„Zeszyty Teoretyczne Rachunkowości”
tom 84 (140), 2015, s. 67–93

Stowarzyszenie Księgowych
w Polsce

Non-controlling interests, financial performance and the equity of groups

An empirical study of groups listed on the Warsaw Stock Exchange

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Abstract

The purpose of this article is to (a) analyze IFRS requirements for the recognition and presentation of non-controlling (minority) interests in consolidated financial statements in relation to theoretical concepts of consolidation of financial statements, and (b) assess the share and importance of non-controlling interests in financial performance and the equity of the groups of companies in practice.
For the purpose of the article, selected scientific methods have been used, including: descriptive and analytical ones (for analyzing the theoretical concepts and IFRS requirements), critical analysis, especially used for the literature review, and for the assessment of practice: primary empirical research methods, and quantitative methods, including descriptive statistics, nonparametric tests and correlation analysis. The empirical material collected was used to verify several hypotheses related to non-controlling interests of the groups whose parents are registered in Poland and whose securities are traded on a regulated, Polish capital market (Warsaw Stock Exchange). The empirical evidence is that non-controlling interests represent a very small part of group's equity (taking the mean of about 3.5%, but the median below 1%) and obviously, they are significantly lower than the share of majority interests. Their deviation among the different classes of companies (big, small and banks) is negligible. Slightly higher is the share of minority interests in the group's net profit and total comprehensive income. However, no significant difference is to be found between the shares of non-controlling interests in the group's equity, net profit and total comprehensive income. Overall, shares of majority (minority) interests in a group's income are in line with their shares in the group's equity. The hypothesis on comparable returns on non-controlling and majority interests (in terms of ROE) cannot be rejected if both net profit and losses are considered. However, if losses are skipped then there is evidence that non-controlling interests are more profitable than majority interests. Analysis of the impact of the number of subsidiaries in groups on non-controlling interests indicates the existence of such an effect only in relation to the equity (rather obvious but weak). No effect is observed for the impact on net profit for the entire sample.

Keywords: minority/non-controlling interests, consolidated financial statements, the theoretical concepts of consolidation of financial statements, the entity concept, the parent company concept, IFRS.

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ISSN 1641-4381 *print* / ISSN 2391-677X *online*
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http://www.ztr.skwp.pl
DOI: 10.5604/16414381.1173806

Streszczenie

Udziały niekontrolujące a dochody i kapitały własne grup kapitałowych. Badanie empiryczne grup spółek notowanych na Giełdzie Papierów Wartościowych w Warszawie

Celem tego artykułu jest: (a) poddanie analizie rozwiązań MSSF w zakresie ujmowania i prezentacji udziałów niekontrolujących w skonsolidowanych sprawozdaniach finansowych na tle teoretycznych koncepcji konsolidacji sprawozdań finansowych; (b) poddanie ocenie wpływu, jaki mają udziały niekontrolujące na kapitały własne grup kapitałowych, na podstawie danych spółek giełdowych notowanych na Giełdzie Papierów Wartościowych (GPW) w Warszawie.
Przeprowadzone badanie empiryczne pozwoliło na zweryfikowanie czterech hipotez badawczych. Udziały niekontrolujące stanowią bardzo niewielką część kapitału grupy 2–5%, różniącą się w sposób statystycznie istotny od udziałów podmiotów dominujących. Ich zróżnicowanie w ramach grup spółek wyróżnionych w badaniu jest bardzo małe. Zwraca uwagę fakt, że mediana udziałów niekontrolujących w kapitale nie przekracza 1%. Nieco większy (tylko pod względem wartości średniej) jest udział kapitałów mniejszościowych w zyskach i dochodach grupy kapitałowej, w grupie małych spółek przekracza 13%. Nie stwierdza się jednak statystycznie istotnych różnic między udziałami niekontrolującymi w kapitale własnym grup a udziałami niekontrolującymi w zyskach i całkowitych dochodach grup. Hipoteza mówiąca o porównywalnej rentowności udziałów niekontrolujących i dominujących została częściowo zanegowana. Analiza przeprowadzona z uwzględnieniem tylko dodatnich obserwacji wskazała na istotnie większą rentowność udziałów niekontrolujących niż udziałów przypisanych do podmiotów dominujących. Badania dotyczące wpływu liczby podmiotów zależnych na wielkość udziałów niekontrolujących w kapitale i wynikach finansowych grupy wskazują na występowanie takiego wpływu jedynie w odniesieniu do udziału w kapitale własnym w grupie spółek dużych.

Słowa kluczowe: udziały mniejszości, udziały niekontrolujące, skonsolidowane sprawozdania finansowe, teoretyczne koncepcje konsolidacji sprawozdań finansowych, koncepcja podmiotu dominującego, koncepcja podmiotowa, MSSF.

Introduction

Many entities in their development pursue their operational and financial goals by entering into relations with other entities. Usually those relations take the form of (capital) groups, but there are also links which are referred to as strategic alliances or other form of business cooperation. The group is formed by the entities in which one of them dominates over the others. In strategic alliances and other business co-operations, their positions are usually equal. The essential distinguishing criterion for groups and strategic alliances is the form of governance on related entities. In groups, governance takes the form of power as the main determinant of control, which is in the hands of the parent undertaking and, as a rule, it has to serve the objectives of the parent and its owners. In other forms of business relations among companies, mainly in strategic alliances, sharing the power takes place so that the objectives are to be pursued by all the participants (Romanowska, 1998; Cygler, 2002). Distinguishing groups and strategic alliances, and other business relations among the companies presented above, is crucial from the point of view of the concept of the reporting entity and the obligation to present financial statements for such a defined entity. Today, in most regulations, including IFRS, the groups of companies are seen as reporting entities only.

Having power over another entity (subsidiary) is an essential, although not the only condition, thanks to which it is possible to consider the exercise of control over a subsidiary. Control is the only criterion, although very complex in its essence, determining whether and, if so, which of the institutional owners of the entity has a dominant position over it and can include it in their groups. Now, in IFRS, control over a subsidiary (investee) is defined as the power that gives the investor the rights to variable returns from its involvement with the investee thanks to its ability to affect those returns (IFRS 10, para. 6 and 7). Power can result, and usually results, from possessing the equity instruments of the investee, but it is also possible to exercise it with a level of zero capital involvement of the parent. In this case, all of the shares and the rights to net assets of the subsidiary are owned by the respective owners. Those owners are referred to as non-controlling shareholders and the interests they have are called non-controlling interests.

Basically, for each group, the financial statements should be drawn up, and the responsibility for that lies in the board of managers (board of directors or other executive body) of the parent. In those financial statements, consolidated financial statements (CFS), the financial data of the whole group of entities, are presented essentially in such a way as if the group was a single economic entity – a reporting entity. No matter whether the parent has all or some of the shares of entities controlled by the parent.

