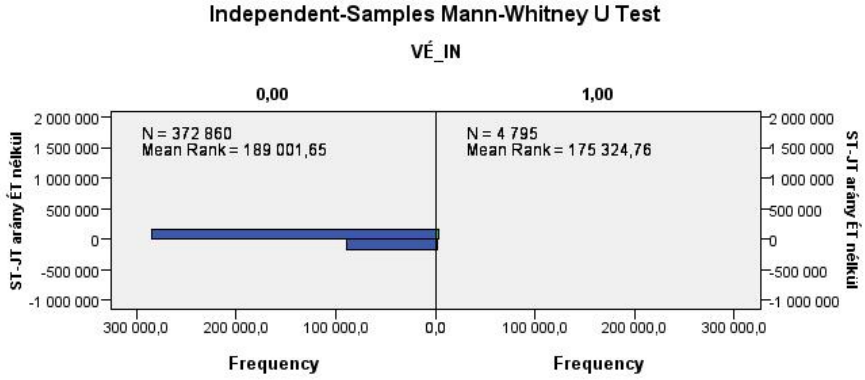
Upon examination of the variation of the samples (normality does not exist for these variables, either – see Point 5 of Annex VIII) it is found based on the Mann-Whitney tests that the two samples are not identical according to either of the variables. It also emerges from the ranks that for the entities using fair valuation the values of the indicators are lower. The results of the tests are summarized in the following graphs (under a significance level of 5%). The Kolmogorov-Smirnov test yielded the same result, the statistics of which are attached in Point 6 of Annex VIII.

[223] One could obtain a more precise picture by increasing the number of categories, however, this is hardly relevant from the point of view of verifying the hypothesis.



Total N	379 666
Mann-Whitney U	732 184 629,500
Wilcoxon W	743 726 239,500
Test Statistic	732 184 629,500
Standard Error	7 547 183,416
Standardized Test Statistic	-22,291
Asymptotic Sig. (2-sided test)	,000

Figure 9: Results of the Mann-Whitney test of equity/total assets ratio.



Total N	377 655
Mann-Whitney U	829 183 830,000
Wilcoxon W	840 682 240,000
Test Statistic	829 183 830,000
Standard Error	7 501 010,983
Standardized Test Statistic	-8,632
Asymptotic Sig. (2-sided test)	,000

Figure 10: Results of the Mann-Whitney test of equity/share capital ratio.

Therefore, based on the tests conducted it can be stated that the indicators of companies using fair valuation, calculated without the valuation reserve, remain significantly below those of companies not using fair valuation; however, whether or not the equity situation influences the choice of fair valuation requires further investigations.

In order to assess the causal relationship I compared the indebtedness indicators, calculated with and without the valuation reserve, of companies using fair valuation.

Distribution of entities (%)	Equity/Total assets			
	Entities using fair valuation			
	Without VR		With VR	
Negative	32.8	*32.8*	6.9	*6.9*
0% – 25%	22.7	*55.5*	23.4	*30.3*
26% – 50%	18.1	*73.6*	23.1	*53.4*
51% – 75%	13.5	*87.1*	24.2	*77.6*
76% –	12.9	*100*	22.4	*100*

Table 52: Change in equity/total assets ratio as a function of fair valuation (N=4,811).

Distribution of entities (%)	Equity/Share capital			
	Entities using fair valuation			
	Without VR		With VR	
Negative	33.1	*33.1*	6.9	*6.9*
0% – 50%	6.0	*39.1*	3.3	*10.2*
51% – 66%	2.2	*41.3*	1.5	*11.7*
67% –	58.7	*100*	88.3	*100*

Table 53: Change in equity/share capital ratio as a function of fair valuation (N=4,804).

The change is illustrated particularly well by the categories of the share capital ratio indicators: the number of entities clearly ranked in the problem-free categories (a ratio above 66%) has increased by nearly 30% points. The decrease by over 25% points in the ratio of companies with negative equity is clearly significant for both variables while a significant increase of 20% points in the total asset ratio indicator can also be observed for the aggregated ratios of the first 3 categories (liabilities in excess of equity).

> Nevertheless, here one should also take into account the fact that the middle bands practically disappear and one can only speak of compliance or non-compliance only.

In case of share capital ratio indicators over 80% (a total of 1507) of the entities clearly ranked in the problematic categories without fair valuation (a total of 1875 or 39.1%) have jumped a category as a result of the revaluation while 74.3% of them left the categories in non-compliance with the Act on business associates (only a total of 482 problematic companies remained). The related cross-tables are enclosed in Point 7 of Annex VIII.

In order to *expose the relationship between the equity situation and the choice of fair valuation*, I selected a sample out of the entities not suing fair valuation that have the required characteristics for fair valuation based on the hypotheses verified so far. When selecting the sample I thus applied the following as the filter criteria:

1) Did not use fair valuation.
2) Large entity (total assets *and* revenues category 4 or higher)
3) The ratio of tangible assets represented in the balance sheet is over 30% (calculated at historical cost).
4) The weight of real estates within the consolidated gross value of tangible assets is at least 60%.

A total of 4,073 entities were entered in the sample and the descriptive statistics of the sample according to the filter criteria have been enclosed in Point 8 of Annex VIII.

The leverage indicators of those using fair valuation *without the valuation reserve* and the respective indicators of the sample are compared in the following tables.

Distribution of entities (%)	Equity (without VR)/Total assets (without VR)			
	Using fair valuation		Established sample	
Negative	32.8	*32.8*	6.2	*6.2*
0% – 25%	22.7	*55.5*	24.7	*30.9*
26% – 50%	18.1	*73.6*	24.2	*55.1*
51% – 75%	13.5	*87.1*	27.8	*82.9*
76% –	12.9	*100*	17.1	*100*

Table 54: Ratio of equity/total assets as a function of choice of fair valuation (N=4,811/4,073).

Distribution of entities (%)	Equity (without VR)/Share capital			
	Using fair valuation		Established sample	
Negative	33.1	*33.1*	6.2	*6.2*
0% – 50%	6.0	*39.1*	1.8	*8.0*
51% – 66%	2.2	*41.3*	0.9	*8.9*
67% –	58.7	*100*	91.1	*100*

Table 55: Ratio of equity/share capital as a function of choice of fair valuation (N=4,804/4,073).

A clear picture emerges from the established sample: the equity situation of entities not using fair valuation but potentially capable of using it based on their characteristics and of entities using fair valuation is significantly different: among those using fair valuation the ratio of entities in breach of equity requirements (without using fair valuation) is much higher.

> However, concerning the sample a restricting factor cannot be ignored: no information is available on the fair value of the assets of entities included in the sample. Underlying the non-use of fair valuation could be the fact that the fair value did not vary from the historical cost for the specific asset in question. When establishing the sample I selected entities having real estates as I assumed that in case of the real estates, at least in statistical terms, similar trends manifest themselves in nominal value for the whole of the population. The existence of this condition cannot be proven with the database and the results could thus only be interpreted with this restriction.

Using the DB1 database it can be said that the equity situation of a great portion of the entities using fair valuation is worse than average. The improvement in the indicator occurring as a result of fair valuation and the sample established also show that the settlement of the equity situation plays a role. Yet one cannot find an answer to whether underlying this is the fulfilment of equity requirements or some other reason, such as the improvement of the credit standing. Equally, one cannot ignore the fact that 58.7% of those using fair valuation fulfil the equity requirements in the first place (see Table 55), which suggests the existence of other motivations as well.

> I obtained the same result when I tried to separate those using fair valuation with the help of the equity/share capital ratio as a categorical explanatory variable and the entities contained in the sample and not using fair valuation with the help of the binary logistic regression model.

Although the classification force of the model is around 64%, it is right in classifying the elements of the sample with a ratio of 91% and those using fair valuation with a ratio of 41%, respectively: it practically signals no fair valuation for entities with clearly problem-free equity while it does so in other cases. (The details of the model are found in Point 9 of Annex VIII.)

8.6.2.2 Possible conclusions using the DB2 database

In the auditor survey I also included a question concerning the reasons underlying the choice of fair valuation. The unweighted and weighted point totals obtained (calculated in a similar way to earlier methods) are shown in the following table (based on the 976 audits performed by 49 auditors encountering fair valuation).

Reasons for choosing fair valuation	Scores	Weighted scores
The owners' equity would otherwise remain below the threshold set in the Business Entities Act	80	1,513
It was required by the owners to assess the wealth of the company	81	1,302
To improve profitability	26	304
The company is member of a group and the group applies these	20	460
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied	7	315
The creditor demanded the application when assessing credibility	57	1,410
To take advantage of taxation	22	205

Table 56: Scores assigned to the reasons of choosing fair valuation.

It can be seen from the table that the three most common reasons are the settlement of equity, the improvement of the credit standing (the effect of these two are reflected in the leverage indicators), as well as the owner's expectation with almost the same frequency as the other reasons.

The owner's expectation could not be reflected by the indicators examined above and this can be one of the explanations for the choice of fair valuation by companies in a proper equity situation. The database could not provide an answer to the question of what groups the reasons appeared in if there were several reasons as the data collection was done not per entity but per auditor.

Based on the *Friedman test* they obtained a higher rank due to the owner's expectation and the equity situation variables also and although according to the weighted data the median of the equity situation and the owner's expectation is the same, neither of the medians is high (1 or 2). The detailed data are contained in Point 10 of Annex VIII.

In addition to the above, respondents could specify additional reasons as well. The answers obtained were as follows:

- It related to the examination of the credit standing and was the decision of the entity; it was not prescribed by the lender.
- It was due the result of reaching of the value limit of the capital adequacy ratio of the bank as stipulated in the Act on credit institutes and banks.[224]
- It was due to guarantee capital requirements of the banks.
- In case of public entities it is the expectation of members and stakeholders in order to preserve the assets and capital.

The responses essentially further specified the earlier categories and in addition to the equity requirements as per the Act on business associations they highlighted the role of the equity requirements pertaining to financial institutes and different aspects of the owner expectations.

The significance of the DB2 database is perhaps the greatest at this point: the motivations of fair valuation are the information that an auditor may have; however, these can be extracted from the numbers only indirectly and to a limited degree, whereas the low point totals suggest the existence of reasons not listed above.

Based on the above I accept Sub-hypothesis H4/b) with the condition that within the equity situation the effect of compliance with the legislational equity requirements could not be separated in a distinct manner.

8.6.3 Sub-hypothesis H4/c)

The data of the database established for the purpose of verifying the sub-hypothesis of the dual reporting present a rather extreme picture. (The detailed data are found in Annex V.)

Among the companies examined, only 3 opted for *the fair valuation of financial instruments required by the IFRS* in their report made in accordance with the Hungarian rules, which is equivalent to a ratio of 9.68%; however, 1 company did not use fair value for the financial assets available sale as allowed by the provisions of the Aa.

In the financial statements prepared in accordance with the IFRS I encountered *optional fair valuation* in case of 5 companies (16.13%), and in all cases these meant the revaluation of fixed assets or specifically, that of investment real estates with the exception of one company only. (One company also revalued the fixed assets classified under IAS 16 also while another company, although it possessed investment properties, opted for the historical cost model instead.)

[224] Act CXII of 1996 on banks and financial institutes.

Yet among the 5 companies choosing fair valuation in accordance with the IFRS a total of 3 did not use value adjustment as stipulated in the Hungarian rules, thus the overall ratio of users is 6.45%.

This ratio is somewhat higher than the figure observed for the whole population (1.3%) but the following must also be considered when interpreting the data measured in percentages:

- The sample of companies listed on the stock exchange is small, whereby a singly company can cause a major change in the percentage.
- Using the DB1 database, fair valuation through profit and loss could not be examined, although in my view this does not mean a significant difference.
- Listed companies are clearly among the larger entities and in terms of total assets and revenues belong in categories 6 or above (total assets or revenues above HUF 500 million) and in this band of size, as pointed out in 8.4.1.1, the frequency of fair valuation is higher than average (7-8% in terms of revenues and 10-13% in terms of total assets – see Table Hiba! A hivatkozási forrás nem található.).

  In 2011 the minimum revenues of the companies examined were HUF 521 million, whereas the minimum total assets were HUF 758 million, the average revenues were HUF 278 billion, and the average total assets were HUF 611 billion – albeit these data showed a large spread.

With respect to the use of fair valuation by the *DB2 database* the reporting according to a different system of rules or group-level policies as reasons featured a rather low point total in Table 56. Of those that filled out the survey only 2 persons (representing a total of 153 audits) indicated dual reporting while the effect of the group policy could be observed for 6 persons (315 audits), although the mere existence of a company group does not inherently mean dual reporting. This also suggests the existence of what has been stated in the hypothesis.

The *group of entities subject to foreign majority influence* (where the ratio of share capital owned by foreigners is above 50%) can provide an estimate on the group of entities concerned by dual reporting. By excluding this group of entities from the DB1 database I obtained a fair valuation ratio of 3.2%, a figure somewhat above that of the whole population.

Although among the independence tests based on the volume of valuation reserves the Mann-Whitney also signalled the separation of the sub-samples, the order ranks did not vary greatly, nor could a possible effect of magnitude be separated as the entities majority owned by foreigners belonged in higher categories of size in a greater ratio.

This was reinforced by the Kolmogorov-Smirnov test showing the correspondence of sub-samples. Thus the variation from the full population ratio cannot be considered significant from the perspective of dual reporting. (The detailed data are available in Point 11 of Annex VIII.)

Based on the above I accept Sub-hypothesis H4/c) on the basis of the sample examined. However, it should be noted that no information was available on the members of the population that cannot be classified into other groups.

8.7 Verification of hypothesis H5

H5: The majority of fair value measurements conducted in the Hungarian regulation environment are mark-to-model measurements.

In order to verify the hypothesis I first performed a rescaling (1-6 → 0-5) of the DB2 database as presented earlier and its weighting with the number of audits conducted. The unweighted and weighted scores assigned to the responses given to the questions of the auditor survey pertaining to the measurement methods of fair value are summarized in the following table based on the 976 audits conducted by 49 auditors.

Methodology of fair value measurement	Scores	Weighted scores
Based on the quoted price of the instrument in question	104	1,889
Based on quoted prices of similar instruments	86	1,473
Based on a model starting from the income generated by the instrument	11	245
Based on a model starting from replacement cost of the instrument	26	462
Based on the combination of the methods mentioned above	50	910

Table 57: Measurement methods of fair value in the Hungarian practice.

The *Friedman test* yielded a similar result as shown in the table; quoted prices and comparative prices dominated both the weighted and unweighted cases, although their median was the same in the weighted case. For the *Wilcoxon signed rank tests* the frequency of price-based measurements is significantly higher compared to other inputs and no ranking order can be established between the quoted prices and comparative prices, nevertheless no further conclusions can be made due to the high number of the related ranks as the respondents typically entered 1 for the less frequent methods. (Detailed data: Point 1 of Annex IX.)

Both the low median figures (3 at the most) and the low scores shown in the above table suggest the low frequency of the methods. This is surprising in view of the fact that the answer options theoretically comprised a whole system covering all the measurement methods of fair value.

The results obtained are also somewhat surprising given that in comparison with the group of assets subject to fair valuation the point total of the quoted prices is rather high. Namely: the respondents mostly encountered fair valuation for real estates (see Point 8.4.2.2) despite the fact that almost without any exception the real estate in question has not quoted prices. Consequently, one can only speak of comparative prices for real estates, thus I presume that the answers given relate to this instead.

> Still, as a lesson it should be learned that the questionnaire must specify in more detail and highlight the meaning of the different answer options.

To verify this assumption (i.e. the indication of quoted prices instead of comparative prices) I compared the group of assets indicated by the different respondents with the measurement method selected. To enable a better overview I established three categories:

- did not encounter the fair valuation of the asset/method in question (Answers 1);
- rarely encountered the fair valuation of the asset/method in question (Answer 2 and 3);
- frequently encountered the fair valuation of the asset/method in question (Answer 4, 5, and 6).

In the analysis the section of Categories 3 of the assets with Categories 1 and 2 of the valuation methods was of interest: I examined the valuation methods of assets frequently encountered by each auditor. In case of other equipment there was no auditor frequently encountering this asset, so I excluded it from the examination. The results obtained are summarized in the following table.

Asset/ Measurement method	Intan-gibles	Real estates	Technical equip.	Animals	L-T invest.
Quoted prices	*20%*	*29%*	*20%*	*25%*	*50%*
Comparative prices	*20%*	*29%*	*20%*	*25%*	*50%*
Income-based model	*20%*	*9.7%*	*20%*	*25%*	–
Cost-based model	*20%*	*19.4%*	*20%*	*25%*	–
Combined method	*20%*	*12.9%*	*20%*	–	–

Table 58: The relationship between the different asset categories and the measurement methods/1

Asset/ Measurement method	Shares	Debt instrum.	Receivables	Derivatives
Quoted prices	*28.6%*	*28.6%*	*40%*	*25%*
Comparative prices	*28.6%*	*28.6%*	*26.7%*	*25%*
Income-based model	*14.3%*	*14.3%*	*6.7%*	*16.7%*
Cost-based model	*28.6%*	*28.6%*	*13.3%*	*25%*
Combined method	–	–	*13.3%*	*8.3%*

Table 59: The relationship between the different asset categories and the measurement methods/2.

The tables thus show the valuation method indicated by the respondent if it encountered a given asset frequently. However, it does not follow from the table, nor do the data enable the identification of the dominant valuation procedures of the different assets for the specific valuations in question. Therefore, the table can only indicate the indirect effect whereby if fair valuation was applied to a given asset group with a greater frequency, then its valuation method is also better reflected in the answers obtained. Yet the detailed query per asset would have far exceeded the limits of the questionnaire and its insertion would have increased the number of questions to an extent that would have severely deteriorated the completion ratio.

Sub-hypothesis H2/b) highlighted the fact that fair value plays the most important role for real estates (the fair valuation of real estates essentially dominates the Hungarian practice of fair value accounting), so I examined in more detail the methodology applied for the valuation of real estates.

As can be seen from the table, the use of quoted prices features a relatively high frequency for real estates, the highest with the same frequency as the comparative prices. This, in turn, reinforces the earlier assumption, namely that *quoted prices and comparative prices cannot be separated on the basis of the answers obtained.*

With respect to the real estates I also performed a *Friedman test* by separating the database according to the frequency of fair valuation of real estates. Both in the weighted and in the unweighted cases the median of the quoted prices is the highest in both Group 1 (rarely encountered) and Group 2 (frequently encountered). The *Wilcoxon signed rank test*, which I performed for only the weighted variables due to the low number of elements, signals a significantly higher frequency of price-based inputs in both groups. However, in Group 2 the ranking order between quoted prices and comparative prices can only be ascertained at a relatively high level of significance. The detailed data are available in Point 2 of Annex IX.

Concerning the valuation methods of the real estates the *in-depth interviews* have highlighted the fact that valuation experts usually perform the valuation according to several methods and a properly weighted combination of these yields the final appraisal. It can occur that a given valuation approach is not included (has a weight of 0) in the appraisal if the circumstances do not allow a reliable performance of the valuation for a given real estate. The main valuation approaches (in accordance with IFRS 13) are: the price comparison approach, the cost approach, and the yield approach (this is the typical method used for revenue-generating properties).

With respect to the methods based on comparative prices (market inputs) one should also consider the fact that several correction factors should be taken into account for a given real estate, thus meaning that the appraisal conducted on the basis of market inputs should be adjusted. Equally, the value of connected properties (land + building) may be split using various model calculations as well.

> When adjusting comparative prices the effect of the following factors must be considered for a given property: monumental protection; technical state; maximum development allowed; zoning classification; ownership status, date of valuation; proximity of transactions underlying the comparative prices; size, square area; financing; conditions of sale; location, infrastructure.

The in-depth interviews also highlighted the importance of an additional characteristic: given that market transactions are rather low (in some cases negligible), the discounted cash-flow calculations and the methods based on the valuation (models) of equity can be considered general methods *for financial instruments also.*

Overall, based on the examinations conducted I believe that even the method using comparative prices itself does not calculate the value of real estates simply from market prices but determines it by applying several adjustments and calculations and it is often used in combination with the other two (clearly mark-to-model) valuation methods, thus it is closer to mark-to-model measurements than mark-to-market ones. From the perspective of the fair value hierarchy this means that the valuations are typically Level 3 measurements.

Based on the above I accept hypothesis H5 with the condition that the role of comparative prices as market-based inputs is significant while also noting that they are typically adjusted with other factors that essentially renders the valuation a mark-to-model measurement.

9 Summary and conclusions

The *focus of examination of the dissertation* was the role and application of fair value accounting. The role of fair value accounting was understood as its ability to influence the regulation and the actual accounting practice while its application was understood as the practical aspect of the theoretical model: to what extent the primary assumptions of fair value accounting are observed in the actual application.

As *the objective of the dissertation* I set out, on the one hand, to clarify what role fair value accounting plays in the current Hungarian regulation and in the practice of business entities operating in the Hungarian regulation environment; on the other hand, I sought to examine the practical application of fair value accounting according to certain aspects.

Accordingly, the main results of the dissertation is summarized in a form grouped around the questions of role and application while laying down a few proposals aimed at the improvement of the regulation based on the conclusions drawn.

9.1 The role of fair value accounting

With respect to *fair value accounting restricted to financial instruments* explicitly stated in the Hungarian regulation a relatively clear picture emerges: it appears as an alternative valuation basis of fair value, although only a negligible portion of the entities uses it. To some extent this is also reflected in the regulation: the system of rules pertaining to fair valuation is one of the few parts of the Accounting Act whose rules have not changed at all during the past 10 years almost, although the international regulation has made substantial progress.[225]

> It cannot be stated with absolute certainty that leaving the rules unchanged was a conscious decision of legislators, or can only be observed because the subjects of the regulation did not seek to influence the regulation, or perhaps because these two factors were jointly evident. In my view, regardless of the answer it can be said that due to the marginal role of fair valuation the issue was never in the forefront of interest. Yet this is an issue related more to the usefulness of financial statements and the regulation.

The inclusion of *value adjustment* in the examination casts additional contrast on the picture: based on the examination I do not consider necessary the separation of the two as value adjustment is one of the forms of manifestation of fair value accounting as well.

[225] The rules of consolidation can also be considered similarly stable legislation, where the problems are similar.

With respect to real estates in particular, value adjustment occurs more frequently to a significant extent than the fair valuation of financial instruments, albeit the usage ratio of value adjustment is also considered low. When comparing the frequency of use of fair valuation to the results of *Varga* (2009), also having in mind the partially different examination focus of the two research projects, no fundamental change can be detected as the trends observed at the time are also evident today for both major and minor entities.

Generally speaking, it can also be said that the role of fair value is more important for real estates. This inherently *determines the chief characteristics of the Hungarian application of fair value accounting* as in case of real estates the availability of quoted prices is limited, thus the lower level inputs are more dominant at a system level for fair value measurements.

The essentially *marginal role* of fair value accounting *can be attributed to several reasons*. Firstly, it is due to an external given characteristic: the Hungarian enterprise system, the ownership relationships, and the forms of financing all determine that the application is in the interest of a very narrow group of entities only. Secondly, the examination of the asset structure also highlighted another restrictive factor: the majority of the entities do not have any assets available for valuation, or at least any assets with a significant weight within the balance sheet.

Accordingly, it can be said on the Hungarian accounting system that it rests predominantly *on the basis of historical cost*. The shift toward fair value evident in the international regulation, which is neither a recent nor an unbroken trend, is not reflected in the Hungarian accounting. In harmony with the findings of Nobes (2011), this phenomenon is partly due to the continental accounting roots built on the principle of prudence and, in agreement with the conclusion of Bosnyák (2003), also due to the fact that as a result of the close intertwining of taxation and accounting the not realized income items accompanying the extension of fair valuation (e.g. investment properties) would require a number of legislative decisions necessitating the rethinking of taxation rules.

However, the *examination of the asset structure* partially goes beyond fair valuation: upon comparing the results of the examination involving different categories with the examination of Lakatos (2009) involving liabilities it emerges that there is substantial overlapping between companies lacking assets available for fair valuation and companies where no traditional creditor interest is evident.

Accordingly, with respect to the asset structure of Hungarian companies the conclusion can be made that small enterprises exhibit a rather extreme picture both on the asset side and on the liability an equity side: they practically have liabilities and cash items only, whose sources are represented by items related to the owners (equity and liabilities from owners).

9.2 Application of fair value accounting

Based on the results of the examination concerning the application it has been proven that a positive relationship exists between *the size of the enterprise and the use of fair valuation* and as such fair valuation is used more frequently by large enterprises. Conversely, the examinations failed to confirm an often stated stereotype: the motivational system behind the choice of fair valuation is more complex and *it cannot be simply restricted to compliance with the equity requirements as stated in the act on associations*. The equity situation of the majority of entities using fair valuation fulfils the requirements of the Act on Business Associations and "ownership expectation" as a motivation factor was also represented with a significant weight in the questionnaire survey. Evidently, the effect of the intention to settle the equity situation should not be underestimated but the identification of the motivational system requires examinations that far exceed the limits of this dissertation. In particular, the as yet unclear "ownership expectations" should be further specified and the other factors beyond this and/or inherent in this should be exposed.

The thesis concerning dual reporting highlighted the fact that even if fair values are available based on the financial statements made according to the IFRSs these do not appear in the Hungarian reports. In my view, this is (largely) due to the fact that in case of entities obliged to perform dual reporting the Hungarian report has a secondary role relative to the financial statements made according to the IFRSs.

The examinations related to the *measurement methodology of fair value* have revealed that measurements are in most cases mark-to-model ones while the results themselves can only be interpreted with limitations owing to several reasons. Firstly, it must be seen that, although my objective was solely to expose the trends, the sample based on an auditor survey cannot be considered representative, although the results obtained were confirmed by the in-depth interviews as well. The predominance of mark-to-model measurements also follows from the fact that among the assets subject to fair valuation real estates play a dominant role.

9.3 Recommendations for improving the Hungarian regulation

The first and foremost conclusion concerning the conceptual system results not from the theses but from the comparison of the Hungarian rules and the IFRS rules as presented in Chapter 6: since the introduction of fair value in 2003 the Hungarian regulation has not followed the development of the international regulation and it varies in its detail rules and, most importantly, in its conceptual system.

In my view the adoption of the clear *sales price approach* and the conceptual system of the *fair value hierarchy* is necessary even from a legal harmonization perspective. As explained earlier, the conceptual differences can be bridged and consequently the modification would not entail any major change in the rules, thus their introduction would not result in undue burdens while the consistency of the conceptual system would be strengthened. This is true both for the definition of fair value and the hierarchical approach.

An issue related to the adoption of the hierarch is the *regulation of the measurement of fair value*. I believe that a methodology framework similar to that of IFRS 13 and consolidating earlier practices into a uniform system would be necessary in the Hungarian regulation as well. However, one should be mindful of the fact that this would exceed the limits of the accounting act due to the minor role of fair value and the regulation traditions as well.

Upon examination of the unique Hungarian characteristics of the measurement of fair value I do not believe that the drafting of an independent Hungarian standard other than IFRS 13 would be necessary under this scope; instead, I think it would be more appropriate for the regulation to state that the rules of IFRS 13 and, more importantly, its principles serve as guidance for the Hungarian practice as well.

