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Ladies and Gentlemen,

With the 15th edition of the ‘Journal of Management and Financial Sciences’ we are trying to present articles which we hope will present a contribution to the development of economic thought and contribute to a fuller understanding of the complex economic issues.

“Determinants of Network Organisations Creation. Selected Results of Empirical Research” by Anna Skowronek-Mielczarek (presents theoretical considerations referring to different approaches to the comprehension of the idea of network organisation and its features. It indicates, against this background, the major sources of competitive advantage created by network organisations as well as the determinants of their creation. This article is aimed at the presentation of a review of the factors which may contribute to the creation of network organisational structures in the Polish business practice.

Waldemar Rogowski and Magdalena Wojtuch-Krasuska in the article “Market Valuation Inefficiency of WIG 20 Companies in View of Research Conducted from 1st January 2007 till 15th August 2012” attempt to identify the reasons for abnormal daily share price changes of companies listed in the WIG 20 blue-chip index from January 2007 to August 2012. The article is aimed at the presentation of results of research conducted by the authors in 2012. The goal of the research was to identify and analyse the reasons for short-term abnormal fluctuations of share prices of companies within WIG 20 index in the period 2007 – 15 August 2012 and to refer these results to the Value Based Management.

The paper presented by Krzysztof Borowski and Weronika Kosmala “The Contemporary Art Market in Poland – paintings” shows the current prevailing trends in the Polish art market as well as the factors determining its development. Alternative investments are very popular among investors in the period of economic downturn. It also demonstrates the complexity of the domestic paintings art market and the necessity of considering each individual piece in a particular context of the tendencies regarding the group it is classified into.

“Internal and external factors and the effectiveness of the actual stock split” is an article by Rafał Tuzimek The prime concern of this article is to present an instrument called an actual stock split. This article aims to determine the effectiveness of
the conducted actual stock splits in the background of the factors specific for the company, the stock of the company and the phase of the stock market. The article presents the results of empirical studies of foreign markets, and the results of empirical research conducted by the author on the Warsaw Stock Exchange. The parameter observed in the study is an abnormal rate of return. In this study the Author analyzes the impact of the actual split on stock prices. The results of Author’s research on WSE are in contrast to the regularities captured in most of presented foreign studies.

The purpose of the article “Theoretical and Practical Aspects of the Real Estate Taxation System Reform in Poland – An Outline of the Concepts of the Target Solution” written by Paweł Felis is to make an attempt to present the concept of a target solution within the real estate taxation system. This article consists of two parts. In part one four basic areas of the reform are isolated and outlined: development and introduction of the cadastre system, the procedure of the general taxation of real estates, management and administration of the cadastre system and the scope of the tax autonomy of the communes. In the second part, implementation issues are developed, such as: election of the taxable base, problems relating the practice of tax rate determination.

Mateusz Guzikowski and Aleksandra Ambroży in the article “A Few Critical and Updating Remarks on the Arthur Lewis Theory of Development with Unlimited Supplies of Labour” want to achieve two aims. Firstly, they show Lewis’s groundbreaking concept of 1954. Secondly, contribute relevant elements to the criticism of this concept. The paper is organized as follows. In the first section authors briefly outline the historical background of different theories in Development Economics. Then they move onto critical arguments concerning the Lewis concept, and afterwards present their own critical remarks.

We wish you pleasant reading.

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Determinants of Network Organisations Creation. Selected Results of Empirical Research

Abstract

The strategies of modern companies deal with their independent development but the concepts which make use of connections and partnership cooperation with other entities are gaining more significance. Cooperation may become, besides competition, the key to a market success. There are new forms of this cooperation, new organisational structures, a new perception of a business company focusing on a high dynamics of changes in the ways it operates and interacts with the environment. Network organisation may be regarded as one of these forms of cooperation. The article presents theoretical considerations referring to different approaches to the comprehension of the idea of network organisation and its features. It indicates, against this background, the major sources of competitive advantage created by network organisations as well as the determinants of their creation. The empirical section of the article presents selected results of empirical research conducted in 2013 on a sample of 363 companies belonging to network organisations. They dealt with, for example, the determinants of network organisation creation in the Polish business practice.

Keywords: network organisation, forms of cooperation, sources of competitive advantage, barriers of cooperation.
1. Introduction

The strategies of modern companies deal with their independent development but the concepts which make use of connections and partnership cooperation with other entities are gaining more significance. Cooperation\(^1\) may become, besides competition, the key to a market success. Competition does not exclude cooperation. Thus, there are new forms of this cooperation, new organisational structures, a new perception of a business company focusing on a high dynamics of changes in the ways it operates and interacts with the environment. A network organisation may be treated as one of these forms of cooperation. This article is aimed at the presentation of a review of the factors which may contribute to the creation of network organisational structures in the Polish business practice.

2. The idea of network organisation

The available literature on management does not explicitly define the terms such as network organisation, network company, corporate network or inter-organisational networks. Many of them are used interchangeably. Depending on the context, a network organisation may be treated as a modern form of corporate organisation, a new management method or a new method of organisation of relations among separate business entities.\(^2\) According to one of these definitions, a network company is a set of legally independent business entities implementing various tasks and projects coordinated by a company called integrator, which has distinctive competences.\(^3\) In view of another approach, a network company is to be considered as an organisational form which helps the participants mobilise the outlays and information in order to enhance innovation, flexibility, speed of operation and effectiveness. They

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are a polycentric form of business activity based on the cooperation of independent and financially separate companies aspiring to gain a competitive advantage.4

Another concept treats a network company as an organisational structure built in relation with business projects completed by different parts of different companies cooperating with one another and creating a network of connections for the time of the completion of a given project and changing the configuration of these networks during the implementation of every new project.5 The next approach focuses on the operation of a network organisation as a set of resources used to create a common chain of value. A network organisation is a kind of organisation which operates through internal as well as external resources and its value added chain includes the value added chain of its suppliers, buyers, business environment institutions etc. The synergy of potentials of the network participants is a source of innovativeness and competitiveness of such an organisation. One more concept points out to the necessity of making business operation based on the relations made by independent companies which implement their development strategies on the basis of cooperation. Thus, a network organisation is the one which is based on a relative approach to the competitive advantage creation. It assumes that the source is derived from the cooperation, corporate cooperation, the relation specific assets, knowledge sharing practices, complementarity of resources and coordination effectiveness. The competitive advantage of this kind may last for a fairly long time due to the imitation barrier of complex network connections.6

Another definition of a network organisation indicates the significance of horizontal relatively permanent relations between independent business entities. Thus, a network organisation is made up by a relatively permanent grouping of separate specialised companies cooperating according to the market principles, with the hierarchical structure replaced by the horizontal connections and reciprocal relations.7

Another approach focuses on similarities in the area of business activity conducted by the participants of a network organisation. Thus, a network organisation is created by the business entities which are similar within the area of business activity, using

certain resources and implementing common processes, which should lead to the achievement of the synergy effect.\(^8\)

The next concept of a network organisation refers to the synergy effects generated by this kind of organisation. A network organisation is a system of cooperation of companies which are organisationally and legally independent, connected or not in terms capital, based on the synergy potential of these entities, operating in one or more areas of operation and on the basis of a broader cooperation than a one-time exchange.\(^9\)

This review of the selected definitions of network organisations results in numerous approaches represented by different authors and the emphasis on the variety of their features. Thus, it is difficult to classify an organisation as a network organisation. What is essential is the context of a given approach and the key significance ascribed to a respective set of features of a network organisation. There are different acceptable approaches in this area. Several of them are presented below.

### 3. Network organisation discriminants

The analysis of a network organisation definitions leads to a conclusion that the major features of their functioning should synthetically include:

- desire to cooperate, with a simultaneous autonomy of the entities creating a network organisation,
- making use of the market activity coordination mechanisms,
- raising the innovation potential of individual participants of the organisation as well as the whole network,
- the implementation of common goals and development strategies,
- no dominating role of capital connections among the participants of the network, there are organisational, market, regional and social connections,
- a low level of vertical integration and hierarchy among the participants,
- the natural market flexibility of the whole organisation as well as its participants.\(^{10}\)

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One more view at the network organisation features leads to the following description:

- permanent transfer of tangible and intangible assets between the participants (nodes) of the network, which may be both domestic and foreign companies;
- specific kind of relations between companies which may become hierarchical when one of the entities has a dominating position or horizontal and loose market contacts;
- permanent aspiration of network organisation participants to the internationalisation of individual goals, strategies and values in order to enhance the competitive position of the whole organisation;
- creation of their own, common and integrated communication channels allowing for multidirectional communication among the organisation participants.\(^\text{11}\)

On the basis of the review of diversified definitional approaches and of feature sets of network organisations, it is worth trying to list the main discriminants ascribed to network organisations. They include:

- more than two participants in the network, it is usually a larger number of independent companies, but other organisations may also become network participants, such as universities, research and development institutes, business environment institutions, local self-government entities etc.;
- possibly frequent exchange of partners in the network, it means however that the network organisation has a liquid character in terms of the number of participants, and it is unlikely to be long-lasting though if a given organisation is successful on the market, it may be transformed to become a more durable entity, e.g. a joint capital company;
- voluntary joining and leaving the network makes the number of participants change depending on the needs connected with the implementation of a business undertaking or project;
- the character of ties connecting the participants of a network organisation is usually periodical, contractual and serving the achievement of definite goals;\(^\text{12}\)
- these ties results from various connections between the participants of a given network organisation, e.g. market, organisational, regional or social relations;


the participants creating the network organisation determine and implement the intended goals; joining the organisation is related to the acceptance of goals and values as well as development strategies implemented together;

the participants of a network organisation have to possess a network ability, an ability to cooperate and manage together, thus they should trust their partners who are the participants of the organisation;

a network organisation may organise simultaneously diversified business projects and undertakings in which companies creating the organisation engage selected resources or participate in fragmentary projects;

network organisations are usually set up on the basis of resources complementarity and the competences of their participants, so they make use of the synergy effects connected with internal resources indispensable to implement definite processes and projects;

network organisations make use of the division of labour and specialisation of their participants in some processes. Thus, it is possible to improve their activities, achieving a competitive advantage in these areas as well as to accelerate the implementation of innovation solutions;

a network organisation which lets the participating companies teach each other, exchange knowledge and experience, conduct research and development together is presently an important source of innovations;¹³

a network organisation may permanently change the configuration of its participants, their resources, processes and activities depending on implemented tasks and necessary competences,

within network organisations there are multilevel relations between their participants, they may concern the implementation of operational activities directly connected with the basic business operations as well as the implementation of development strategies;

a network organisation is based on a horizontal cooperation, there are no superior entities, as a rule there is no hierarchical structure, which means a necessity of commonly made decisions as well as fast and effective communication through the integration of information and communication systems;

the operation of a network organisation requires also a precise determination of the scopes of decision empowerments, responsibility and duties of every participant, which allows for the minimising of the risk of conflicts and failures of the implementation of the planned goals;¹⁴


network organisations flexibly react to the changes in the environment and through a fast reaction they increase the dynamism of their operation and enhance the power of their impact on other entities which are not the participants of the organisation.