Within the consolidation of the subsidiaries in which the parent does not have all of the equity shares, not owned interests are recognized and presented separately as non-controlling interests. At the moment, according to IFRS (IAS 1 and IFRS 10),

non-controlling interests are classified as equity of the group, which requires the allocation of the capital of the group into interests attributable to the parent and its shareholders and non-controlling interests. Allocation of the equity of subsidiaries is associated with the allocation of their total comprehensive income, that is, profit or loss for the period and other comprehensive income. The classification of non-controlling interests as equity has an impact on financial performance measures and of course on the equity of the entire group presented in CFS, and such an attitude has been changed in IFRS since their earliest pronouncements.

The purpose of this article is to:

a) present and analyze the development of IFRS requirements for the recognition and presentation of non-controlling (minority) interests in CFS in relation to theoretical concepts of consolidation,
b) assess the share and importance of non-controlling interests in financial performance measures and the equity of the groups of companies in practice since the most crucial elements of the entity concept have been introduced into IFRS regulations.

For the purpose of the article selected scientific methods have been used, including[1]: descriptive and analytical ones (for analyzing the theoretical concepts and IFRS requirements), critical analysis of the literature on the topic, and for the assessment of practice concerning non-controlling interests, primary empirical research methods and quantitative methods, including descriptive statistics, nonparametric tests and correlation analysis. The empirical material collected was used to verify several hypotheses related to the importance and significance of non-controlling interests on the financial position and financial performance of the groups, whose parents are registered in Poland and whose securities are traded on a regulated, Polish capital market (Warsaw Stock Exchange). Details of the empirical study are given in the third part of the article.

In the literature of accounting and of the related areas written by Polish authors, little space is devoted to the problems of non-controlling interests (see: Jaworski and Sokołowska, 2014; Sojak and Czerska, 2013). Most of the literature which exists is descriptive only, presenting a theoretical description and analysis of the concept of consolidation methods, for example: Ignatowski (1995a, 1995b, 2012) and Toborek-Mazur (2014). The literature on minority/non-controlling interests focuses mainly on the description and analysis of the requirements of the IFRS regulations for the purposes of the preparation and presentation of consolidated financial statements. For example: Ignatowski (1995a, 2004, 2013), Helin (2009), Remlein (2010), Toborek-Mazur (2011), Wartini-Twardowska (2011), Gierusz and Gierusz (2012). Therefore, we believe that the article brings new value to the research on non-controlling interests and the quality and usefulness of financial statements, drawn up according to IFRS.

[1] Classification of research methods consistent with general methodology, e.g. Pieter (1967), Apanowicz (2002) and Kuc (2012).

1. Review of the global scientific literature on non-controlling interests

Research carried out by academics from around the world and the literature on non-controlling/minority interests have focused mainly on the protection of their rights in the context of business governance, as well as corporate social responsibility (CSR), methods of their valuation, also in relation to the valuation of goodwill, and the impact of adopting the entity concept in the IFRS on the quality of the financial statements, expressed in terms of relevance of information about capital structure, including non-controlling interests and their impact on shaping the financial policy of the subsidiaries.

In the first group of issues, what dominates is the research on the influence of ownership structure of subsidiaries and other entities on corporate social responsibility of the entity, the relationships of the entity and its governing and managing bodies and the owners, and the quality of reporting in this area. Examples of that area of interests are: Bianco and Casavola (1999), and Li and Zhang (2010), according to which the dispersal of shareholding is conducive to the growth of the level of social responsibility of companies. Research conducted by Souam *et al.* (2003) showed, however, that a higher degree of capital engagement of investor in the investee in acquisitions promotes the protection of the interests of minority shareholders. The study, conducted by Ali (2009) on financial reports of French companies, showed that capital concentration and the low level of protection of the interests of shareholders is not conducive to the growth of the quality of the financial reports, which reflects negatively on their perception by the minority shareholders.

Chen and Chen (2009) in their study, show that, among others, the introduction of the applicability of the entity concept in the valuation of goodwill has not contributed to an increase in recognized goodwill. This indicates, among other things, the tendency of the practice to estimate the non-controlling interests on the traditional basis of participating theirs share in the fair value of the net assets of the subsidiary, in accordance with the expanded parent company concept.

Bazas and Shastri (2012) describe and analyze possible methods for estimating the value of non-controlling interests, stating that for the purposes of increasing the usefulness of financial reports those should contain information on a variety of models for their valuation, and not just the specific one adopted for their recognition. The results of the research of Samkin and Deegan (2010) indicate that the method of measurement of non-controlling interests affects the presentation of these in the financial statements from the point of view of the interests, retained earnings and capital as a whole. Research shows the diversity of results obtained. The same themes and conclusions were reached in the studies of Sotti *et al.* (2015), conducted on simulated data.

The research of So and Smith (2009), on the basis of financial reports of companies listed in Hong Kong, demonstrated that the entity concept, adopted in IAS 27 (2003), expressing a presentation of non-controlling interests in the equity section contributed positively to the increased usefulness of the information presented in the financial statements. But the research of Lopes *et al*. (2012), carried out on a sample of German companies, showed that the presentation of non-controlling interests as part of the owner's equity instead of their presentation outside this section did not affect their valuation, carried out by the market. Similar conclusions come from the research of Isabel and Lopes (2011). Empirical research on the basis of the consolidated financial statements of groups from five European countries, carried by Isabel and Lopes (2011) shows, that in some countries (France, Greece) there is a positive relationship between the level of non-controlling interests and the stock prices of the companies, which cannot be observed in the relationship of non-controlling interests and shares of companies in the markets of Great Britain, Sweden and Germany.

Other mainstream literature on non-controlling interests is relates to their impact or importance on:

a) the financial policy of subsidiaries, tailored by the parent. For example, Wang (2005), testing Chinese financial public companies, pointed out that the concentration of capital in the subsidiary, which is the result of acquisitions, did not affect the changes in the financial performance of the subsidiaries, which indicates that the share of minority ownership is of no importance. In a study of Italian companies, Bianco and Casavola (1999) show that the concentration of capital in the groups, characteristic not only of Italian companies, reflects negatively on the situation of the minority shareholders, whose returns on investment are strongly dependent on the interests of the shareholders of the parent companies;
b) a consistent and stable dividend policy in the subsidiaries. For example, Mancinelli and Ozkan (2006), examining 139 Italian listed companies found that there was a strong relationship between concentration of ownership and the tendency of companies to pay dividends: the higher the concentration of capital, the smaller the dividends become, which significantly affects the marginalization of minority shareholders' influence and position;
c) earnings management in the context of the protection of the interests of shareholders. For example, Leuz *et al*. (2003), on the basis of empirical research, covering the situation in 31 countries state that earnings management is not correlated with the quality of minority rights and their legal security.

An overview of the global and domestic scientific literature on non-controlling interests indicates that the problem taken by the authors in this article has not been given enough space in scientific research, particularly in empirical research on the importance and significance of non-controlling interests on the financing structure of groups and their importance in the financial performance of the groups. It confirms the legitimacy of taking on this topic.