The verification of Hypothesis H1 also highlighted some of the more profound deficiencies of the conceptual system. Firstly, contrary to (or besides) the inflation accounting solution determined as a legislational objective during its introduction the concept, role, and application of *value adjustment* has come to be filled with the content appropriate for the revaluation of the non-current assets to a specially determined fair value in actual practice.

Although the market value used in value adjustments means fair value, this does not appear in an explicit manner in the regulation and, as a result, in the financial statements made on the basis of the regulation.

In my view the mixing of the concept of market value and fair value is rather inappropriate and fair value should be used instead of market value while the rules of value adjustment should be separated from the rules of reversal of impairment loss.

Yet it should also be noted that this partly a traditional question: *fair valuation and value adjustment are sharply distinct in the Hungarian accounting thinking.* Fair value being defined as a valuation basis for value adjustment also would not mean any change in the rules and the scope of fair valuation would not have to be extended, nor would the decision on value adjustment and fair valuation of financial instruments have to be linked.

Although I consider the *value adjustment of long-term equity investments* as alien to the system (given that they are financial instruments) and I believe that it would be more appropriate to link them with the fair valuation of financial instruments, one should take into account the fact that the Hungarian regulation primarily focuses on individual reports, thus the issue should be addressed. This essentially means that the regulation should enable the fair valuation of long-term equity investments potentially representing significant items in the individual report independent of all other financial instruments. However, here I would make two recommendations: firstly, fair value should be defined as the valuation basis instead of market value in this case as well; secondly, the relationship between fair valuation and value adjustment should be clarified: when using fair valuation the fair valuation of this asset group should be made mandatory also. This would not be an unfeasible expectation in the sense that in cases where fair value cannot be measured in a reliable manner the current rules of the legislation also prescribe the obligation to use the historical cost.[226]

A more complex issue in the regulation and indirectly related to value adjustment is the *treatment of the effects of post-reporting period events:* the term "*as known at the date of preparing the balance sheet"* and the concept of modifying and non-modifying events should be further specified, among others, for the rules of value adjustment as well. The clarification of these issues would address the theoretical differences between the Hungarian rules and the IFRS rules.

[226] For non-registered equity investments the international regulation also explicitly names valuation at historical cost in the absence of a reliable measurement of fair value (cf. Point (c) of Para 46 of IAS 39, Para B5.4.14 of IFRS 9).

In my view the *regulation of fair valuation as an optional method* is appropriate based on the theses related to the role of fair value also. Challenging in part the conclusion of Varga (2009), I do not believe that making fair valuation mandatory would be justified, even for large business entities, given the asset structure, size and stakeholders of the enterprises.

From a theoretical perspective, if the measurement of fair value is reliable and while fulfilling the requirement of fair representation the degree of relevance improves the use of fair value is justified. Nevertheless, one should not ignore the fact that the role of general purpose financial reporting is rather limited in Hungary owing to the lack of stakeholders for whom the financial statements represent the primary source of information.

The works of (Bosnyák, 2003) and (Lakatos, 2009) serving as the research background of the dissertation have also pointed out that for a substantial part of the entities operating in the Hungarian regulation environment there is no need for financial reporting other than registration for taxation purposes. This conclusion was confirmed by my own examination pertaining to asset structure. The main recipients of general purpose financial reporting are small investors in the stock exchange, shareholders or bondholders. However, the number of Hungarian companies listed on the stock exchange is rather low and as a rule they are obliged to prepare financial statements according to the IFRSs. Consequently, during the adoption of investment decisions the reports made in accordance with Hungarian accounting rules, along with the value relationships appearing in such reports, do not represent a significant weight even in this aspect.

The examination concerning indebtedness has highlighted the limits of manifestation of the *equity requirements according to the act on associations* and its binary nature. With respect to fair value the question arises: is it appropriate, admissible and to what extent is it compatible with creditor protection goals if entities fulfil the equity requirements by means of revaluing of the assets and the recognition of not realized equity gains.

I believe that there is more than one side to a coin: if fair value had indeed been established in a reliable manner and the value appearing in the report truly reflects the equilibrium price of the asset in question, then the justification of revaluation cannot be questioned concerning capital adequacy, either. Conversely, if the valuation is not reliable, then fraud has been committed and it cannot be accepted in financial reports based on any value theory whatsoever.

Nevertheless, it should be pointed out that by definition fair value is not equivalent to liquidation value and it does not in itself ensure the satisfaction of creditors. Concerning the regulation of equity requirements the question arises if regulation established as a function of share capital and differentiated per type of entity is necessary. *Based on the examinations performed I could not confirm the justification of such regulation.* The negative equity value, potentially not reaching the minimum value of share capital prescribed in the law[227], could practically fulfil the same function.

[227] It is another and mostly legal-political question if for reasons of creditor protection the minimum volume of share capital should be determined. In my view, its function is rather limited, something that is due not only to the low level of value limits (Ltd. HUF 500,000 – app. € 1,700, Zrt. HUF 5,000,000 – app. € 17,000, Nyrt. HUF 20,000,000 – app. € 70,000). I believe that the mere fact of a certain amount of share capital being available at the date of founding the enterprise does not in itself provide any guarantee at later stages.

References

AAA. (1971). Report of the Committee on Foundations of Accounting Measurement. *The Accounting Review, Vol. 46, Committee Reports: Supplement to Volume XLVI*, pp. 1+3-48.

AAA FASC. (2000). Response to the FASB preliminary views: Reporting financial instruments and certain unrelated assets and liabilities at fair value. *Accounting Horizons 14*, pp. 501-508.

Abdel-Magid, M. F. (1979). Toward a Better Understanding of the Role of Measurement in Accounting. *The Accounting Review, Vol: 54 No: 2* , pp. 346-357.

Aboody, D. E., Barth, M. E., & Kasznik, R. (1999). Revaluations of fixed assets and future firm performance: Evidence from the UK. *Journal of Accounting and Economics 26 (1999)*, pp. 149-178.

Aboody, D., & Lev, B. (1998). The value-relevance of intangibles: the case of software capitalization. *Journal of Accounting Research 36*, pp. 161–191.

Ahmed, A., & Takeda, C. (1995). Stock market valuation of gains and losses on commercial banks investment securities:an empirical analysis. *Journal of Accounting and Economics 20*, pp. 207–225.

Alexander, D. (2007). Recent history of fair value. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 71-90). London: Routledge/Taylor & Francis Group.

Alexander, S. S. (1962). Income measurement in a dynamic economy. In W. T. Baxter, & S. Davidson (szerk.), *Studies in Accounting Theory.* Homewood, Richard D. Irwin Inc.

Allen, F., & Carletti, E. (2008). Mark-to-market accounting and liquidity pricing. *Journal of Accounting and Economics 45*, pp. 358–378.

Amir, E. (1993). The market valuation of accounting information:the case of postretirement benefits other than pensions. *The Accounting Review 68*, pp. 703–724.

Amir, E. (1996). The effect of accounting aggregation on the value-relevance of financial disclosures: the case of SFAS No. 106. *The Accounting Review 71*, pp. 573–590.

Amir, E., Harris, T. S., & Venuti, E. K. (1993). A Comparison of the Value-Relevance of U.S. Versus Non-U.S. GAAP Accounting Measures Using Form 20-F Reconciliations. *Journal of Accounting Research, Vol. 31, Studies on International Accounting*, pp. 230-264.

Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research, 3*, pp. 159-178.

Baricz, R. (1994). *Mérlegtan.* Budapest: Aula.

Baricz, R. (2009). *A számvitel alapjai.* Budapest: Saldo.

Baricz, R., & Róth, J. (2003). *Könyvviteltan.* Budapest: Aula.

Barker, R. (2004). Reporting financial performance. *Accounting Horizons, 18 (2)*, pp. 157–172.

Barlev, B., & Haddad, J. R. (2003). Fair value accounting and the management of the firm. *Critical Perspectives on Accouting 14*, pp. 383-415.

Barlev, B., & Haddad, J. R. (2007). Harmonization, Comparability, and Fair Value Accounting. *Journal of Accounting, Auditing & Finance, 22 (3)*, pp. 493-509.

Barth, M. E. (1991). Relative measurement errors among alternative pension asset and liability measures. *The Accounting Review 66*, pp. 433–463.

Barth, M. E. (1994). Fair value accounting: Evidence from investment securities and the market valuation of banks. *The Accounting Review 69*, pp. 1-25.

Barth, M. E. (2000). Valuation-based accounting research: Implications for financial reporting and opportunities for future research. *Accounting and Finance, 40*, pp. 7–31.

Barth, M. E. (2006). Including Estimates of the Future in Today's Financial Statements. *Accounting Horizons, Vol. 20, No. 3*, pp. 271-285.

Barth, M. E. (2011). To Fair Value, or Not? *Presentation - AMIS Conference Bucharest June 2011*, http://cig.ase.ro/amis2011/fisiere/Barth%20AMIS%202011%20Plenary.pdf.

Barth, M. E., & Beaver, W. H. (1996). Value-Relevance of Banks' Fair Value Disclosures under SFAS No. 107. *The Accounting Review, Vol. 71, No. 4 (Oct., 1996)*, pp. 513-537.

Barth, M. E., & Clinch, G. (1998). Revalued Financial, Tangible, and Intangible Assets: Associations with Share Prices and Non-Market-Based Value Estimates. *Journal of Accounting Research, Vol. 36, Studies on Enhancing the Financial Reporting Model (1998)*, pp. 199-233.

Barth, M. E., & Landsman, W. R. (1995). Fundamental Issues Related to Using Fair Value Accounting for Financial Reporting. *Accounting Horisons Vol. 9. No. 4. December 1995*, pp. 97-107.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (1992). The market valuation implications of net periodic pension cost components. *Journal of Accounting and Economics 15*, pp. 27–62.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting: another view. *Journal of Accounting and Economics 31*, pp. 77-104.

Barth, M. E., Clement, M. B., Foster, G., & Kasznik, R. (1998). Brand values and capital market valuation. *Review of Accounting Studies 3*, pp. 41–68.

Barth, M. E., Landsman, W. R., & Wahlen, J. M. (1995). Fair value accounting: Effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of Banking & Finance 19*, pp. 577-605.

Bartov, E. (1997). Foreign currency exposure of multinational Þrms: Accounting measures and market valuation. *Contemporary Accounting Research 14*, pp. 623-652.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics 24 (1997)*, pp. 3-37.

Baxter, W. T. (2003). *The Case for Deprival Value.* Edinburgh: ICAS.

BCE Pénzügyi Számvitel Tanszék. (2008). Tanulmány a számviteli és adózási adminisztráció egyszerűsítéséről (Kézirat).

Beaver, W. H. (1998). *Financial Reporting:An Accounting Revolution.* Engelwood Cliffs: Prentice-Hall.

Beaver, W. H., & Demski, J. S. (1979). The Nature of Income Measurement. *The Accounting Review, Vol. 54, No. 1 (Jan., 1979)*, pp. 38-46.

Beaver, W. H., & Landsman, W. R. (1983). *Incremental information content of Statement No. 33 disclosures.* Stamford: FASB.

Beaver, W. H., & Venkatachalam, M. (2000). Differential pricing of discretionary, nondiscretionary and noise components of loan fair values. *Working Paper - Stanford University*, ssrn.com/abstract=146439 or doi:10.2139/ssrn.146439.

Bedford, N. M. (1968). The Foundations of Accounting Measurement. *Journal of Accounting Research, Vol. 6, No. 2 (Autumn, 1968)*, pp. 270-282.

Beke, J. (2009). A számvitel harmonizációjának elméleti és gyakorlati aspektusai. In J. Ulbert (Szerk.), *Az iskolateremtő : Tanulmánykötet Bélyácz Iván 60. születésnapja tiszteletére* (pp. 29-43). Pécs: Pécsi Tudományegyetem. Közgazdaságtudományi Kar.

Beke, J. (2010). A számvitel globalizálódása és harmonizálódása a regionális (EU) és a nemzetközi vizsgálatok tükrében. *Külgazdaság 54. évf. 5-6. sz.*, pp. 81-101.

Bélyácz, I. (2002). Adalékok a gazdaságelméleti amortizáció tartalmának tisztázásához. *Közgazdasági Szemle, XLIX. évf., 2002. szeptember*, pp. 741-759.

Benston, G. J. (2008). The shortcomings of fair-value accounting described in SFAS 157. *Journal of Accounting and Public Policy 27*, pp. 101-114.

Berle, A. A., & Fisher, F. S. (1932). Elements of the Law of Business Accounting. *Columbia Law Review, Vol. XXXII. No. 4*, pp. 573-622.

Bernard, V. L. (1993). Discussion of An Investigation of Revaluations of Tangible Long-Lived Assets. *Journal of Accounting Research, Vol. 31, Studies on International Accounting (1993)*, pp. 39-45.

Bernard, V. L., Merton, R. C., & Palepu, K. G. (1995). Mark-to-Market Accounting for Banks and Thrifts: Lessons from the Danish Experience. *Journal of Accounting Research, Vol. 33, No. 1 (Spring, 1995)*, pp. 1-32.

Bertomeu, J., Magee, R., & Schneider, G. (2011). On the Special Impossibility of Positive Accounting Standards. *Conference paper - AAA Annual Meeting*, http://aaahq.org/AM2011/display.cfm?Filename=SubID_1787.pdf&MIMEType=application%2Fpdf.

Biddle, G. C., & Choi, J. H. (2006). Is Comprehensive Income Useful? *Journal of Contemporary Accounting & Economics, Volume 2, Issue 1, June 2006*, pp. 1-32.

Bignon, V., Biondi, Y., & Ragot, X. (2004). An Economic Analysis of Fair Value: The Evolution of Accounting Principles in European Legislation. *Cournot Centre for Economic Studies (formerly Saint-Gobain Centre), Prisme No. 4*.

Biondi, Y. (2011). The Pure Logic of Accounting: A Critique of the Fair Value Revolution. *Accounting, Economics, and Law, Volume 1, Issue 1*, Article 7.

Black, E. L., Sellers, K. F., & Manly, T. S. (1998). Earnings management using asset sales: An international study of countries allowing noncurrent asset revaluation. *Journal of Business Finance & Accounting, 25(9) & (10), November/December 1*, pp. 1287-1317.

Bonanci, C. G., Matis, M., & Strouhal, J. (2009). Crisis of Fair Value Measurement? Some Defense of the Best of All Bad Measurement Bases. *WSEAS Transactions on Business and Economics, Volume: 7, Issue: 2*, pp. 114–125.

Bordáné, R. M. (1990). *A gazdasági társaságok pénzügyi megítélése.* Budapest: KJK.

Boros, J., Bosnyák, J., & Kováts, E. (szerk.). (2006). *Az IFRS-ek rendszere.* Budapest: MKVK OK.

Bosnyák, J. (2003). Számviteli értékelési eljárások hatása a vállalkozások vagyoni, jövedelmi és pénzügyi helyzetére. *PhD értekezés, Budapesti Közgazdaságtudományi és Államigazgatási Egyetem*.

Bosnyák, J. (2004). Valós értékelés a magyar és a nemzetközi szabályozásban. *Számvitel, adó, könyvvizsgálat 46. évf. 10. sz.*, pp. 435-440.

Bosnyák, J. (2006). IASB Keretelvek a pénzügyi kimutatások elkészítésére és bemutatására. *Külföldi számviteli rendszerek – egyetemi előadás, Budapesti Corvinus Egyetem, 2006. szeptember 18.*

Bosnyák, J., Gyenge, M., Pavlik, L., & Székács, P. (2010). *Vezetői számvitel.* Budapest: Saldo.

Boumans, M. (2007). *Measurement in economics: a handbook.* London: Emerald Group Publishing.

Boussard, D. (1984). The Impact of the Definition of Inflation on the Effectiveness of Inflation Accounting Adjustments. *ABACUS, Voi. 20, No. 2*, pp. 157-169.

Break, G. F. (1954). Capital Maintenance and the Concept of Income. *Journal of Political Economy, Vol. 62, No. 1*, pp. 48-62.

Brealey, R. A., & Myers, S. C. (1999). *Modern vállalati pénzügyek.* Budapest: Panem.

Brief, R. P. (1982). Hicks on accounting. *The Accounting Historians Journal 9 (1)*, 101-111.

Bródy, A. (1990). Mennyi az ennyi? - Bevezetés a gazdasági mérések elméletébe. *Közgazdasági Szemle, XXXVII. évf., 5. sz.*, pp. 521-537.

Bromwich, M. (2007). Fair values: imaginary prices and mystical markets. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 46-67). London: Routledge/Taylor & Francis Group.

Bromwich, M., Macve, R., & Sunder, S. (2010). Hicksian Income in the Conceptual Framework. *Abacus, Vol. 46, No. 3*, pp. 349-376.

Brown, P. D., & Finn, F. J. (1980). Asset revaluations and stock prices: Alternative interpretations of a study by Sharpe and Walker. In R. Ball (Szerk.), *Share Markets and Portfolio Theory* (pp. 349-354). St. Lucia: University of Queensland Press.

Brown, P. D., Izan, H. Y., & Loh, A. L. (1992). Fixed Asset Revaluations and Managerial Incentives. *ABACUS, Vol. 28, No. I*, pp. 36-57.

Cairncross, A. (1960). *Introduction to Economics.* London: Butterworth.

Cairns, D. (2007). The use of fair value in IFRS. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 9-23). London: Routledge/Tylor & Francis Group.

Cairns, D., Massoudi, D., Taplin, R., & Tarca, A. (2011). IFRS fair value measurement and accounting policy choice in the United Kingdom and Australia. *The British Accounting Review 43*, pp. 1–21.

Campbell, N. R. (1952). *What is science?* London: Dover Publications Inc.

Canning, J. B. (1929). *TIhe Economics of Accountancy.* New York: Ronald Press.

Chambers, D., Jennings, R., Thompson, & B., R. (1999). Evidence on the usefulness of capitalizing and amortizing research and development costs. *Review of Accounting Studies 4*, pp. 169–195.

Chambers, R. J. (1976). The Possibility of a Normative Accounting Standard. *The Accounting Review, Vol. 51, No. 3*, pp. 646-652.

Chambers, R. J. (1987). Accounting education for the twenty-first century. *ABACUS, Vol. 23, No. 2*, pp. 97-106.

Chambers, R. J. (1991). Metrical and Empirical Laws in Accounting. *Accounting Horizons, Vol. 5. No. 4.*, pp. 1-15.

Chambers, R. J. (1994). Historical Cost - Tale of a False Creed. *Accounting Horizons, Vol. 8 No. 1, March 1994*, pp. 76-89.

Chambers, R. J. (1998). Wanted: Foundations of Accounting Measurement. *Abacus, Vol. 34, No. 1., 1998*, pp. 36-47.

Choi, F., & Levich, R. M. (1997). International Accounting Diversity and Capital Market Decisions. In F. Choi (Szerk.), *International Accounting and Finance Handbook* (pp. 6.1–6.26.). New York: John Wiley & Sons.

Christensen, H. B., & Nikolaev, V. (2010). Does fair value accounting for non-financial assets pass the market test? *The University of Chicago Booth School of Business Working Paper No. 09-12*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1269515.

Christensen, J., & Demski, J. S. (2002). *Accounting Theory: an information content perspective.* Boston: McGraw-Hill.

Cornell, B. (1993). *Corporate Valuation.* New York: Business One Irwin.

Cornell, B., & Landsman, W. R. (2003). Accounting Valuation: Is Earnings Quality an Issue? *Financial Analysts Journal, Vol. 59, No. 6*, pp. 20-28.

Cornett, M. M., Rezaee, Z., & Tehranian, H. (1996). An investigation of capital market reactions to pronouncements on fair value accounting. *Journal of Accounting and Economics 22*, pp. 119-154.

Cotter, J. (1999). Asset Revaluations and Debt Contracting. *Abacus Volume 35, Issue 3*, pp. 268-285.

Cotter, J., & Richardson, S. (2002). Reliability of Asset Revaluations: The Impact of Appraiser Independence. *Review of Accounting Studies, 7 (December 2002)*, pp. 435–457.

Cotter, J., & Zimmer, I. (1995). Asset Revaluations and Assessment of Borrowing Capacity. *ABACUS, Vol. 31, No. 2*, pp. 136-151.

Csubák, T. K. (2003). Kis- és középvállalkozások finanszírozása Magyarországon. *PhD értékezés, Budapesti Közgazdaságtudományi és Államigazgatási Egyetem*.

Danbolt, J., & Rees, W. (2008). An Experiment in Fair Value Accounting: UK Investment Vehicles. *European Accounting Review 17 (2)*, pp. 271-303.

Deák, I. (2006). A megbízható és valós összkép érvényesülési környezete a hazai és nemzetközi számviteli szabályozásban. *PhD értekezés, Szegei Tudományegyetem*.

Decoene, S., Onghena, P., & Janssen, R. (1995). Representationalism under Attack. *Journal of Mathematical Psychology 39*, pp. 234-242.

Demaria, S., & Dufour, D. (2007). First time adoption of IFRS, Fair value option, Conservatism: Evidences from French listed companies. *Working paper - EAA Annual Congress, Lisbon*, http://hal.archives-ouvertes.fr/docs/00/26/61/89/PDF/First_adoption_and_fair_value_Demaria_Dufour.pdf.

Demski, J. S. (1973). The General Impossibility of Normative Accounting Standards. *The Accounting Review, Vol. 48, No. 4*, pp. 718-723.

Demski, J. S., Felligham, J. C., Ijiri, Y., & Sunder, S. (2002). Some Thoughts on the Intellectual Foundations of Accounting. *Accounting Horizons, Vol. 16 No. 2*, pp. 157-168.

Dhaliwal, D., Subramanyam, K. R., & Trezeva, R. (1999). Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics 26 (1999)*, pp. 43-67.

Dichev, I. D. (2008). On the Balance Sheet-Based Model of Financial Reporting. *Accounting Horizons Vol. 22, No. 4*, pp. 453-470.

Dietrich, D., Harris, M., & Muller, K. A. (2001). The reliability of investment property fair estimates. *Journal of Accounting and Economics 30 (2001)*, pp. 125-158.

Diewert, W. E. (1996). The Measurement of Business Capital, Income and Performance. *Working Paper - University of British Columbia*, http://www.oecd.org/dataoecd/9/28/2666968.pdf.

Dye, R. A., & Sridhar, S. S. (2004). Reliability-Relevance Trade-Offs and the Efficiency of Aggregation. *Journal of Accounting Research, Vol. 42, No. 1 (Mar., 2004)*, pp. 51-88.

Dye, R. A., & Sunder, S. (2001). Why Not Allow FASB and IASB Standards to Compete in the U.S.? *Accounting Horizons, 15 (3)*, pp. 257–271.

Easton, P. D. (1998). Discussion of Revalued Financial, Tangible, and Intangible Assets: Association with Share Prices and Non-Market-Based Value Estimates. *Journal of Accounting Research, Vol. 36, Studies on Enhancing the Financial Reporting Model (1998)*, pp. 235-247.

Easton, P. D., Eddey, P. H., & Harris, T. S. (1993). An Investigation of Revaluations of Tangible Long-Lived Assets. *Journal of Accounting Research, Vol. 31, Studies on International Accounting (1993)*, pp. 1-38.

Eccher, E. A., Ramesh, K., & Thiagarajan, S. R. (1996). Fair value disclosures by bank holding companies. *Journal of Accounting and Economics 22*, pp. 79-117.

Emanuel, D. M. (1989). Asset Revaluations and Share Price Revisions. *Journal of Business Finance & Accounting, 16(2) Spring 1989*, pp. 213-227.

European Commission. (2011). SBA Fact Sheet 2010/11 - Hungary. http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/countries-sheets/2010-2011/hungary_en.pdf.

Feltham, G. A., & Ohlson, J. A. (1995). Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research 12*, pp. 689-731.

Flanders, D. P. (1961). Accountancy, Systematized Learning and Economics. *The Accounting Review, Vol. 36 No. 4*, pp. 564-576.

Francis, J., & Schipper, K. (1999). Have Financial Statements Lost Their Relevance? *Journal of Accounting Research, Vol. 37, No. 2 (Autumn, 1999)*, pp. 319-352.

Füstös, L., Kovács, E., Meszéna, G., & Simonné, M. N. (2004). *Alakfelismereés.* Budapest: Új Mandátum Könyvikadó.

Garajszki, Z. (Szerk.). (2004). *A számviteli törvény magyarázatata 2004-2005.* Budapest: HVG ORAC.

Gassen, J., & Schwedler, K. (2010). The Decision Usefulness of Financial Accounting Measurement Concepts: Evidence from an Online Survey of Professional Investors and Their Advisors. *European Accounting Review, 19 (3)*, pp. 495-509.

Georgiou, O., & Jack, L. (2008). Gaining legitimacy: where has Fair Value Accounting come from? *Conference Papar - Association of Business History Conference, Cardiff, July 4-5*, http://www.cardiff.ac.uk/carbs/conferences/abfh2008/omiros.pdf.

Georgiou, O., & Jack, L. (2011). In Pursuit of Legitimacy: A History Behind Fair Value Accounting. *The British Accounting Review*, (megjelenés alatt).

Glover, J. C., Ijiri, Y., Levine, C. B., & Liang, P. J. (2005). Seaprating facts from forecasts in financial statements. *Accounting Horizons, Vol. 19 No. 4.*, pp. 267-282.

Gordon, M. J. (1962). *The Investment, Financing, and Valuation of the Corporation.* Homewood: Irwin.

Gouws, D. G., & Van der Poll, H. M. (2004). The integrity of information created through book entries. *Meditari Accountancy Research Vol. 12 No. 1*, pp. 101–117.

Hague, I. P. (2007). The case for fair value. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 32-45). London: Routledge/Taylor & Francis Group.

Healy, P. M., & Palepu, K. G. (1993). The Effect of Firms' Financial Disclosure Strategies on Stock Prices. *Accounting Horizons, Vol. 7 No. 1, March 1993*, pp. 1-11.

Henderson, S., & Goodwin, J. (1992). The Case Against Asset Revaluations. *ABACUS, Vol. 28, No. I*, pp. 75-87.

Herrmann, D., Saudagaran, S., & Thomas, W. (2006). The quality of fair value measures for property, plant, and equipment. *Accounting Forum 30 (2006)*, pp. 43-59.

Hicks, J. R. (1978). *Érték és tőke.* Budapest: Közgazdasági és Jogi Könyvkiadó.

Higson, C. (1998). Goodwill. *British Accounting Review*, pp. 141–158.

Hirst, D. E., Hopkins, P. E., & Wahlen, J. M. (2004). Fair Values, Income Measurement, and Bank Analysts' Risk and Valuation Judgments. *The Accounting Review, Vol. 79, No. 2*, pp. 453-472.

Hitz, J. M. (2007). The Decision Usefulness of Fair Value Accounting - A Theoretical Perspective. *European Accounting Review, Vol. 16, No. 2*, pp. 323–362.

Holthausen, R. W., & Watts, R. L. (2001). The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting. *Journal of Accounting and Economics 31*, pp. 3-75.

Homburger, R. H. (1961). Measurement in Accounting. *The Accounting Review, Vol. 36, No. 1 (Jan., 1961)*, pp. 94-99.