To sum up the aforementioned deliberations in relation to the idea and features of a network organisation, it should be said that it may be treated as a voluntary association of independent companies (in a broader sense: organisations), which through the common use of complimentary resources accomplish their goals achieving faster, flexible and more innovative synergy effects.

4. The sources of competitive advantage of network organisations as their creation determinants

Network organisations, as indicated by the review of their features, are based on a number of sources of competitive advantage, either in the optimisation based on the use of resources and the creation of their unique configuration or the improvement of business processes, the improvement of their business processes and their quality as well as the shortening of their duration.

The participation in a network organisation may contribute to the optimisation of operational costs of participants through common purchases, promotion and advertising campaigns, the use of distribution channels, research and development or preparation and implementation of all types of innovation. The participation in a network organisation leads to the elimination of repetitive, overlapping or unnecessary processes. The chain of value connected with the creation of a certain product or rendering of a set of services may be reorganised. Every participant may be responsible for the implementation of a part of it. This allows for a full concentration and faster acting. Network organisations frequently eliminate auxiliary functions and processes, as for example the IT, analytical or administrative and accounting services may be jointly used.

Network organisation participants usually combine complimentary resources and skills. Thus, their configuration creates a unique pattern, difficult to imitate by other market players. It is a major factor of their competitive advantage. This configuration allows for a more effective management of common resources and effective implementation of business processes. It also allows for the concentration

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of the organisation participants on the resources which are of key significance for them and the disengagement from the processes in which they have less experience and poorer skills. Every participant can specialise and master their activities; having joined the network organisation they can achieve definite synergy effects.

A network organisation also allows its participants to generate a higher level of turnover than they could achieve separately. Through the enhanced bargaining power in relation to their suppliers and clients network organisations can often impose their own conditions in the implementation of business contracts, achieving a higher level of incomes and margins.

Network organisations through their horizontal relations may more quickly respond to the market signals, flexibly adjusting their configuration of common resources to implement their business undertakings and projects. It also contributes to the common solution to the decision problems and in this way to the sharing of business risk by more entities. It helps to create an offer which is better adjusted to customers’ expectations, more diversified and individualised.

Network organisations favour faster and more effective implementation of innovations in relation to their competitors. Their development and implementation result from larger teams of people applying external knowledge resources. It allows for a better use of the innovation potential of the network organisation participants. It may often happen that a separate company is not able to prepare or implement innovations for example due to financial reasons, the lack of knowledge, competence or skills. Whereas within their participation in a network organisation such a chance may appear owing to the conditions thanks to which the incubation of innovative ideas and solutions is becoming realistic.

5. Selected determinants of network organisations creation in the Polish business practice

In 2013 the author of the present article took part in an empirical research conducted within the NCN grant entitled *Network Organisation Innovativeness in the Knowledge Based Economy*. The aim of this research was to identify the determinants of innovativeness in network organisations in the Polish economy. The empirical research included 363 companies belonging to network organisations operating on the territory of Poland. The research was conducted in the form of computer assisted direct interviews (CAPI). The examined population consisted of companies belonging to a franchising network

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(121 companies), clusters (121 companies) and virtual organisations (121). The research had a quota character. The interviews were made on the basis of the research related list of 370 franchise companies. According to the structure of the population, quota (number of interviews compliant with the structure of population) was set for a region as well as category: trade and services. The interviews were made on the basis of cluster coordinators’ groups of 198 companies prepared for the purpose of the research. According to the structure of the population quota were set (number of interviews compliant with the structure of the population) for a region and the character of the institution included in the cluster: business companies, scientific and research entities or business environment institutions. In the case of virtual organisations the quota refers to regions (due to the unknown structure of the virtual organisation population, the quota are based on the structure of all companies in Poland). There were two stages of research: preliminary and proper. The majority of companies belonged to micro-companies (59%), companies in the service sector (57.6%) and those performing a function of network participant (63.9%). The research included companies belonging primarily to a network of up to 10 participants (42.4%) and network at the stage of maturity (45.2%), of national scope (35%) and regional scope (34.4%).

One of the areas of interest of the research was to identify the factors that made the examined companies undertake the cooperation within a network organisation (respondents could indicate any number of answers). The obtained of answers are presented in Figure 1.

**Figure 1. Factors making companies cooperate within network organisation in %**

- Possession of resources and skills the company is missing: 46%
- Faster and more effective and flexible acquisition of resources: 42%
- Similarity of conducted business: 45%
- Close location of partners, common suppliers’ and buyers’ markets: 34%
- Experience in establishing cooperation: 45%
- Possibility of reducing / sharing risk among more participants: 25%
- Possibility of eliminating competition: 27%

Source: empirical research of Management Institute, Warsaw School of Economics, 2013, n=363.
The reasons most frequently indicated by respondents for undertaking cooperation within a network organisation are: the resources and skills possessed by partners and missing in the company, similarity of the conducted business activity and experience in establishing cooperation. The percentage on indications in this area was actually similar, oscillating around 45%. The conclusion is that the experience from earlier cooperation is important for the companies, especially the positive one, which encourages to further attempts cooperate, not only to confine business to the competition against the direct competitors.

A similarly high level of indications, over 42% refers to fast, more effective and flexible acquisition of resources. The awareness is growing that through cooperation companies may acquire from external resources those ones that will let them remain on the market and achieve a market success. A lower frequency of indications referred to the close locations of partners, common suppliers and clients. It may be concluded that, in the time of the Internet, the barrier of access to suppliers, clients or partners disappears. Companies may freely establish relations with entities of their own environment making use of information and communication technologies. Thus, they do not have to be entities located in a close environment.

Interestingly, the possibility of eliminating competition was not a factor pointed to most frequently by the respondents. Thus, not competitive struggle and elimination of competition but cooperation may favour establishing relations between companies. The least frequent indication is the possibility of reducing/sharing risk among more participants. The obtained responses lead to the conclusion that companies are inclined to undertake cooperation due to the prospects for achieving benefits and enhancing their own potential rather than the defence against the activity of the competition and its elimination. It is the cooperation and not competitive fight according to the respondents that may lead them to a market success and competitive advantage.

Taking into account the kind of network organisation the respondents belonged to, there are clear differences with regard to the factors making companies undertake cooperation, see Figure 2 below.

Franchise companies indicated most frequently faster and more effective and flexible acquisition of resources: more than 51% of companies from this group pointed to this factor. The possession of resources and skills the company is missing, a similarity of conducted business and experience in establishing cooperation had a similar layout of indications to the total of the examined entities. However, the possibility of eliminating competition and the possibility of reducing/sharing risk among more participants were indicated more often than in the case of the company total. It may be concluded then that franchising is treated as a corporate development model in favour of overcoming competition. Moreover, a reliable operational formula of franchising
companies allows for the reduction in business risk, in particular in the case small sized companies. Thus, joining a franchising network allows for the achievement of a market success, reducing at the same time the level of business related risk.

The companies belonging to the group of clusters most frequently pointed to the possession of experience in establishing cooperation and close location of partners, suppliers’ and buyers’ common markets, which is clear due to the character of operation of this kind of network organisations. Risk reduction and the possibility of eliminating competition are less frequent indications than those made by the whole group of the examined entities.

**Figure 2. Factors making companies undertake cooperation within network depending on its kind in %**

- Possession of resources and skills the company is missing: 36% Virtual organisations, 46% Franchise companies, 46% Clusters.
- Possibility of reducing / sharing risk among more participants: 38% Virtual organisations, 88% Franchise companies, 88% Clusters.
- Possibility of eliminating competition: 28% Virtual organisations, 51% Franchise companies, 51% Clusters.
- Experience in establishing cooperation: 31% Virtual organisations, 41% Franchise companies, 41% Clusters.
- Close location of partners, suppliers’ and buyers’ common markets: 28% Virtual organisations, 46% Franchise companies, 46% Clusters.
- Similarity of conducted business: 18% Virtual organisations, 38% Franchise companies, 38% Clusters.

Source: see Figure 1.

For the virtual organisations the crucial significance in the establishment of cooperation is ascribed to the possession of resources and skills the company is missing: over 55% of the indications as well as a similarity of the conducted business: over 50% of responses in this group of respondents. Thus, the percentage of indications in this area was higher than in the case of the total of the examined entities. It may be concluded that in the virtual companies the similarity of the conducted business
as well as mutual replenishment of resources and their complementarity play crucial roles in the processes of cooperation establishment. They allow for a faster reaction to the changes in the environment, the creation of a well-adjusted offer etc.

The next research area of the empirical research concerned the assessment of barriers to the establishment and development of cooperation within network organisations. The respondents could choose any number of barriers to corporate cooperation within network organisations presented in Figure 3.

**Figure 3. Barriers to the establishment and development of cooperation within network organisations in %**

- No need for the establishment of cooperation: 27%
- Protection of own independence: 12%
- Reluctance of potential partners to establish cooperation: 18%
- Too small benefits from cooperation: 22%
- Different motivation and involvement of partner: 27%
- Capital requirements: 28%
- There were no barriers: 33%

Source: see Figure 1.

What is especially interesting, most indications in this area concern the lack of barriers. Over 33% of respondents indicated this factor. This may mean that the cooperation of companies, if it has been established, is being developed in a conscious and reasonable way becoming an inherent feature of the corporate development strategy. Capital requirements, posed to the potential participants of network, may become a barrier to the cooperation: this factor was indicated by 28% of all the respondents.

The protection of company’s own independence and different motivation and involvement of partners are next barriers hindering the establishment and development of cooperation within network organisations. 27% of respondents pointed to them. Thus, it seems that company managers, when deciding to do business together, are aware of the existence of peculiar limitations with regard to the operational rules within a network organisation. Nevertheless, this sort of cooperation is taking place. A little over 20% of the examined entities indicated too small benefits from
the cooperation within the network organisation. It may mean that the decision to join a network organisation was made in those cases without a thorough analysis or the level of expectations was too high. The practice of operation of their network organisations appeared to be less profitable than initially assumed. 18% of respondents pointed to the reluctance of business partners to establish cooperation as a barrier to operation within network organisations. The reluctance to cooperate may lead to the decline in the level of trust to partners, and consequently to the conflicts as well as the withdrawal of the company from the network organisation.