2. The evolution of IFRS provisions on non-controlling interests and the theoretical concepts for consolidating financial statements

The current IFRS provisions (mainly IAS 1, IFRS 3 and IFRS 10) with regard to the definition, recognition, measurement and presentation of non-controlling interests in consolidated financial statements, differ significantly from those provisions which were adopted earlier. Here a clear evolutionary change is seen, oriented on the implementation of the theoretical concepts of the consolidation of financial statements developed much earlier. The out theoretical concepts of consolidating financial statements, which have been developed over the years, and which Baxter and Spinney (1975) are credited with systematizing, can be differentiated according to three main criteria: recognition and valuation of the net assets of the subsidiary, recognition and valuation of minority (non-controlling) interests, and recognition and measurement of the goodwill of the subsidiary. Elements of those concepts are presented in Table 1 in a synthetic manner.

Table 1. The basic elements of the theoretical concepts of consolidating financial statements

The theoretical concept of	Net assets	Goodwill	Minority interests
The proprietary concept	Measurement, recognition and presentation of the investor's share only on fair values bases	Measurement and presentation of outstanding share investor	Not recognized and then not disclosed
The parent company concept	Measurement, recognition and presentation of the investor's share on fair values bases, and minorities on previously recognized book values	Measurement, recognition and presentation of investor's share (purchased goodwill only)	Measurement, recognition and presentation on pre-acquisition net assets at carrying amounts
The extended parent company concept	Measurement, recognition and presentation on fair values bases	Measurement, recognition and presentation of investor's share (purchased goodwill only)	Measurement, recognition and presentation on post-acquisition net assets at fair values
The entity concept	Measurement, recognition and presentation on fair values bases	Measurement and presentation of full goodwill (attributable to all of the owners, including minorities)	Measurement, recognition and presentation at fair value (including goodwill attributed)

Source: FASB (1976, para. 370); Ignatowski (1995a, p. 176).

In addition to these basic elements of the theoretical concepts, where the approach to the measurement and qualification of minority interests is poorly developed (see: Beams *et al*., 2009), the literature is full of different solutions in this regard (Rosenfield and Rubin (1986)). Taylor (1987) determined the classification and the place of presenting minority (non-controlling) interests in the consolidated financial statements with respect to the parent company concept, the extended parent company concept and the entity concept. In the perspective of those first two concepts, minorities are classified as non-owner's capital of the group and they are presented as an intermediate position between the owner's equity and the liabilities sections. From the perspective of the entity concept, minority interests are classified as equity and they are presented in a separate line in the total, separately from the equity attributed to the owners of the parent (Taylor, 1987, p. 111).

Initially, in IFRS, then known as IAS, accounting for minority interests was specified in IAS 3 *Consolidated Financial Statements* (1976), defined as „part of the net results of operations, or of net assets, of a subsidiary attributable to shares owned other than by the parent company or other subsidiary" (IAS 3, para. 4). The basis for this approach was the theoretical concept of a parent company. It is clear that minority interests should be measured on their initial recognition as a share of net assets of a subsidiary, calculated on the basis of their existing carrying amounts and presented as a separate item, outside the owner's equity section (IAS 3, para. 43). The negative value (debit balance) of minority interests could be included and presented „to the extent that the minority interest has a binding obligation to make good of losses" (IAS 3, para. 17)[2]. In other words, where all the shareholders, including minority shareholders have pledged to cover losses assigned to the subsidiary.

In IAS 27 *Consolidated Financial Statements and Accounting for Investments in Subsidiaries*, initially issued in 1989, which replaced IAS 3, the IASC maintained:

a) a definition of minority interests (para. 6), previously introduced in IAS 3,
b) its previous approach to the presentation of minority interests as a separate line item in the balance sheet, outside the section of the owner's equity of the group (para. 13 (g)) and maintained the approach to negative value (para. 20).

However, the basis for the initial recognition of minority interests, in accordance with IAS 22 *Accounting for Business Combinations* adopted six years earlier could be (1983, para. 26 and 28):

a) the pre-acquisition carrying amounts of the net assets of a subsidiary, or
b) the post-acquisition values (i.e. fair values) of the net identifiable assets involved.

The IASC, issuing IAS 22, thus introduced solutions which are crucial to the extended parent company concept, but which do not allow the entity concept elements to be used (IAS 22, para. 28).

In 1990, the IASC promulgated IAS 31 *Financial Reporting of Interests in Joint Ventures,* in which proportional consolidation was introduced. Proportional consolidation

[2] This solution has been adopted according to U.S. GAAP (ARB 51, para. 15).

is strictly based on the proprietary concept, which does not allow any other shares in assets and liabilities of other entity, not owned by the reporting entity (directly or indirectly by other subsidiaries) to be recognized. But the proprietary concept in the form of proportional consolidation was introduced into practice not for controlled subsidiaries, but as a preferred treatment for the accounting of interests in jointly controlled entities. This concept was finally rejected by the IASB, the successor to the IASC, by issuing IFRS 11 *Joint Arrangements* in 2011[3].

Despite the subsequent changes in IAS 22 (1993, 1998)[4] and in IAS 27 (2000), the IASB through IFRS 3 *Business Combinations*, published in 2004, totally rejected the parent company concept, only allowing the use of an extended parent company concept. It was thought that the only basis for settling a takeover of the subsidiary in a business combination was the net assets of the subsidiary identified at the date of the acquisition, including not previously recognized contingent liabilities. By that, the minority interests at the moment of their initial recognition should be valued on the basis of their share in the identified net assets of the subsidiary, recognized at the date of the acquisition (IFRS 3, 2004, para. 36). Changing IAS 27 provisions in 2003, the IASB also introduced the obligation to qualify and present the total amount of minority interests in a separate line in the owner's equity section (IAS 27, 2003, para. 33), despite the fact that the definition of minority interests (IAS 27, 2003, para. 4) was broadly neutral in this regard.

Crucial for the implementation to the practice the most complex and advanced concept of consolidation of financial statements: the entity concept, were changes to IFRS 3 and IAS 27, made in 2008. In the revised version of IFRS 3:

- the previously used name of the minority interests has been replaced by non-controlling interests, defining them as "the equity in a subsidiary not attributable, directly or indirectly, to a parent"[5],

[3] One of the main reasons for rejecting proportional consolidation was the problem of control over assets and liabilities, one of the crucial elements of the recognition criteria which is not satisfied by jointly controlling the ventures (IFRS 11, para. BC11).

[4] As a result of comprehensive change in the IASC approach for reformatting the texts of IAS, variants in determining accounting policy to be used by entities, in IAS 22 (1998), it was considered that initial recognition of minority interests according to their share in the pre-acquisition net assets of the subsidiary is the leading, benchmarking solution (IAS 22, 1998, para. 32b) whereas recognition on the post-acquisition fair values of net assets identified is permitted as an allowed alternative treatment (IAS 22, 1998, para. 34).