Horton, J., Macve, R., & Serafeim, G. (2011). 'Deprival value' vs. 'fair value' measurement for contracting liabilities in resolving the 'revenue recognition' conundrum: towards a general model. *London School of Economics - Working paper*, http://www2.lse.ac.uk/accounting/facultyAndStaff/profiles/RMV%20June%202011%20Deprival%20Value.pdf.

Hunt, D., & Hilton, D. (1997). *Property Companies.* London: ICAEW.

Hunyadi, L., & Vita, L. (2002). *Statisztika közgazdászoknak.* Budapest: KSH.

IASB. (2007). Information for Observers, Board Paper 2B, July 2007.

IASB-FASB. (2008). Conceptual Framwork Project, Phase C: Measurement, Milestone I Summary Report - Inventory and Definitions of Possible Measurement Bases.

IASB-FASB. (2010). Conceptual Framework for Financial Reporting: The Reporting Entity - Proposed Statement of Financial Accounting Concepts.

ICAEW. (2006). Measurement in financial reporting. *Institute of Chartered Accountants in England & Wales: Information for Better Markets*, http://www.iasplus.com/uk/0610icaewmeasurement.pdf.

Ijiri, Y. (1965). Axioms and structures of conventional accounting measurement. *The Accounting Review, Vol. 40, No. 1*, pp. 36-53.

Ijiri, Y. (1967). *The Foundations of Accounting Measurement.* London: Prentice-Hall.

Ijiri, Y. (1975). *Theory of Accounting Measurement - Studies of Accouting Research.* AAA.

Ismail, W. A., Kamarudin, K. A., & Mohamed, A. (2003). Accounting for Revaluation: An Association of its Practices with Stock Wealth. http://www.hicbusiness.org/biz2003proceedings/Wan%20Adibah%20Wan%20Ismail%202.pdf.

Jaggi, B., & Tsui, J. (2001). Management motivation and market assessment: Revaluations of fixed assets. *Journal Of International Financial Management & Accounting Volume: 12 Issue: 2*, pp. 160-187.

Jameson, J. (2005a). FASB and the IASB versus J.R. Hicks. *Research in Accounting Regulation, Volume 18*, pp. 331-334.

Jameson, J. (2005b). How FASB and the IASB Should Apply Hicksian Theory to Calculate Income. *Research in Accounting Regulation, Volume 18*, pp. 335-349.

Jennings, R., Robinson, J., Thompson, R., & Duvall, L. (1993). The relation between accounting goodwill numbers and equity values. *Working Paper, University of Texas at Austin*.

Joyce, E. J., Libby, R., & Sunder, S. (1982). Using the FASB's Qualitative Characteristics in Accounting Policy Choices. *Journal of Accounting Research, Vol. 20, No. 2, Part II*, pp. 654-675.

Kallapur, S., & Kwan, S. (2004). The value relevance of brand assets recognized by U.K. firms. *The Accounting Review, Vol. 79, No. 1*, pp. 151-172.

Ketskeméty, L., & Izsó, L. (2005). *Bevezetés az SPSS programrendszerbe - Módszertani útmutató és feladatgyűjtemény statisztikai elemzésekhez.* Budapest: ELTE Eötvös Kiadó.

Keynes, J. M. (1965). *A foglalkoztatás, a kamat és a pénz általános elmélete.* Budapest: Közgazdasági és Jogi Könyvkiadó.

Khurana, I. K., & Kim, M. S. (2003). Relative value relevance of historical cost vs. fair value: Evidence from bank holding companies. *Journal of Accounting and Public Policy 22*, pp. 19-42.

Kircher, P. (1959). Measurements and Managerial Decisions. In C. W. Churchman, & P. Ratoosh (szerk.), *Measurement Definitions and Theories* (pp. 64-82.). New York: Wiley.

Kisfaludi, A. (2007). *Társasági jog.* Budapest: CompLex.

Kolev, K. (2008). Do Investors Perceive Marking-to-Model as Marking-to-Myth? Early Evidence from FAS 157 Disclosure. *Working paper - New York University*, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1336368.

Kothari, S. P. (2001). Capital markets research in accounting. *Journal of Accounting and Economics 31*, pp. 105-231.

Kothari, S. P., Shu, S., & Wysocki, P. (2009). Do managers without bad news? *Journal of Accounting Research 47*, pp. 241-276.

Kousenidis, D. V., Ladas, A. C., & Negakis, C. I. (2009). Value relevance of conservative and non-conservative accounting information. *The International Journal of Accounting 44*, pp. 219–238.

Kovács, D. M., & Mohl, G. (2011). A kkv-knak szóló IFRS-ek Magyarországon. *Számvitel, adó, könyvvizsgálat, 53. évf. 6. szám*, pp. 280-284.

Kovács, D. M., & Mohl, G. (2012). A számvitel és az adózás lehetséges összefüggései. *Számvitel , Adó, Könyvvizsgálat 4.*, p. 181.

Kovács, E. (2006). *Pénzügyi adatok statisztikai elemzése.* Budapest: Tanszék Kft.

Königsgruber, R. (2010). A political economy of accounting standard setting . *Journal Of Management And Governance Volume: 14 Issue: 4* , pp. 277-295.

Lakatos, L. P. (2009). A számvitel szabályozása, és a pénzügyi kimutatások hasznosságának megítélése. *PhD értekezés, Budapesti Corvinus Egyetem*.

Landsman, W. R. (1986). An empirical investigation of pension fund property rights. *The Accounting Review 61*, pp. 662–691.

Landsman, W. R. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and Business Research Special Issue: International Accounting Policy Forum*, pp. 19-30.

Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society 34*, pp. 826–834.

Lázár, L. (2002). Értékek és mértékek - A vállalati erőforrás-felhasználás leképzése és elemzése hazai üzleti szervezetekben. *Phd értekezés, Budapesti Közgazdaságtudományi és Államigazgatási Egyetem*.

Lennard, A. (2002). *Liabilities and how to account for them: an exploratory essay.* London: ASB.

Lev, B., & Zarowin, P. (1999). The Boundaries of Financial Reporting and How to Extend Them. *Journal of Accounting Research, Vol. 37*, pp. 353-385.

Liang, P. J. (2001). Recognition: an information content perspective. *Accounting Horizons, 15 (3)*, pp. 223-242.

Lin, Y. C., & Peasnell, K. V. (2000). Fixed Asset Revaluation and Equity Depletion in the UK. *Journal of Business Finance & Accounling. 27 (3) & (4). April/May 2000*, pp. 359-394.

Littleton, A. C. (1929). Value and Price in Accounting. *The Accounting Review, Vol. 4 No. 3*, pp. 147-154.

Lo, K., & Lys, T. (2000). The Ohlson Model: Contribution to Valuation Theory, Limitations, and Empirical Applications. *Journal of Accounting, Auditing & Finance 15 (3)* , pp. 337-367.

Lukács, J. (2002). Hogyan lehetne megbízható és valós az összkép, avagy Milyen esetben indokolt a 4. § (4) bekezdésének alkalmazása? *Számvitel – Adó – Könyvvizsgálat, 11. szám*, pp. 490-492.

Lukács, J. (2009). Kiemelt könyvvizsgálati feladatok gazdasági krízis idején . *Számvitel, adó, könyvvizsgálat, 51. évf. 3. sz.*, pp. 100-104.

Lukács, J., & al. (2002). *Okleveles könyvvizsgálók továbbképzésének oktatási anyaga.* Budapest: MKVK.

Madarasiné, Sz. A. (2009). A pénzügyi kimutatások valóságtartalma a környezeti információk tükrében. *PhD értékezés, Budapesti Műszaki és Gazdaságtudományi Egyetem*.

Magnan, M. (2009). To Fair Value or Not to Fair Value: Messenger or Contributor? *Accounting Perspectives Volume 8, Issue 3*, pp. 189-213.

Malasics, A. (2003). *A számvitelelmélet és módszertan alaptézisei.* Budapest: Nemzeti Tankönyvikiadó.

Mattessich, R. (1956). The Constellation of Accountancy and Economics. *The Accounting Review, Vol. 31, No. 4*, pp. 551-564.

Mattessich, R. (1957). Towards a General and Axiomatic Foundation of Accounting with an Introduction to the Matrix Formulation of Accounitng Systems. *Accounting Research, Vol. 8. No. 4.*, pp. 328-355.

Mattessich, R. (1964). *Accounting and Analytical Methods.* Homewood: Irwin.

Meek, G. K., & Thomas, W. B. (2004). A Review of Markets-Based International Accounting Research. *Journal of International Accounting Research 3 (1), 21 (2004)*, pp. 23-45.

Missonier-Piera, F. (2007). Motives for Fixed Asset Revaluation: An Empirical Analysis with Swiss Data. *The International Journal of Accounting, Vol. 42 (2)*, pp. 186-205.

Mock, T. J. (1976). *Measurement and Accounting Information Criteria.* Sarasota: AAA.

Muller, K. A. (1999). An examination of the voluntary recognition of acquired brand names in the United Kingdom. *Journal Of Accounting And Economics Volume: 26 Issue: 1*, pp. 179-191.

Muller, K. A., Riedl, E. J., & Sellhorn, T. (2011). Mandatory Fair Value Accounting and Information Asymmetry: Evidence from the European Real Estate Industry. *Management Science, Volume 57 Issue 6, June 2011*, pp. 1138-1153.

Musvoto, S. W. (2011a). Implications Of The Homomorphism Definition Of Measurement On Accounting Measurement Theory. *The Clute Institute International Business & Economics Research Journal Vol 10, No 5*, pp. 215-223.

Musvoto, S. W. (2011b). Introducing The Representational Measurement Project In Accounting. *Journal Of Applied Business Research 27 (5)*, pp. 97-112.

Nelson, K. K. (1996). Fair Value Accounting for Commercial Banks: An Empirical Analysis of SFAS No. 107. *The Accounting Review, Vol. 71, No. 2*, pp. 161-182.

Nichols, L., & Buerger, K. (2002). An investigation of the effect of valuation alternatives for fixed assets on the decisions of statement users in the United States and Germany. *Journal of International Accounting, Auditing & Taxation 11*, pp. 155–163.

Nobes, C. (2003). *Liabilities and their Measurement in UK and International Accounting Standards.* London: ACCA.

Nobes, C. (2006). The survival of international differences under IFRS: towards a research agenda. *Accounting and Business Research, Vol. 36. No. 3.*, pp. 233-245.

Nobes, C. (2011). IFRS practices and the persistence of accounting system classification. *ABACUS Vol. 47, Issue 3*, pp. 267-283 .

Nobes, C., & Parker, R. (2010). *Comparative International Accounting.* Harlow: Prentice Hall.

O'Hanlon, J. F., & Pope, P. F. (1999). The value-relevance of UK dirty surplus accounting flows. *The British Accounting Review, Volume 31, Issue 4, December 1999*, pp. 459-482.

Ohlson, J. A. (1995). Earnings, Book Values, and Dividends in Equity Valuation. *Contemporary Accounting Research 11*, pp. 661-687.

Ohlson, J. A. (1999). On transitory earnings. *Review of Accounting Studies 4*, pp. 145–162.

Ohlson, J. A. (2001). Earnings, Book Values, and Dividends in Equity Valuation: An Empirical Perspective. *Contemporary Accounting Research 18 (1)*, pp. 107-120.

Ohlson, J. A. (2005). On Accounting-Based Valuation Formulae. *Review of Accounting Studies 10*, pp. 323–347.

Orbach, K. N. (1978). Accounting as a Mathematical Measurement Theoretic Discipline. *PhD Dissertation, Texas A&M University*.

Paik, G. (2009). The Value Relevance of Fixed Asset Revaluation Reserves in International Accounting. *International Management Review Vol. 5 No. 2* , pp. 74-81.

Parker, J. E. (1975). Testing Comparability and Objectivity of Exit Value Accounting. *The Accounting Review, Vol. 50, No. 3*, pp. 512-524.

Paton, W. A., & Littleton, A. C. (1940). *An Introduction to Corporate Accounting Standards.* Sarasota: American Accounting Association.

Peasnell, K. V. (1982). Some formal connections between economic value and yields and accounting numbers. *Journal of Business Finance and Accounting 9*, pp. 361-381.

Peasnell, K. V. (2005). Institution-specific Value. *BIS Working Papers No 210*, http://www.bis.org/events/armpr05/peasnell.pdf.

Peloubet, M. E. (1935). Is Value an Accounitng Concept? *Jornal of Accountancy, Vol LIX. No. 3.*, pp. 205-223.

Penman, S. H. (2007). Financial reporting quality: is fair value a plus or a minus? *Accounting and Business Research Special Issue: International Accounting Policy Forum*, pp. 33-44.

Perry, J., & Nölke, A. (2006). The Political Economy of International Accounting Standards. *Review of International Political Economy, Vol. 13, No. 4*, pp. 559-586.

Platin, G., Sapra, H., & Shin, H. S. (2008). Fair Value Accounting and Financial Stability. *Chicago GSB Research Paper No. 08-15*, http://ssrn.com/abstract=1275395.

Power, M. (2010). Fair value accounting, financial economics and the transformation of reliability. *Accounting and Business Research, Vol. 40. No. 3 2010 International Accounting Policy Forum*, pp. 197-210.

Radebaugh, L., Gray, h., & Sidney, J. (1997). *International Accounting and Multinational Enterprises.* Canada: John Wiley and Sons.

Revsine, L. (1981). A Capital Maintenance Approach to Income Measurement. *The Accounting Review, Vol. 56, No. 2*, pp. 383-389.

Richard, J. (2005). The concept of fair value in French and German accounting regulations from 1673 to 1914 and its consequences for the interpretation of the stages of development of capitalist accounting. *Critical Perspectives on Accounting 16*, pp. 825-850.

Róth, J., Adorján, Cs., Lukács, J., & Veit, J. (2008). *Pénzügyi számviteli.* Budapest: MKVK OK.

Róth, J., Adorján, Cs., Lukács, J., & Veit, J. (2010). *Számvitel speciális kérdései.* Budapest: MKVK OK.

Ruback, R. (2000). Capital Cash Flows: A Simple Approach to Valuing Risky Cash Flows. *Working Paper - Harward Business School*, http://www.people.hbs.edu/rruback/CCF2.pdf.

Ryan, S. G. (2008). Accounting in and for the Subprime Crisis. *The Accounting Review, Vol. 83, No. 6*, pp. 1605-1638.

Schuetze, W. P. (2001). What Are Assets and Liabilities? Where Is True North? *ABACUS, Vol. 37, No. 1*, pp. 1-25.

Sharpe, I. G., & Walker, R. G. (1975). Asset Revaluations and Stock Market Prices. *Journal of Accounting Research, Vol. 13, No. 2 (Autumn, 1975)*, pp. 293-310.

Shortridge, R. T., & Smith, P. A. (2009). Understanding the changes in accounting thought. *Research in Accounting Regulation 21*, pp. 11–18.

Shwayder, K. (1969). The Capital Maintenance Rule and the Net Asset Valuation Rule. *The Accounting Review, Vol. 44, No. 2* , pp. 304-316.

Smith, P. A., & Reither, C. L. (1996). Comprehensive Income and the Effect of Reporting It. *Financial Analysts Journal, Vol. 52, No. 6*, pp. 14-19.

Somogyiné, K. E. (2008). A pénzügyi beszámolás jövője az IFRS-ek tükrében - A kockázatok megjelenítése a számvitelben. *PhD értekezés, Pannon Egyetem*.

Song, C. J., Thomas, W. B., & Yi, H. (2010). Value Relevance of FAS No. 157 Fair Value Hierarchy Information. *The Accounting Review, Vol. 85, No. 4*, pp. 1375-1410.

Staubus, G. J. (1985). An Induced Theory of Accounting Measurement. *The Accounting Review, Vol. 60, No. 1*, pp. 53-75.

Stevens, S. S. (1946). On the Theory of Scales of Measurement. *Science, New Series, Vol. 103, No. 2684*, pp. 677-680.

Sunder, S. (1988). Political economy of accounting standards. *Journal of Accounting Literature 7*, pp. 31-41.

Sunder, S. (2008). Econometrics of Fair Values. *Accouting Horisons, Vol. 22, No. 1*, pp. 111-125.

Székelyi, M., & Barna, I. (2002). *Túlélőkészlet az SPSS-hez - Többváltozós elemzési technikákról társadalomkutatók számára.* Budapest: Typotex Kiadó.

Tippet, M. (1978). The Axioms of Accounting Measurement. *Accounting and Business Research, Autumn 1978*, pp. 266-278.

Tweedie, D. P., & Whittington, G. (1984). *The debate on inflation accounting.* Cambridge: Cambridge University Press.

van Cauwenberge, P., & de Beelde, I. (2010). A Critical Note on Empirical Comprehensive Income. *BFuP 62 (1)*, pp. 82-101.

van Zijt, T., & Whittington, G. (2006). Deprival Value and Fair Value: A Reinterpretation an Reconciliation. *University of Wellington - Working Paper*, http://researcharchive.vuw.ac.nz/handle/10063/201.

Varga, I. (2009). A valódiság elvének érvényesülése a magyar számviteli rendszerben. *PhD értekezés, Nyugat-magyarországi Egyetem*.

Vehmanen, P. (2007). Measurement in accounting and fair value. In P. Walton (Szerk.), *The Routledge Companinon to Fair Value and Financial Reporting* (pp. 152-180). London: Routledge/Taylor & Francis Group.

Venkatachalam, M. (1996). Value-relevance of banks' derivatives disclosures. *Journal of Accounting and Economics 22*, pp. 327-355.

Vickrey, D. W. (1970). Is Accounting a Measurement Discipline? *Accounting Review, 45 (4)*, pp. 731-742.

Walker, R. G., & Jones, S. (2003). Measurement: A way forward. *ABACUS, Vol. 39, No. 3*, pp. 356-374.

Walton, P. (2007a). CCA - an unsuccessful attempt to change the measurement basis. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 173-180). London: Routledge/Taylor & Francis Group.

Walton, P. (2007b). The nature of fair value. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 3-8). London: Routledge/Taylor & Francis Group.

Wang, Y., Buijink, W. F., & Eken, R. C. (2006). The Value Relevance of Dirty Surplus Accounting Flows in the Netherlands. *The International Journal of Accounting. Volume 41, Issue 4, December 2006*, pp. 387-405 .

Watts, R. L. (1977). Corporate financial statements, a product of the market and political processes. *Australian Journal of Management, 2* , pp. 53-75.

Watts, R. L. (2003a). Conservatism in Accounting - Part I: Explanations and Implications. *Accounting Horizons, 17 (3)*, pp. 207-222.

Watts, R. L. (2003b). Conservatism in Accounting - Part II: Evidence and Research Opportunities. *Simon Business School Working Paper No. FR 03-25.*, http://ssrn.com/abstract=438662 or doi:10.2139/ssrn.438662.

Watts, R. L. (2006). What Has the Invisible Hand Achieved? *Working Paper, Massachusetts Institute of Technology*, http://management.bu.edu/academics/departments/documents/Paper-RossWatts-What-has-the-invisible-hand-achieved.pdf.

Watts, R. L., & Zimmerman, J. L. (1978). Towards a Positive Theory of the Determination of Accounting Standards. *The Accounting Review, Vol. 53, No. 1*, pp. 112-134.

Watts, R. L., & Zimmerman, J. L. (1979). The Demand for and Supply of Accounting Theories: The Market for Excuses. *The Accounting Review, Vol. 54, No. 2 (Apr., 1979)*, pp. 273-305.

Watts, R. L., & Zimmerman, J. L. (1990). Positive Accounting Theory: A Ten Year Perspective. *The Accounting Review, Vol. 65, No. 1*, pp. 131-156.

Wheeler, J. T. (1955). Economics and Accounting. In Becker, *Handbook of Modern Accounting Theory* (pp. 43-76). New York: Prentice Hall.

White, G. I., Sondhi, A. C., & Fried, D. (1994). *Analysis and Use of Financial Statements.* New York: John Wiley&Sons.

Whittington, G. (2007). Alternatives to fair value. In P. Walton (Szerk.), *The Routledge Companion to Fair Value and Financial Reporting* (pp. 181-195). London: Routledge/Taylor & Francis Group.

Whittington, G. (2008). Fair Value and the IASB/FASB Conceptual Framework Project: An Alternative View. *ABACUS, Vol. 44, No. 2*, pp. 140-168.

Whittington, G. (2010). Measurement in Financial Reporting. *ABACUS, Vol. 46, No. 1, 2010*, pp. 104-110.

Whittred, G., & Chan, Y. K. (1992). Asset Revaluations and the Mitigation of Underinvestment. *ABACUS, Vol. 28. No. 1*, pp. 58-73.

Willet, R. J. (1987). An Axiomatic Theory of Accounting Measurement. *Accounting and Business Research 17 (66)*, pp. 155-172.

Willet, R. J. (1988). An Axiomatic Theory of Accounting Measurement - Part II. *Accounting and Business Research 19 (73)*, pp. 79-91.

Wolk, H. I., Dodd, J. L., & Rozycki, J. J. (2008). *Accounting Theory.* Los Angeles: Sage Publications.

Wong, M. (2000). The association between SFAS 119 derivatives disclosures and the foreign exchange risk exposure of manufacturing firms. *Journal of Accounting Research 38*, pp. 387-417.

Wood, J. (2004). A Fairwell to History - As historical cost accounting gives way to fair value, Europe's CFOs are bracing for turbulent times. *CFO Europe, November 29 2004*, http://www.cfo.com/printable/article.cfm/3258520/c_2984368?f=options.

Yu, S. C. (1966). Microaccounting and Macroaccounting. *The Accounting Review, Vol. 41, No. 1*, pp. 8-20.

Yuan, M., & Liu, H. (2011). The Economic Consequences of Fair Value Accounting. *Accounting, Economics, and Law: Vol. 1: Iss. 2*, Article 1.

Zeff, S. A. (1999). The Evolution of the Conceptual Framework for Business Enterprises in the United States. *Accounting Historians Journal, Vol. 26, No. 2*, pp. 89-131.

Zeff, S. A. (2005). The Evolution of U.S. GAAP: The Political Forces Behind Professional Standards. *The CPA Journal, 75 (2)*, pp. 18-29.

Zysman, J. (1983). *Governments, Markets and Growth: Financial Systems and the Politics of Industrial Change.* Ithaca: Cornell University Press.

Relevant own publications

Referred professional journals

1) Kovács Dániel Máté [accepted for publication]: Mérés és értékelés a számvitelben. *Vezetéstudomány (Expexted date of issue: 2013*.)
2) Kovács Dániel Máté – Mohl Gergely [2012]: A vállalati likviditásmenedzsment számviteli támogatása. *Vezetéstudomány 43. 2012/október,* pp. 19-35.
3) Kovács Dániel Máté [2012]: A valós értékelés új keretrendszere a nemzetközi pénzügyi beszámolásban. *Hitelintézeti Szemle* 2, pp. 161-181.
4) Kovács Dániel Máté – Mohl Gergely [2012]: A számvitel és az adózás kapcsolata – nemzet(köz)i példák. *Számvitel, Adó, Könyvvizsgálat* 7-8, p. 345. Teljes tanulmány: www.szak-ma.hu
5) Kovács Dániel Máté – Mohl Gergely [2012]: A számvitel és az adózás lehetséges összefüggései. *Számvitel, Adó, Könyvvizsgálat* 4, p. 181. Teljes tanulmány: www.szak-ma.hu
6) Kovács Dániel Máté – Mohl Gergely [2011]: A kkv-knak szóló IFRS-ek Magyarországon. *Számvitel, Adó, Könyvvizsgálat* 2011/6., pp. 280-284.

Others

- Textbooks
  1) Kovács Dániel Máté [2012]: *Sajátos fizetési formák.* In: Róth József [szerk]: *Mérlegképes továbbképzés 2012..* MKVK OK, Budapest. pp. 17-36.
  2) Baricz Rezső – Gyenge Magdolna – Joó Ágnes – Kovács Dániel Máté [2011]: *Számviteli beszámolók - Jegyzet és Feladatgyűjtemény.* Saldo Zrt., Budapest.
- Journal articles
  1) Kovács Dániel Máté [2011]: Céltartalékok az éves beszámolóban. *Számviteli Tanácsadó* 3., pp. 2-12.
  2) Kovács Dániel Máté – Mohl Gergely [2010]: A származékos ügyletek számvitele. *Számviteli Tanácsadó* 6., pp. 2-15.
  3) Kovács Dániel Máté [2010]: A valós [piaci] értéken történő értékelés alapvető szabályai. *Számviteli Tanácsadó* 4., pp. 2-11.
  4) Kovács Dániel Máté [2010]: Weboldalak értékelése számviteli megközelítésben II. *Számadó* 2., pp. 8-12.
  5) Kovács Dániel Máté [2010]: Weboldalak értékelése számviteli megközelítésben I. *Számadó* 1., pp. 11-15.
  6) Kovács Dániel Máté [2007]: A valós érték mérésének problémái és az amerikai válasz. *Számadó* 5., pp. 7-13.