It is worth pointing to the fact that 12% of respondents indicated the lack of need to establish cooperation as a barrier to the decisions to undertake cooperation within the network organisation. It is surprising enough as all the examined entities belonged to network organisations, so they were as a matter of principle involved in common operations conducted by these organisations.

The research also shows some insignificant differences in the frequency of selection barriers which occur in the course of the establishment and development of cooperation by different network participants (Figure 4.).

**Figure 4. Barriers to the establishment and development of cooperation with regard to the kind of network organisations in %**

- no need for the establishment of cooperation
- protection of own independence
- reluctance of potential partners to establish cooperation
- too small benefits from cooperation
- different motivation and involvement of partners
- capital requirements
- there were no barriers

Source: see Figure 1.
In the group of franchise companies no barriers to cooperation and capital requirements connected with joining a network organisation were most frequently indicated. It may be concluded that franchise is treated as a conscious way of corporate development, with its intensity of practical use limited by the capital requirements set by the system. In the remaining groups of network organisations the layout of responses was actually similar to that obtained from all the respondents.

6. Conclusion

Dynamic market changes and their unpredictability make individual companies unable to cope on their own with the increasingly fierce competition. Due to this, the establishment of cooperation with other companies and the creation of network organisations with them may let them remain on the market and mitigate the threat resulting from the dynamic changes in the environment. What is to be considered when deciding to follow this strategy is the opportunity to obtain the synergy effects, strengthening the market position as well as faster and more effective growth. The empirical research conducted in the Polish business practice confirmed that company managers, when deciding to cooperate within a network organisation, most frequently consider the complementarity of partners’ resources and skills, similarity of the conducted business and experience in the establishment of cooperation. These factors are to help them retain their current market position rather than to give rise to a faster growth or market expansion. There are also limitations which hinder cooperation within the processes of establishment and development of network organisations. The research indicates that the most frequent barriers are capital requirements posed to the potential network participants, protection of company’s own independence, different motivation and involvement of partners as well as too small benefits from the cooperation within the network organisation obtained by the participants.

References

Market Valuation Inefficiency of WIG 20 Companies in View of Research Conducted from 1\textsuperscript{st} January 2007 till 15\textsuperscript{th} August 2012

\textbf{Abstract}

The authors attempt to identify the reasons for abnormal daily share price changes of companies listed in the WIG 20 blue-chip index from January 2007 to August 2012. Average market fluctuations anomalies were recorded more often during the epicentre of financial crisis in 2008 and 2009, and alleviated afterwards. The period cannot serve as negation of effective market hypothesis derived from normal distribution of stock price changes. Global trends were behind more than 14 percent of abnormal identified changes, proving that Warsaw is not a strongly endogenous market. Financial results publications and signals about strategy changes were responsible for 11 percent of deviations each. Such large numbers, higher compared to Western markets, may indicate information inefficiencies and over-reaction among investors, explained partly by the state Treasury inconsistent policies. Under these conditions, investor relations based on economic value added long-term creation may be a useful tool for companies which want to differentiate from global trends and investor herding.

\textbf{Keywords:} market efficiency, stock market, effective market hypothesis, Warsaw Stock Exchange, share price movements, economic value added, investor relations, value based management, Poland, equities, State Treasury.
Introduction

The article is aimed at the presentation of results of research conducted by the authors in 2012. The goal of the research was to identify and analyse the reasons for short-term abnormal fluctuations of share prices of companies within WIG 20 index in the period 2007 – 15 August 2012 and to refer these results to the Value Based Management. The VBM followers think that the rise in the market value of a stock market company is an “effect of investors’ positive assessment of its so far financial results, including the value measures and future development prospects.”¹ According to the VBM concept the company’s ability to generate free cash flows should have an essential impact on the valuation of its stock. Alfred Rappaport underlines that investing in company shares is nothing else but expectations game,² won by those who can best forecast an improved situation of the company before other participants of the market can notice it. Aswath Damodaran claims that maximising the corporate value is the only financial goal of every company, and in practice this goal narrows to maximising the market price of company shares as it is the only measurable and explicit measure of a corporate business success.³ A decisive role played by the capital market as an instance responsible for the ultimate corporate value estimation, assumes that it works efficiently, although to a different extent, and when valuating a company it takes into account all the public information accessible to investors. It also assumes investors’ rational behaviour.

1. Discussion about the capital market efficiency

The research of the fluctuations of share prices of the largest companies on the Warsaw Stock Exchange requires considering the notion of information efficiency. Theory of Efficient Markets, ascribed to Eugene Fama⁴ assumes that all the newly released information, public or non-public, should be immediately reflected in

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share prices. Thus, according to Eugene Fama,\(^5\) in the long-term it is not possible to achieve above-average rates of return, and the appearance of profits that are higher than average is the result of the probability distribution. In further studies on this theory researchers\(^6\) distinguished three forms of market efficiency:

- **weak efficiency**, assuming that all the past information has already been included in the current stock price,
- **semi-strong form**, assuming that all the public information is fully reflected in the stock price, and prices are not developed according to any regularities determined on the basis of the past fact,
- **strong form**, assuming that all the information, public and confidential has already been included in the price of securities.

The research of anomalies in stock price creation as well as a more thorough analysis of the assumption made by Eugene Fama, led to the discussion lasting till now between the followers and opponents of the theory of efficient markets. An important issue under discussion is the appearance of anomalies in rates of return on stock, which according the theory of efficient markets should not take effect. According to the researchers the best documented anomalies prove that the information coming to the market is not considered in the valuation of securities in a linear and proportional way.\(^7\) The best documented **anomalies** include:

- **calendar effects**, consisting in repetitive schemes in different periods (e.g. January effect – at the beginning of the year funds begin new investments, which translates into the overall rise in stock prices on the market),
- **effects connected with the correlation between rates of return**, e.g. in the loss aversion effect the shares of the companies which in the recent long period have achieved the lowest rates of return in the coming period allow for above-average profits. In the momentum effect it is possible to achieve above-average rates of return having invested in the shares of companies which have achieved the lowest rates of return recently,
- **effects connected with giving essential information publicly**, such as financial results, payment and dividend policy changes. Within this group, it was also recorded that above-average rates of return may be achieved due to splits, acquiring the company own shares, IPOs, calls and takeovers of companies,

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\(^7\) A. Gabryś *Zarządzanie wartością spółki w kontekście teorii chaosu (Corporate value management in the context of the chaos theory)*, in: "Value Based Management – collective work edited by A. Szablewski, K. Pniewski and B. Bartoszewicz. Publisher: Poltext, Warsaw 2008, p.224.
• **anomalies connected with corporate capital market ratios**: undervaluation or overvaluation of the weight of information on the situation of the company: for example, above-average rates of return may be achieved through investing in stocks having a low price/profit ratio, in the case of a merger the rise the overtaken company’s prices and the fall in the overtaking company’s prices,

• **low capitalisation effect** (or low percentage of stocks in free turnover) and **small-sized companies effect**.

Criticism of the efficient market theory derives from the concept of **behavioural finance**. In behavioural finance it is assumed that investors (people) behave in a way that is not fully rational. It results from short-sightedness, imperceptibility of long-term benefits, desire to make profits fast and the will which is not strong enough to behave according to the textbook principles (criticism of rationality of homo oeconomicus). In 1974 Amos Tversky and Daniel Kahneman claimed that partial rationality is caused by the pressure of time and complexity of information.\(^8\) That is why in the decision making process of an individual (an investor) a full process of mathematical analysis is replaced by intuition simplifications, whether consciously or not. They estimate probability on the basis of the past (information accessibility) referring small samples to the whole groups of population (representativeness) or making estimations on the basis of initially suggested level (anchoring).\(^9\) In 1979 Amos Tversky and Daniel Kahneman proposed the **prospect theory**\(^10\) as a model describing decision making in the conditions of uncertainty. According to the prospect theory, more weight is given to the sphere of losses than profits, and absolute utility values obtained from profit are smaller than absolute utility value for a loss of identical value. And the major reason for the purchase or sale of shares should be the expected rise or fall in price.\(^11\)

Behavioural finance also makes use of research done by Werner De Bondt and Richard Thaler, who, when analysing the behaviour of capital markets, proved that investors show excessive response to new information.\(^12\) These observations let both researchers formulate a **capital market overreaction hypothesis**, according to which an excessive reaction of stock prices means their deviation from an efficient level,

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\(^9\) S. Buczek, *Efektywność informacyjna*..., pp.35–36.


i.e. the level in which all the available information has already been included in the market stock price.

Since the mid-1990s, also in relation to companies listed on the Warsaw Stock Exchange researchers have been trying to verify arguments formulated by the supporters and opponents of the theory of capital market efficiency. Studies conducted by Jan Czekaj, Mirosław Woś, Janusz Żarnowski and Adam Szyszka confirm the existence of typical anomalies on the Polish capital market in the 1990s. In 2005 a verification of a semi-strong (półsilna) form of efficiency of the Warsaw Exchange was conducted by Sebastian Buczek. In the study entitled “Efektywność informacyjna rynków akcji. Teoria a rzeczywistość” (Stock market Information Efficiency. Theory and Reality) he argued that investing in stocks of companies carrying out splits in the years 2003–2004 allowed for the achievement of above-average profits on the day following the period of rights issue in the case of semi-splits or on the first day after the division of shares in the case of splits. On the other hand, the observation of first pages of two newspapers: Rzeczpospolita and Gazeta Wyborcza made by Sebastian Buczek in the years 1999–2004 proved that the investors applying the method of contrarian investing could achieve above-average rates of exchange buying (or selling) shares following the publication of articles on the front pages of these newspapers after a plunge (or surge) of stock prices on the WSE.

The impact of information on the prices of securities and the analysis of events on the Polish stock market are the subject of scientific studies conducted for many years by Henryk Gurgul. They indicate that the recommendations “Buy” or “Keep” with regard to WIG 20 companies statistically have no significant impact on their prices, unlikely the recommendation “Sell”, which evokes market reactions on the day before the official publication. According to the researcher, announcements of dividend payment have substantial information significance for the market, but the market participants’ reactions are different in this case depending on the scope and completeness of the possessed private information, which translates into a big rise in turnover in relation to this category of events.

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14 S. Buczek in his study: Efektywność informacyjna (Information efficiency) used the word “półsilna” to describe a semi-strong form of efficiency.

The research conducted by Monika Czerwonka and Bartłomiej Gorlewski, referring to the years 1997–2006, confirmed the effect of the regression to the mean on the WSE. It occurs when there is an excessive reaction to information, due to which the stock prices change their value in the direction determined by the character of the information: bad news makes the stock price fall, good news makes it grow. The analysis of the investment strategies of winner and loser portfolios proves according to the authors that the stock prices extremely changing their values in the following period returned to the average of the period.