[5] A major reason for this change was a nod in the direction of the FASB, contributors to new international standards, which in its U.S. GAAP (ARB 51, para. 2) control over a subsidiary was determined on majority shareholding. Hence, the concept of minority in the face of control over a subsidiary based on factors other than majority shares, lost on validity. A compromise approach was therefore to adopt a new term: non-controlling interests. As some studies showed, consolidated financial statements prepared according to an approach based on *de facto* control, provide more useful information than those using an approach based on majority shares (Hsu *et al*., 2012). But, conversely, such a conclusion was not reached in the test of Attig and Gadhoum (2003), carried out on Canadian companies. As the authors concluded, it is rather the effect of the high concentration of capital in the companies tested, which featured not only Canadian companies.

– measurement of non-controlling interests on their initial recognition on fair value bases has been introduced, which is a modification of the classic entity concept assumption whereby the minorities should initially be valued as the sum of the share in the net assets of the subsidiary and its goodwill, determined on the assumption that the parent acquires all the shares of a subsidiary. The approach adopted in IFRS 3 makes the valuation of non-controlling interests independent from the consideration transferred for the acquisition of control of a subsidiary, which was the main reason for rejecting the entity concept in IAS and IFRS until the crucial change of IFRS 3 in 2008.

At the same time, it was considered appropriate to change the name of the purchase method (e.g. IFRS 3, 2004, para. 14) on the acquisition method (IFRS 3, 2008, para. 4). In turn, changes to IAS 27 included the absolute obligation to recognize the negative balances of non-controlling interests (IAS 27, 2008, para. IN7, 28). Through this, entire elements of the entity concept have been adopted into practice by international accounting standards.

The IFRS evolution of approaches for recognizing and presenting minority/non-controlling interests in statement of financial position (balance sheet) is presented in Table 2.

Table 2. The evolution of IFRS approaches on the recognition, measurement and presentation of minority (non-controlling) interests at the date of acquisition and later

Year	Sourse of approach	Approach taken
1976	IAS 3 *Consolidated Financial Statements*	Accounted for on the basis of the valuation of assets and liabilities identified at the date of acquisition at their existing carrying amounts (adjusted to uniform accounting policy for preparation of CFS) Presented as a separate line item outside the owner's equity section
1983	IAS 22 *Accounting for Business Combinations*	Accounted for on the basis of: – the valuation of assets and liabilities identified at the date of acquisition at their fair values or – carrying amounts of assets and liabilities previously (pre-acquisition) recognized.
1998	IAS 22 *Business Combinations*	Same as above, but preferred recognition on the basis of the valuation of assets, and liabilities at the date of acquisition were identified according to their fair values, including those liabilities arising on restructuring of a subsidiary
1988	IAS 27 *Consolidated and Financial Statements and Accounting for Investments in Subsidiaries*	Presented outside the owner's equity and liabilities separately, in addition to a section of the capital and liabilities The negative value of the minority interests can be presented only when there is a binding obligation to cover losses by the minority shareholders

Year	Sourse of approach	Approach taken
1990	IAS 31 *Financial Reporting of Interests in Joint Ventures*	Proportional consolidation allowed, based on the proprietary concept, which does not allow any shares in assets and liabilities of a jointly controlled entity to be recognized other than those attributed to the venturer.
2003	IAS 27 *Consolidated and Separate Financial Statements*	Same as above, i.e. negative value of the minority interests can be presented only when there is a binding obligation to cover losses by the minority shareholders.
2004	IFRS 3 *Business Combinations*	Recognition on the basis of identified assets, liabilities (excl. provisions for restructuring) and contingent liabilities at the date of acquisition according to their fair values and presented in a separate line in the group owner's equity section Negative value of minority interests as previously
2008	IFRS 3 *Business Combinations*	Allowed recognition on the basis of: – identified assets, liabilities and contingent liabilities at the date of acquisition at their fair values, or – according to their fair value (with due part of the value of the company). Presented in a separate line in the group owner's equity section (same as previously)
2008	IAS 27 *Consolidated and Separate Financial Statements*	Ordinary allocation of losses of the subsidiary, i.e. presentation of a negative amount of non-controlling interests as other items of equity, attributable to the owners of the parent

Source: own elaboration based on IFRS.

The outline of the provisions of IFRS for the accounting of minority/non-controlling interests presented above indicates the evolution of the application of theoretical concepts for consolidation. First, IFRS (IASs) started with the parent company concept (IAS 3, 1976), allowing application of the proprietary concept later (IAS 31, 1990), but not for subsidiaries, moving towards the extended parent company concept (IAS 22, IAS 27) and finally rejecting the proprietary concept (IFRS 11, 2011) and introducing a very complex treatment, represented by the entity concept (IFRS 3, 2008). It can even be said that today's IFRS (IFRS 3, 2008) positively influenced the improvement of these concepts, fine-tuning the principles for estimating the initial value of non-controlling interests in the entity concept, previously rejected by the IASC, arguing that the application of the equity concept "is not acceptable because it cannot be assumed that the purchase consideration for the majority interest can be extrapolated to the hypothetical purchase of all the shares" (IAS 22, 1983, para. 28). But some authors further claim (e.g. Baluch *et al*., 2010) that estimating the fair value of the non-controlling interests on the basis of the cost of acquisition is still a permitted option, although the empirical research of Graham Jr. and Lefanowicz (1999), published much earlier, clearly showed that the relationship between value of subsidiary shares and controlling shares and non-controlling interests is not symmetrical.

3. Non-controlling interests in the financing of the activities of the groups of companies – an empirical study

3.1. Hypotheses and outline of the empirical research

The aim of the study was to determine the importance and significance of non-controlling interests in the activities of groups of companies (in total equity and income[6]). The questions we wanted to find answers to through empirical tests were:

1. Do, and if so, how do the non-controlling interests significantly influence the financial performance and the total equity of groups of companies?
2. Does the profitability of non-controlling and majority interests differ?
3. Does the size or business profile of the parent company influence the level of non-controlling interests?

For those reasons, four hypotheses were formulated:

First hypothesis: *the share of non-controlling interests is significantly lower than the share of the parent company in the equity of the group of companies.*

Second hypothesis: *the impact of non-controlling interests on the income of the group is proportional to their share in the equity and significantly smaller than the impact of the majorities.*

Third hypothesis: *the profitability of non-controlling and majority interests does not differ significantly.*

Fourth hypothesis: *there is a significant relationship between the number of subsidiaries in the group and the share of non-controlling interests in equity and income of the group.*

The research methods used were: descriptive statistics, nonparametric tests and correlation analysis. The calculations were done in *IBM SPSS Statistics version 21*.