Annexes

Annex I. The relevant part of Form-1029 (DB1 database)

1029-07-01 **Az eredménykimutatáshoz kapcsolódó adatok a kettős könyvvitelt vezető adózók részére**

(Az MRP, illetve nonprofit szervezetnek nem kell kitöltenie)

Adószám 1 1 1 1 1 1 1 — 1 — 1 1 Adózó neve _____

Az eredménykimutatáshoz kapcsolódó adatok — Az adatok ezer forintra kerekítve

	a)		b)	c)
01.	Értékesítés nettó árbevétele (Biztosítónál biztosítástechnikai bevétel, befektetési szolgáltatónál a befektetési szolgáltatási tevékenység bevételei, hitelintézetnél a pénzügyi szolgáltatás és a befektetési szolgáltatási tevékenység bevételei)	01.		
02.	A 01. sorból: - exportértékesítés nettó árbevétele	02.		
03.	Aktivált saját teljesítmények értéke (+/-)	03.	±	
04.	Egyéb bevételek összesen	04.		
05.	A 4. sorból: - a költségek (a ráfordítások) ellentételezésére illetve fejlesztésére - visszafizetési kötelezettség nélkül - kapott támogatás, juttatás összege	05.		
06.	Anyagjellegű ráfordítások összesen [(07.+08.+09.+10.+11.) sorok]	06.		
07.	A 06. sorból: - anyagköltség	07.		
08.	- igénybe vett szolgáltatások értéke	08.		
09.	- eladott (közvetített) szolgáltatások értéke	09.		
10.	- eladott áruk beszerzési értéke	10.		
11.	- egyéb szolgáltatások értéke	11.		
12.	A 11. sorból: - bankköltség	12.		
13.	- biztosítási díj	13.		
14.	Személyi jellegű ráfordítások összesen [(15.+16.+17). sorok]	14.		
15.	A 14. sorból: - bérköltség	15.		
16.	- személyi jellegű egyéb kifizetések	16.		
17.	- bérjárulékok	17.		
18.	Értékcsökkenési leírás	18.		
19.	Egyéb ráfordítások összesen	19.		
20.	A 19. sorból: - a költségek (a ráfordítások) ellentételezésére visszafizetési kötelezettség nélkül adott támogatás, juttatás összege	20.		
21.	- adók, illetékek, hozzájárulások bevallott, fizetendő összege (a társasági és különadó nélküli összeg)	21.		
22.	- követelések elszámolt értékvesztésének összege	22.		
23.	- a külföldön, külföldi telephelyen fizetett, fizetendő nyereségadó összege	23.		
24.	- pénzügyi szervezetek különadó összege	24.		
25.	Befektetési szolgáltatási tevékenység ráfordításai	25.		
26.	Üzemi (üzleti) tevékenység eredménye [01.±03.+04.-06.-14.-18.-19.-25. sorok] (+/-)	26.	±	0

1029-07-02

Az eredménykimutatáshoz kapcsolódó adatok a kettős könyvvitelt vezető adózók részére

(Az MRP, illetve nonprofit szervezetnek nem kell kitöltenie)

Adószám

1	1	1	1	1	1	1	1	—	1	—	1	1

Adózó neve _____

Az eredménykimutatáshoz kapcsolódó adatok — Az adatok ezer forintra kerekítve

a)		b)	c)
27. Pénzügyi műveletek bevételei összesen (biztosítónál befektetések nettó bevétele)	27.		ezer
28. A 27. sorból: - kapott (járó) osztalék, részesedés	28.	ezer	
29. - részesedések értékesítésének árfolyamnyeresége	29.	ezer	
30. - befektetett pénzügyi eszközök kamata, árfolyamnyeresége	30.	ezer	
31. - egyéb kapott (járó) kamatok és kamatjellegű bevételek	31.	ezer	
32. A 30. és 31. sorból (együtt): magánszemélytől kapott kamatok és kamatjellegű bevételek	32.	ezer	
33. Pénzügyi műveletek ráfordításai összesen (biztosítónál befektetések ráfordításai) (+/-)	33.	±	ezer
34. A 33. sorból: - befektetett pénzügyi eszközök értékesítésének árfolyamvesztesége	34.	ezer	
35. - nem magánszemélynek fizetett, fizetendő kamatok és kamatjellegű ráfordítások	35.	ezer	
36. - magánszemélynek fizetett kamatok és kamatjellegű ráfordítások	36.	ezer	
37. - részesedések, értékpapírok, bankbetétek értékvesztése a korábban leírt értékvesztések visszaírt összegével csökkentve (+/-) ±	37.	ezer	
38. Pénzügyi műveletek eredménye [(27.-(±33.) sor] (+/-)	38.	±	ezer
39. Szokásos vállalkozási eredmény [±26.±38. sor] (+/-)	39.	±	ezer 0
40. Rendkívüli bevételek összesen	40.		ezer
41. A 40. sorból: - visszafizetési kötelezettség nélkül, nem költségek, ráfordítások ellentételezésére kapott támogatás, juttatás	41.	ezer	
42. Rendkívüli ráfordítások összesen	42.		ezer
43. A 42. sorból: - visszafizetési kötelezettség nélkül, nem költségek, ráfordítások ellentételezésére adott támogatás, juttatás	43.	ezer	
44. Rendkívüli eredmény (40.-42. sor) (+/-)	44.	±	ezer

1029-A-01

A mérleghez kapcsolódó adatok a kettős könyvvitelt vezető adózók részére

(Az MRP, illetve a nonprofit szervezetnek nem kell kitöltenie.)

Adószám 1 1 1 1 1 1 1 1 — 1 — 1 1

Adózó neve _____

A mérleghez kapcsolódó adatok		Az adatok ezer forintra kerekítve	
		a)	b)
01. Immateriális javak	01.		ezer
02. A 01. sorból: kísérleti fejlesztés aktivált értéke	02.	ezer	
03. Tárgyi eszközök	03.		ezer
04. Befektetett pénzügyi eszközök	04.		ezer
05. Készletek	05.		ezer
06. Követelések könyv szerinti értéke	06.		ezer
07. A 06. sorból: - követelések áruszállításból és szolgáltatásból (vevők)	07.	ezer	
08. - követelések nyilvántartott értékvesztése	08.	ezer	
09. Értékpapírok (forgóeszközök része)	09.		ezer
10. Pénzeszközök	10.		ezer
11. A 10. sorból a pénztár	11.	ezer	
12. Aktív időbeli elhatárolások	12.		ezer
13. Jegyzett tőke összege [14-21. sorok adatai]	13.		ezer
14. A 13. sorból: - állami tulajdon	14.	ezer	
15. - önkormányzati tulajdon	15.	ezer	
16. - belföldi magánszemély tulajdona	16.	ezer	
17. - belföldi egyéb társaság, gazdálkodó szervezet tulajdona	17.	ezer	
18. - belföldi hitelintézeti tulajdon	18.	ezer	
19. - külföldi tulajdon	19.	ezer	
20. - belföldi egyéb pénzügyi szervezet (társaság, pénztár, alap) tulajdona	20.	ezer	
21. - belföldi nonprofit szervezet tulajdona	21.	ezer	
22. Jegyzett, de még be nem fizetett tőke	22.	-	ezer
23. Tőketartalék	23.		ezer
24. Eredménytartalék (+/-)	24.	±	ezer
25. Lekötött tartalék	25.		ezer
26. Értékelési tartalék	26.		ezer
27. Általános tartalék	27.		ezer
28. Mérleg szerinti eredmény (+/-)	28.	±	ezer
29. Céltartalékok	29.		ezer
30. Hátrasorolt kötelezettségek	30.		ezer
31. Hosszú lejáratú kötelezettségek	31.		ezer
32. A 31. sorból: - beruházási és fejlesztési hitelek	32.	ezer	
33. - tulajdonos(ok) által nyújtott hosszú lejáratú kölcsönök	33.	ezer	
34. Rövid lejáratú kötelezettségek	34.		ezer
35. A 34. sorból: - kötelezettségek áruszállításból és szolgáltatásból (szállítók)	35.	ezer	
36. - tulajdonosokkal szembeni kötelezettségek	36.	ezer	
37. - egyéb kapott hitelek, kölcsönök összege	37.	ezer	
38. Passzív időbeli elhatárolások	38.		ezer
39. Mérlegfőösszeg [(01.+03.+04.+05.+06.+09.+10.+12.)= (13.-22.+23.±24.+25.+26.+27.±28.+29.+30.+31.+34.+38.)]	39.		ezer

1029-A-02-01 Egyéb, valamint tájékoztató adatok a kettős könyvvitelt vezető adózók részére

Adószám 1 1 1 1 1 1 1 — 1 — 1 1 Adózó neve _____

A) Eszközök (értékhelyesbítés nélkül)		Az adatok ezer forintra kerekítve Bekerülési érték a mérlegforduló napon a)	Nettó érték a mérlegforduló napon b)
01. Immateriális javak	01.	ezer	ezer
02. Ingatlanok és a kapcsolódó vagyoni értékű jogok	02.	ezer	ezer
03. Műszaki berendezések, gépek, járművek	03.	ezer	ezer
04. Egyéb berendezések, felszerelések, járművek	04.	ezer	ezer
05. Tenyészállatok	05.	ezer	ezer
06. Beruházások, felújítások	06.	ezer	ezer

B) Eszközök értékcsökkenése, értékcsökkenési leírása		Az adatok ezer forintra kerekítve Költségként elszámolt (módosított) terv szerinti értékcsökkenés a)	Egyéb ráfordításként elszámolt terven felüli értékcsökkenés b)	Tao. tv. 1. és 2. sz. melléklete szerinti értékcsökkenési leírás c)
07. Immateriális javak	07.	ezer	ezer	ezer
08. Ingatlanok és a kapcsolódó vagyoni értékű jogok	08.	ezer	ezer	ezer
09. Műszaki berendezések, gépek, járművek	09.	ezer	ezer	ezer
10. Egyéb berendezések, felszerelések, járművek	10.	ezer	ezer	ezer
11. Tenyészállatok	11.	ezer	ezer	ezer
12. A 100 000 Ft alatti egyedi beszerzési, előállítási értékű tárgyi eszközök, vagyoni értékű jogok, szellemi termékek bekerülési értékének egyösszegű elszámolása	12.	ezer		ezer
13. Beruházások, felújítások	13.		ezer	ezer

Annex II. Cover letter and questionnaire of auditor survey

BUDAPESTI CORVINUS EGYETEM

Magyar Könyvvizsgálói Kamara

Request for participation in research

Dear Auditor,

The Department of Financial Accounting and the Department of Management Accounting of our university, the Corvinus University of Budapest, in close cooperation with the Chamber of Hungarian Auditors is the prestigious workshop of theoretical research and practical development of accounting and auditing. It is in this scope that we would like to utilize your methodological experience and practice. Please spare 25 to 30 minutes to complete the questionnaire referred to hereunder.

Herewith we kindly ask you to provide assistance in a research project undertaken in collaboration between the University and the Chamber, which examines the risk of auditing and the subject of estimation and valuation in an anonymous and non-retraceable manner. We are obliged to signal that the data provision is not mandatory but your response will greatly contribute to the research, therefore we are counting on your cooperation.

When completing the questionnaire it is essential that we are interested in the practice adopted during the auditing of financial statements of 2011 and the conclusions drawn thereupon. If you do not know the exact data for any question, *please provide an estimate*. Your expert estimation is greatly appreciated.

The data obtained will be used in an aggregate form and they will be processed using statistical methods; the questionnaire does not enable individual identification.

For the sake of easy completion and processing of the questionnaire, as well as ensuring anonymity, you can access it and enter your answers by clicking on the internet address below. All you need to do is click on the link below and you can start responding. To enable us to complete the research in due time please submit your response by 15th September 2012 at the latest.

PASSWORD required for completing the questionnaire (all uppercase characters, written together): MKVK12

Link to access the questionnaire:
http://www.uni-corvinus.hu/szamvitel/bkae_tsz.php?id=99

Should you have any question, we will be glad to answer them. In this case please email us at szamvitel@uni-corvinus.hu or call our Faculty at 06–1–482–5040 (landline) or 06-30-422-59-79 (mobile).

If it is any easier for you, we can also mail you the questionnaire in paper form with a pre-stamped response envelope. Just let us know at one of the above contacts where we should mail you the letter.

Thanking you in advance, your collaboration and assistance is greatly appreciated.

Budapest, 25 July 2012

Dr. Rezső Baricz
professor emeritus
Founding Vice-President of the
Association of Hungarian Auditors

Dr. János Lukács
Associate Professor,
Head of Department
President of the Chamber of Hungarian Auditors

Dániel Máté Kovács
Assistant Professor
Doctoral Candidate, Researcher

Gergely Mohl
Assistant Professor
Doctoral Candidate, Researcher

Questionnaire

(Participation is voluntary and anonymous)

Please, answer the questions based on the audits of 2011 financial statements.

General questions

1. Please indicate with an 'x' in what form you have conducted audits in 2011?
   (more than one answer may be chosen)

Statement	
Individually without assistants	
Individually with assistants	
Partner or employee of a smaller audit firm (cooperation of more auditors)	
As a partner or employee of a mid tier firm or network („Big 5- Big10")	
Big 4 firm	

2. Are you or your firm a member of any international audit networks?
   o YES **o** NO **o** NO, but we are planning membership or it is already in progress

3. For how many audit engagements were you responsible in person in the 2011 business year?_____pcs

4. What percent of your clients is a...

Statement	%
General profit oriented company	
Financial institution, insurance company	
Public sector organisation	
Other organisation (e.g. condominium, foundation, bureau of attorney etc.)	

5. What percent of your general profit oriented company clients has an...

Statement	%
annual sales revenue below HUF 200 million	
annual sales revenue between HUF 200 million – 500 million	
annual sales revenue between HUF 501 million – 1.000 million	
annual sales revenue between HUF 1.001 million – 2.000 million	
annual sales revenue above HUF 2 billion	

6. What percent of your financial institution and insurance company clients is a(n)...:

Statement	%
Large bank (total assets >HUF 1.500 billion)	
Small and medium bank (total assets < HUF 1.500 billion)	
Other financial institution, insurance company	

7. The financial statements you audit are based on the...

Statement	%
Hungarian Act on Accounting and related government decrees	
IFRS	
US GAAP	
Other	

1/7

The following questions are related to audit risk and risk assessment of 2011. You can answer the questions by clicking on the chosen value of the "Rating" column. If you wish to change your answer later you can do that before submitting the questionnaire. Please evaluate each statement (row) one by one.

8. Please rate the following statements.
(1: not at all, never…6: always)
For the purpose of conducting my audit engagements I use...

Statement	Rating
a written audit manual compiled by me or my firm.	1 2 3 4 5 6
an off- the-shelf working paper package.	1 2 3 4 5 6
a customised, updated working paper package.	1 2 3 4 5 6
the guidebooks and manuals issued by MKVK.	1 2 3 4 5 6

9. Please rate the following statements.
(1: not at all, never…6: always)
For the purpose of conducting my audit engagements I use...

Statement	Rating
an audit software.	1 2 3 4 5 6

10. Please rate the following statements.
(1: not at all, never…6: always)
When assessing audit risk I...

Statement	Rating
use a written audit manual compiled by me or my firm.	1 2 3 4 5 6
use an off- the-shelf working paper package.	1 2 3 4 5 6
use a customised, updated working paper package.	1 2 3 4 5 6
use the guidebooks and manuals issued by MKVK.	1 2 3 4 5 6
use an audit software.	1 2 3 4 5 6
do not follow some formalised method but rather I work on an intuitive basis.	1 2 3 4 5 6
decide based on the actual engagement whether I follow a written methodology or I work on an intuitive basis.	1 2 3 4 5 6

11. According to your views the assessment of audit risk is...
(1: I do not agree with the statement …6: I completely agree with the statement)

Statement	Rating
an important planning tool.	1 2 3 4 5 6
something that fundamentally influences the audit process.	1 2 3 4 5 6
an administrative (documentation) burden.	1 2 3 4 5 6
important primarily with larger auditees.	1 2 3 4 5 6
to be skipped with smaller auditees.	1 2 3 4 5 6
well quantifiable („can be calculated").	1 2 3 4 5 6
rather descriptive, a qualitative factor.	1 2 3 4 5 6
objective.	1 2 3 4 5 6
subjective, an issue of professional judgement.	1 2 3 4 5 6

2/7

12. Please rate the following statements.
(1: I never act like this… 6: I always act like this)
When conducting audit engagements I...

Statement	Rating
prepare a written risk assessment in case of first year audits.	1 2 3 4 5 6
consider risks in case of first year audits but not in a written form.	1 2 3 4 5 6
prepare a written risk assessment in case of subsequent audits.	1 2 3 4 5 6
consider risks in case of subsequent audits but not in a written form.	1 2 3 4 5 6
do not think it is necessary to even consider risks in case of subsequent audits.	1 2 3 4 5 6
only prepare a written risk assessment in case of significant engagements.	1 2 3 4 5 6
only consider risks in case of significant engagements but not in a written form.	1 2 3 4 5 6

13. Please rate the following statements.
(1: I never act like this/I do not agree… 6: I always act like this/I completely agree)
When assessing risks...

Statement	Rating
I assess the risk components separately.	1 2 3 4 5 6
I assess inherent and control risks separately.	1 2 3 4 5 6
I assess inherent and control risks jointly.	1 2 3 4 5 6
there is no reason to separate the risk components.	1 2 3 4 5 6
there is no reason to separate the inherent and control risk.	1 2 3 4 5 6

14. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
When assessing detection risk I…

Statement	Rating
separate sampling and non-sampling risks.	1 2 3 4 5 6
separate the risk of test of details and the risk of analytical procedures.	1 2 3 4 5 6
calculate it as a function of inherent, control and audit risks.	1 2 3 4 5 6
estimate it as a separate risk component.	1 2 3 4 5 6

15. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
I...

Statement	Rating
estimate risks (e.g. as a percentage).	1 2 3 4 5 6
describe risk using qualitative categories (e.g. low, middle, high).	1 2 3 4 5 6
describe risk otherwise.	1 2 3 4 5 6

If you work with qualitative categories (as well), please indicate the number of categories you apply:_____

3/7

16. Please rate the following statements.
(1: I do not agree with the statement …6: I completely agree with the statement)
Audit risk...

Statement	Rating
is determined by the value of the risk components.	1 2 3 4 5 6
has a fixed value that determines the value of the individual risk components.	1 2 3 4 5 6
is the same by every engagement.	1 2 3 4 5 6
is influenced by the size of the auditee.	1 2 3 4 5 6
has an optimal value, which is 5%.	1 2 3 4 5 6
has an optimal value below 5%.	1 2 3 4 5 6
has no optimal value.	1 2 3 4 5 6

17. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
When conducting an audit I...

Statement	Rating
base my approach on the business risks of the auditee.	1 2 3 4 5 6
base my approach on the transactions that took place by the auditee.	1 2 3 4 5 6
do use the results of risk assessment.	1 2 3 4 5 6
rarely let risk assessment have an impact on the actual audit work (e.g. because I have a fixed audit programme I have to go through anyway).	1 2 3 4 5 6

18. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
I use the results of risk assessment...

Statement	Rating
for audit planning.	1 2 3 4 5 6
when conducting the audit tests.	1 2 3 4 5 6
for evaluation.	1 2 3 4 5 6
to plan next year's audit.	1 2 3 4 5 6
I do not use the results of risk assessment.	1 2 3 4 5 6

19. Please rate the following statements
(1: I do not agree with the statement …6: I completely agree with the statement)
Previous year's auditor's opinion...

Statement	Rating
has no effect on next year's risk assessment.	1 2 3 4 5 6
always has an effect on next year's risk assessment.	1 2 3 4 5 6
only has an effect on next year's risk assessment if the opinion was a modified one.	1 2 3 4 5 6
only has an effect on next year's risk assessment if the risk of fraud is present.	1 2 3 4 5 6

The following questions are related to valuation. You can answer the questions by clicking on the chosen value of the "Rating" column. If you wish to change your answer later you can do that before submitting the questionnaire. Please evaluate each statement (row) one by one.

4/7

20. How frequently did you encounter value adjustment (Aa. Para 58 (5)-(8)) in case of the below listed asset elements during your 2011 audits when auditing financial statements based on the Hungarian Accounting Act (Aa.)?
(1: no occurrence... 6: present everywhere)

Statement	Rating
Intangible assets (rights and intellectual property)	1 2 3 4 5 6
Real estates	1 2 3 4 5 6
Technical equipments	1 2 3 4 5 6
Other equipments	1 2 3 4 5 6
Animals	1 2 3 4 5 6
Long-term investments	1 2 3 4 5 6

21. How frequently did you encounter fair valuation (Aa. Para 59/A-F) in case of the below listed asset elements during your 2011 audits when auditing financial statements based on the Hungarian Accounting Act (Aa.)?
(1: no occurrence... 6: present everywhere)

Statement	Rating
Shares	1 2 3 4 5 6
Debt instruments	1 2 3 4 5 6
Receivables	1 2 3 4 5 6
Derivatives	1 2 3 4 5 6

If you have never encountered value adjustment of fair valuation during your 2011 audits when auditing financial statements based on the Hungarian Accounting Act (Aa.) please continue with question number 26.

22. How frequently did the entities listed below and classified according to the amount of their sales revenue apply revaluation or fair valuation in their financial statements based on the Hungarian Accounting Act?
(1: no occurrence... 6: present everywhere)

Statement	Value adjustment	Fair valuation
Companies with a revenue below HUF 200 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 200 – 500 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 501 – 1.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 1.001 – 2.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue above HUF 2 billion	1 2 3 4 5 6	1 2 3 4 5 6
Financial institutions, insurance companies	1 2 3 4 5 6	1 2 3 4 5 6
Public sector organisations	1 2 3 4 5 6	1 2 3 4 5 6
Other entities	1 2 3 4 5 6	1 2 3 4 5 6

23. How frequently did the entities listed below and classified according to the amount of their total assets apply revaluation or fair valuation in their financial statements based on the Hungarian Act on Accounting?
(1: no occurrence... 6: present everywhere)

Statement	Value adjustment	Fair valuation
Companies with total assets below HUF 100 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 100 – 250 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 251 – 500 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 501 – 1.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets above HUF 1 billion	1 2 3 4 5 6	1 2 3 4 5 6
Financial institutions, insurance companies	1 2 3 4 5 6	1 2 3 4 5 6
Public sector organisations	1 2 3 4 5 6	1 2 3 4 5 6
Other entities	1 2 3 4 5 6	1 2 3 4 5 6

24. What was the reason for the APPLICATION of revaluation or fair valuation at companies where it occurred in the Aa. based financial statements?
(1: no such reason occurred…6: it was always the reason)

Statement	Rating
The owners' equity would otherwise remain below the threshold set in the Companies Act	1 2 3 4 5 6
It was required by the owners to assess the wealth of the company	1 2 3 4 5 6
To improve profitability	1 2 3 4 5 6
The company is member of a group and the group applies these	1 2 3 4 5 6
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied	1 2 3 4 5 6
The creditor demanded the application when assessing credibility	1 2 3 4 5 6
To take advantage of taxation	1 2 3 4 5 6
Other:……	

25. When applying revaluation or fair valuation the value of the subject…
(1: never… 6: always):

Statement	Rating
was measured based on its quoted price.	1 2 3 4 5 6
was measured based on the quoted price of similar instruments.	1 2 3 4 5 6
was measured based on the income generated by the item.	1 2 3 4 5 6
was measured based on the costs of replacement.	1 2 3 4 5 6
was measured as a combination of methods above.	1 2 3 4 5 6
Other:……	

26. What was the reason for NOT applying revaluation or fair valuation in Aa. based financial statements?
(1: no such reason occurred…6: it was always the reason):

Statement	Rating
It would have been too costly (administration, external expert etc.)	1 2 3 4 5 6
More relevant information is not provided	1 2 3 4 5 6
The value of item cannot be measured reliably	1 2 3 4 5 6
Has no item to which these could have been applied	1 2 3 4 5 6
The company is member of a group and the group does not apply these	1 2 3 4 5 6
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied, so it is not relevant in the Aa. based financial statements	1 2 3 4 5 6
Because of the potential tax losses	1 2 3 4 5 6
As it had no effect on taxation	1 2 3 4 5 6
No or unknown reason	1 2 3 4 5 6
Other:……	

27. What factors, what areas proved to be a risk factor during your audits? Please indicate that when these items occur how risky they are
(1: minimally risky, 6: bears significant risks),
and what is the primary source of this riskiness (error or fraud).
(1: only minimally the source of risk; 6: always the source of risk)

Area	How risky is it?	If risky, is the source of risk	
		error?	fraud?
Intangibles "in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Determination of cost	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Amortization	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Impairment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of goodwill	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Tangibles "in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Determination of cost	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Depreciation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Impairment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Inventories „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Write down of inventories	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Receivables „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of bad and doubtful debts	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Securities, long-term investments „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Impairment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Fair valuation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Cash „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of cash	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Accruals and prepayments „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of accruals and prepayments	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Owners' equity	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Provisions „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of provisions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Liabilities „in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of liabilities	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Issues of taxation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Judgement of the going concern principle	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Intangibles "in general"*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

*: with the exception of the below listed items printed in italics, as there is a separate question related to them.

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28. In your opinion could the willingness of auditors be increased to participate in research similar to the present one if the participants were to receive training credits for their cooperation?

- **o** Yes, significantly.
- **o** Probably yes.
- **o** Probably not.
- **o** Not at all.
- **o** I cannot judge this.

Once again we appreciate your cooperation!