The reactions of securities prices are treated as anomalies with regard to the theory of efficient markets. According to American researcher Edgar E. Peters, the aforementioned empirical observations may be explained by the fractal market hypothesis originating from the theory of chaos. It is an attempt to describe the operation of capital markets, contrary to the theory of the efficient market. Edgar E. Peters questioned the rationality of the operation of the whole population of investors and looked for a model which would explain the specificity of capital market operations better than normal linear decompositions. It turns out that the rate of changes exceeding a few standard deviations occurs more frequently than it would appear from normal decompositions with regard to these events. Additionally, strong declines occur more often than strong rises of quotations. According to Edgar E. Peters, the modelling of stock market investor behaviours should consider the fact that the reactions to information coming to the market do not translate immediately to definite decisions (orders) – instead of this they are often cumulated in delayed but violent reactions. Investors wait for new trends and need some confirmation of their suppositions and interpretations in order to make changes in their portfolios. However, this means that investors do not react to information in the same and linear way. According to Edgar E. Peters the uneven acquisition of information may cause reinforced random walks, which in terms of mathematics resemble fractal time series rather than normal distributions, which till the 1980s were the foundation of the theory of investment. It states claims, following technological analysts that on the capital markets we have to do with trends, i.e. situations in which past information reinforces one-sided investor reactions in the future (they reinforce the trend).

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18 E. E. Peters, Teoria chaosu a rynki kapitałowe Chaos theory and capital markets), Warsaw, Wydawnictwo WIG-Press 1997, p.64.
At the same time Edgar E. Peters observes that from time to time capital markets are shaken by strong turbulence caused by less or more incidental information which changes the scale or direction of investors’ decisions. The fractal description of investors’ behaviours proposed by Edgar E. Peters assumes that a “long-term market memory exists.” Past information affects the current price, but their impact declines exponentially over time. Fractals allow the researcher to estimate the stability of the stock market systems. In his opinion they are the future of research on the capital market. Simultaneously, he says “There will always be circumstances allowing for profit generation, but there will be no one simple system thanks to which this profit will be realised.”

2. Research methodology description

The research is based on the analysis of daily changes in the period from 1st January 2007 to 15th August 2012 in stock prices of WIG 20 companies. The analysis concerns the quotations of 20 companies composing WIG 20 on 15th August 2012. It means that the research included companies which were in the blue chip index for the whole period as well as those which in did not enter the index until the examined period. The period of analysis which lasted over 4.5 years allowed for the examination of the whole business cycle, which in the case of the capital market is usually estimated at 3 or 4 years. Additionally, the selected period allowed for the valuation of the largest companies before the beginning of the world financial crisis (Lehman Brothers bank collapse in September 2008) and after this event. The selected date of the ending allowed for the inclusion of the largest possible number of half yearly financial reports published by the companies. Due to numerous limitations, it was impossible to examine all companies which formed the WIG 20 index in the years 2007–2012. Choosing the moment of selection of companies to be examined (at the moment WIG 20 on 15th August 2012), the authors followed the criterion of validity and intentionally resigned from the analysis of companies which dropped out of the index in the research period.

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19 Ibid, p.182.
20 In the future it is planned to extend the research by all companies included in the WIG 20 index from 1 January 2007 – 22 September 2013.
21 On this day the research started.
22 In the future it is also planned to extend the research by an analysis of share prices of companies which left this index in the period from 1 January 2007 till 31 December 2012. The research will refer to the period in which the company was within the WIG 20 index and the period when it was removed from it.
The aim of the research was to identify, analyse and characterise abnormal short-term fluctuations of the company rates indicating that on that day they explicitly differed from what was happening on the market treated as the whole WIG 20 index. It was important to point to such events in the company, whose impact on the stock prices could not be explained by the general situation on the market or those whose character opposed the behaviour of the whole market or deepened declines or caused price rises significantly above the changes on the whole market. In order to identify the aforementioned cases, the authors used the difference in the daily percentage change of stock price of the examined company and a percentage change of WIG 20 index on the same day. From the set of data (constituting percentage points) selected in this way, in relation to the years 2007 – 15th August 2012 of every analysed company, values were selected whose distance from the set mean exceeded the twofoldness of the standard deviation, according to the equation:

\[
2\sigma = 2\sqrt{\frac{\sum (x - \bar{x})^2}{n}}
\]

[1]

To simplify, it was assumed that the deviation will be calculated analogically to the normal distribution (Gauss) with the mean corresponding to the mean of the set. In this way, these days were selected on which the change of the company share price significantly differed from the changes in the WIG 20 index. There was an attempt to identify reasons for the abnormal short-term fluctuations of company stock prices on a given day, i.e. the events that could affect the stock price on a given day. The event may be understood as public announcement of information which is new for the market participants, concerning either the undertaken activities by the company or those only planned23 – completed by the company itself, a rival company, other market participants or the state (regulator).

In order to find these events, an analysis was made of the contents of the current and periodic reports of the examined companies (on the day the deviation occurred and on two days preceding and two days following the event24), as well as press articles in “Gazeta Giełdy Parkiet”, and also “Pulsu Biznesu”, “Gazeta Wyborcza” and “Rzeczpospolita”. In a few cases an additional source used in the process of identification of events was an investor forum in Parkiet.com and Bankier.pl portals. A three-day transaction settlement period (T+3) valid on the Polish market was considered, which

23 H. Gurgul, Analiza zdarzeń na rynkach akcji... (Analysis of events on stock markets...), p.34.
24 Ibid, p.36.
was essential primarily for the identification of events connected with the payment (cut) and rights issue.

The analysis was completed by the examination of remaining market parameters such as for example the volume of turnover or daily changes. It allowed for the explanation of the cases of a high volatility of share prices caused by a low liquidity as well as for the verification of a hypothesis that higher (lower) turnovers are connected with rises (declines) of stock prices.25

In the described analysis eventually a Ukrainian company Kernel was not included due to a small amount of newspaper information published regularly about this issuer and its environment. In relation to Boryszew the period 1st July 2008 – 18th August 2009 was omitted due to the fact that the maximum share price amounted to 0.1 zloty and that is why even a minimum stock price change made the rate surge or plunge by a dozen per cent.

In the research the following major hypothesis was formulated and then empirically verified: “certain categories of information about the company itself or its environment cause short-term abnormal share price changes of this company.”

The research hypothesis was based on the assumption that the stock price is derived from a consistently conducted corporate value growth strategy and the information about it passed to the shareholders. It should be assumed that the market is able to effectively read and interpret what is happening inside a company and its environment and with no delay (in short-term) take this information into account when estimating the company value, and as a consequence when valuating its shares. The share price should not be subject to rapid changes except for extraordinary events unconsidered in the strategy of forecasts of the board and analysts.

3. Research results review

3.1. General characteristics of research results

The research of the behaviour of stock prices of 20 companies within WIG 20 in the period from 1st January 2007 to 15th August 2012 indicated totally 1,179 cases of abnormal short-term deviations of their stock prices in relation to the WIG 20 index. However, as shown in Table 1, this number does not spread evenly in all the analysed years.

Table 1. The number of abnormal short-term fluctuations of stock prices of WIG 20 companies recorded in the period from 1 January 2007 to 15 August 2012

<table>
<thead>
<tr>
<th>Company</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asseco Poland</td>
<td>21</td>
<td>25</td>
<td>9</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>Bank Handlowy</td>
<td>17</td>
<td>16</td>
<td>21</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>78</td>
</tr>
<tr>
<td>Bogdanka</td>
<td></td>
<td></td>
<td>13</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Boryszew</td>
<td>2</td>
<td>28</td>
<td>44</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>92</td>
</tr>
<tr>
<td>BRE Bank</td>
<td>10</td>
<td>15</td>
<td>39</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>77</td>
</tr>
<tr>
<td>GTC</td>
<td>19</td>
<td>16</td>
<td>13</td>
<td>1</td>
<td>7</td>
<td>13</td>
<td>69</td>
</tr>
<tr>
<td>JSW</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>5</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Kernel</td>
<td>3</td>
<td>31</td>
<td>23</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>KGHM</td>
<td>4</td>
<td>23</td>
<td>21</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>61</td>
</tr>
<tr>
<td>Lotos</td>
<td>11</td>
<td>15</td>
<td>19</td>
<td>1</td>
<td>9</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>PKO BP</td>
<td>9</td>
<td>19</td>
<td>31</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>76</td>
</tr>
<tr>
<td>Pekao</td>
<td>11</td>
<td>20</td>
<td>23</td>
<td>1</td>
<td>11</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>PGE</td>
<td></td>
<td></td>
<td>1</td>
<td>14</td>
<td>19</td>
<td>3</td>
<td>37</td>
</tr>
<tr>
<td>PGNiG</td>
<td>13</td>
<td>28</td>
<td>18</td>
<td>1</td>
<td>12</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>PKN Orlen</td>
<td>13</td>
<td>20</td>
<td>16</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>59</td>
</tr>
<tr>
<td>PZU</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>10</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Synthos</td>
<td>14</td>
<td>21</td>
<td>17</td>
<td>4</td>
<td>13</td>
<td>2</td>
<td>71</td>
</tr>
<tr>
<td>Tauron</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>TP SA</td>
<td>7</td>
<td>15</td>
<td>21</td>
<td>6</td>
<td>15</td>
<td>2</td>
<td>66</td>
</tr>
<tr>
<td>TVN</td>
<td>7</td>
<td>16</td>
<td>15</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>161</td>
<td>308</td>
<td>344</td>
<td>92</td>
<td>196</td>
<td>78</td>
<td>1179</td>
</tr>
<tr>
<td>Average</td>
<td>10.7</td>
<td>20.5</td>
<td>20.2</td>
<td>4.8</td>
<td>9.8</td>
<td>3.9</td>
<td>58.9</td>
</tr>
</tbody>
</table>

Source: own research.

Thus, in 2007 161 cases of abnormal short-term share price fluctuations were recorded, with 318 in 2008, 344 in 2009, only 92 in 2010, 196 in 2011 and 78 during seven and a half months of 2012. A definitely higher number of abnormal short-term share price fluctuations in 2008–2009 may be explained by the financial crisis, and consequently an increased uncertainty on the financial markets then. The unevenness can also be seen in an average number of annual events per company. In 2007 and 2011 there were on the average 10 cases of short-term share prices anomalies, while in the years 2008–2009 the number doubled (20 on the average), and in 2010 declined by as much as half (4.8), similarly in 2012 (6.2 after annualisation). Because
some companies were not quoted during the whole research period, Figure 1 presents also an average number of short-term anomalies in the period in which they were quoted of the WSE (PGE and Bogdanka from 2009, Tauron and PZU from 2010, and JSW from 2011, the remaining companies were quoted throughout the whole research period.