The study sample consisted of annual data for the years 2009–2013 for 49 group of companies, whose parents are listed on the Warsaw Stock Exchange. The data were taken directly from the consolidated financial statements of the groups, prepared in compliance with IFRS. Three classes of companies and their groups were distinguished depending on the size and the presence in the relevant stock market index: big companies – included in the WIG20 portfolio index in the sample period (21 companies excluding banks), small companies – included in the sWIG80 portfolio index (19 companies) and the separate group of nine banks and insurance companies. The reason for grouping the companies into three classes was due to the idea of the hypothesis tested: whether size or the specificity of their activities is an important factor in relation to formatting the groups in terms of non-controlling interests and their significance.

[6] Wherever the word „income” is used without detailed definition (net, other comprehensive, total comprehensive income) it refers generally to all examined income items (profit or loss, other comprehensive income and total comprehensive income).

3.2. Variable coding

The following rules were applied to create the names of the variables (companies' financial characteristics) examined in the study. Each name was made up of two or three parts. In the case of names composed of three parts, the first part is „u" meaning that the variable refers to the share of minority or majority interests in total for the group of the analyzed variable. The variable whose name consists of two parts is expressed in terms of value, in million PLN. The second part of the name (first for the two-part names) refers to the financial variable (characteristic) of a company. Variables highlighted in the study include: assets („aktywa"), equity ("kap"), net profit/loss („zn"), other comprehensive income („indoch"), and total comprehensive income („doch"). The last part of the name indicates that the variable applies to a group („g"), parent company („d"), or minorities („m"). For example, the name „u_kap_d" means the share of majority interests in group's equity, the name „zn_m" means a net profit of minorities within a group expressed in million PLN.

Analyses were performed separately for the above-defined three classes of companies („big", „small", „banks") and for the total of all companies („all"). Unless otherwise stated, the sample used consisted of panel data including the given class of companies (or all of them) throughout the period 2009–2013.

3.3. Preliminary analysis

Table 3 contains the statistical characteristics of financial variables for the examined data of groups of companies.

Table 3. Statistical parameters of analyzed variables

Variable	Class of companies	Mean, mln PLN	Median, mln PLN	Standard deviation, mln PLN	Coefficient of variation %	Skewness
aktywa_g	All	21541.5	2625.4	37827.3	175.6	2.6
	Big	15248.3	8465.9	16864.0	110.6	1.3
	Small	81.8	46.2	77.2	94.4	1.6
	Banks	81529.2	60019.2	49936.9	61.3	1.0
kap_g	All	5725.3	1207.6	8924.6	155.9	2.0
	Big	8896.5	3196.2	10800.3	121.4	1.5
	Small	29.4	24.6	40.7	138.6	0.3
	Banks	10350.8	7483.0	7073.9	68.3	0.9
zn_g	All	620.9	37.3	1284.1	206.8	3.4
	Big	830.1	294.0	1595.4	192.2	3.3
	Small	–4.2	–0.3	21.2	–500.3	–6.9
	Banks	1452.5	1040.6	1212.6	83.5	0.6

Table 3. Statistical parameters of analyzed variables (cont.)

Variable	Class of companies	Mean, mln PLN	Median, mln PLN	Standard deviation, mln PLN	Coefficient of variation %	Skewness
doch_g	All	625.0	28.9	1296.3	207.4	3.5
	Big	827.3	271.4	1609.4	194.5	3.4
	Small	–4.0	–0.1	21.2	–529.2	–7.0
	Banks	1481.0	1052.5	1222.1	82.5	0.6

Source: own calculations.

The statistical parameters presented in Table 3 indicate a wide variation in the value of basic variables characterizing the companies in the sample. This justifies the division of the entire sample into three classes. The strongest group proved to be the banks, for which the average values of all variables are clearly higher than the sample average. Skewness indicates that the distributions for most of the examined variables are right-tailed. The exceptions are net profit and total comprehensive income in the class of small companies, where negatively skewed distribution is observed. In this case, even median values are negative, indicating that the profitability of groups of small companies is lower than the profitability of other groups. It is worth noting the large dispersion of values of variables within classes.

The remainder of the study is focused on analyzing the shares of minority and majority interests in equity, net profit and comprehensive income of the groups of companies. Table 4 contains the statistical parameters of variables expressed as shares in the group total.

Table 4. Statistical parameters for examined variables expressed as shares in the group total

Variable	Class of companies	Mean, mln PLN	Median, mln PLN	Standard deviation, mln PLN	Coefficient of variation %	Skewness
u_kap_d	All	0.965	0.996	0.096	9.9	–3.2
	Big	0.950	0.993	0.120	12.6	–2.3
	Small	0.971	0.999	0.084	8.7	–4.0
	Banks	0.984	0.996	0.027	2.8	–2.1
u_kap_m	All	0.035	0.004	0.096	269.7	3.2
	Big	0.050	0.007	0.120	241.2	2.3
	Small	0.029	0.001	0.084	290.6	4.0
	Banks	0.016	0.004	0.027	168.3	2.1
u_zn_d	All	0.923	0.999	0.391	42.3	–8.5
	Big	0.949	0.999	0.189	19.9	0.3
	Small	0.869	1.000	0.592	68.2	–6.2
	Banks	0.977	0.997	0.048	4.9	–1.1

Variable	Class of companies	Mean, mln PLN	Median, mln PLN	Standard deviation, mln PLN	Coefficient of variation %	Skewness
u_zn_m	All	0.077	0.001	0.391	507.2	8.5
	Big	0.051	0.001	0.189	372.3	0.3
	Small	0.131	0.000	0.592	450.5	6.2
	Banks	0.023	0.003	0.048	204.0	1.1
u_doch_d	All	0.878	0.999	0.503	57.3	–6.3
	Big	0.896	0.999	0.311	34.7	–4.5
	Small	0.813	1.000	0.734	90.4	–4.7
	Banks	0.976	0.998	0.053	5.4	–1.7
u_doch_m	All	0.122	0.001	0.503	413.6	6.3
	Big	0.104	0.001	0.311	298.9	4.5
	Small	0.187	0.000	0.734	391.6	4.7
	Banks	0.024	0.002	0.053	223.1	1.7

Source: own calculations.

The results presented in Table 4 allow us to conclude that there is a clear difference between the shares of minority and majority interests, both in the equity and the income of the groups of companies. The mean of non-controlling interests in a group's equity is only 3.5% (the median is even much lower, at only 0.4%). Slightly bigger numbers can be seen for shares in net profit and total comprehensive income. The mean share in the net profit of a group attributable to minorities is 7.7% (the median is only 0.1%). For total comprehensive income, the share of non-controlling interests is 12.2% (but the median only 0.01%). The highest shares of non-controlling interests for these two variables can be observed for small companies: 13.1% (for net profit) and 18.7% (for total comprehensive income). However, substantial differences between the mean and the median must be stressed (in any case, the median share of non-controlling interests does not exceed 1%). This follows from the positive asymmetry of distribution of shares for non-controlling interests in terms of the equity, net profit and comprehensive income of a group. Although most of the observations for shares of non-controlling interests are below the mean (hence the value of the median is low) there are some outliers tending towards 1 and boosting the value of the mean. In addition, the coefficients of variation indicate a large dispersion of shares of minority interests.