7/7

Annex III. Descriptive statistics of DB2 database

The measures of central tendency and dispersion:

		Number of audits	Clients: Companies	Clients: Financial Institutions	Clients: Public sector entities	Clients: other organizations
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		15,5673	,9413	,0192	,0144	,0250
Median		10,0000	1,0000	,0000	,0000	,0000
Std. Deviation		20,48336	,12968	,07449	,06707	,07568
Variance		419,568	,017	,006	,004	,006

		Companies with revenue lower than 200M HUF	Companies with revenue between 200-500M HUF	Companies with revenue between 500-1000M HUF	Companies with revenue between 1000-2000M HUF	Companies with revenue higher than 2000M HUF
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		,4212	,2716	,1418	,0813	,0841
Median		,4000	,2500	,1000	,0000	,0000
Std. Deviation		,28325	,25758	,20001	,17379	,17113
Variance		,080	,066	,040	,030	,029

The distribution tables of the variables:

Clients: Companies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,40	1	1,0	1,0	1,0
	,45	1	1,0	1,0	1,9
	,50	2	1,9	1,9	3,8
	,55	1	1,0	1,0	4,8
	,65	1	1,0	1,0	5,8
	,70	2	1,9	1,9	7,7
	,75	4	3,8	3,8	11,5
	,85	5	4,8	4,8	16,3
	,90	4	3,8	3,8	20,2
	,95	8	7,7	7,7	27,9
	1,00	75	72,1	72,1	100,0
	Total	104	100,0	100,0	

Clients: Financial institutions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	95	91,3	91,3	91,3
	,05	2	1,9	1,9	93,3
	,15	2	1,9	1,9	95,2
	,25	3	2,9	2,9	98,1
	,35	1	1,0	1,0	99,0
	,50	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Clients: Other organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	87	83,7	83,7	83,7
	,05	6	5,8	5,8	89,4
	,10	4	3,8	3,8	93,3
	,15	2	1,9	1,9	95,2
	,25	2	1,9	1,9	97,1
	,30	2	1,9	1,9	99,0
	,50	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Companies with revenue lower than 200M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	14	13,5	13,5	13,5
	,05	4	3,8	3,8	17,3
	,10	2	1,9	1,9	19,2
	,15	5	4,8	4,8	24,0
	,20	3	2,9	2,9	26,9
	,25	3	2,9	2,9	29,8
	,30	5	4,8	4,8	34,6
	,35	3	2,9	2,9	37,5
	,40	16	15,4	15,4	52,9
	,45	3	2,9	2,9	55,8
	,50	17	16,3	16,3	72,1
	,60	4	3,8	3,8	76,0
	,65	3	2,9	2,9	78,8
	,70	6	5,8	5,8	84,6
	,75	6	5,8	5,8	90,4
	,80	2	1,9	1,9	92,3
	,85	1	1,0	1,0	93,3
	1,00	7	6,7	6,7	100,0
	Total	104	100,0	100,0	

Companies with revenue between 200M-500M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	22	21,2	21,2	21,2
	,05	4	3,8	3,8	25,0
	,10	4	3,8	3,8	28,8
	,15	12	11,5	11,5	40,4
	,20	9	8,7	8,7	49,0
	,25	15	14,4	14,4	63,5
	,30	6	5,8	5,8	69,2
	,35	7	6,7	6,7	76,0
	,40	5	4,8	4,8	80,8
	,50	6	5,8	5,8	86,5
	,55	2	1,9	1,9	88,5
	,60	2	1,9	1,9	90,4
	,65	2	1,9	1,9	92,3
	,70	1	1,0	1,0	93,3
	,85	1	1,0	1,0	94,2
	,90	1	1,0	1,0	95,2
	1,00	5	4,8	4,8	100,0
	Total	104	100,0	100,0	

Companies with revenue between 500M-1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	42	40,4	40,4	40,4
	,05	9	8,7	8,7	49,0
	,10	5	4,8	4,8	53,8
	,15	18	17,3	17,3	71,2
	,20	7	6,7	6,7	77,9
	,25	10	9,6	9,6	87,5
	,30	1	1,0	1,0	88,5
	,35	3	2,9	2,9	91,3
	,40	2	1,9	1,9	93,3
	,50	3	2,9	2,9	96,2
	,55	1	1,0	1,0	97,1
	1,00	3	2,9	2,9	100,0
	Total	104	100,0	100,0	

Companies with revenue between 1000M-2000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	63	60,6	60,6	60,6
	,05	14	13,5	13,5	74,0
	,10	5	4,8	4,8	78,8
	,15	8	7,7	7,7	86,5
	,20	2	1,9	1,9	88,5
	,25	4	3,8	3,8	92,3
	,30	1	1,0	1,0	93,3
	,40	1	1,0	1,0	94,2
	,45	1	1,0	1,0	95,2
	,50	3	2,9	2,9	98,1
	1,00	2	1,9	1,9	100,0
	Total	104	100,0	100,0	

Companies with revenue higher than 200M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,00	65	62,5	62,5	62,5
	,05	11	10,6	10,6	73,1
	,10	5	4,8	4,8	77,9
	,15	3	2,9	2,9	80,8
	,20	7	6,7	6,7	87,5
	,25	4	3,8	3,8	91,3
	,30	1	1,0	1,0	92,3
	,35	2	1,9	1,9	94,2
	,40	1	1,0	1,0	95,2
	,45	1	1,0	1,0	96,2
	,50	1	1,0	1,0	97,1
	,70	1	1,0	1,0	98,1
	,80	1	1,0	1,0	99,0
	1,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Value adjustment: intangible assets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	92	88,5	88,5	88,5
	2,00	9	8,7	8,7	97,1
	3,00	2	1,9	1,9	99,0
	5,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Value adjustment: real estates

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	55	52,9	52,9	52,9
	2,00	23	22,1	22,1	75,0
	3,00	14	13,5	13,5	88,5
	4,00	9	8,7	8,7	97,1
	5,00	2	1,9	1,9	99,0
	6,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Value adjustment: technical equipments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	85	81,7	81,7	81,7
	2,00	11	10,6	10,6	92,3
	3,00	7	6,7	6,7	99,0
	4,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Value adjustment: other equipments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	90	86,5	86,5	86,5
	2,00	12	11,5	11,5	98,1
	3,00	2	1,9	1,9	100,0
	Total	104	100,0	100,0	

Value adjustment: animals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	98	94,2	94,2	94,2
	2,00	1	1,0	1,0	95,2
	3,00	4	3,8	3,8	99,0
	4,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Value adjustment: long term investments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	95	91,3	91,3	91,3
	2,00	5	4,8	4,8	96,2
	3,00	2	1,9	1,9	98,1
	5,00	1	1,0	1,0	99,0
	6,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Fair valuation: shares

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	95	91,3	91,3	91,3
	2,00	5	4,8	4,8	96,2
	3,00	2	1,9	1,9	98,1
	5,00	1	1,0	1,0	99,0
	6,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Fair valuation: debt instruments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	95	91,3	91,3	91,3
	2,00	6	5,8	5,8	97,1
	3,00	1	1,0	1,0	98,1
	5,00	1	1,0	1,0	99,0
	6,00	1	1,0	1,0	100,0
	Total	104	100,0	100,0	

Fair valuation: receivables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	87	83,7	83,7	83,7
	2,00	4	3,8	3,8	87,5
	3,00	2	1,9	1,9	89,4
	4,00	3	2,9	2,9	92,3
	5,00	2	1,9	1,9	94,2
	6,00	6	5,8	5,8	100,0
	Total	104	100,0	100,0	

Did encounter fair valuation/value adjustment?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	55	52,9	52,9	52,9
	YES	49	47,1	47,1	100,0
	Total	104	100,0	100,0	

Companies using value adjustment: with revenue lower than 200M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	28	57,1	57,1	57,1
	2,00	13	26,5	26,5	83,7
	3,00	5	10,2	10,2	93,9
	4,00	1	2,0	2,0	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with revenue between 200M-500M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	33	67,3	67,3	67,3
	2,00	9	18,4	18,4	85,7
	3,00	5	10,2	10,2	95,9
	4,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with revenue between 500M-1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	30	61,2	61,2	61,2
	2,00	8	16,3	16,3	77,6
	3,00	7	14,3	14,3	91,8
	4,00	3	6,1	6,1	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with revenue between 1000M-2000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	35	71,4	71,4	71,4
	2,00	6	12,2	12,2	83,7
	3,00	4	8,2	8,2	91,8
	4,00	1	2,0	2,0	93,9
	5,00	1	2,0	2,0	95,9
	6,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with revenue higher than 2000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	40	81,6	81,6	81,6
	2,00	5	10,2	10,2	91,8
	5,00	1	2,0	2,0	93,9
	6,00	3	6,1	6,1	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with revenue lower than 200M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	46	93,9	93,9	93,9
	2,00	1	2,0	2,0	95,9
	3,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with revenue between 200M-500M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	40	81,6	81,6	81,6
	2,00	6	12,2	12,2	93,9
	4,00	2	4,1	4,1	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with revenue between 500M-1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	43	87,8	87,8	87,8
	2,00	1	2,0	2,0	89,8
	4,00	3	6,1	6,1	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with revenue between 1000M-2000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	43	87,8	87,8	87,8
	2,00	1	2,0	2,0	89,8
	4,00	2	4,1	4,1	93,9
	6,00	3	6,1	6,1	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with revenue higher than 2000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	46	93,9	93,9	93,9
	4,00	1	2,0	2,0	95,9
	6,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Financial institutions using value adjustment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	46	93,9	93,9	93,9
	3,00	1	2,0	2,0	95,9
	4,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Public sector entities using value adjustment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	47	95,9	95,9	95,9
	4,00	1	2,0	2,0	98,0
	5,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Other organizations using value adjustment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	49	100,0	100,0	100,0

Financial institutions using fair valuation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	47	95,9	95,9	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Public sector entities using fair valuation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	48	98,0	98,0	98,0
	3,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Other organizations using fair valuation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	48	98,0	98,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with total assets lower than 100M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	40	81,6	81,6	81,6
	2,00	5	10,2	10,2	91,8
	3,00	2	4,1	4,1	95,9
	5,00	1	2,0	2,0	98,0
	112,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with total assets between 250M-500M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	27	55,1	55,1	55,1
	2,00	11	22,4	22,4	77,6
	3,00	7	14,3	14,3	91,8
	4,00	2	4,1	4,1	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using value adjustment: with total assets higher than 1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	33	67,3	67,3	67,3
	2,00	6	12,2	12,2	79,6
	3,00	4	8,2	8,2	87,8
	4,00	2	4,1	4,1	91,8
	5,00	1	2,0	2,0	93,9
	6,00	3	6,1	6,1	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with total assets lower than 100M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	44	89,8	89,8	89,8
	2,00	2	4,1	4,1	93,9
	3,00	2	4,1	4,1	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with total assets between 250M-500M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	39	79,6	79,6	79,6
	2,00	5	10,2	10,2	89,8
	3,00	2	4,1	4,1	93,9
	4,00	1	2,0	2,0	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with total assets between 500M-1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	41	83,7	83,7	83,7
	2,00	3	6,1	6,1	89,8
	3,00	2	4,1	4,1	93,9
	4,00	1	2,0	2,0	95,9
	6,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Companies using fair valuation: with total assets higher than 1000M HUF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	44	89,8	89,8	89,8
	2,00	1	2,0	2,0	91,8
	3,00	2	4,1	4,1	95,9
	4,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Reason for fair value: equity position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	27	55,1	55,1	55,1
	2,00	4	8,2	8,2	63,3
	4,00	5	10,2	10,2	73,5
	5,00	4	8,2	8,2	81,6
	6,00	9	18,4	18,4	100,0
	Total	49	100,0	100,0	

Reason for fair value: owners' requirements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	21	42,9	42,9	42,9
	2,00	8	16,3	16,3	59,2
	3,00	6	12,2	12,2	71,4
	4,00	4	8,2	8,2	79,6
	5,00	1	2,0	2,0	81,6
	6,00	9	18,4	18,4	100,0
	Total	49	100,0	100,0	

Reason for fair value: enhancement of profit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	40	81,6	81,6	81,6
	2,00	2	4,1	4,1	85,7
	3,00	1	2,0	2,0	87,8
	4,00	3	6,1	6,1	93,9
	5,00	2	4,1	4,1	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Reason for fair value: group policy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	43	87,8	87,8	87,8
	2,00	1	2,0	2,0	89,8
	3,00	1	2,0	2,0	91,8
	4,00	1	2,0	2,0	93,9
	5,00	1	2,0	2,0	95,9
	6,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Reason for fair value: IFRS reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	47	95,9	95,9	95,9
	3,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Reason for fair value: Credit rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	31	63,3	63,3	63,3
	2,00	4	8,2	8,2	71,4
	3,00	2	4,1	4,1	75,5
	4,00	3	6,1	6,1	81,6
	5,00	5	10,2	10,2	91,8
	6,00	4	8,2	8,2	100,0
	Total	49	100,0	100,0	

Reason for fair value: Tax benefits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	40	81,6	81,6	81,6
	2,00	4	8,2	8,2	89,8
	3,00	2	4,1	4,1	93,9
	5,00	1	2,0	2,0	95,9
	6,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Fair value measurement: Quoted prices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	19	38,8	38,8	38,8
	2,00	5	10,2	10,2	49,0
	3,00	4	8,2	8,2	57,1
	4,00	3	6,1	6,1	63,3
	5,00	8	16,3	16,3	79,6
	6,00	10	20,4	20,4	100,0
	Total	49	100,0	100,0	

Fair value measurement: Comparative prices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	23	46,9	46,9	46,9
	2,00	7	14,3	14,3	61,2
	3,00	1	2,0	2,0	63,3
	4,00	4	8,2	8,2	71,4
	5,00	5	10,2	10,2	81,6
	6,00	9	18,4	18,4	100,0
	Total	49	100,0	100,0	

Fair value measurement: Income-based models

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	43	87,8	87,8	87,8
	2,00	3	6,1	6,1	93,9
	3,00	1	2,0	2,0	95,9
	4,00	2	4,1	4,1	100,0
	Total	49	100,0	100,0	

Fair value measurement: Cost-based models

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	36	73,5	73,5	73,5
	2,00	7	14,3	14,3	87,8
	3,00	2	4,1	4,1	91,8
	4,00	2	4,1	4,1	95,9
	5,00	1	2,0	2,0	98,0
	6,00	1	2,0	2,0	100,0
	Total	49	100,0	100,0	

Fair value measurement: Combined methods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	37	75,5	75,5	75,5
	2,00	2	4,1	4,1	79,6
	5,00	2	4,1	4,1	83,7
	6,00	8	16,3	16,3	100,0
	Total	49	100,0	100,0	

Not opted: High costs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	50	48,1	48,1	48,1
	2,00	3	2,9	2,9	51,0
	3,00	8	7,7	7,7	58,7
	4,00	10	9,6	9,6	68,3
	5,00	18	17,3	17,3	85,6
	6,00	15	14,4	14,4	100,0
	Total	104	100,0	100,0	

Not opted: Not relevant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	48	46,2	46,2	46,2
	2,00	4	3,8	3,8	50,0
	3,00	7	6,7	6,7	56,7
	4,00	15	14,4	14,4	71,2
	5,00	9	8,7	8,7	79,8
	6,00	21	20,2	20,2	100,0
	Total	104	100,0	100,0	

Not opted: No assets measureable at fair value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	54	51,9	51,9	51,9
	2,00	8	7,7	7,7	59,6
	3,00	14	13,5	13,5	73,1
	4,00	9	8,7	8,7	81,7
	5,00	12	11,5	11,5	93,3
	6,00	7	6,7	6,7	100,0
	Total	104	100,0	100,0	

Not opted: Not relevant together with IFRS reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	95	91,3	91,3	91,3
	2,00	1	1,0	1,0	92,3
	4,00	1	1,0	1,0	93,3
	5,00	5	4,8	4,8	98,1
	6,00	2	1,9	1,9	100,0
	Total	104	100,0	100,0	

Not opted: Taxation disadvantage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	97	93,3	93,3	93,3
	2,00	2	1,9	1,9	95,2
	3,00	2	1,9	1,9	97,1
	4,00	3	2,9	2,9	100,0
	Total	104	100,0	100,0	

Not opted: No tax benefit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	74	71,2	71,2	71,2
	2,00	1	1,0	1,0	72,1
	3,00	10	9,6	9,6	81,7
	4,00	9	8,7	8,7	90,4
	5,00	5	4,8	4,8	95,2
	6,00	5	4,8	4,8	100,0
	Total	104	100,0	100,0	

Annex IV. The listed companies in the research (DB3 database)

Issuer	Type of the instrument	Included?	*Remarks*
AAA Auto	Shares B	NO	*HUN FSs not prepared*
ÁLLAMI NYOMDA Nyrt.	Shares A	YES	
ALTEO Nyrt.	Shares B, Corporate bonds	YES	
Appeninn Nyrt.	Shares A	YES	
BIOMEDICAL Nyrt.	Shares B	NO	*IFRS FSs not available*
Budapesti Ingatlan Nyrt.	Shares B	YES	
BUSINESS TELECOM Nyrt.	Shares B, Corporate bonds	NO	*No annual report yet.*
CIB Bank Zrt.	Corporate bonds	NO	*IFRS FSs not available*
CIG Pannónia Életbiztosító Nyrt.	Shares A	YES	
Csepel Holding Nyrt.	Shares B	YES	
Danubius Hotels Nyrt.	Shares A	YES	
Diákhitel Zrt.	Corporate bonds	NO	*IFRS FSs not available*
EGIS Gyógyszergyár Nyrt.	Shares A	YES	
EHEP Nyrt.	Shares B	NO	*IFRS FSs not available*
ELMŰ Nyrt.	Shares B	YES	
ÉMÁSZ Nyrt.	Shares B	YES	
EST MEDIA Nyrt.	Shares B	YES	
E-Star Alternatív Nyrt.	Shares A, Corporate bonds	NO	*IFRS FSs not available*
EXTERNET Nyrt.	Shares B	NO	*IFRS FSs not available*
FHB Nyrt.	Shares A, Corporate bonds	YES	
Finext Nyrt.	Shares B	NO	*IFRS FSs not available*
FORRÁS Nyrt.	Shares B	YES	
FreeSoft Nyrt.	Shares B	YES	
FuturAqua Nyrt.	Shares B	YES	
Graphisoft Park SE	Shares A	YES	
HUN MINING Nyrt.	Shares B	NO	*IFRS FSs not available*
HybridBox Nyrt.	Shares B	NO	*IFRS FSs not available*
KARTONPACK Nyrt.	Shares B	NO	*IFRS FSs not available*
KEG Nyrt.	Shares B	YES	
KONZUM Nyrt.	Shares B	NO	*IFRS FSs not available*
KREDITJOG Corporation Nyrt.	Shares B	NO	*IFRS FSs not available*
Kulcs-Soft Nyrt.	Shares B	NO	*IFRS FSs not available*
Magyar Telekom Nyrt.	Shares A	YES	
MASTERPLAST Nyrt.	Shares B	NO	*IFRS FSs not available*
MKB Bank Zrt.	Corporate bonds	YES	

Issuer	Type of the instrument	Included?	*Remarks*
MOL Nyrt.	Shares A, Corporate bonds	YES	
NORDTELEKOM Nyrt.	Shares B	NO	*IFRS FSs not available*
NUTEX Nyrt.	Shares B	YES	
OPTISOFT Nyrt.	Shares B	YES	
OTP Bank Nyrt.	Shares A, Corporate bonds	YES	
Őrmester Nyrt.	Shares B	YES	
PannErgy Nyrt.	Shares A	YES	
PANNON-FLAX NyRt.	Shares B	NO	*IFRS FSs not available*
PANNON-VÁLTÓ Nyrt.	Shares B	NO	*IFRS FSs not available*
PHYLAXIA 1912. Holding Nyrt.	Shares B	NO	*IFRS FSs not available*
PLOTINUS Nyrt.	Shares B	NO	*IFRS FSs not available*
QUAESTOR Értékpapír Nyrt.	Shares B	NO	*IFRS FSs not available*
RÁBA Nyrt.	Shares A	YES	
Richter Gedeon Nyrt.	Shares A	YES	
Shopline-webáruház Nyrt.	Shares B	NO	*IFRS FSs not available*
Synergon Nyrt.	Shares B	YES	
TC Befektetési Nyrt.	Shares B	NO	*IFRS FSs not available*
TVK Nyrt.	Shares A	YES	
VISONKA Nyrt.	Shares B	YES	
Zwack Unicum Nyrt.	Shares A	YES	

Annex V. Observations of DB3 database

Issuer	Fin. instr. (HUN)	Properties, plants and equipments		Intangible assets		LT invest. (HUN)
		HUN	IFRS	HUN	IFRS	
ÁLLAMI NYOMDA Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
ALTEO Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Appeninn Nyrt.	*NO*	*YES*	*YES (IAS 40)*	*NO*	*NO*	*NO*
Budapesti Ingatlan Nyrt.	*NO*	*NO*	*YES (IAS 40, IAS 16 property)*	*NO*	*NO*	*NO*
CIG Pannónia Életbiztosító Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Csepel Holding Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Danubius Hotels Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
EGIS Gyógyszergyár Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
ELMŰ Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
ÉMÁSZ Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
EST MEDIA Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
FHB Nyrt.	*NO*	*YES*	*YES (IAS 40)*	*NO*	*NO*	*NO*
FORRÁS Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
FreeSoft Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
FuturAqua Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Graphisoft Park SE	*NO*	*NO*	*YES (IAS 40)*	*NO*	*NO*	*NO*
KEG Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Magyar Telekom Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
MKB Bank Zrt.	*YES*	*NO*	*NO*	*NO*	*NO*	*NO*
MOL Nyrt.	*YES (AFS NO)*	*NO*	*NO*	*NO*	*NO*	*NO*
NUTEX Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
OPTISOFT Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
OTP Bank Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Őrmester Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
PannErgy Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
RÁBA Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Richter Gedeon Nyrt.	*YES*	*NO*	*YES (IAS 40)*	*NO*	*NO*	*NO*
Synergon Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
TVK Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
VISONKA Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
Zwack Unicum Nyrt.	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*

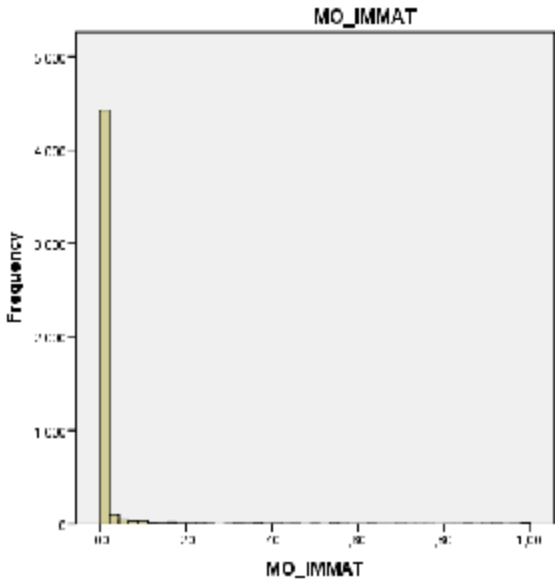
Abbreviations:

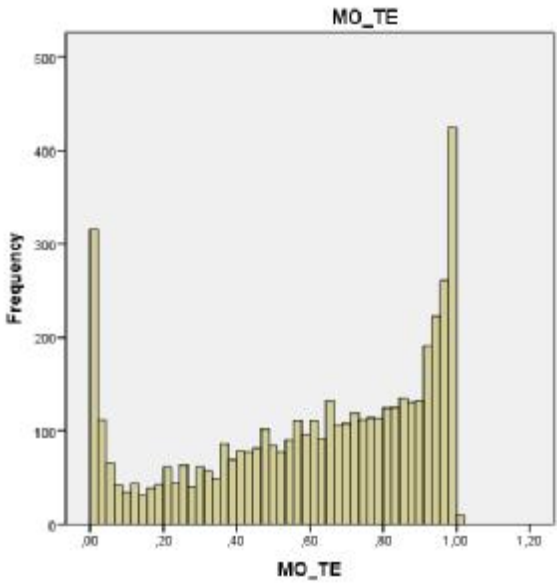
- AFS – available for sale financial assets,
- IAS 16 property – owner occupied properties,
- IAS 40 – investment properties.

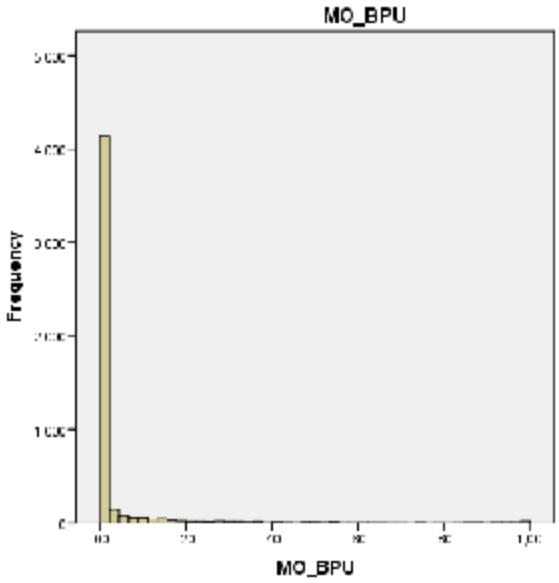
Annex VI. Details of verification of hypothesis H2

1. The asset structure of companies with valuation reserve

	MO_I (Intang. assets)	*MO_TE (PPE)*	*MO_BPU (LT fin. assets)*	MO_KSZ (Inventory)	MO_KOV (Receiv-ables)	*MO_EP (Securi-ties)*	MO_PE (Cash)	MO_AIE (Prepay-ments)
Valid	*4811*	*4811*	*4811*	4811	4811	*4811*	4811	4811
Missing	*0*	*0*	*0*	0	0	*0*	0	0
Mean	*,0225*	*,6091*	*,0341*	,0920	,1600	*,0098*	,0566	,0159
Median	*,0000*	*,6714*	*,0000*	,0086	,0811	*,0000*	,0135	,0006
Mode	*,00*	*,00*	*,00*	,00	,00	*,00*	,00	,00
Std. Deviation	*,11060*	*,31582*	*,12816*	,15699	,19886	*,05354*	,12585	,04678
Minimum	*,00*	*,00*	*,00*	,00	,00	*,00*	,00	,00
Maximum	*1,00*	*1,00*	*1,00*	1,00	1,00	*1,00*	1,00	,60



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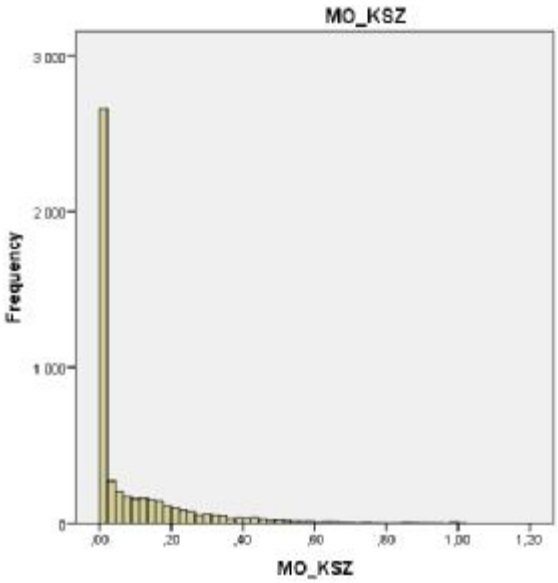
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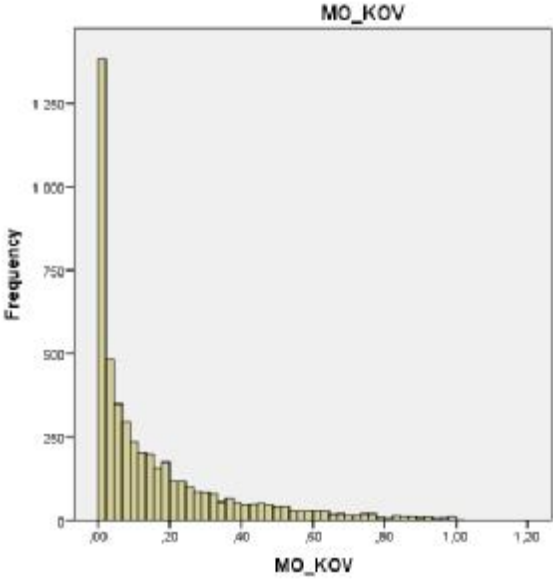
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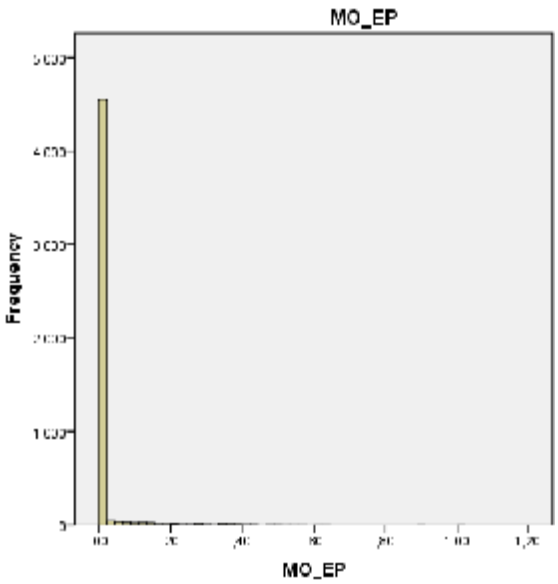
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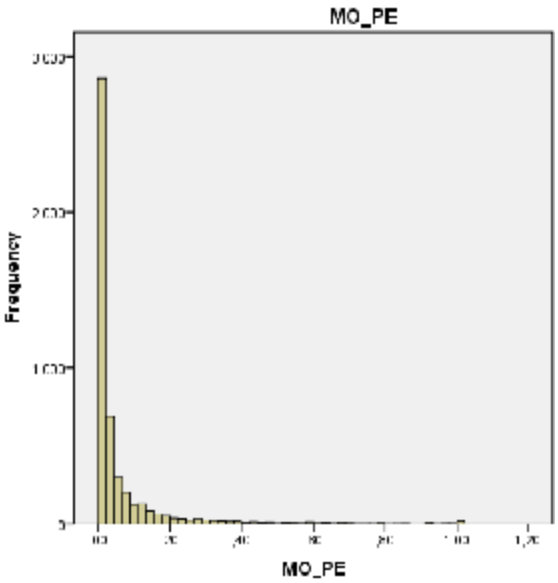
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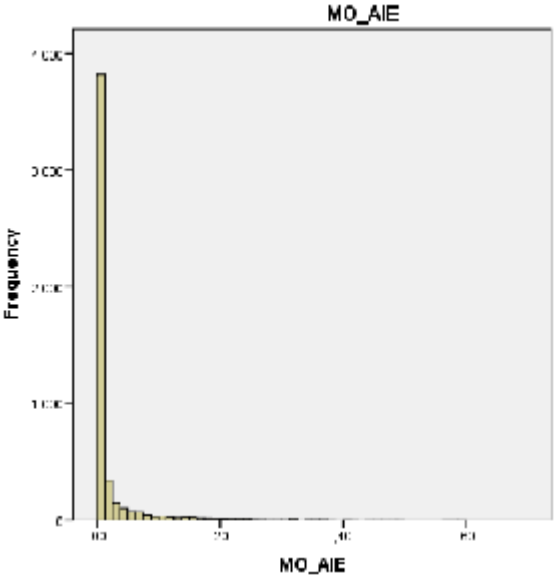
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Frequency
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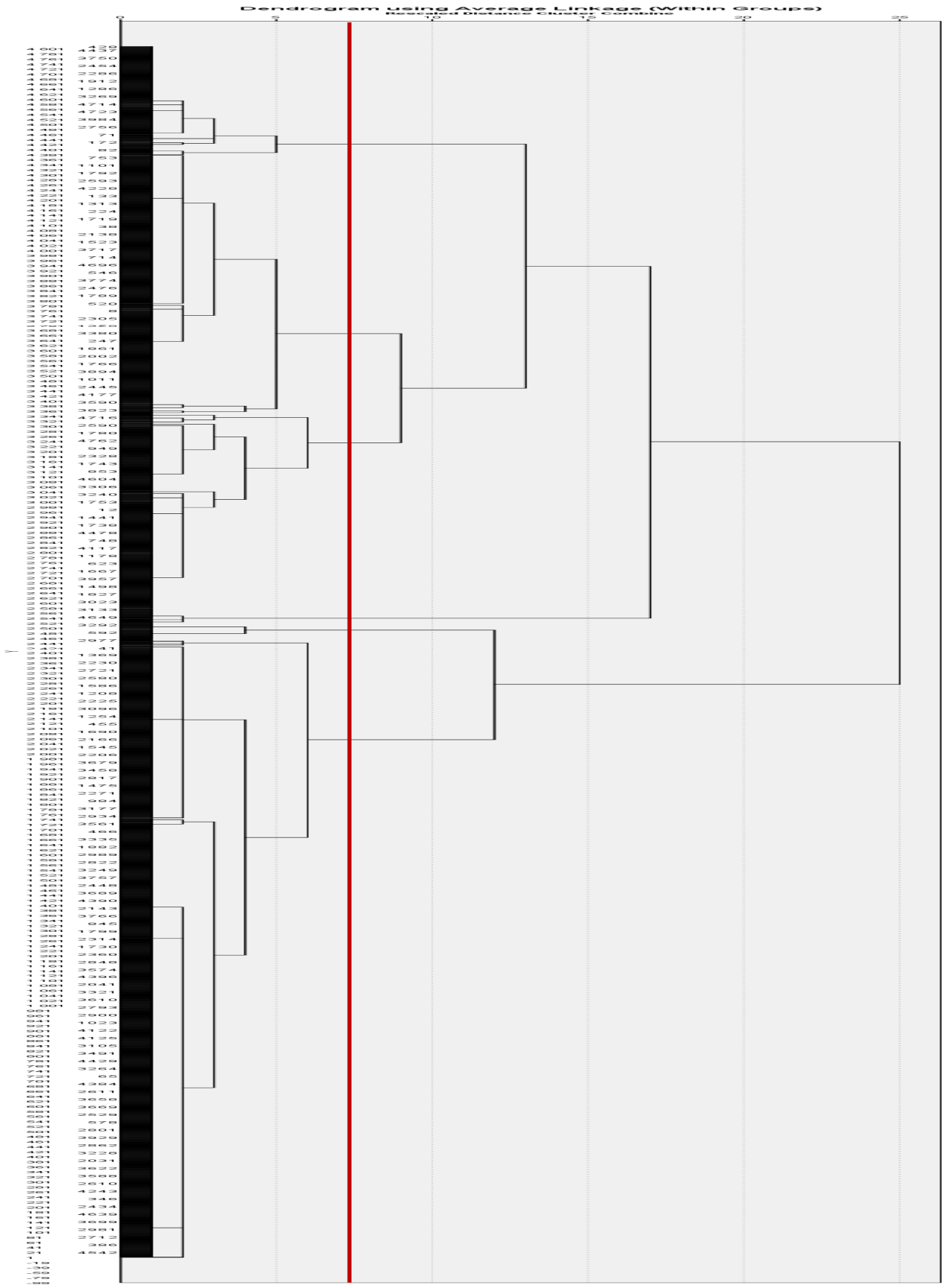
2. Hierarchical cluster analysis – dendogram