**Figure 1. Daily rate anomalies for WIG20 companies (number of cases) – average in the period.**
In 76% of the examined cases (873) the detailed analysis of the issuers’ announcements and press articles indicated probable causes of short-term stock price changes. In 306 (26%) cases it was not possible to determine the event which could affect substantial short-term rate fluctuations, which resulted from the lack of identification of the cause as well as unsatisfied condition of the explicitness of information and its exclusive impact on quotations.\(^\text{26}\)

During the analysis, the information accompanying the examined stock price changes was divided into 8 major categories, corresponding to the following events:

- Market trends, including raw materials quotations;
- Publication of financial results and forecasts;
- Recommendations, forecasts and analysts’ estimates;
- Political and regulatory causes;
- Announcements of dividend payments and dividend payments (cuts);
- Personnel changes in the company;
- Technical reasons, errors and rate manipulation;
- Information from the company including changes and updates of strategy, investment plans, newly concluded contracts, plans, court proceedings etc.

There were also 6 specific sub-categories of information specified coming directly from the company:

- announcement, planning and stock buy-back,
- the convening of general meetings and resolution draft publication,
- announcement, planning and execution of mergers and acquisitions, including market rumours,
- issues: shares, debt, including setting issue price and subscription results,
- stock splits,
- rights issue, situations connected with rights issue cuts.

As indicated by the list of categories, the stock prices are affected by the activities and factors generated directly by the company and the ones independent from it and coming from its environment: market, rivals, state institutions, legislative or regulatory environment or the ones that depend on the economic situation.

\(^{26}\) The same condition was taken into account by H. Gurgul in his research, see Analiza zdarzeń na rynkach akcji... (Analysis of events on the stock market...), p. 34.
3.2. Market trends, including raw materials quotations

The events which most frequently (14.2%) determined abnormal short-term company stock prices within the examined sample were factors connected directly with the financial or raw material market, cf. Figure 2. They included changes of raw materials on the world exchanges and also investors’ global moods and evaluations connected with a given sector. In the case of KGHM, an important producer of copper and silver in the world, the declines and rises in copper and silver prices on the Metal Exchange in London affect the share price fluctuations of a few to a dozen per cent, cf. Figure 3.
The most spectacular example was the suspension of the KGHM quotation for 45 minutes on 10 October 2008, when following the cheaper (by 11%) raw material, the KGHM share price dropped by over 21%, considerably more than the WIG 20 index decline.\textsuperscript{27} What may be surprising is the scale of such events. Without thorough analyses, it is difficult to state whether investors’ decisions are connected with the policy conducted by companies aimed at hedging against the volatility of raw materials and currencies.

\textbf{Figure 3. KGHM stock price in relation to copper quotations}

While analysing the global factors it is worth focusing on their impact on the stock prices of banks within the WIG 20 index. The quantitative analysis indicates that in this sector the economic situation and approach to financial institutions on foreign markets can be clearly translated into the valuation of Polish financial institutions. Global moods were especially conspicuous within the banking sector in the period of uncertainty connected with the spread of the world financial crisis. From autumn 2008 throughout 2009 newspapers’ headlines were constantly showing

\textsuperscript{27} A. Roguski, T. Hondo, \textit{Przecena firm wydobywczych (Revaluation of extractive companies)}, GG „Parkiet”; 22.11.2011.
that bank stock prices were managed by emotions and fears, the sources of which were to be found on the other side of the Atlantic. In Poland the anxiety about the condition of the banking sector was most marked in the quotations of Bank Handlowy (Citibank Group), Pekao SA (UniCredit Group) and BRE (Commerzbank Group), which was also a result of the uncertainty connected with the condition of their parent companies.

It is the wobbliness and nervousness on the world financial and raw materials markets that can justify a bigger number of short-term anomalies in company share prices in 2008 and 2009. In 2008 they had an impact primarily on companies processing metals, oil and gas: KGHM, Lotos, PKN Orlen, and PGNiG. And the third quarter of 2008 was dominated by the mood fluctuations on the financial markets visible in the quotations of banks: PKO BP, Pekao SA, BRE Bank and Bank Handlowy.

The counterbalance to rapid reductions was created by the companies which did not only resist the market decline but also benefited from it. A spectacular example to be quoted is the TPSA stock price, which in October 2008 grew by a few per cent in relation to the strongly declining WIG 20 index, cf. Figure 4. At the moment of crisis investors turned to the companies called defensive, less indebted, less exposed to cyclical fluctuations of the economic situation and guaranteeing a high dividend.\(^{28}\)

A record, 33\% decline in the stock price of Telekomunikacja Polska on 12\(^{nd}\) February 2013 (the date exceeding the research time scope) shows that the assessment of securities as “defensive” by investors is not made to last. Disappointing results of the company, poor forecasts concerning future profits as well as a reduction in the recommended level of dividend caused a decline of 32 pps, exceeding the decline of WIG 20 index. The company which regularly paid investors the dividend of 1.5 zloty of profit per one share, declared the reduction in the level of dividend only for 2012 only by 0.5 zloty.

\(^{28}\) Fundusze emerytalne wydłużyły listę nabytków (Pension funds extended their acquisition lists), A. Kurowska, A. Kołodziej, Ł. Wilkowicz “GG Parkiet” 15.01.2009; Tylko 12 firm oparło się bessie (Only 12 firms resisted the decline), T. Hońdo, “GG Parkiet” 10.10.2008.
Analysing the category “market trends” it should be remarked that it includes external circumstances beyond the companies’ control exerting impact on their quotations. However, the activities connected with them were conducted by stakeholders from the company environment: for example market participants, institutions operating within the sector or competitors. There was an explicit impact of certain sectoral events on the behaviour of TVN share price: its clear deviation was caused for example by the announcement of good results or investment plans of one of its competitors: Polsat (on 14th November 2011 decline in price by 5.6%, deviation 6.7pp) or publication of reports made by institutions doing research of the (Nielsen’s Agency report on 3rd October 2011, rise in price of 3.1%, deviation 5pp).

In this category of events, it is worth pointing to a big sensitivity of “blue chips” to the changes in the WIG 20 composition and revisions in fund indices, for example the inclusion or exclusion of a company from MSCI indices with the largest companies of the region which are used by the passive management funds. This tendency was clearly seen in the PGE quotations in December 2009 (16th December 2009 – rise of 3%, deviation 2.7 pp) after the announcement of the inclusion of the company, PZU – on 26 May 2010 a day before entering the MSCI indices, the quotations of this company rose by 7.3%, deviation 2.8 pp) or TP SA – on 30th November 2010 on the day of MSCI indices revision the shares of Telekomunikacja recorded a decline of 4.1% (deviation – 4 pp).
The announcement of the inclusion of Boryszew into the WIG 20 index also caused a high rise in the quotations of its share prices. The report made by BZ WBK Brokerage House published on 28th October 2011, including the information that the chemicals producer will probably enter the WIG 20 index composition made the company share price rise by 8.1%, with the deviation of 8.32 pp. An analogous situation could be seen in the case of quotations of Synthos shares: on 9th February WSE announced a new index composition, and a day later the stock of the synthetic rubber producer rose by 3.37%, with the deviation of 5pp in this case.

In the described cases, the so-called index effect definitely confirms the short-term inefficiency in the market of corporate valuation. The market value, liquidity or sector affiliation are the basic criteria of the index inclusion or exclusion of a company. Since the inclusion of the company to the index has no impact on its economic results and the composition is predictable from a certain moment, essential price reactions connected with such events should not be expected. Nevertheless, such events take place on both mature and developing markets and are subject to thorough analyses. Henryk Gurgul29 presents a few possible reasons explaining this phenomenon, for example according to the price pressure hypothesis the index effect is caused by the adjustment of portfolios of investors who prefer to possess shares within the definite indices. When company shares enter the index there is a surplus of demand over the supply of these securities, and the lack of liquidity in a short-term allows for the achievement of the equilibrium only through price adjustment. In turn, imperfect substitutes hypothesis is to explain a permanent change following the company index inclusion. For example, shares belonging to an index portfolio allow for speculation and position hedging through the use of derivative rights, which leads to the situation in which they are no more substitutes for shares unquoted within the index. Some reasons which explain the permanent index effect is based on the supposition that together with the company index inclusion/exclusion the rate of return expected by investors changes, which is directly related to risk. It may be connected with the increased scope of professional information about the company; if after the company has entered the index, and analysts become more interested in it, there is a rise in the volume, quality, frequency, scope, character and availability of the information about the company, and investors react with lowering of the required premium for investment risk connected with the purchase of shares of the company.

The analysis indicates that out of 11 companies which WIG 20 was composed of in the examined period, the index effect was explicitly recorded only in three cases. In the remaining 8 companies this effect did not take place. Different factors

contributed to it, e.g. in the case of JSW the market evaluated its presence in the index of the largest companies already at the stage of the IPO. Even before its debut, due to its future high capitalisation it was very likely to enter WIG 20, thus its entering the index in September 2011 came as no surprise to the investors. On the other hand, Bogdanka joined the group of the largest firms in March 2011 thanks to a relatively big rise in liquidity after selling the shares to funds (primarily pension funds) by the State Treasury, which had been rightly predicted much earlier by the majority of investors.