Insights from Figure 1 in the Appendix confirm the findings from Table 4. The distributions of shares of non-controlling interests are positively skewed, especially for net profit and comprehensive income. The largest dispersion occurs in the class of small companies, while the most stable and concentrated group are banks.

Figure 2 in the Appendix shows the evolution of shares of non-controlling interests in equity, net profit and total income of groups of companies in the period 2009–2013. The mean values of shares of minority interests in equity, net profit and com-

prehensive income of groups in 2009–2013 were subject to some volatility, especially for total income and, in some periods, for net profit. The shares in equity were steady. As indicated earlier, banks definitely showed the greatest stability.

3.4. Testing for the significance of the share of non-controlling interests in the equity of the group of companies (first hypothesis) and the impact of non-controlling interests on the income of the group (second hypothesis)

After analyzing the above, and before drawing conclusions for the first two hypotheses, tests for normality distributions of the examined variables were carried out, followed by paired difference tests. The results of Kolmogorov-Smirnov and Shapiro-Wilk tests pointed to a rejection of the null hypothesis about the normality of distributions of variables representing assets, equity, net profit and comprehensive income, expressed both in absolute and relative terms for majorities and minorities in relation to the appropriate total category for a group of companies. The indication of the lack of normal distribution was in line with earlier observation of skewness with values considerably different from 0.

Next, the paired difference Wilcoxon test was used to test for the median difference of two sets of observations (variables in this study). The nonparametric Wilcoxon signed-rank test was used because of the unfulfilled assumption of the normal distribution of the analyzed variables. The set of hypotheses in the Wilcoxon test is as follows:

Null hypothesis: the median difference of two sets of observations is equal to 0.

Alternative hypothesis: the median difference of two sets of observations is different from 0.

The outcomes of the Wilcoxon test conducted at the significance level of 0.05 for the pairs of analyzed variables are presented in Table 5.

Table 5. Outcomes of the Wilcoxon test for tested pairs of variables

Pair of variables	Decision
kap_m, kap_d	reject null hypothesis
zn_d, zn_m	reject null hypothesis
doch_d, doch_m	reject null hypothesis
u_kap_d, u_kap_m	reject null hypothesis
u_zn_d, u_zn_m	reject null hypothesis
u_doch_d, u_doch_m	reject null hypothesis
u_kap_d, u_zn_d	fail to reject null hypothesis
u_kap_m, u_zn_m	fail to reject null hypothesis
u_kap_d, u_doch_d	fail to reject null hypothesis
u_kap_m, u_doch_m	fail to reject null hypothesis

Source: own calculations.

The test was conducted for each class of companies, as well as for the entire sample – the results shown in Table 5 were consistent for each pair of variables. These results, combined with data from Tables 3 and 4, clearly indicate that the importance of non-controlling interests in the equity, net profit and comprehensive income of a group is significantly lower than the impact of majority interests. There is a visible proportionality between shares of minority and majority interest in the group's equity and the group's income i.e. the share of minority shareholders (parent company) in a group's equity does not differ significantly from the share of minority shareholders (parent company) in the group's net profit and comprehensive income. Thus, the performed analysis did not provide evidence against the first two hypotheses formulated at the outset of the study. The share of non-controlling interests both in the group's equity and income is significantly different (and smaller) compared to the share of majority interests. Their share in the group's income is proportional to their share in the equity.

3.5. Testing for differences in profitability of non-controlling and majority interests (third hypothesis)

Before testing for differences in profitability of non-controlling and majority interests, the occurrence of negative values of the minority and majority interests in a group's equity and net profit (loss) was examined. Table 6 contains the number and percentage share of observations with negative values for equity, net profit (loss) and other comprehensive income of minorities, parent entities and groups.

Table 6. Summary and percentage of observations with negative equity values, losses and negative other comprehensive income values

Variable	All		Big		Small		Banks	
	No.	%	No.	%	No.	%	No.	%
kap_g	4	1.6	0	0.0	4	4.2	0	0.0
kap_d	4	1.6	0	0.0	4	4.2	0	0.0
kap_m	22	9.0	9	8.6	11	11.6	2	4.4
zn g	67	27.3	17	16.2	49	51.6	1	2.2
zn_d	66	26.9	17	16.2	48	50.5	1	2.2
zn_m	77	31.4	30	28.6	39	41.1	8	17.8
indoch_g	78	31.8	44	41.9	15	15.8	19	42.2
indoch_d	79	32.2	45	42.9	15	15.8	19	42.2
indoch_m	41	16.7	26	24.8	2	2.1	13	28.9
N	245		105		95		45	

Note: N – number of observations

Source: own calculations.

There is a relatively high percentage of observations with negative values. It is observed especially for the net loss in the class of small companies where the percentage exceeds 50%. What is interesting in this case is that more losses were recorded for majorities than minorities (like for negative other comprehensive income for the entire sample). However, the situation of non-controlling interests compared to majority interests was worse for equity, where the proportion of negative cases hovered around 10%, with the exception for the class of banks where it stood at 4.4%. The overall results presented in Table 6 allow us to conclude that the scale of recording losses (only to the sign, and not magnitude in theirs amounts) by non-controlling and majority interests was relatively large and mutually balanced.

The presentation of the structure and the non-negligible scale of losses was followed by in-depth analysis of the return on equity (ROE) generated by shares of non-controlling and majority interests in a group's equity. Table 7 shows the statistical parameters of ROE calculated for the group's total equity (ROE_g), as well as shares of minority and majority interests in the group's equity (ROE_m and ROE_d respectively). The results are presented for the entire sample and for the classes of companies in two variants: A (P&L) – taking into account all observations with net profit and loss (observations with a negative value of equity excluded), and B (P) – taking into account only observations with net profit (observations with negative value of equity excluded).