3. Details of the non-hierarchical cluster analysis

Initial Cluster Centers

	Cluster					
	1	2	3	4	5	6
MO_IMMAT	,00	,00	,00	1,00	,26	,00
MO_TE	,50	,00	,00	,00	,02	1,00
MO_BPU	,49	,00	1,00	,00	,00	,00
MO_EP	,00	1,00	,00	,00	,00	,00

Iteration History[a]

Iteration	Change in Cluster Centers					
	1	2	3	4	5	6
1	,361	,411	,175	,154	,290	,186
2	,094	,183	,063	,112	,053	,037
3	,027	,054	,034	,029	,015	,022
4	,015	,026	,020	,000	,006	,009
5	,009	,002	,013	,000	,005	,004
6	,006	,012	,014	,000	,004	,002
7	,004	,002	,003	,000	,003	,002
8	,003	,003	,006	,000	,002	,002
9	,002	,000	,000	,000	,001	,001
10	,001	,000	,003	,000	,001	,001
11	,001	,000	,003	,000	,002	,000
12	,001	,000	,003	,000	,001	,001
13	,001	,002	,000	,000	,001	,001
14	,001	,002	,000	,000	,001	,000
15	,001	,002	,000	,000	,001	,000
16	,001	,005	,000	,000	,002	7,943E-005
17	,001	,000	,000	,000	,001	,001
18	,001	,000	,000	,000	,000	,001
19	,002	,000	,000	,000	,002	,000
20	,001	,002	,000	,005	,001	,000
21	,001	,000	,000	,000	,000	,000
22	,001	,000	,000	,000	,000	,000
23	,001	,000	,000	,000	,001	,000
24	,001	,000	,000	,000	,001	,000
25	,000	,000	,000	,000	,000	7,966E-005
26	,000	,002	,000	,000	,001	7,923E-005
27	,000	,002	,000	,000	,000	,000
28	,000	,000	,000	,000	,000	8,794E-005
29	,000	,000	,000	,000	,000	,000

Final Cluster Centers

	Cluster					
	1	2	3	4	5	6
MO_IMMAT	,01	,01	,01	,71	,02	,00
MO_TE	,57	,08	,12	,06	,17	,90
MO_BPU	,02	,05	,70	,01	,02	,00
MO_EP	,01	,32	,01	,00	,00	,00

Distances between Final Cluster Centers

Cluster	1	2	3	4	5	6
1		,586	,817	,865	,399	,328
2	,586		,718	,760	,328	,884
3	,817	,718		,985	,681	1,048
4	,865	,760	,985		,697	1,097
5	,399	,328	,681	,697		,727
6	,328	,884	1,048	1,097	,727	

ANOVA

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
MO_IMMAT	9,776	5	,002	4805	4720,708	,000
MO_TE	86,286	5	,010	4805	8579,459	,000
MO_BPU	12,227	5	,004	4805	3288,096	,000
MO_EP	1,897	5	,001	4805	2120,392	,000

Number of Cases in each Cluster

Cluster	1	1545,000
	2	99,000
	3	132,000
	4	102,000
	5	859,000
	6	2074,000
Valid		4811,000
Missing		,000

4. Details of discriminant analysis

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
MO_IMMAT	,169	4720,708	5	4805	,000
MO_TE	,101	8579,459	5	4805	,000
MO_BPU	,226	3288,096	5	4805	,000
MO_EP	,312	2120,392	5	4805	,000

Log Determinants

Cluster Number of Case	Rank	Log Determinant
1	4	-23,319
2	4	-19,499
3	4	-21,160
4	4	-22,626
5	4	-23,398
6	4	-32,164
Pooled within-groups	4	-23,409

Test Results

Box's M		17240,678
F	Approx.	341,837
	df1	50
	df2	616625,043
	Sig.	,000

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	9,781[a]	51,5	51,5	,952
2	4,560[a]	24,0	75,5	,906
3	2,793[a]	14,7	90,2	,858
4	1,853[a]	9,8	100,0	,806

a. First 4 canonical discriminant functions were used in the analysis.

Wilks' Lambda

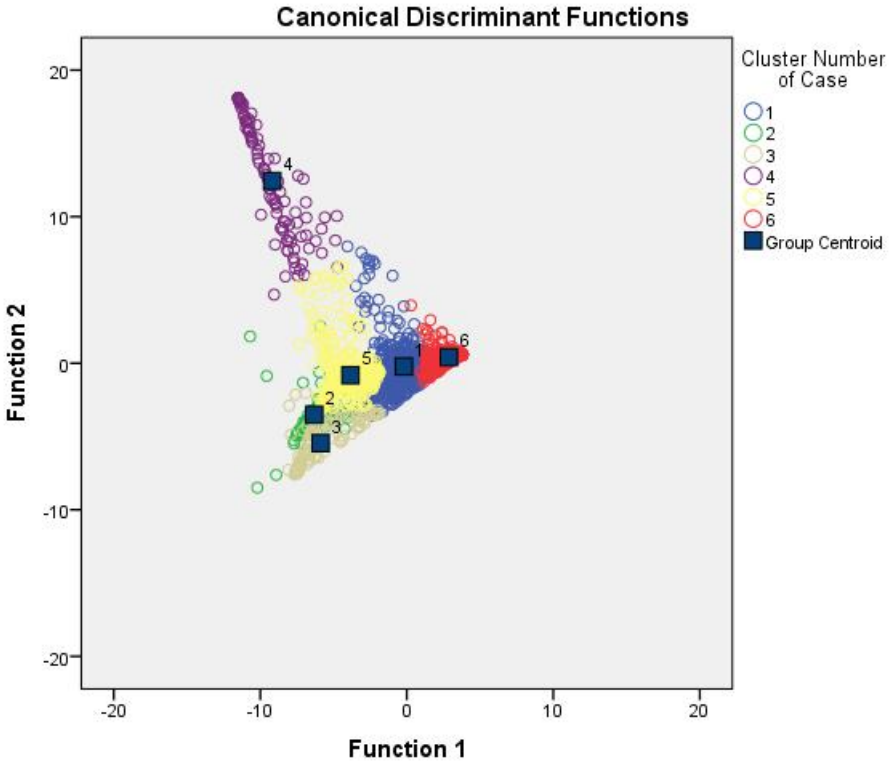
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 4	,002	31112,025	20	,000
2 through 4	,017	19686,748	12	,000
3 through 4	,092	11443,123	6	,000
4	,351	5036,987	2	,000

Standardized Canonical Discriminant Function Coefficients

	Function			
	1	2	3	4
MO_IMMAT	-,287	,887	,300	,212
MO_TE	,904	,195	,288	,276
MO_BPU	-,143	-,379	,905	,175
MO_EP	-,149	-,214	-,242	,936

Structure Matrix

	Function			
	1	2	3	4
MO_TE	,936*	,186	,179	,238
MO_IMMAT	-,341	,874*	,271	,215
MO_BPU	-,227	-,396	,884*	,102
MO_EP	-,156	-,178	-,279	,930*



5. The NACE classification of the clusters

	Sector/cluster	1	2	3	4	5	6	S
01	Crop and animal production, hunting and related service activities	12%	0%	2%	1%	3%	6%	7%
02	Forestry and logging	0%	0%	0%	0%	1%	0%	0%
03	Fishing and aquaculture	0%	0%	0%	0%	0%	0%	0%
08	Other mining and quarrying	0%	0%	0%	1%	0%	0%	0%
09	Mining support service activities	0%	0%	0%	0%	0%	0%	0%
10	Manufacture of food products	5%	0%	2%	0%	2%	3%	3%
11	Manufacture of beverages	2%	0%	0%	2%	1%	1%	1%
12	Manufacture of tobacco products	0%	0%	0%	0%	0%	0%	0%
13	Manufacture of textiles	1%	0%	0%	0%	0%	0%	0%
14	Manufacture of Wearing Apparel	1%	0%	0%	0%	1%	1%	1%
15	Manufacture of Leather…	0%	0%	0%	1%	0%	0%	0%
16	Manufacture of Wood and of Products of Wood and Cork	1%	0%	0%	0%	1%	1%	1%
17	Manufacture of Paper…	1%	0%	0%	0%	0%	0%	0%
18	Printing and Reproduction of Recorded Media	1%	0%	0%	1%	0%	1%	1%
20	Manufacture of Chemicals…	1%	0%	0%	1%	1%	0%	1%
21	Manufacture of Basic Pharmaceutical Products…	0%	0%	1%	0%	0%	0%	0%
22	Manufacture of Rubber and Plastic Products	2%	0%	0%	0%	1%	1%	1%
23	Manufacture of Other Non-Metallic Mineral Products	1%	0%	0%	0%	1%	1%	1%
24	Manufacture of Basic Metals	1%	0%	1%	0%	0%	0%	1%
25	Manufacture of Fabricated Metal Products, Except---	4%	2%	1%	0%	3%	2%	3%
26	Manufacture of Computer, Electronic and Optical Products	0%	0%	0%	1%	1%	0%	0%
27	Manufacture of Electrical Equipment	1%	0%	0%	0%	0%	0%	0%
28	Manufacture of Machinery and Equipment N.E.C.	1%	0%	0%	1%	1%	0%	1%
29	Manufacture of Motor Vehicles, Trailers and Semi-Trailers	1%	0%	0%	1%	0%	0%	0%
30	Manufacture of Other Transport Equipment	0%	0%	0%	0%	0%	0%	0%
31	Manufacture of Furniture	1%	0%	1%	0%	1%	1%	1%
32	Other Manufacturing	1%	0%	0%	0%	1%	0%	0%
33	Repair and Installation of Machinery and Equipment	0%	0%	0%	0%	0%	0%	0%
35	Electricity, Gas, Steam and Air Conditioning Supply	0%	0%	0%	1%	0%	0%	0%
36	Water Collection, Treatment…	0%	0%	0%	0%	0%	0%	0%
37	Sewerage	0%	0%	0%	0%	0%	0%	0%
38	Waste Collection, Treatment…	1%	1%	0%	1%	0%	0%	0%
39	Remediation Activities…	0%	0%	0%	0%	0%	0%	0%
41	Construction of Buildings	3%	2%	5%	2%	5%	4%	4%
42	Civil Engineering	1%	1%	1%	0%	2%	0%	1%
43	Specialised Construction Activities	2%	2%	1%	3%	4%	1%	2%
45	Wholesale and Retail Trade and Repair of Motor Vehicles…	6%	0%	1%	1%	3%	3%	4%
46	Wholesale Trade, Except …	10%	4%	2%	3%	14%	5%	8%
47	Retail Trade, Except…	9%	1%	3%	6%	10%	5%	7%
49	Land Transport and Transport Via Pipelines	3%	0%	1%	0%	2%	2%	2%

	Sector/cluster	1	2	3	4	5	6	S
50	Water Transport	0%	0%	0%	0%	0%	0%	0%
51	Air Transport	0%	0%	0%	0%	0%	0%	0%
52	Warehousing and Support Activities for Transportation	1%	0%	1%	0%	1%	1%	1%
53	Postal and Courier Activities	0%	0%	0%	0%	0%	0%	0%
55	Accommodation	1%	1%	0%	1%	0%	5%	2%
56	Food and Beverage Service Activities	1%	0%	1%	4%	1%	5%	3%
58	Publishing Activities	0%	0%	2%	8%	1%	0%	1%
59	Motion Picture, Video and Television Programme…	0%	0%	0%	2%	0%	0%	0%
60	Programming and Broadcasting Activities	0%	0%	0%	2%	1%	0%	0%
61	Telecommunications	0%	1%	0%	0%	0%	0%	0%
62	Computer Programming, Consultancy…	0%	2%	1%	15%	2%	0%	1%
63	Information Service Activities	0%	0%	0%	1%	0%	0%	0%
64	Financial Service Activities, Except Insurance and Pension…	0%	67%	16%	1%	4%	0%	3%
66	Activities Auxiliary to Financial Services and Insurance Activities	0%	0%	0%	1%	1%	0%	0%
67	(NON-EXISTING SECTOR)	0%	1%	0%	0%	0%	0%	0%
68	Real Estate Activities	13%	3%	24%	7%	9%	39%	24%
69	Legal and Accounting Activities	1%	1%	4%	5%	2%	1%	2%
70	Activities of Head Offices; Management Consultancy…	1%	3%	17%	4%	2%	1%	2%
71	Architectural and Engineering Activities; Technical Testing…	1%	4%	4%	3%	2%	1%	1%
72	Scientific Research and Development	0%	1%	0%	4%	1%	0%	0%
73	Advertising and Market Research	0%	0%	0%	3%	1%	0%	0%
74	Other Professional, Scientific and Technical Activities	0%	0%	2%	0%	1%	0%	0%
75	Veterinary Activities	0%	0%	0%	0%	0%	0%	0%
77	Rental and Leasing Activities	1%	0%	0%	0%	0%	1%	1%
78	Employment Activities	0%	0%	0%	0%	0%	0%	0%
79	Travel Agency, Tour Operator and Other Reservation Service…	0%	0%	2%	0%	1%	0%	0%
80	Security and Investigation Activities	0%	0%	0%	1%	0%	0%	0%
81	Services to Buildings and Landscape Activities	0%	0%	0%	0%	0%	0%	0%
82	Office Administrative, Office Support and Other Business…	1%	1%	4%	1%	1%	0%	1%
85	Public Administration and Defence…	0%	2%	0%	1%	1%	0%	1%
86	Education	1%	0%	3%	1%	2%	1%	1%
87	Human Health Activities	0%	0%	0%	0%	0%	0%	0%
88	Residential Care Activities	0%	0%	0%	0%	0%	0%	0%
90	Social Work Activities Without Accommodation	0%	0%	0%	0%	0%	0%	0%
91	Creative, Arts and Entertainment Activities	0%	0%	1%	0%	0%	0%	0%
92	Libraries, Archives, Museums and Other Cultural Activities	0%	0%	0%	0%	0%	0%	0%
93	Gambling and Betting Activities	0%	0%	0%	10%	0%	2%	1%
94	Sports Activities and Amusement and Recreation Activities	0%	0%	1%	0%	0%	0%	0%
95	Activities of Membership Organisations	0%	0%	0%	0%	0%	0%	0%
96	Repair of Computers and Personal and Household Goods	1%	0%	1%	0%	1%	1%	1%

6. Frequency of fair valuation (DB2 database)

Friedman test

	Unweighted mean ranks	Median	Weighted mean ranks	Median
Value adjustment: intangibles	5,22	1	5,08	1
Value adjustment: real estates	7,14	1	7,82	2
Value adjustment: technical equipments	5,60	1	5,77	1
Value adjustment: other equipments	5,29	1	5,27	1
Value adjustment: animals	5,03	1	4,72	1
Value adjustment: long term investments	5,71	1	5,38	1
Fair valuation: shares	5,18	1	5,24	1
Fair valuation: debts instruments	5,17	1	5,22	1
Fair valuation: receivables	5,69	1	5,41	1
Fair valuation: derivatives	4,97	1	5,09	1

Test Statistics[a]

N	104	1619
Chi-Square	133,854	3059,027
df	9	9
Asymp. Sig.	,000	0,000

a. Friedman Test

Wilcoxon signed rank test – unweighted variables

		N	Mean Rank	Sum of Ranks
VA_LTInv - VA_RealEst	Negative Ranks	36[a]	22,03	793,00
	Positive Ranks	6[b]	18,33	110,00
	Ties	62[c]		
	Total	104		
FV_REC - VA_LTInv	Negative Ranks	14[d]	11,68	163,50
	Positive Ranks	15[e]	18,10	271,50
	Ties	75[f]		
	Total	104		
VA_Techn - FV_REC	Negative Ranks	16[g]	20,34	325,50
	Positive Ranks	15[h]	11,37	170,50
	Ties	73[i]		
	Total	104		
VA_OthEqip - VA_Techn	Negative Ranks	10[j]	5,50	55,00
	Positive Ranks	0[k]	,00	,00
	Ties	94[l]		
	Total	104		
VA_Intang - VA_OthEqip	Negative Ranks	7[m]	6,50	45,50
	Positive Ranks	6[n]	7,58	45,50
	Ties	91[o]		
	Total	104		
FV_Secur - VA_Intang	Negative Ranks	10[p]	10,15	101,50
	Positive Ranks	9[q]	9,83	88,50
	Ties	85[r]		
	Total	104		
VA_Animal - FV_Secur	Negative Ranks	9[s]	5,44	49,00
	Positive Ranks	4[t]	10,50	42,00
	Ties	91[u]		
	Total	104		
FV_DER - VA_Animal	Negative Ranks	5[v]	4,80	24,00
	Positive Ranks	4[w]	5,25	21,00
	Ties	95[x]		
	Total	104		

Test Statistics[a]

	VA_LTInv - VA_RealEst	FV_REC - VA_LTInv	VA_Techn - FV_REC	VA_OthEqip - VA_Techn	VA_Intang - VA_OthEqip	FV_Secur - VA_Intang	VA_Animal - FV_Secur	FV_DER - VA_Animal
Z	-4,354[b]	-1,181[c]	-1,539[b]	-2,972[b]	,000[d]	-,275[b]	-,252[b]	-,180[b]
Asymp. Sig. (2-tailed)	,000	,238	,124	,003	1,000	,784	,801	,857

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

d. The sum of negative ranks equals the sum of positive ranks.

Wilcoxon signed rank test – unweighted variables

		N	Mean Rank	Sum of Ranks
ÉH_Intang - ÉH_RealEst	Negative Ranks	43[a]	22,74	978,00
	Positive Ranks	1[b]	12,00	12,00
	Ties	60[c]		
	Total	104		
ÉH_Techn - ÉH_RealEst	Negative Ranks	38[d]	20,92	795,00
	Positive Ranks	2[e]	12,50	25,00
	Ties	64[f]		
	Total	104		
ÉH_OthEqip - ÉH_RealEst	Negative Ranks	43[g]	22,73	977,50
	Positive Ranks	1[h]	12,50	12,50
	Ties	60[i]		
	Total	104		
ÉH_Animal - ÉH_RealEst	Negative Ranks	45[j]	24,91	1121,00
	Positive Ranks	3[k]	18,33	55,00
	Ties	56[l]		
	Total	104		
ÉH_LTInv - ÉH_RealEst	Negative Ranks	36[m]	22,03	793,00
	Positive Ranks	6[n]	18,33	110,00
	Ties	62[o]		
	Total	104		
VÉ_Share - ÉH_RealEst	Negative Ranks	42[p]	22,39	940,50
	Positive Ranks	3[q]	31,50	94,50
	Ties	59[r]		
	Total	104		
VÉ_SECUR - ÉH_RealEst	Negative Ranks	46[s]	25,26	1162,00
	Positive Ranks	4[t]	28,25	113,00
	Ties	54[u]		
	Total	104		
VÉ_REC - ÉH_RealEst	Negative Ranks	39[v]	24,24	945,50
	Positive Ranks	13[w]	33,27	432,50
	Ties	52[x]		
	Total	104		
VÉ_DER - ÉH_RealEst	Negative Ranks	45[y]	24,17	1087,50
	Positive Ranks	3[z]	29,50	88,50
	Ties	56[aa]		
	Total	104		

Test Statistics[a]

	ÉH_Intang - ÉH_RealEst	ÉH_Techn - ÉH_RealEst	ÉH_OthEqip - ÉH_RealEst	ÉH_Animal - ÉH_RealEst	ÉH_LTInv - ÉH_RealEst	VÉ_Share - ÉH_RealEst	VÉ_SECUR - ÉH_RealEst	VÉ_REC - ÉH_RealEst	VÉ_DER - ÉH_RealEst
Z	-5,757[b]	-5,322[b]	-5,757[b]	-5,564[b]	-4,354[b]	-4,836[b]	-5,165[b]	-2,370[b]	-5,204[b]
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,018	,000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Wilcoxon signed rank test – weighted variables

		N	Mean Rank	Sum of Ranks
ÉH_Techn - ÉH_RealEst	Negative Ranks	800[a]	414,02	331215,00
	Positive Ranks	21[b]	296,00	6216,00
	Ties	798[c]		
	Total	1619		
VÉ_REC - ÉH_Techn	Negative Ranks	407[d]	320,06	130263,00
	Positive Ranks	262[e]	358,21	93852,00
	Ties	950[f]		
	Total	1619		
ÉH_LTInv - VÉ_REC	Negative Ranks	238[g]	225,34	53631,50
	Positive Ranks	209[h]	222,47	46496,50
	Ties	1172[i]		
	Total	1619		
ÉH_OthEqip - ÉH_LTInv	Negative Ranks	255[j]	275,97	70371,50
	Positive Ranks	232[k]	208,86	48456,50
	Ties	1132[l]		
	Total	1619		
VÉ_Share - ÉH_OthEqip	Negative Ranks	276[m]	240,33	66332,00
	Positive Ranks	232[n]	271,35	62954,00
	Ties	1111[o]		
	Total	1619		
VÉ_SECUR - VÉ_Share	Negative Ranks	60[p]	44,50	2670,00
	Positive Ranks	36[q]	55,17	1986,00
	Ties	1523[r]		
	Total	1619		
VÉ_DER - VÉ_SECUR	Negative Ranks	69[s]	35,00	2415,00
	Positive Ranks	3[t]	71,00	213,00
	Ties	1547[u]		
	Total	1619		
ÉH_Intang - VÉ_DER	Negative Ranks	197[v]	191,77	37779,00
	Positive Ranks	209[w]	214,56	44842,00
	Ties	1213[x]		
	Total	1619		
ÉH_Animal - ÉH_Intang	Negative Ranks	163[y]	110,48	18007,50
	Positive Ranks	61[z]	117,91	7192,50
	Ties	1395[aa]		
	Total	1619		

Test Statistics[a]

	ÉH_Techn - ÉH_RealEst	VÉ_REC - ÉH_Techn	ÉH_LTInv - VÉ_REC	ÉH_OthEqip - ÉH_LTInv	VÉ_Share - ÉH_OthEqip	VÉ_SECUR - VÉ_Share	VÉ_DER - VÉ_SECUR	ÉH_Intang - VÉ_DER	ÉH_Animal - ÉH_Intang
Z	-25,128[b]	-3,825[b]	-1,364[b]	-3,745[b]	-,557[b]	-1,350[b]	-6,620[b]	-1,610[c]	-5,798[b]
Asymp. Sig. (2-tailed)	,000	,000	,173	,000	,577	,177	,000	,107	,000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Wilcoxon signed rank test – weighted variables

		N	Mean Rank	Sum of Ranks
ÉH_Intang - ÉH_RealEst	Negative Ranks	955[a]	483,94	462160,00
	Positive Ranks	9[b]	330,00	2970,00
	Ties	655[c]		
	Total	1619		
ÉH_Techn - ÉH_RealEst	Negative Ranks	800[d]	414,02	331215,00
	Positive Ranks	21[e]	296,00	6216,00
	Ties	798[f]		
	Total	1619		
ÉH_OthEqip - ÉH_RealEst	Negative Ranks	923[g]	468,03	431992,50
	Positive Ranks	9[h]	309,50	2785,50
	Ties	687[i]		
	Total	1619		
ÉH_Animal - ÉH_RealEst	Negative Ranks	989[j]	503,97	498425,00
	Positive Ranks	20[k]	556,00	11120,00
	Ties	610[l]		
	Total	1619		
ÉH_LTInv - ÉH_RealEst	Negative Ranks	823[m]	434,27	357407,50
	Positive Ranks	56[n]	524,15	29352,50
	Ties	740[o]		
	Total	1619		
VÉ_Share - ÉH_RealEst	Negative Ranks	810[p]	410,64	332618,50
	Positive Ranks	25[q]	656,46	16411,50
	Ties	784[r]		
	Total	1619		
VÉ_SECUR - ÉH_RealEst	Negative Ranks	853[s]	433,07	369408,50
	Positive Ranks	25[t]	658,90	16472,50
	Ties	741[u]		
	Total	1619		
VÉ_REC - ÉH_RealEst	Negative Ranks	800[v]	424,12	339294,50
	Positive Ranks	87[w]	626,82	54533,50
	Ties	732[x]		
	Total	1619		
VÉ_DER - ÉH_RealEst	Negative Ranks	850[y]	433,81	368736,00
	Positive Ranks	23[z]	555,00	12765,00
	Ties	746[aa]		
	Total	1619		

Test Statistics[a]

	ÉH_Intang - ÉH_RealEst	ÉH_Techn - ÉH_RealEst	ÉH_OthEqip - ÉH_RealEst	ÉH_Animal - ÉH_RealEst	ÉH_LTInv - ÉH_RealEst	VÉ_Share - ÉH_RealEst	VÉ_SECUR - ÉH_RealEst	VÉ_REC - ÉH_RealEst	VÉ_DER - ÉH_RealEst
Z	-27,713[b]	-25,128[b]	-27,145[b]	-27,078[b]	-22,332[b]	-23,073[b]	-23,990[b]	-18,980[b]	-24,325[b]
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,000

a. Wilcoxon Signed Ranks Test

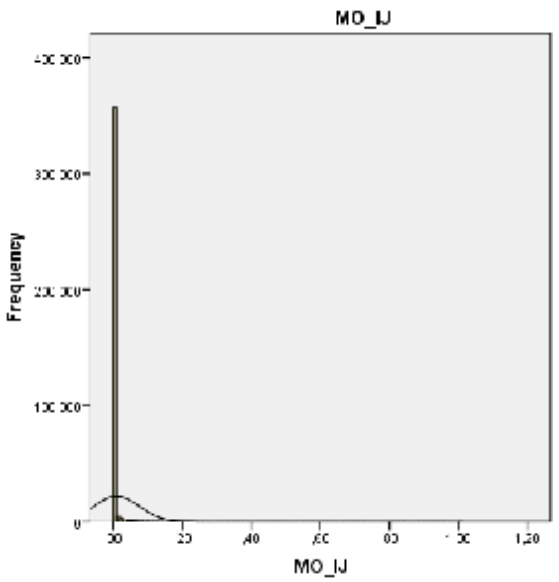
b. Based on positive ranks.