Table 2. Changes in WIG 20 composition in the years 2007–2012

<table>
<thead>
<tr>
<th>Company</th>
<th>Joining index</th>
<th>Removal from index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agora</td>
<td></td>
<td>21 March 2010</td>
</tr>
<tr>
<td>Bank Handlowy</td>
<td>6 April 2011</td>
<td></td>
</tr>
<tr>
<td>Bioton</td>
<td>19 December 2005</td>
<td>19 December 2010</td>
</tr>
<tr>
<td>BPH</td>
<td></td>
<td>20 March 2008</td>
</tr>
<tr>
<td>Boryszew</td>
<td>19 March 2012</td>
<td></td>
</tr>
<tr>
<td>Bank Zachodni WBK</td>
<td></td>
<td>4 May 2011</td>
</tr>
<tr>
<td>CEZ</td>
<td>19 December 2006</td>
<td>18 September 2011</td>
</tr>
<tr>
<td>Cyfrowy Polsat</td>
<td>23 March 2009</td>
<td>20 March 2011</td>
</tr>
<tr>
<td>Getin Holding</td>
<td>25 March 2008</td>
<td>18 March 2012</td>
</tr>
<tr>
<td>JSW</td>
<td>19 September 2011</td>
<td></td>
</tr>
<tr>
<td>Kernel*</td>
<td>21 March 2011</td>
<td></td>
</tr>
<tr>
<td>Kety</td>
<td></td>
<td>19 March 2007</td>
</tr>
<tr>
<td>Bogdanka</td>
<td>21 March 2011</td>
<td></td>
</tr>
<tr>
<td>MOL</td>
<td>20 June 2005</td>
<td>23 September 2007</td>
</tr>
<tr>
<td>Netia</td>
<td></td>
<td>17 June 2007</td>
</tr>
<tr>
<td>PBG</td>
<td>18 June 2007</td>
<td>18 March 2012</td>
</tr>
<tr>
<td>PGE</td>
<td>22 March 2010</td>
<td></td>
</tr>
<tr>
<td>PKO BP</td>
<td>10 May 2009</td>
<td></td>
</tr>
<tr>
<td>Polnord</td>
<td>24 September 2007</td>
<td>22 March 2009</td>
</tr>
<tr>
<td>PZU</td>
<td>17 May 2010</td>
<td></td>
</tr>
<tr>
<td>Rovese</td>
<td>20 March 2007</td>
<td>16 May 2010</td>
</tr>
<tr>
<td>Synthos</td>
<td>19 March 2012</td>
<td></td>
</tr>
<tr>
<td>Tauron</td>
<td>20 December 2010</td>
<td></td>
</tr>
</tbody>
</table>

*informative, the company was excluded from the research

Source: WSE.
Silesian energy concern Tauron waited for the inclusion to the group of most prestigious companies for half a year from floating. Eventually, it was promoted in December 2010, eliminating Bioton from WIG 20. Like in the case of JSW, it is hard to speak about a definitely positive impact of the inclusion of Tauron into WIG 20 on the company share price. Investors waited for the company to enter WIG 20 relatively long; the change was expected during a possible extraordinary index revision in July 2010, and also a quarterly revision in September 2010.30

3.3. Publication of financial results and forecasts

The information connected with the publication of financial results of companies was the second most frequent category of events (11.1% cases – cf. Figure 2) causing abnormal short-term fluctuations of share prices of Warsaw blue chips in the examined period. The reaction in this case is closely related to the investors’ prior expectations, i.e. the market usually reacts to the publication of results that are either better or worse from the ones expected before. The bigger the discrepancy between what analysts and investors expected from the company and what eventually was presented by the company in the published financial report, the bigger the fluctuations of their share prices. The research of the American market indicates that in the case of slightly unadjusted actual results to the expectations the market reaction is inessential.31 Profits or incomes which are 1 per cent lower than the analysts’ estimates median translate into an average fall in share price of 0.2 per cent. Tim Koller, Rishi Raj, Abhishek Saxena also claim that the majority of American managers did not personally experienced a catastrophic decline in their company share prices after the publication of results worse than expectations; hence the American managers think that such situations occur extremely seldom.32

We have to do with a different situation in the examined period on the Polish market. In the case of the Warsaw blue chips, it is the presentations of the results unexpected by the market that cause the biggest abnormal short-term declines of share prices: they usually amount to a few or a dozen per cent.

Double digit share price falls, as a result of the publication of results which are lower than expected, are a trend best seen in the years 2008–2009 in the quotations

30 Awans do indeksu stygmatem (Index promotion as a stigma), K. Krasuski “GG Parkiet” 16-03-2012.
of such companies as Pekao, BRE Bank, GTC, TVN, Asseco, PKN Orlen or KGHM. Probable causes of such situations are outlined in the analysis of the most extreme deviations, which sometimes occur even session after session. For example, on 12\textsuperscript{nd} November 2008 a day before the publication of the results in the third quarter, the Asseco share price rose by 9.7\% (deviation 14.6pp), which was connected with public recommendation “Buy” announced by ING Securities on 6\textsuperscript{th} November. One day after the report was presented by the company, its share price plunged by 11.6\% (deviation – 7.3pp). At the same time, the results were also announced by GTC. On 12\textsuperscript{nd} November 2008 on the day of report publication, the developer’s profit which was higher than expected translated into the fall of quotations of over 2\%, and it plunged dramatically on the next day by as much as 16.8\% (deviation – 12.5 pp). At this time companies were able to positively surprise the analysts and the market: for example, on 14\textsuperscript{th} October 2008 the KGHM share price surged by 19.4\%, with the deviation of 15.2pp, after the increased profit forecasts coincided with the rise in copper prices on the London Exchange. A commotion among investors was caused on 4\textsuperscript{th} February by Lotos President Paweł Olechnowicz, who stated that the results of the fuel potentate were to return to the level of 2007. As a result the Lotos share price rose on this day by 18.6\% with deviation of 17.2 pp.

The described cases of market astonishment with the information from the companies may indicate both certain confusion among investors in that time as well as their poor knowledge of the companies, their situations and operations. It went together with investors’ trust to the recommendations made by analysts to whom some shareholders transferred the duty of current monitoring of the results of company operations. On the other hand, the differences between forecasters’ expectations and the real financial results cast some doubt on the qualifications and reliability of analysts responsible for company reports. The situation improved only slightly in the following years, which was reflected in frequent cases of share price turbulences of a few per cent and only one case of permanent convergence of the presented financial results and market expectation, which is PZU. In the case of the insurer’s shares, there was no significant share price reaction to periodic publications of financial results. The rest of the Polish blue chips still have an important problem related to the communication of their financial achievements and failures as well as the relations with the analysts dealing with financial results forecasts.

The research did not identify any situations which could indicate that significant failures to meet market expectations in the area of the company financial results explicitly translate into the market assessment of management performance. Only in the case of TVN shares, interdependence between the publication of financial results and personnel changes can be noticed. On 12\textsuperscript{nd} May 2009 the TVN share
price rose by 7.1% (deviation of 4.9 pp, increased trading) after the announcement of financial forecasts by analysts. Already on the next day the share price started to fall by 4.1%, still with the increased trading, and on the day of publication of the results it fell by 5.2%, with the return to the traditional trading volume. Together with the publication of its financial report, TVN gave information about the resignation of the current management board and overtaking the reins by a co-author of the company success Mariusz Walter. And in August 2009, a day before the publication of half-yearly reports, the TVN share price rose by 5.6% (deviation of 6 pp), and on the day of the publication, i.e. 13th August 2009 the company also issued information about appointing a new president Markus Tellenbach and raising the May forecast of investment expenditure. The share price reacted with a rise of 8.2% (deviation 5.7pp). On the other hand, on 10th November 2011 the company announced results worse than expected, for example reduced the profit forecasts, which as a consequence caused a decline of the share price of 9.3% (deviation of –8.1pp). Two days earlier concern ITI informed that it arranged with Łukasz Wejchert, to purchase the shares possessed by his family, and at the same time the media informed that Łukasz Wejchert was leaving the Onet management.

3.4. Resignations and dismissals of board members from their positions

It should be stressed that in the examined group of WIG 20 companies, TVN is one of few companies which consistently communicate to their investors and environment a clear and explicit appraisal of the company management board, depending on the currently obtained financial results, including unmet forecasts. In the remaining cases the appraisal of CEOs’ performance was made by the market through rises or declines in share prices or by the press speculation on personnel decisions in a company. It has to be remarked, however, that the interdependence between a personnel change and a significant share price fluctuation occurred very rarely. It was recorded only in 14 out of 1,179 cases (1.15%) of the analysed share price deviations. In this category of events, the source of the stock market turbulences were primarily market

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33 Current report no. 28/2009 (TVN SA Management composition change), and also investment expenditure forecast (current report 29/2009 Forecast of investment expenditure of TVN SA Group for 2009).
34 TVN current report no. 41/2009.
35 TVN current report no. 40/2009.
rumours or media speculation, with official announcements of issuers affecting the share price much more rarely.

The example of the strongest reaction of share prices to the resignation of a management board member and shareholder at the same time is the share price of the developer Globe Trade Centre on 5th and 6th March 2012. After the company announced\(^{38}\) that after 18 years of work, Eli Alroy resigned from the function of the chairman of the GTC Supervisory Council, its share price fell by 11.6% (deviation –9.8 pp), to go on falling on the next day by 7.1% with the deviation of –5.5 pp). Such a considerable fall was undoubtedly affected by the moment the decision was announced: in early spring 2012 on the market there were clear symptoms of deterioration of the condition on the construction and developers’ market. In no other examined case, did the resignation of a top management member have such a great impact on the fluctuation of share prices. However, the circumstances of some personnel decisions indicate that with regard to the blue chips of the Warsaw Exchange, it is impossible to speak about an explicit assessment of this kind of information by the market, in particular if it refers to the companies in which the State Treasury is a large shareholder.

Another example is the behaviour of the PKN Orlen shares on 17th January 2007, when the market obtained information that on the following day at its meeting the Supervisory Council may dismiss the Management Board headed Igor Chalupec. The share price reacted with a 3.6 decline (deviation –3.4 pp). On the next day the speculation was confirmed and Igor Chalupec was replaced by the so far Vice President Piotr Kownacki,\(^{39}\) and the share price rose by 2.6%, which was explained by the analysts that the dismissal referred only to the president and the company was to be managed by his co-workers. On 7th November 2007, the shareholders positively assessed the information about the dismissal of Vice President of Lotos Jarosław Kryński and the company share price rose by 6.4% (deviation 4.4 pp). Two years later it was different: on 21 January 2009 the market assessed rumours that the Lotos president may change exceptionally nervously, the quotation fell by 6.4% (–8.6 pp), to rise by 6.30% (deviation 4.2 pp) on 9th June 2009 after the publication of the information on website of the “Rzeczpospolita” daily that President Paweł Olechnowicz would remain in the position for the next term.

In the examined period the Warsaw Exchange in a few cases also reacted with the rise in share price of the companies which intended to dismiss or were dismissing their board members. For example, on 14 April investors positively, from the

\(^{38}\) Current report of GTC no. 7/2012: Resignation of the Chairman of Supervisory Council.

company perspective, assessed the rumours saying that Mirosław Krutin would no longer be the KGHM president and the share price of the copper potentate rose by 3.9% (deviation of –4.7 pp). The immediate dismissal\textsuperscript{40} on 14 December of two board members: President Tomasz Zadroga and Vice President for Trade Marek Szostek was felt with “relief” by the shareholders of Polska Grupa Energetyczna, and the PGE share price rose by 3% (deviation 3.6 pp) on that day. It is difficult, however, to assess the market reaction to the resignation of Berndt Loewen, a board member of BRE Bank on 10\textsuperscript{th} June 2009. On this day the share price skyrocketed by 8.9% (deviation 6.7 pp), but at the same time the bank announced the information about exceeding by ING OFE the total number of votes in the company by 5%.\textsuperscript{41}

The conducted analysis does not allow for the confirmation of thesis posed by Henryk Gurgul, with regard to the examined WIG 20 companies, the resignation of board members in extraordinary situations is treated by better informed shareholders as a chance to improve the situation of the company (rise in share price before the disclosure of the information), and for all the investors it usually means the information of a negative significance reflecting the deterioration of the situation in the company. The analysis indicates rather that in the future the announcements of personnel changes will more and more seldom have a direct impact on the behaviour of share prices of the companies quoted on the Warsaw Stock Exchange. As personnel changes are as a rule this sort of information that the companies control, it may be assumed that increasingly frequently investor relations departments will be carefully preparing such publications, neutralising or mitigating their significance and choosing the best possible moment to release the information, connecting it with other important events in the company.