Table 7. Return on equity of minority and majority interests and classes of companies

Statistics	ROE_g		ROE_d		ROE_m	
	P&L	P	P&L	P	P&L	P
	All					
N	241	94	241	94	172	94
Mean	–0.040	0.111	–0.050	0.110	0.080	0.356
Median	0.066	0.095	0.065	0.094	0.072	0.111
Standard deviation	0.809	0.079	0.941	0.082	1.433	0.963
Coefficient of variation, %	–2039.4	71.4	–1883.5	74.5	1800.6	270.7
Skewness	–8.6	1.9	–9.9	1.8	–1.7	7.3
	Big					
N	105	49	105	49	79	49
Mean	0.068	0.108	0.071	0.109	0.178	0.230
Median	0.070	0.088	0.072	0.089	0.046	0.094
Standard deviation	0.350	0.086	0.350	0.090	0.844	0.330
Coefficient of variation, %	514.3	79.3	493.6	82.8	473.7	143.6
Skewness	–4.0	2.2	–4.1	2.0	2.0	2.0

Statistics	ROE_g		ROE_d		ROE_m	
	P&L	P	P&L	P	P&L	P
	Small					
N	91	16	91	16	55	16
Mean	–0.238	0.095	–0.267	0.090	–0.327	0.305
Median	0.005	0.068	0.007	0.061	0.000	0.122
Standard deviation	1.223	0.089	1.442	0.089	1.855	0.482
Coefficient of variation, %	–513.9	94.0	–539.7	99.3	–566.9	157.8
Skewness	–6.0	2.4	–6.7	2.6	–3.8	3.3
	Banks					
N	45	29	45	29	38	29
Mean	0.128	0.124	0.127	0.123	0.534	0.596
Median	0.125	0.124	0.125	0.122	0.111	0.122
Standard deviation	0.069	0.060	0.070	0.061	1.526	1.637
Coefficient of variation, %	54.1	48.1	55.2	49.7	285.8	274.7
Skewness	0.6	0.9	0.6	1.0	4.4	4.7

Notes: N – number of observations, ROE not expressed in %

Source: own calculations.

A quite interesting conclusion may be drawn from the results in Table 7. The profitability of non-controlling interests is, in most cases, higher than the average profitability of majority interests. That is true for the entire sample in terms of the mean and median ROE in both variants. The same is true in most cases for particular classes of companies. Including preceding analyses, it points to non-controlling interest as being highly volatile in generating profit or loss but, on average, more it is profitable than majority interest. The significance of the difference in profitability of majority and non-controlling interests measured by ROE was investigated by applying the Wilcoxon signed-rank test (cf. Table 8).

Table 8. Outcomes of the Wilcoxon test for examined pairs of ROE_d and ROE_m

Class of companies	Variant	Decision
All	P&L	fail to reject null hypothesis
All	P	reject null hypothesis
Big	P&L	fail to reject null hypothesis
Big	P	reject null hypothesis
Small	P&L	fail to reject null hypothesis
Small	P	reject null hypothesis
Banks	P&L	fail to reject null hypothesis
Banks	P	reject null hypothesis

Note: the significance level at 0.05

Source: own calculations.

The results in Table 8 show that the difference in profitability between majority and minority interests is significant for all classes of companies when observations with only net profit are included. For variant A (P&L), the test outcome pointed to the insignificance of the differences in profitability. Thus, the analysis does not allow for the evident rejection of the third research hypothesis. Considering observations with net profit and loss, there is no clear evidence of difference in profitability between majority and minority interests measured by ROE. However, when observations with only net profit are examined (P) the outcome suggests the rejection of the hypothesis and the conclusion that the return on non-controlling interests differs significantly (is higher) from the return on majority interests.

3.6. Testing for the relationship between the number of subsidiaries in the group, and the share of non-controlling interests in equity and income of the group (the fourth hypothesis)

The last part of the study addresses the impact of the number of subsidiaries in a group of companies on the non-controlling interests in equity and income. Table 9 contains a brief description of the number of subsidiaries per group of companies in the sample.

Table 9. Number of subsidiaries in a group of companies

Statistics	All	Big	Small	Banks
Median	11	23	4	17
Min	1	2	1	2
Max	199	199	20	40

Source: own calculations.

The relatively large difference in median subsidiaries between classes of companies may be noted. As expected, the largest number of subsidiaries is recorded for big companies, the smallest for small ones. There is one evident outlier with a huge number of subsidiaries in the class of big companies. It is the Asseco Poland group. Table 10 presents the Spearman correlation coefficients between the number of subsidiaries and variables related to non-controlling interests in terms of equity and income.

Table 10. Spearman[7] correlation coefficients between the number of subsidiaries in a group of companies and some variables concerning minority interests

Variable	All	Big	Small	Banks
kap_m	0.424**	0.488**	0.176	–0.001
zn_m	0.091	0.008	–0.331**	–0.220
indoch_m	0.000	–0.024	–0.083	–0.172
doch_m	0.058	–0.057	–0.360**	–0.248
u_kap_m	0.216**	0.346**	0.148	–0.027
u_zn_m	0.018	0.078	0.109	–0.193
u_indoch_m	0.138	0.243*	0.164	–0.300*
u_doch_m	0.032	0.121	0.066	–0.206

Note:
* Correlation is significant at the 0.05 level (two-sided),
** Correlation is significant at the 0.01 level (two-sided)
Source: own calculations.

The results of correlation analysis indicate that a significant relationship between the number of subsidiaries and non-controlling interests exists only in a few cases and it is weak or moderate. This applies to the value of non-controlling interests and its share in a group's equity (as expected, it is a positive correlation), but only in the class of big companies (and for the entire sample). The correlation between the number of subsidiaries and the share of non-controlling interests in a group's income is significant (positive but weak) only in the case of other comprehensive income for big companies. In three cases (values of net profit and comprehensive income of minority interests for the class of small companies, and the share of non-controlling interests in other comprehensive income of a group's total for the class of banks) a weak negative correlation was observed. It is interesting to note that for banks, all correlation coefficients are negative (only in one case can one speak about a significant but weak relationship). Finally, the results are in favor of rejecting the fourth research hypothesis. Overall, the number of subsidiaries exhibits no significant correlation relationship with the share of non-controlling interests in a group's equity (with the exception a big companies) and in a group's income.

3.7. Conclusions on empirical research

The conducted empirical study allowed for four research hypotheses to be tested. Non-controlling interests represent a very small part of a group's equity (taking the mean of about 3.5%, but the median below 1%) and obviously, they are significantly lower

[7] Spearman rank correlation coefficients were applied due to the non-fulfillment of the assumption about normality of distribution for the examined variables.

than the share of majority interests. Their deviation among the different classes of companies is negligible. Slightly higher (7.7–12.2% in terms of the mean, but still not exceeding 1% for the median) is the share of minority interests in a group's net profit and total comprehensive income. However, no significant difference may be found between the shares of non-controlling interests in the group's equity, net profit and total comprehensive income. Overall, shares of majority (minority) interests in a group's income are in line with their shares in the group's equity. The third hypothesis on a comparable return on non-controlling and majority interests cannot be rejected if both net profit and losses are considered. However, if losses are skipped then there is evidence that non-controlling interests are more profitable (in terms of ROE) than majority interests. The analysis of the impact of the number of subsidiaries in a group on non-controlling interests indicates the existence of such an effect only in relation to equity (rather obvious but weak). No effect is observed for the impact on net profit for the entire sample.

General conclusions

Non-controlling interests, which are concerned with consolidated financial statements represent those part of subsidiaries in which the group does not have all of the rights to their assets and liabilities. In consolidated financial statements, prepared and presented with conformity to today's IFRS, non-controlling interests should be treated as the equity of the group. Such an attitude is consistent with the main assumptions for the entity concept of the consolidation of financial statements. This theoretical concept was adopted to the IFRS in 2008 and is the successor of previously implemented concepts based on the parent company approach. Today's IFRS developed and improved not reasonable or questionable assumption in the entity concept previously made, that the initial value of non-controlling interests should be correlated with the consideration paid for the control of the subsidiary. Shifting into the fair value of the non-controlling interests solves the problem of putting the entity concept into practice.