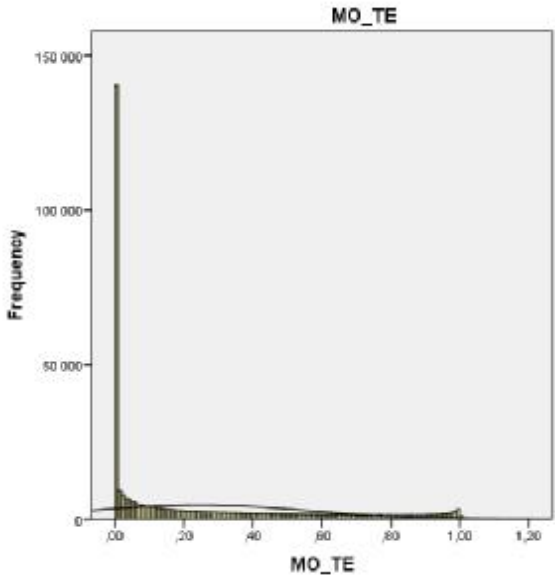
Annex VII. Details of verification of hypothesis H3

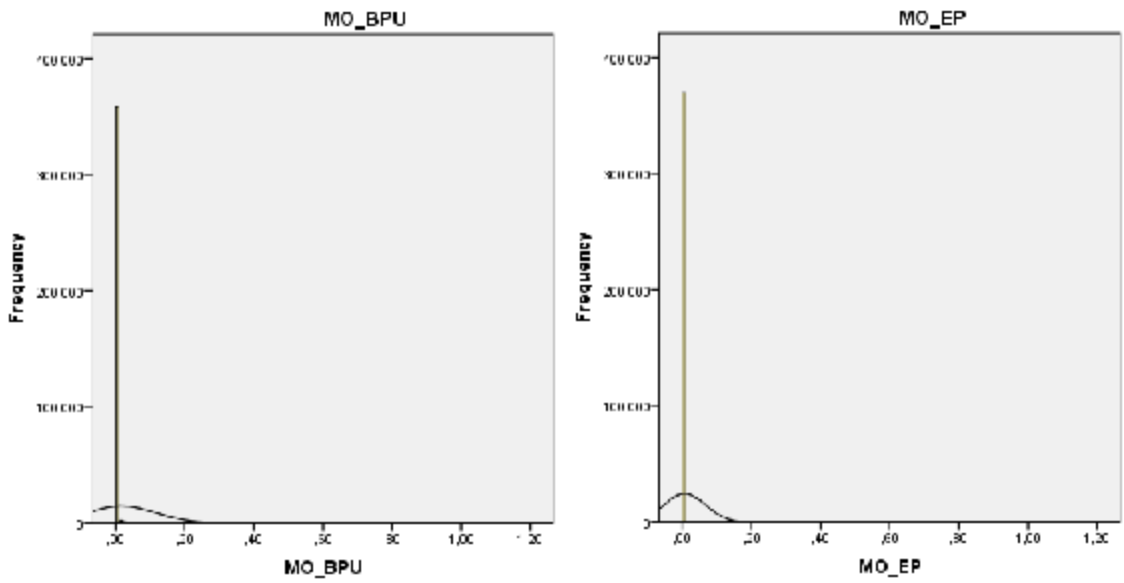
1. Distribution assets possibly measured at fair value

Statistics

		MO_I (Intang. assets)	*MO_TE (PPE)*	*MO_BPU (LT fin. assets)*	*MO_EP (Securities)*
N	Valid	379673	379673	379673	379673
	Missing	0	0	0	0
Mean		,0092	,2433	,0164	,0067
Median		,0000	,0836	,0000	,0000
Mode		,00	,00	,00	,00
Std. Deviation		,06572	,30712	,09963	,05900
Minimum		,00	,00	,00	,00
Maximum		1,00	1,00	1,00	1,00
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0000	,0000	,0000
	30	,0000	,0000	,0000	,0000
	40	,0000	,0219	,0000	,0000
	50	,0000	,0836	,0000	,0000
	60	,0000	,1852	,0000	,0000
	70	,0000	,3352	,0000	,0000
	80	,0000	,5336	,0000	,0000
	90	,0015	,7806	,0000	,0000







2. Categorization of the distribution of assets possibly measured at fair value

Statistics

Category: TA1		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	225461	225461	225461	225461
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0000	,0000	,0000
	30	,0000	,0000	,0000	,0000
	40	,0000	,0000	,0000	,0000
	50	,0000	,0049	,0000	,0000
	60	,0000	,0650	,0000	,0000
	70	,0000	,1765	,0000	,0000
	80	,0000	,3670	,0000	,0000
	90	,0000	,6564	,0000	,0000

Statistics

Category: TA2		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	87702	87702	87702	87702
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0129	,0000	,0000
	30	,0000	,0516	,0000	,0000
	40	,0000	,1140	,0000	,0000
	50	,0000	,1963	,0000	,0000
	60	,0000	,3075	,0000	,0000
	70	,0000	,4573	,0000	,0000
	80	,0000	,6436	,0000	,0000
	90	,0033	,8550	,0000	,0000

Statistics

Category: TA3		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	24247	24247	24247	24247
	Missing	0	0	0	0
Percentiles	10	,0000	,0018	,0000	,0000
	20	,0000	,0348	,0000	,0000
	30	,0000	,0898	,0000	,0000
	40	,0000	,1722	,0000	,0000
	50	,0000	,2850	,0000	,0000
	60	,0000	,4152	,0000	,0000
	70	,0000	,5548	,0000	,0000
	80	,0007	,7145	,0000	,0000
	90	,0054	,8909	,0125	,0000

Statistics

Category: TA4		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	20195	20195	20195	20195
	Missing	0	0	0	0
Percentiles	10	,0000	,0020	,0000	,0000
	20	,0000	,0395	,0000	,0000
	30	,0000	,1047	,0000	,0000
	40	,0000	,2033	,0000	,0000
	50	,0000	,3245	,0000	,0000
	60	,0000	,4526	,0000	,0000
	70	,0003	,5888	,0000	,0000
	80	,0014	,7334	,0011	,0000
	90	,0081	,8983	,0433	,0000

Statistics

Category: TA5		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	9127	9127	9127	9127
	Missing	0	0	0	0
Percentiles	10	,0000	,0022	,0000	,0000
	20	,0000	,0400	,0000	,0000
	30	,0000	,1181	,0000	,0000
	40	,0000	,2280	,0000	,0000
	50	,0000	,3540	,0000	,0000
	60	,0002	,4700	,0000	,0000
	70	,0007	,5952	,0006	,0000
	80	,0025	,7391	,0082	,0000
	90	,0138	,8970	,1011	,0005

Statistics

Category: TA6		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	9543	9543	9543	9543
	Missing	0	0	0	0
Percentiles	10	,0000	,0009	,0000	,0000
	20	,0000	,0374	,0000	,0000
	30	,0000	,1166	,0000	,0000
	40	,0000	,2413	,0000	,0000
	50	,0001	,3651	,0000	,0000
	60	,0005	,4847	,0004	,0000
	70	,0014	,6077	,0041	,0000
	80	,0046	,7486	,0291	,0000
	90	,0191	,9155	,1992	,0036

Statistics

Category: TA7		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	2583	2583	2583	2583
	Missing	0	0	0	0
Percentiles	10	,0000	,0004	,0000	,0000
	20	,0000	,0182	,0000	,0000
	30	,0000	,0818	,0000	,0000
	40	,0001	,2112	,0000	,0000
	50	,0005	,3554	,0006	,0000
	60	,0014	,4876	,0042	,0000
	70	,0031	,6268	,0240	,0000
	80	,0078	,7793	,1027	,0000
	90	,0275	,9241	,3813	,0136

Statistics

Category: TA8		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	815	815	815	815
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0000	,0000	,0000
	30	,0000	,0018	,0001	,0000
	40	,0001	,0170	,0017	,0000
	50	,0004	,0574	,0122	,0000
	60	,0012	,2523	,0579	,0000
	70	,0031	,4661	,1851	,0000
	80	,0093	,6629	,5735	,0004
	90	,0347	,8885	,9354	,1164

Statistics

Category: REV0		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	66944	66944	66944	66944
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0000	,0000	,0000
	30	,0000	,0000	,0000	,0000
	40	,0000	,0000	,0000	,0000
	50	,0000	,0000	,0000	,0000
	60	,0000	,0000	,0000	,0000
	70	,0000	,0000	,0000	,0000
	80	,0000	,1775	,0000	,0000
	90	,0000	,8135	,0000	,0000

Statistics

Category: REV1		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	155092	155092	155092	155092
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0000	,0000	,0000
	30	,0000	,0000	,0000	,0000
	40	,0000	,0043	,0000	,0000
	50	,0000	,0570	,0000	,0000
	60	,0000	,1522	,0000	,0000
	70	,0000	,3133	,0000	,0000
	80	,0000	,5491	,0000	,0000
	90	,0000	,8196	,0000	,0000

Statistics

Category: REV2		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	88835	88835	88835	88835
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0089	,0000	,0000
	30	,0000	,0435	,0000	,0000
	40	,0000	,0998	,0000	,0000
	50	,0000	,1778	,0000	,0000
	60	,0000	,2822	,0000	,0000
	70	,0000	,4143	,0000	,0000
	80	,0000	,5768	,0000	,0000
	90	,0028	,7714	,0000	,0000

Statistics

Category: REV3		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	25296	25296	25296	25296
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000
	20	,0000	,0215	,0000	,0000
	30	,0000	,0635	,0000	,0000
	40	,0000	,1207	,0000	,0000
	50	,0000	,1951	,0000	,0000
	60	,0000	,2910	,0000	,0000
	70	,0000	,4076	,0000	,0000
	80	,0005	,5512	,0000	,0000
	90	,0058	,7256	,0006	,0000

Statistics

Category: REV4		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	21835	21835	21835	21835
	Missing	0	0	0	0
Percentiles	10	,0000	,0028	,0000	,0000
	20	,0000	,0318	,0000	,0000
	30	,0000	,0774	,0000	,0000
	40	,0000	,1380	,0000	,0000
	50	,0000	,2141	,0000	,0000
	60	,0000	,3099	,0000	,0000
	70	,0003	,4201	,0000	,0000
	80	,0016	,5436	,0000	,0000
	90	,0086	,7058	,0081	,0000

Statistics

Category: REV5		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	9849	9849	9849	9849
	Missing	0	0	0	0
Percentiles	10	,0000	,0059	,0000	,0000
	20	,0000	,0383	,0000	,0000
	30	,0000	,0864	,0000	,0000
	40	,0000	,1481	,0000	,0000
	50	,0000	,2277	,0000	,0000
	60	,0002	,3207	,0000	,0000
	70	,0009	,4268	,0000	,0000
	80	,0029	,5448	,0010	,0000
	90	,0132	,6885	,0208	,0000

Statistics

Category: REV6		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	9164	9164	9164	9164
	Missing	0	0	0	0
Percentiles	10	,0000	,0080	,0000	,0000
	20	,0000	,0383	,0000	,0000
	30	,0000	,0842	,0000	,0000
	40	,0001	,1489	,0000	,0000
	50	,0004	,2353	,0000	,0000
	60	,0009	,3326	,0000	,0000
	70	,0022	,4319	,0009	,0000
	80	,0063	,5418	,0067	,0000
	90	,0227	,6780	,0477	,0018

Statistics

Category: REV7		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	2112	2112	2112	2112
	Missing	0	0	0	0
Percentiles	10	,0000	,0065	,0000	,0000
	20	,0001	,0306	,0000	,0000
	30	,0003	,0752	,0000	,0000
	40	,0008	,1399	,0000	,0000
	50	,0016	,2263	,0002	,0000
	60	,0031	,3130	,0011	,0000
	70	,0057	,4154	,0060	,0000
	80	,0111	,5197	,0270	,0000
	90	,0288	,6455	,0973	,0004

Statistics

Category: REV8		MO_IJ	MO_TE	MO_BPU	MO_EP
N	Valid	546	546	546	546
	Missing	0	0	0	0
Percentiles	10	,0000	,0030	,0000	,0000
	20	,0002	,0147	,0000	,0000
	30	,0006	,0467	,0000	,0000
	40	,0014	,1134	,0003	,0000
	50	,0025	,1861	,0010	,0000
	60	,0051	,2682	,0039	,0000
	70	,0089	,3621	,0187	,0000
	80	,0156	,4707	,0618	,0000
	90	,0600	,6263	,2021	,0108

3. Categorization of the gross values of PPE

		TA1	TA2	TA3	TA4
N	Valid	225461	87702	24247	20195
	Missing	0	0	0	0
Percentiles	10	,0000	,0000	121,0000	308,0000
	20	,0000	739,0000	5101,0000	11072,2000
	30	,0000	2713,0000	12588,4000	28431,8000
	40	,0000	5272,2000	21585,4000	49471,4000
	50	180,0000	8218,0000	32159,0000	72778,0000
	60	494,0000	11639,0000	43570,6000	97182,8000
	70	1108,0000	15916,0000	55022,2000	120241,2000
	80	2400,0000	21761,0000	67424,2000	149162,8000
	90	5002,0000	31968,7000	85465,2000	192030,2000

		TA5	TA6	TA7	TA8
N	Valid	9127	9543	2583	815
	Missing	0	0	0	0
Percentiles	10	450,2000	990,0000	2894,8000	,0000
	20	25551,4000	58693,6000	152204,6000	1089,4000
	30	67243,6000	166043,0000	542242,8000	177050,6000
	40	117636,6000	307812,2000	1259452,8000	801201,0000
	50	171406,0000	444332,0000	2020979,0000	4186758,0000
	60	225996,8000	576524,2000	2703144,0000	10168499,6000
	70	277993,6000	722546,4000	3456604,8000	16182668,6000
	80	334134,0000	947051,4000	4489307,2000	24375346,0000
	90	413220,2000	1358199,0000	6613343,8000	59661633,6000

		REV0	REV1	REV2	REV3	REV4
N	Valid	66944	155092	88835	25296	21835
	Missing	0	0	0	0	0
Percentiles	10	,0000	,0000	,0000	,0000	243,6000
	20	,0000	,0000	300,0000	1248,4000	3680,2000
	30	,0000	,0000	1109,8000	3889,1000	9208,8000
	40	,0000	188,0000	2555,0000	7362,8000	16381,8000
	50	,0000	483,0000	4565,0000	12095,5000	26581,0000
	60	,0000	1048,0000	7241,0000	19399,2000	41052,0000
	70	101,0000	2241,0000	11347,4000	30558,4000	64619,6000
	80	750,0000	4712,0000	19092,8000	50622,6000	109012,8000
	90	4860,5000	11669,7000	40622,8000	102245,9000	213384,4000

		REV5	REV6	REV7	REV8
N	Valid	9849	9164	2112	546
	Missing	0	0	0	0
Percentiles	10	1197,0000	4245,5000	26462,5000	94589,5000
	20	9732,0000	26046,0000	121517,6000	452236,4000
	30	21401,0000	59931,5000	267521,3000	1284815,4000
	40	37408,0000	106712,0000	515772,0000	2940235,0000
	50	59837,0000	173877,0000	889781,5000	5497011,5000
	60	92550,0000	275375,0000	1390622,4000	9199454,8000
	70	146302,0000	424079,0000	2140432,0000	15672654,3000
	80	238583,0000	684116,0000	3338099,2000	30807237,8000
	90	460082,0000	1306592,0000	6182086,9000	94064025,5000

4. Reasons for not opting for fair value – Friedman test (DB2 database)

	Unweighted mean ranks	Median	Weighted mean ranks	Median
Not opted: High costs	5,88	2	6,12	3
Not opted: Not relevant	5,89	2,5	6,14	4
Not opted: Fair value not measurable	5,44	1,5	5,05	1
Not opted: No assets measureable at fair value	5,32	1	5,51	3
Not opted: Group policy	4,33	1	4,33	1
Not opted: Not relevant together with IFRS reporting	3,81	1	3,90	1
Not opted: Taxation disadvantage	3,58	1	3,40	1
Not opted: No tax benefit	4,55	1	4,69	1
Not opted: No reason/unknown	6,22	3,5	5,86	2

Test Statistics[a]

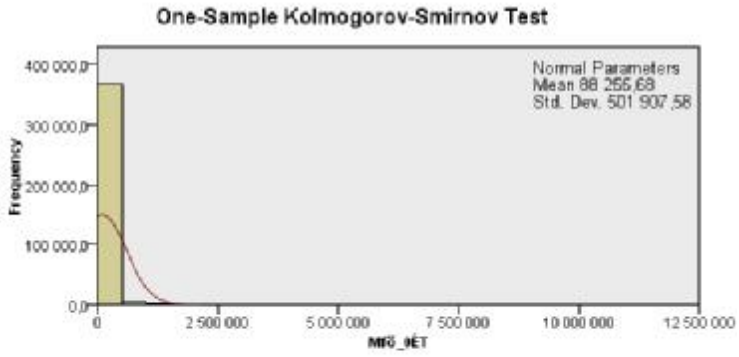
N	104	1619
Chi-Square	173,652	2667,793
df	8	8
Asymp. Sig.	,000	0,000

a. Friedman Test

Annex VIII. Details of verification of hypothesis H4

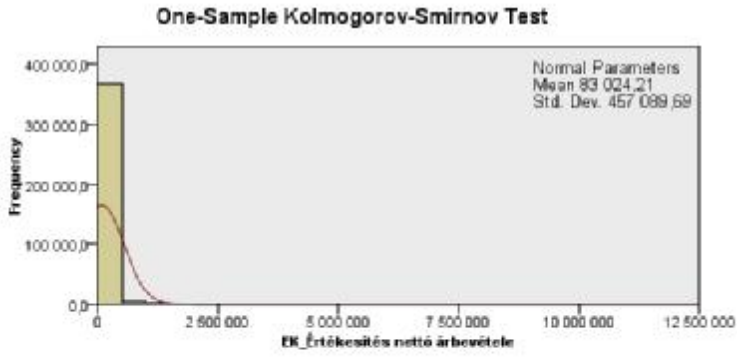
1. Testing normality of total assets and sales revenue

Total assets less valuation reserve:



Total N		378 687
Most Extreme Differences	Absolute	,430
	Positive	,383
	Negative	-,430
Test Statistic		264,760
Asymptotic Sig. (2-sided test)		,000

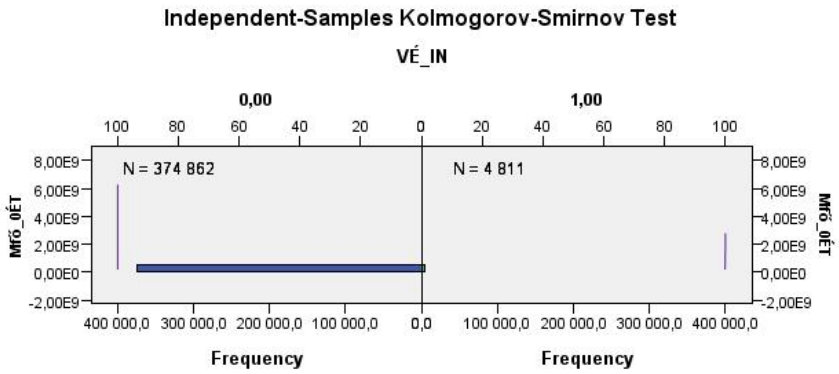
Revenue:



Total N		379 127
Most Extreme Differences	Absolute	,428
	Positive	,372
	Negative	-,428
Test Statistic		263,493
Asymptotic Sig. (2-sided test)		,000

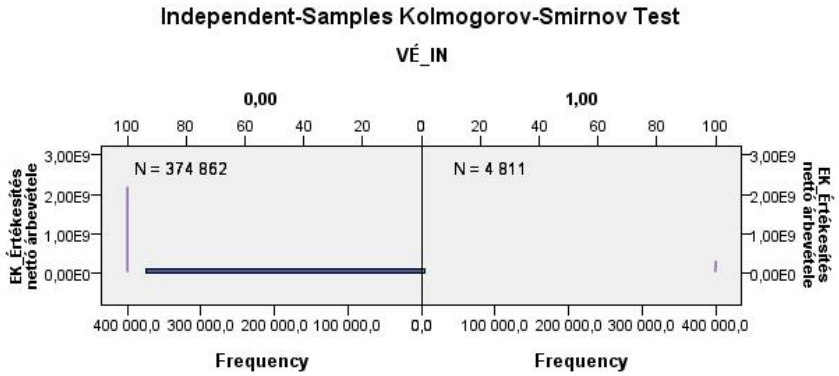
2. Differentiation of companies using fair valuation

Total assets– Kolmogorov-Smirnov test, P=5%



Total N		379 673
Most Extreme Differences	Absolute	,537
	Positive	,537
	Negative	-,008
Test Statistic		37,024
Asymptotic Sig. (2-sided test)		,000

Revenue – Kolmogorov-Smirnov test, P=5%



Total N		379 673
Most Extreme Differences	Absolute	,365
	Positive	,365
	Negative	-,000
Test Statistic		25,132
Asymptotic Sig. (2-sided test)		,000

3. Fair valuation as a function of size – Friedman test (DB2 database)

Based on total assets

	Unweighted mean ranks	Median	Weighted mean ranks	Median
Companies using value adjustment with total assets lower than 100M HUF	5,19	1	5,03	1
Companies using value adjustment with total assets between 100M-250M HUF	5,99	1	5,33	1
Companies using value adjustment with total assets between 250M-500M HUF	6,65	1	6,98	2
Companies using value adjustment with total assets between 500M-1000M HUF	6,24	1	6,46	1
Companies using value adjustment with total assets higher than 1000M HUF	6,08	1	6,56	1
Companies using fair valuation with total assets lower than 100M HUF	4,70	1	4,44	1
Companies using fair valuation with total assets between 100M-250M HUF	4,78	1	4,49	1
Companies using fair valuation with total assets between 250M-500M HUF	5,34	1	5,36	1
Companies using fair valuation with total assets between 500M-1000M HUF	5,11	1	5,23	1
Companies using fair valuation with total assets higher than 1000M HUF	4,91	1	5,11	1

Test Statistics[a]

N	49	871
Chi-Square	50,435	1413,761
df	9	9
Asymp. Sig.	,000	0,000

a. Friedman Test

Based on revenue:

	Unweighted mean ranks	Median	Weighted mean ranks	Median
Companies using value adjustment with revenue lower than 200M HUF	6,44	1	5,78	1
Companies using value adjustment with revenue between 200M-500M HUF	6,06	1	5,64	1
Companies using value adjustment with revenue between 500M-1000M HUF	6,32	1	6,90	2
Companies using value adjustment with revenue between 1000M-2000M HUF	5,85	1	6,13	1
Companies using value adjustment with revenue higher than 2000M HUF	5,33	1	5,88	1
Companies using fair valuation with revenue lower than 200M HUF	4,68	1	4,36	1
Companies using fair valuation with revenue between 200M-500M HUF	5,28	1	4,69	1
Companies using fair valuation with revenue between 500M-1000M HUF	5,12	1	5,26	1
Companies using fair valuation with revenue between 1000M-2000M HUF	5,15	1	5,28	1
Companies using fair valuation with revenue higher than 2000M HUF	4,78	1	5,07	1

Test Statistics[a]

N	49	871
Chi-Square	41,754	879,426
df	9	9
Asymp. Sig.	,000	0,000

a. Friedman Test

4. Differentiation of share capital – equity ratio according to the size

Based on equity with valuation reserve:

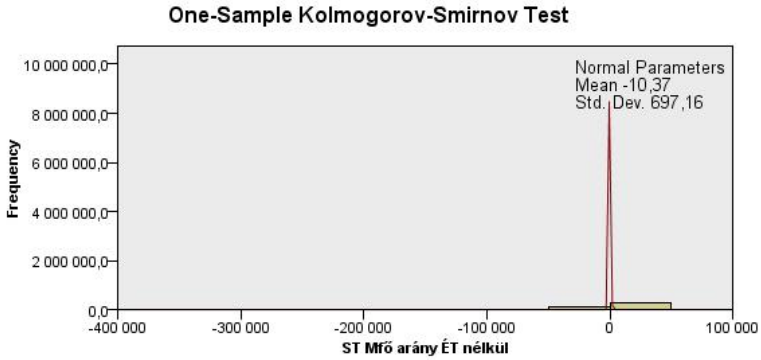
		ST_JT_KAT							
		Negative		*0%-50%*		*51%-66%*		Above 66%	
		Count	Row N %	*Count*	*Row N %*	*Count*	*Row N %*	Count	Row N %
Total assets categories	1,00	69496	30,8%	*20435*	*9,1%*	*7701*	*3,4%*	127825	56,7%
	2,00	12514	14,3%	*3315*	*3,8%*	*1575*	*1,8%*	70298	80,2%
	3,00	2632	10,9%	*640*	*2,6%*	*254*	*1,0%*	20720	85,5%
	4,00	2079	10,3%	*464*	*2,3%*	*220*	*1,1%*	17432	86,3%
	5,00	881	9,7%	*186*	*2,0%*	*93*	*1,0%*	7967	87,3%
	6,00	872	9,1%	*216*	*2,3%*	*113*	*1,2%*	8342	87,4%
	7,00	267	10,3%	*64*	*2,5%*	*38*	*1,5%*	2214	85,7%
	8,00	48	5,9%	*18*	*2,2%*	*10*	*1,2%*	739	90,7%
	,00	20807	31,1%	*8119*	*12,1%*	*2854*	*4,3%*	35163	52,5%
Revenue categories	1,00	46476	30,0%	*12267*	*7,9%*	*4876*	*3,1%*	91470	59,0%
	2,00	15685	17,7%	*3613*	*4,1%*	*1631*	*1,8%*	67906	76,4%
	3,00	2752	10,9%	*629*	*2,5%*	*304*	*1,2%*	21611	85,4%
	4,00	1774	8,1%	*363*	*1,7%*	*174*	*0,8%*	19523	89,4%
	5,00	664	6,7%	*159*	*1,6%*	*67*	*0,7%*	8959	91,0%
	6,00	505	5,5%	*138*	*1,5%*	*61*	*0,7%*	8460	92,3%
	7,00	104	4,9%	*42*	*2,0%*	*27*	*1,3%*	1939	91,8%
	8,00	22	4,0%	*8*	*1,5%*	*10*	*1,8%*	506	92,7%

Based on equity without valuation reserve:

		ST_JT_ÉT0_KAT							
		Negative		*0%-50%*		*51%-66%*		Above 66%	
		Count	Row N %	*Count*	*Row N %*	*Count*	*Row N %*	Count	Row N %
Total assets categories	1,00	69556	30,9%	*20445*	*9,1%*	*7702*	*3,4%*	127747	56,7%
	2,00	12710	14,5%	*3341*	*3,8%*	*1578*	*1,8%*	70073	79,9%
	3,00	2804	11,6%	*658*	*2,7%*	*259*	*1,1%*	20525	84,7%
	4,00	2308	11,4%	*486*	*2,4%*	*220*	*1,1%*	17181	85,1%
	5,00	1039	11,4%	*206*	*2,3%*	*100*	*1,1%*	7782	85,3%
	6,00	1174	12,3%	*233*	*2,4%*	*125*	*1,3%*	8011	83,9%
	7,00	378	14,6%	*78*	*3,0%*	*41*	*1,6%*	2086	80,8%
	8,00	77	9,4%	*20*	*2,5%*	*12*	*1,5%*	706	86,6%
	,00	20962	31,3%	*8127*	*12,1%*	*2857*	*4,3%*	34991	52,3%
Revenue categories	1,00	46775	30,2%	*12318*	*7,9%*	*4887*	*3,2%*	91108	58,7%
	2,00	15963	18,0%	*3646*	*4,1%*	*1634*	*1,8%*	67592	76,1%
	3,00	2903	11,5%	*635*	*2,5%*	*309*	*1,2%*	21449	84,8%
	4,00	1933	8,9%	*380*	*1,7%*	*178*	*0,8%*	19343	88,6%
	5,00	756	7,7%	*161*	*1,6%*	*68*	*0,7%*	8864	90,0%
	6,00	604	6,6%	*147*	*1,6%*	*66*	*0,7%*	8347	91,1%
	7,00	125	5,9%	*44*	*2,1%*	*26*	*1,2%*	1917	90,8%
	8,00	25	4,6%	*9*	*1,6%*	*12*	*2,2%*	500	91,6%

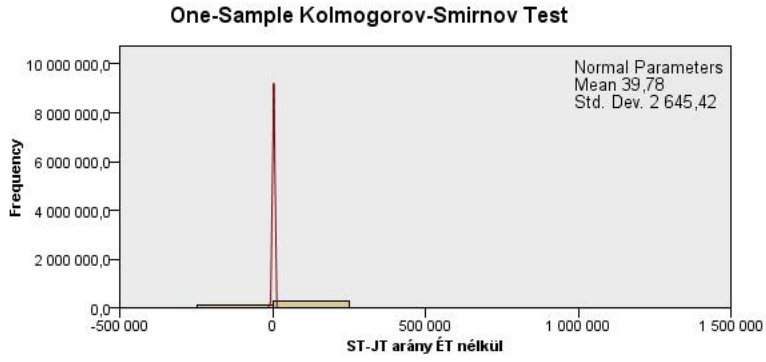
5. Testing normality of leverage ratios

Equity – Total assets ratio, without valuation reserve:



Total N		379 666
Most Extreme Differences	**Absolute**	,493
	Positive	,493
	Negative	-,469
Test Statistic		304,028
Asymptotic Sig. (2-sided test)		,000

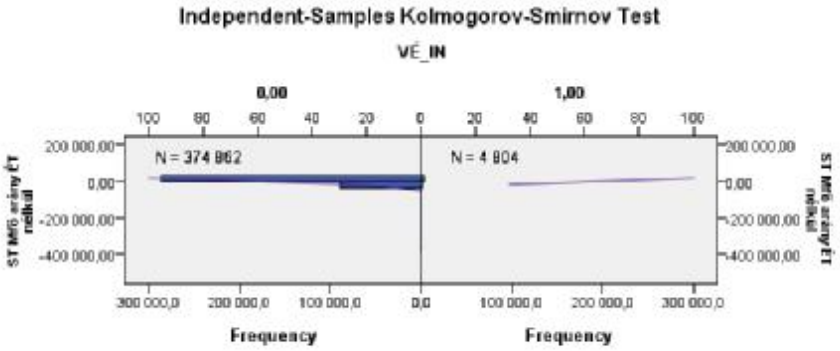
Share capital – Equity ratio, without valuation reserve:



Total N		377 655
Most Extreme Differences	**Absolute**	,452
	Positive	,441
	Negative	-,452
Test Statistic		277,951
Asymptotic Sig. (2-sided test)		,000

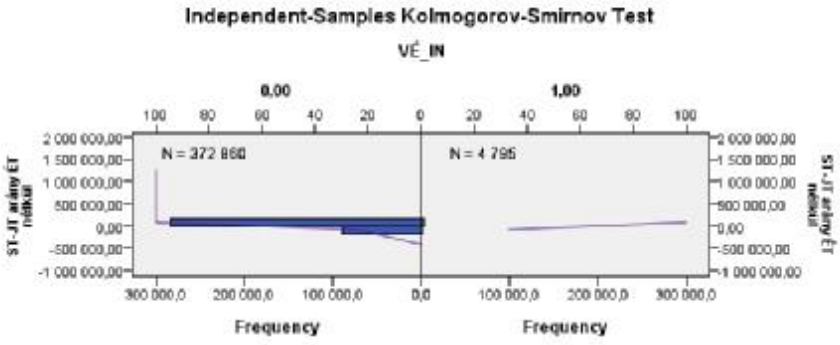
6. Equity position as a function of using fair valuation

Equity – Total assets ratio – Kolmogorov-Smirnov test, P=5%



Total N		379 666
Most Extreme Differences	Absolute	,185
	Positive	,069
	Negative	-,185
Test Statistic		12,715
Asymptotic Sig. (2-sided test)		,000

Share capital – Equity ratio – Kolmogorov-Smirnov test, P=5%



Total N		377 655
Most Extreme Differences	Absolute	,096
	Positive	,000
	Negative	-,096
Test Statistic		6,574
Asymptotic Sig. (2-sided test)		,000

7. The effect of fair valuation on the distribution based on leverage ratios

Equity – Total assets ratio:

Count

		ST_ÉT0_KAT					Total
		Negative	0%-25%	26%-50%	51%-75%	Above 75%	
ST_MFŐ_KAT	Negative	332	0	0	0	0	332
	0%-25%	692	436	0	0	0	1128
	26%-50%	316	416	377	0	0	1109
	51%-75%	181	182	410	393	0	1166
	Above 75%	58	57	86	256	619	1076
Total		1579	1091	873	649	619	4811

Share capital – Equity ratio:

Count

		ST_JT_ÉT0_KAT				Total
		Negative	0%-50%	51%-66%	Above 66%	
ST_JT_KAT	Negative	332	0	0	0	332
	0%-50%	114	36	0	0	150
	51%-66%	44	27	3	0	74
	Above 66%	1099	223	104	2822	4248
Total		1589	286	107	2822	4804

8. Sample based on entities not opting for fair value

Total assets categories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4,00	1401	34,4	34,4	34,4
	5,00	899	22,1	22,1	56,5
	6,00	1263	31,0	31,0	87,5
	7,00	412	10,1	10,1	97,6
	8,00	98	2,4	2,4	100,0
	Total	4073	100,0	100,0	

Revenue categories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4,00	1764	43,3	43,3	43,3
	5,00	1030	25,3	25,3	68,6
	6,00	1077	26,4	26,4	95,0
	7,00	164	4,0	4,0	99,1
	8,00	38	,9	,9	100,0
	Total	4073	100,0	100,0	

		Frequency of tangible assets	**Frequency of gross value of real estates**
N	Valid	4073	4073
	Missing	0	0
Mean		,6283	,7932
Median		,6166	,7812
Minimum		,30	,60
Maximum		1,00	1,00
Percentiles	10	,3652	,6327
	20	,4276	,6717
	30	,4892	,7054
	40	,5522	,7420
	50	,6166	,7812
	60	,6814	,8196
	70	,7550	,8681
	80	,8336	,9240
	90	,9162	,9832

9. Details of the logistic regression model

Categorical Variables Codings

		Frequency	Parameter coding		
			(1)	(2)	(3)
ST_JT_ÉT0_KAT	Negative	1841	1,000	,000	,000
	0%-50%	360	,000	1,000	,000
	51%-66%	144	,000	,000	1,000
	Above 66%	6532	,000	,000	,000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	10934,145[a]	,137	,184

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	,000	1	1,000

Contingency Table for Hosmer and Lemeshow Test

		VÉ_IN = ,00		VÉ_IN = 1,00		Total
		Observed	Expected	Observed	Expected	
Step 1	1	3710	3710,000	2822	2822,000	6532
	2	111	111,000	393	393,000	504
	3	252	252,000	1589	1589,000	1841

Classification Table[a]

Observed		Predicted		
		VÉ_IN		Percentage Correct
		,00	1,00	
Step 1	VÉ_IN ,00	3710	363	91,1
	VÉ_IN 1,00	2822	1982	41,3
	Overall Percentage			64,1

a. The cut value is ,500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	ST_JT_ÉT0_KAT			993,334	3	,000	
	ST_JT_ÉT0_KAT(1)	2,115	,072	856,710	1	,000	8,290
	ST_JT_ÉT0_KAT(2)	1,626	,133	149,841	1	,000	5,081
	ST_JT_ÉT0_KAT(3)	1,335	,192	48,208	1	,000	3,802
	Constant	-,274	,025	119,970	1	,000	,761

a. Variable(s) entered on step 1: ST_JT_ÉT0_KAT.

10. Reasons for choosing fair value– Friedman test (DB2 database)

	Unweighted mean ranks	Median	Unweighted mean ranks	Median
Because of equity position	4,69	1	4,89	2
Because of owners' requirements	4,95	2	4,76	2
Because of enhancement of profit	3,64	1	3,41	1
Because of group policy	3,49	1	3,72	1
Because of IFRS reporting	3,19	1	3,50	1
Because of credit rating	4,41	1	4,51	1
Because of tax benefits	3,62	1	3,20	1

Test Statistics[a]

N	49	976
Chi-Square	51,154	989,421
df	6	6
Asymp. Sig.	,000	0,000

a. Friedman Test

11. Statistics of foreign-owned companies

Using of fair valuation as a function of foreign ownership:

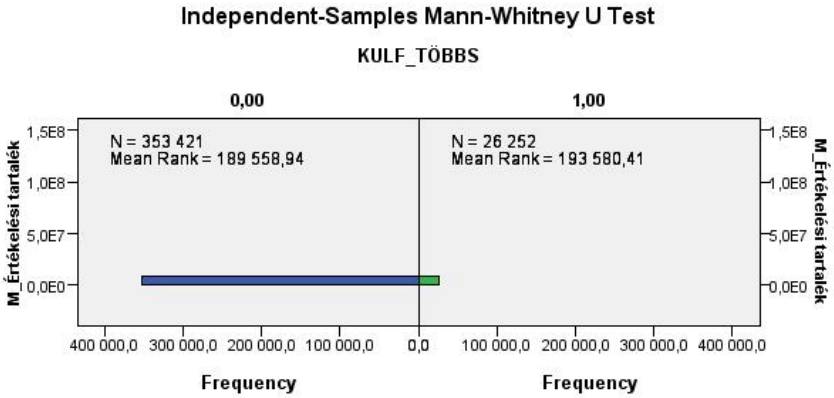
		VÉ_IN			
		,00		1,00	
		Count	Row N %	Count	Row N %
KULF_TÖBBS	,00	349457	98,9%	3964	1,1%
	1,00	25405	96,8%	847	3,2%

Categorization of foreign-owned companies based on size:

		KULF_TÖBBS			
		,00		1,00	
		Count	Row N %	Count	Row N %
Total assets categories (without valuation reserve)	1,00	217139	96,2%	8579	3,8%
	2,00	81965	93,2%	5965	6,8%
	3,00	21640	89,1%	2647	10,9%
	4,00	17180	85,4%	2942	14,6%
	5,00	7201	79,9%	1817	20,1%
	6,00	6630	71,1%	2695	28,9%
	7,00	1368	55,0%	1119	45,0%
	8,00	298	37,9%	488	62,1%
Revenue categories	,00	59533	88,9%	7411	11,1%
	1,00	148287	95,6%	6805	4,4%
	2,00	84853	95,5%	3982	4,5%
	3,00	23737	93,8%	1559	6,2%
	4,00	19932	91,3%	1903	8,7%
	5,00	8531	86,6%	1318	13,4%
	6,00	7142	77,9%	2022	22,1%
	7,00	1212	57,4%	900	42,6%
	8,00	194	35,5%	352	64,5%

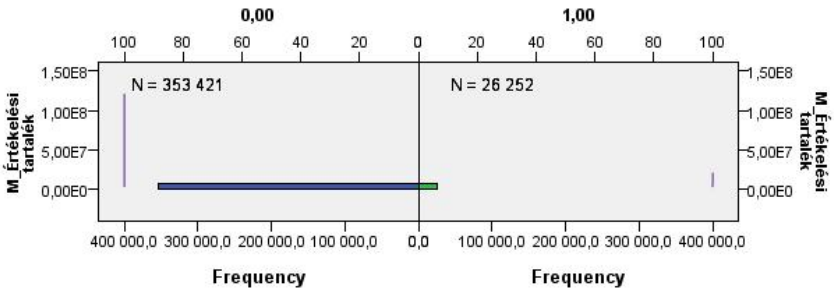
The difference of valuation reserve as a function of foreign ownership (p=5%):

Independent-Samples Mann-Whitney U Test



Total N	379 673
Mann-Whitney U	4 737 276 127,500
Wilcoxon W	5 081 873 005,500
Test Statistic	4 737 276 127,500
Standard Error	3 319 389,770
Standardized Test Statistic	29,605
Asymptotic Sig. (2-sided test)	,000

Independent-Samples Kolmogorov-Smirnov Test



Total N		379 673
Most Extreme Differences	**Absolute**	,022
	Positive	,022
	Negative	-,000
Test Statistic		,917
Asymptotic Sig. (2-sided test)		,370

Annex IX. Details of verification of hypothesis H5

1. The methodology of fair value measurement (DB2 database)

Friedman test

	Unweighted mean ranks	Median	Unweighted mean ranks	Median
Fair value measurement: quoted prices	3,70	3	3,77	2
Fair value measurement: comparative prices	3,45	2	3,39	2
Fair value measurement: income-based models	2,37	1	2,58	1
Fair value measurement: cost-based models	2,67	1	2,54	1
Fair value measurement: combined methods	2,81	1	2,72	1

Test Statistics[a]

N	49	976
Chi-Square	41,554	813,121
df	4	4
Asymp. Sig.	,000	0,000

a. Friedman Test

Wilcoxon signed rank test – unweighted variables

		N	Mean Rank	Sum of Ranks
Comparative price - Quoted price	Negative Ranks	19[a]	15,63	297,00
	Positive Ranks	12[b]	16,58	199,00
	Ties	18[c]		
	Total	49		
Income - Quoted price	Negative Ranks	26[d]	13,50	351,00
	Positive Ranks	0[e]	,00	,00
	Ties	23[f]		
	Total	49		
Cost - Quoted price	Negative Ranks	25[g]	15,70	392,50
	Positive Ranks	4[h]	10,63	42,50
	Ties	20[i]		
	Total	49		
Combined - Quoted price	Negative Ranks	24[j]	16,81	403,50
	Positive Ranks	9[k]	17,50	157,50
	Ties	16[l]		
	Total	49		
Income - Comparative price	Negative Ranks	22[m]	11,50	253,00
	Positive Ranks	0[n]	,00	,00
	Ties	27[o]		
	Total	49		
Cost - Comparative price	Negative Ranks	20[p]	13,10	262,00
	Positive Ranks	4[q]	9,50	38,00
	Ties	25[r]		
	Total	49		
Combined - Comparative price	Negative Ranks	22[s]	14,73	324,00
	Positive Ranks	9[t]	19,11	172,00
	Ties	18[u]		
	Total	49		
Cost - Income	Negative Ranks	2[v]	4,75	9,50
	Positive Ranks	8[w]	5,69	45,50
	Ties	39[x]		
	Total	49		
Combined - Income	Negative Ranks	3[y]	2,83	8,50
	Positive Ranks	11[z]	8,77	96,50
	Ties	35[aa]		
	Total	49		
Combined - Cost	Negative Ranks	8[ab]	5,50	44,00
	Positive Ranks	9[ac]	12,11	109,00
	Ties	32[ad]		
	Total	49		

Test Statistics[a]

	Comparative price - Quoted price	Income - Quoted price	Cost - Quoted price	Combined - Quoted price	Income - Comparative price	Cost - Comparative price	Combined - Comparative price	Cost - Income	Combined - Income	Combined - Cost
Z	-,971[b]	-4,501[b]	-3,815[b]	-2,222[b]	-4,146[b]	-3,227[b]	-1,509[b]	-1,860[c]	-2,790[c]	-1,559[c]
Asymp. Sig. (2-tailed)	,331	,000	,000	,026	,000	,001	,131	,063	,005	,119

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Wilcoxon signed rank test – weighted variables

		N	Mean Rank	Sum of Ranks
Comparative price - Quoted price	Negative Ranks	348[a]	261,00	90829,00
	Positive Ranks	198[b]	295,46	58502,00
	Ties	430[c]		
	Total	976		
Income - Quoted price	Negative Ranks	452[d]	226,50	102378,00
	Positive Ranks	0[e]	,00	,00
	Ties	524[f]		
	Total	976		
Cost - Quoted price	Negative Ranks	559[g]	297,52	166314,00
	Positive Ranks	44[h]	358,91	15792,00
	Ties	373[i]		
	Total	976		
Combined - Quoted price	Negative Ranks	537[j]	317,77	170640,50
	Positive Ranks	153[k]	442,84	67754,50
	Ties	286[l]		
	Total	976		
Income - Comparative price	Negative Ranks	326[m]	163,50	53301,00
	Positive Ranks	0[n]	,00	,00
	Ties	650[o]		
	Total	976		
Cost - Comparative price	Negative Ranks	419[p]	255,35	106990,50
	Positive Ranks	86[q]	241,56	20774,50
	Ties	471[r]		
	Total	976		
Combined - Comparative price	Negative Ranks	427[s]	273,20	116654,50
	Positive Ranks	172[t]	366,54	63045,50
	Ties	377[u]		
	Total	976		
Cost - Income	Negative Ranks	153[v]	91,15	13945,50
	Positive Ranks	134[w]	204,35	27382,50
	Ties	689[x]		
	Total	976		
Combined - Income	Negative Ranks	165[y]	102,88	16975,50
	Positive Ranks	224[z]	262,85	58879,50
	Ties	587[aa]		
	Total	976		
Combined - Cost	Negative Ranks	114[ab]	76,08	8673,00
	Positive Ranks	153[ac]	177,16	27105,00
	Ties	709[ad]		
	Total	976		

Test Statistics[a]

	Comparative price - Quoted price	Income - Quoted price	Cost - Quoted price	Combined - Quoted price	Income - Comparative price	Cost - Comparative price	Combined - Comparative price	Cost - Income	Combined - Income	Combined - Cost
Z	-4,436[b]	-18,616[b]	-17,742[b]	-9,905[b]	-15,830[b]	-13,259[b]	-6,413[b]	-4,923[c]	-9,635[c]	-7,420[c]
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

2. Valuation methods and the fair valuation of real estates

Friedman test

	Rarely encountered the fair valuation of real estates				Frequently encountered the fair valuation of real estates			
	Unweighted mean ranks	Median	Unweighted mean ranks	Median	Unweighted mean ranks	Median	Unweighted mean ranks	Median
Fair value measurement: quoted prices	3,70	2,5	3,78	2	3,75	4	3,78	4
Fair value measurement: comparative prices	3,47	1,5	3,42	1	3,54	4	3,29	3
Fair value measurement: income-based models	2,36	1	2,69	1	2,29	1	2,13	1
Fair value measurement: cost-based models	2,66	1	2,43	1	2,75	1,5	3,00	2
Fair value measurement: combined methods	2,81	1	2,68	1	2,67	1	2,80	1

Test Statistics[a]

N	32	775	12	182
Chi-Square	27,767	722,315	10,889	157,899
df	4	4	4	4
Asymp. Sig.	0,028	0,000	0,028	0,000

a. Friedman Test

Wilcoxon signed rank test – group: rarely encountered real estates

		N	Mean Rank	Sum of Ranks
Comparative price - Quoted price	Negative Ranks	293[b]	229,07	67117,00
	Positive Ranks	166[c]	231,64	38453,00
	Ties	316[d]		
	Total	775		
Income - Quoted price	Negative Ranks	339[e]	170,00	57630,00
	Positive Ranks	0[f]	,00	,00
	Ties	436[g]		
	Total	775		
Cost - Quoted price	Negative Ranks	457[h]	243,59	111321,00
	Positive Ranks	28[i]	233,36	6534,00
	Ties	290[j]		
	Total	775		
Combined - Quoted price	Negative Ranks	424[k]	247,34	104871,50
	Positive Ranks	116[l]	355,16	41198,50
	Ties	235[m]		
	Total	775		
Income - Comparative price	Negative Ranks	236[n]	118,50	27966,00
	Positive Ranks	0[o]	,00	,00
	Ties	539[p]		
	Total	775		
Cost - Comparative price	Negative Ranks	326[q]	172,83	56341,00
	Positive Ranks	20[r]	184,50	3690,00
	Ties	429[s]		
	Total	775		
Combined - Comparative price	Negative Ranks	334[t]	178,71	59689,00
	Positive Ranks	96[u]	343,50	32976,00
	Ties	345[v]		
	Total	775		
Cost - Income	Negative Ranks	150[w]	83,50	12525,00
	Positive Ranks	68[x]	166,85	11346,00
	Ties	557[y]		
	Total	775		
Combined - Income	Negative Ranks	162[z]	81,50	13203,00
	Positive Ranks	148[aa]	236,50	35002,00
	Ties	465[ab]		
	Total	775		
Combined - Cost	Negative Ranks	48[ac]	28,67	1376,00
	Positive Ranks	116[ad]	104,78	12154,00
	Ties	611[ae]		
	Total	775		

Test Statistics[a,b]

	Comparative price - Quoted price	Income - Quoted price	Cost - Quoted price	Combined - Quoted price	Income - Comparative price	Cost - Comparative price	Combined - Comparative price	Cost - Income	Combined - Income	Combined - Cost
Z	-5,107[c]	-16,200[c]	-17,178[c]	-8,882[c]	-13,466[c]	-14,380[c]	-5,279[c]	-,670[c]	-7,055[d]	-9,100[d]
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,503	,000	,000

b. Wilcoxon Signed Ranks Test

c. Based on positive ranks.

d. Based on negative ranks.

Wilcoxon signed rank test – group: frequently encountered real estates

		N	Mean Rank	Sum of Ranks
Comparative price - Quoted price	Negative Ranks	53[b]	28,84	1528,50
	Positive Ranks	32[c]	66,45	2126,50
	Ties	97[d]		
	Total	182		
Income - Quoted price	Negative Ranks	106[e]	53,50	5671,00
	Positive Ranks	0[f]	,00	,00
	Ties	76[g]		
	Total	182		
Cost - Quoted price	Negative Ranks	95[h]	48,84	4640,00
	Positive Ranks	16[i]	98,50	1576,00
	Ties	71[j]		
	Total	182		
Combined - Quoted price	Negative Ranks	106[k]	70,81	7506,00
	Positive Ranks	28[l]	54,96	1539,00
	Ties	48[m]		
	Total	182		
Income - Comparative price	Negative Ranks	85[n]	43,00	3655,00
	Positive Ranks	0[o]	,00	,00
	Ties	97[p]		
	Total	182		
Cost - Comparative price	Negative Ranks	88[q]	97,20	8553,50
	Positive Ranks	66[r]	51,23	3381,50
	Ties	28[s]		
	Total	182		
Combined - Comparative price	Negative Ranks	88[t]	107,19	9432,50
	Positive Ranks	67[u]	39,66	2657,50
	Ties	27[v]		
	Total	182		
Cost - Income	Negative Ranks	3[w]	32,50	97,50
	Positive Ranks	66[x]	35,11	2317,50
	Ties	113[y]		
	Total	182		
Combined - Income	Negative Ranks	3[z]	42,50	127,50
	Positive Ranks	67[aa]	35,19	2357,50
	Ties	112[ab]		
	Total	182		
Combined - Cost	Negative Ranks	66[ac]	40,29	2659,00
	Positive Ranks	28[ad]	64,50	1806,00
	Ties	88[ae]		
	Total	182		

Test Statistics[a,b]

	Comparative price - Quoted price	Income - Quoted price	Cost - Quoted price	Combined - Quoted price	Income - Comparative price	Cost - Comparative price	Combined - Comparative price	Cost - Income	Combined - Income	Combined - Cost
Z	-1,339[c]	-9,141[d]	-4,550[d]	-6,902[d]	-8,136[d]	-4,705[d]	-6,101[d]	-6,842[c]	-6,707[c]	-1,644[d]
Asymp. Sig. (2-tailed)	,180	,000	,000	,000	,000	,000	,000	,000	,000	,100

b. Wilcoxon Signed Ranks Test

c. Based on negative ranks.

d. Based on positive ranks.