Presently, it is difficult to explicitly determine whether such a PR approach will ever take place in relation to companies with the State Treasury casting vote. The analysis of the actions taken so far indicates that in such cases it cannot be stated whether the dominating shareholder will be trying to predict the strategic market consequences of the decisions for the company and consider them also in relation to a long-term process of building corporate value. The frequency at which the state shareholder releases the information which cause abnormal short-term fluctuations of share prices of the controlled companies indicates that information management is not in their opinion an essential element of raising the corporate market valuation.


\textsuperscript{41} Current report no. 34/2009 2009-06-10. Final resignation of a BRE Bank board member from the performed function.
It is also confirmed by another analysis, this time in relation to a clear impact of strictly political factors on the behaviour of share prices of companies, including those with the share of the State Treasury.

3.5. Political factors

Analysing the cases of an explicit impact of events occurring in the corporate environment on the abnormal short-term fluctuations of share prices, it is important to focus on political factors (state or regulatory) which in the described research are classified as a separate category of events. Customarily, it includes changes in regulations, tax laws regulatory authorisations or those related to the environmental protection. The connection of these factors with abnormal short-term fluctuations of share prices were recorded in the research 63 times, which accounts for 4.8% of all deviations. They referred 16 times to the quotations of PGNiG, which appeared to be a very sensitive company to this category of events, primarily due to the necessity of agreement of gas price tariffs with the Energy Regulatory Office (URE) as well as negotiations on the deliveries of gas to Poland and the ownership decisions of the State Treasury. The tariffs proposed by a company and not approved by URE were in the examined period the reason for the rapid sale of shares by PGNiG investors 6 times, with share price declines from 7% (deviation of −4 pp in relation to WIG 20 on 17th December 2007) to 2.8% (deviation of −3.6 pp in relation to WIG 20 on 7 April 2008). The exchange reacted twice with optimism to the URE acceptance of the rise in the examined period.

The analysis of scale of valuation sensitivity of the largest companies of the Warsaw Exchange to political factors was conducted thanks to the events connected with a five sentence announcement of the imposition of the tax on fossils included in the Prime Minister D. Tusk’s policy statement delivered on 18th November 2011.42 On this day the share price of the copper potentate KGHM fell by 13.8% (deviation −11.5 pp), and investors continue selling shares still on Monday, 21st November 2011 (decline of 9.7%, deviation of −7.2 pp). At that time no important information was revealed and investors knew only that the tax may be levied in the second quarter 2012 and cause the rise in KGHM costs of 2–3 billion zloty annually. However, it was enough that the representatives of the Finance Ministry disclosed on 21 November that apart from the announced tax on the extraction of copper and silver, work was conducted also on taxing the extraction of oil and gas and the PGNiG share price lost over 7.7%, and the shares of Bogdanka and JSW also went down. It was not until

later when the officials made it precise that the tax would come into effect after slate gas extraction was to begin.\textsuperscript{43}

The legislation uncertainty connected with the tax on fossils affected the quotations of the Warsaw blue chips and analysts’ valuations many times. For example, on 15 December 2011 the share price of KGHM fell by 10% (deviation –9.5 p.p.) as a reaction to the Finance Ministry publication of the draft of the tax on copper and silver extraction; on 3 January 2012 after the Ministry announcement that in the second half-year the draft would be ready of the law on tax on oil and gas extraction the PGNiG shares were 4.4% cheaper (with the deviation of –4.9 pp), and on 24\textsuperscript{th} January 2012 ING analysts Andrzej Knigawka in the recommendation entitled “KGHM tax of fossils to be value trap” expected the increase of KGHM price volatility rise “due to the high expected sensitivity of company result” and the fact that “the market has to fully identify the effects of the tax rise on the dividends paid by the company and reserves of metals possessed by KGHM.”

The analysis also indicated that in the case of the Polish capital the category of political events should also include the decision of the State Treasury. The share prices of companies controlled by the state shareholder, i.e. the State Treasury, are especially exposed to volatility connected with the decisions or even statements made by politicians. In the examined period this interdependence was recorded in the quotations of nine companies composing the WIG 20 index with the share of the State: Bogdanka, KGHM, Lotos, PKO BP, PGE, PGNiG, PKN Orlen, PZU and Tauron and concerned primarily the privatisation strategies (selling packages of shares belonging to the State Treasury), including rapid and unexpected sale of a part of shares in the possession of the State Treasury within the so-called accelerated demand book building.

The aforementioned analyses of PGNiG confirm that, apart from URE decisions, an important impact on the company quotations was exerted by such activities of the State Treasury Ministry (MSP) as the announcement of the transfer of 750 million shares to the employees in June 2008 or the opinion expressed in November 2008 that MSP could accept PGNiG in the role investor in Police. Also the MSP concept concerning the composition of the consortium for the slate gas extraction resulting in the signature of intention letters with Tauron, PGE and KGHM on 25\textsuperscript{th} January 2012. This event drew down the share prices of all the mentioned companies, but it was worst assessed by the PGNiG shareholders: the share price fell by 5.2% (deviation –4.7 pp).

\textsuperscript{43} Przecena firm wydobywczych (Revaluation of extractive companies), A. Roguski, T. Hońdo, GG „Parkiet”, 22.11.2011.
An example of political and proprietary event which completely took the market as well as the company authorities by surprise is the beginning of sale by MSP of 10% of shares of PZU despite an earlier announcement made by the government that such a transaction was not planned. The scale of astonishment is reflected in the analysts’ reactions: “It is an astonishing action especially that at the beginning of the year MSP assured that this sale was not planned this year. It undermines the MSP credibility, even more as in the future there is some space for another reduction in the involvement of the State Treasury in the company. It is also worth stating that the transaction was made after the PZU General Meeting of Shareholders limited the right to exercise votes to 10%” said Michał Sobolewski, an analyst for DM IDM SA in his morning report. The MSP decision caused the first serious fall in the PZU quotations: as much as 3.75% (deviation –3.32 pp) from its debut in May 2010.

The decline in quotations at the news of a rapid and unexpected sale of shares is a natural reaction of investors, who are well-aware that the company should propose a market price discount to potential purchasers. It is difficult to find customers willing to conclude transactions, in particular with regard to the shares of companies already listed, which can be bought any time. The earlier research of the American market indicates that the decline in share prices amounts to 2–3% on the average, and a later discount is included within 2–5%. A similar volume is shown in the last WSE transactions. The lack of explicit privatisation strategy and implicit politicians’ opinions with regard to the dates and the form of sale of the remaining shares (minority packages) belonging to the State Treasury adversely affected the PGE share price many times. Such a situation took place on 8 February 2010, 14 April 2010, 10 May 2010, 7 October 2010, 18 August 2011 (falls from 2 to 4%) or 23 February 2012, when the PGE share price was falling after surprising information for the market that the State Treasury had sold 7% of PGE shares to finish the session with a 4.5% decline (deviation –3.2 pp). The changing opinions of the MSP officials on the sale of the remaining shares gave rise to a nervous reaction also from the shareholders of Bank Handlowy decline of 3.7% and deviation of –4.7 pp on 8th January 2008 or Bank Pekao SA, when speculations concerning the purchase of the options for the remaining shares in possession of MSP by the major shareholder Unicredit on 8th December 2008 caused the rise in share price by 7.8% (deviation 3.1 pp). In turn,
significant declines of over 6% on 30 March 2009 followed the information published by the newspaper “Parkiet” that MSP was to issue share convertible bonds and also on 26 August, when it turned out that the State Treasury would sell its remaining shares of on the stock market. The share price of Bogdanka also reacted with a decline, when in September 2009, two months after the debut, MSP declared that it would sell more shares of the mine within the budget plan. The shares of the listed mine did not appear to be sensitive to political factors only in this case. In the years 2009–2012 they caused significant fluctuations in six cases, twice in connection with the taxation dispute on the coal heaps and excavations examined by the Constitutional Tribunal, once in connection with the Union mine limitations and once after the sale of a significant package of shares by MSP.

The analysis conducted within this research proved that political factors are without impact on companies outside the strategic areas whose regulation the State is involved in. The only but significant exception was the case of Asseco Poland – the company which took over the information assets of Ryszard Krauze. On 30th August 2007 the information that the Attorney General decided to detain the businessman in relation to the so-called ground scandal in the Ministry of Agriculture translated directly into the valuation of the companies controlled by him. WIG 20 Asseco shares became cheaper by 6.10% (deviation –3.9 pp), whereas, for comparison, Petroinvest, a company directly controlled by Krauze at the end of the day was nearly 20% in the red.46

3.6 Announcements of dividend payment and payments (cuts) of dividends

A separate analysis is required with regard to the policy of the Polish government (represented by the Ministry of State Treasury) in the area of dividend strategy, together with proprietary activities determining the share prices of companies with the share of the State Treasury. The Polish state is an owner of half of blue chips composing the WIG 20 index, and national champions have supplied the budget with amounts of 3–8 billion zloty in recent years. For example, in 2012 the state budget incomes from dividends accounted for 7.79 billion zloty, including 6.02 billion zloty from dividends paid by WIG 20 companies.

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Figure 5. Budget revenues from dividend paid by companies with the State Treasury stake (in bn zloty)

Source: Ministry of Finance.