Generally, as the empirical research and tests on groups of Warsaw Stock Exchange listed parent companies show, non-controlling interests have a non-significant influence on the financial performance and total equity of the groups. The profitability of non-controlling and majority interests are generally the same. However, if losses are skipped then there is evidence that non-controlling interests are more profitable (in terms of ROE) than majority interests. The number of subsidiaries formatting the groups has a non-significant impact on financial performance and the total of the equity of the groups for all the sample and for each tested class of companies (big, small and banks). The tests, run for three classes of parent companies, big, small and financial, generally did not confirm the differences in significance of non-controlling interests. Those results and observations could lead to the general conclusion that Polish groups can be characterized as those with a huge concentration of capital within the

groups. However, such a conclusion should be proved, tested and verified by another study. Another hypothesis could also be assumed: parent companies themselves have a large impact on the main economic characteristics of the groups: profit, comprehensive income and total equity. However, such a conclusion should also be proved, tested and verified by another, independent study.

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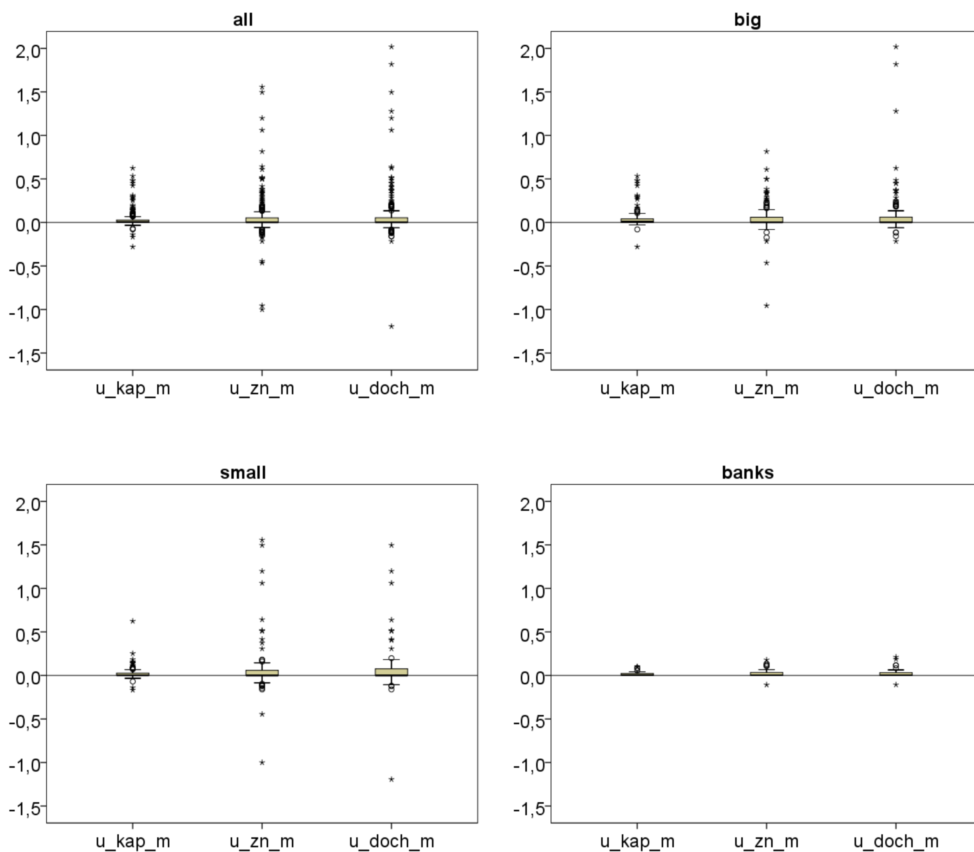
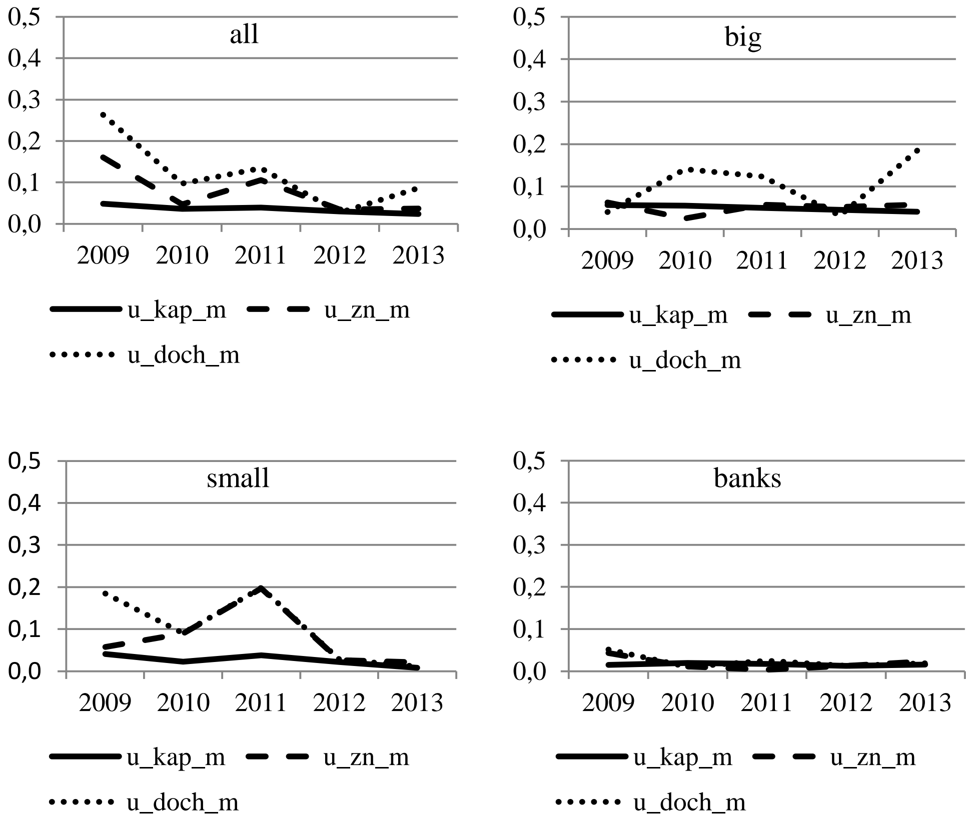
Appendix

Figure 1. Distributions (box plots with outliers) of shares of non-controlling interests in equity, net profit and total comprehensive income of groups of companies



Source: own calculations.

Figure 2. The mean value of shares of non-controlling interests in equity, net profit and total income of groups of companies in the period 2009–2013



Source: own calculations.