Figure 6. Payments to the state budget: WIG 20 companies dividend in 2012 (in bn zloty)

Source: company reports.
This area most clearly shows the differences between the expectations concerning the corporate development strategy and creating their value between the State Treasury and the remaining owners. 50 identified cases of abnormal short-term fluctuations of share prices concerning announcements and payments (cuts) of dividend 38 referred to companies with the share of the state. In these cases, significant fluctuations of company share prices appear at the very word “dividend” uttered by an MSP official. Namely, on 25 March 2009 the KGHM share price fell by 0.9% (deviation –5.2 pp), when MSP did not exclude the payment of dividend although the management did not include it in their financial plans. And on 12th May 2012 investors began to sell the KGHM shares, making the price decline by 2.6% (deviation –4.8 pp) in connection with the suggestion of Treasury Vice Minister Paweł Tamborski that the whole profit was not to be used for dividend payment. Similar events took place in June 2009 in relation to the PGNiG dividend, giving rise to extreme market reactions. For example, on 23rd June 2009 PGNiG shares rose by 3.4% (deviation 3.7 pp), whereas on the next day investors were rapidly selling them reducing the price by 2.4% (deviation –3.8 pp). It resulted from the speech made by the then Treasury Minister Aleksander Grad, who on the day before the General Meeting of Shareholders announced that apart from property dividends he would also demand dividends in cash from this listed company. On the day of the General Meeting of Shareholders Vice Minister Krzysztof Żuk repeated his earlier declarations and wanted from PGNiG only property which was to be transferred to the state Gaz-System. Eventually, at the GMS the whole profit was taken away from the company. As a result, after the meeting nobody knew how many assets PGNiG would have to transfer and how much cash to pay. And on 28th May 2012 the share price of PGE rose by 3.8% (deviation 2.9 pp) as the market expected the State Treasury, the major energy producer to reach a higher dividend than the one proposed by the company management. The authorities of the energy company offered to pay 1.32 złoty per share, i.e. nearly 2.47 billion złoty. It accounted for about 54% of the unit net profit and half of the consolidated net result achieved in the previous year. Out of the 1.32 złoty offered nearly 0.43 złoty came from the sale of Polkomtel share owned by PGE. Analysts suggested that the State Treasury, which possessed almost 62% of PGE shares should set the dividend at over 2 złoty per share. Finally, the energy giant paid shareholders 1.83 złoty per share. 

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48 Rynek oczekuje wyższej dywidendy z PGE (The market expects a higher dividend from PGE), B. Oksińska, “GG Parkiet” 29.05.2012.
49 http://wyborcza.biz/biznes/1,100896,11829040,Skarb_panstwa_podbija_dywidendy__PGE_i__PZU_wypłaca.html. (The state treasury pushes up dividends, PGE and PZU pay).
Table 3. KGHM dividends in years 2007–2012

<table>
<thead>
<tr>
<th>Fiscal year*</th>
<th>Dividend total</th>
<th>Dividend per share (złoty)</th>
<th>Percentage of profit per dividend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1 960</td>
<td>9,80</td>
<td>40%</td>
</tr>
<tr>
<td>2011</td>
<td>5 668</td>
<td>28,34</td>
<td>50%</td>
</tr>
<tr>
<td>2010</td>
<td>2 980</td>
<td>14,90</td>
<td>65%</td>
</tr>
<tr>
<td>2009</td>
<td>600</td>
<td>3,00</td>
<td>25%</td>
</tr>
<tr>
<td>2008</td>
<td>2 336</td>
<td>11,68</td>
<td>80%</td>
</tr>
<tr>
<td>2007</td>
<td>1 800</td>
<td>9,00</td>
<td>47%</td>
</tr>
</tbody>
</table>

Source: Company.

Very high dividends paid by KGHM, PKO BP, PGNiG or PZU were clearly reflected in high declines (reaching 20%) in share prices of the companies on the day cutting their dividend right. Furthermore, in the years 2007, 2008 and 2012 dividends paid by KGHM also caused a significant decline in the value of the whole WIG 20 index on the day when the reference share price included the amounts paid to the shareholders. It results from the fact that WIG 20 is a price index which does not take into account incomes from shares, whereas the KGHM weight in the index accounted for 11.61% in 2012. Thus, cutting KGHM dividend on 12th July 2012 resulted in a 3% WIG 20 decline at the opening, while the KGHM share price was 19.25 lower (deviation –16.22 pp). On 16th July 2008 the KGHM share price declined by 10.88% (deviation –9.54 pp), and WIG 20 declined by 1.34%. On 21 July 2007 KGHM rose by 14.43 proc. (deviation – 13.30 pp, and the index by 1.13%. In 2009 after a relatively low dividend on 14th July the share price fell by 10.19% (deviation – 13.18 pp, and WIG 20 rose by 2.98%. The index was pushed down also by dividend paid by PGNiG: 18 July 2011 the share price declined by 7.14% (deviation – 4.52 pp), and WIG 20 by 2.61%, and also PZU: on 28th September 2011 the insurer’s quotations declined by 7.53 (deviation – 6.54), and WIG 20 by 0.98%.

There has never been any negative impact on WIG 20 by the payment of dividends by PKO BP despite an over 15% share of this company in the index. For example, on 2nd August 2007 the share price of the largest Polish bank was 2.96% lower (deviation –3.11 p.p), and the index rose by 0.14%. Also on 29 August the cut lowered the share price by 4.65% and WIG 20 rose by 1.69%.

On the other hand, in the companies without a dominating share of the State Treasury the expectations of shareholders with regard to dividends were clear in the case of Pekao (in 2007 the information about the intended dividend payment caused a decline of share price by 2.54% and in 2012 a rise of 4.25%) and Bank Handlowy (a 5% rise in share price on 27th May 2010).
3.7. The impact of information from companies on the changes in share prices

The research confirmed that such information from companies as the publication of strategy, investment plans, newly concluded agreements and contracts, litigations and also important shareholding changes or relations with connected entities have a direct impact on the valuation of a company by the market. The information generated by the company itself in terms of quantity was among the category of events which most frequently cause share price changes (10.8%, cf. Figure 2). In this category there are events which the market is able to identify and explicitly interpret as for example agreements concerning significant contracts or litigations won in the last instance but also announcements which instantly give rise to divergent assessments with regard to their significance and kind of impact on the valuation of a company made by the company itself and by the investors. It may be exemplified by investment plans, transfer or sale of company’s own shares, response or no response to calls, sale/transfer of assets of considerable value, purchases and sales of shares or unexpected decisions made by shareholders.

Summing up the analysis of this category, it may be assumed that events about which the company informed implicitly and insufficiently, surprisingly or interpretively doubtfully usually translate into a share price fall, so they have a negative dimension. It may be illustrated by the behaviour of shareholders of Synthos controlled by Michał Sołowow, who were anxious about the management activities connected with their assets. The purchase, transfer or sale of their property translated on many occasions into a significant share price decline. On 9th December 2008 Adam Góral also upset the shares of his company deciding, without any prior indication, to sell 1.4 million of his own shares of Asseco Poland at 45 zloty, while the market valued them over 50 zloty. After this transaction had been announced publicly, the share price of Asseco fell by 2% (deviation –4 pp) to go lower by 5.8% (deviation –5.2 pp) due to the market anxiety about the scale of the possible sale and on the following day: 11 December 2008 it declined by another 6.2% (deviation –5.6 pp). The situation did not calm down until 12nd December 2008, when the share price bounced by 1.9% (deviation 5.5 pp), and the share price levelled up the valuation of Adam Góral’s transaction, i.e. it amounted to 45.61 zloty (closing share price).

The categories of events connected directly with the company and affecting its valuation include undoubtedly the issue of shares and bonds, convening extraordinary general meetings of shareholders or mergers and takeovers announced by the company. In the present research they are presented as separate sub-categories as they usually have a considerable impact as factors affecting the current share price.
3.8. The impact of analysts’ recommendations

The category of events which had a significant quantitative impact on short-term abnormal fluctuations of share prices of the examined companies includes also analysts’ recommendations, including announcements of the change in the rating by the world rating agencies, such as Moody’s, Standard & Poor’s or Fitch. In the analysed period the effect of the issue or publishing (declassifying) an analytical report was recorded 108 times. In the case of two companies: Bank Handlowy and Telekomunikacja Polska the impact of recommendation significantly exceeded an average impact of this kind of events on share prices. With regard to Bank Handlowy these observations may be connected with a higher frequency of publication of recommendations but also with the significance of opinions of the major shareholder of Bank Handlowy, i.e. Citibank. As a result, the quotations of Bank Handlowy on the Warsaw trading floor are equally affected by the rating issued by the Moody’s for the Citigroup (16th January 2009, decline of 2.9% with the deviation of –4.1 pp) and the rating issued by the same agency adjusted for Bank Handlowy (20th January 2009: 6% decline, deviation of –6 pp).

A higher number of recommendations may also have had an impact on the number of similar events in the case of TP SA. In the literature the impact of recommendations on the share price has been analysed a number of times, among others with regard to the impact of recommendations such as “Buy”, “Keep” and “Sell” on the direction and scale of price movements. Scientists,50 but also journalists tried to determine the ability of brokers’ firms to forecast share prices and make valuations, determining at the same time the impact of these analyses on prices of these shares. There is also a discussion being held about the reliability of reports and assessments made by analysts representing different entities, in particular with regard to their objectivism, often in contradiction to the market and investment involvement of the financial institutions they work for.

3.9. Share price manipulation – Fixing of miracles

The analysis also indicates that in the analysed period on the WSE there were abnormal short-term share price fluctuations which could have a non-market character (however, on the scale of the whole research there were only 1.1% of cases within the category “Technical reasons, mistakes and share price manipulation” cf. 50 K.L Womack, “Do Brokerage Analysts’ Recommendations Have Investment Value?”, Journal of Finance”, 1996 vol. 51.
Figure 2), i.e. in press publications they were explained by technical determinants or human error. It concerned, for example, a 10% decline in TPSA share price in January 2011 (broker's mistake) or a 6% rise followed by a correction of PKN Orlen share price on 29th and 30th August 2007, which could be caused by a single transaction for 100,000 shares at fixing. There were suspicions of share price manipulations. For example, on 23rd January 200951 share prices of some companies surged rapidly in a spectacular way: BRE Bank shares rose in one moment by 5.3%, Pekao by 2.8%, PKN Orlen by 5.5% and TP by 3.9%.

4. Conclusions from the research

The analysis of daily changes of share prices of WIG 20 companies in the period from 1st January 2007 to 15th August 2012 indicates abnormal short-term fluctuations of share prices of individual WIG 20 companies as significantly different from the changes within the whole index WIG 20. Short-term anomalies were observed in all the examined companies. The highest number of share price deviations was identified in the years 2008 and 2009, which may be explained by the crisis taking place then, and consequently an increased uncertainty and nervousness on the capital markets. It is in these years when the percentage of short-term anomalies in relation to all daily changes in share prices for a given sample exceeded 8%. It is more than 4.5%, which results from the assumption of probability of this kind of events for normal distributions. In this connection it is difficult to say whether the perturbations on the Warsaw Exchange have a clearly higher scale than it would result from the theory basing on the effective market hypothesis.

An attempt to determine the causes of the short-term share price anomalies indicates that they are primarily caused by market trends and global moods (14.2 of events), publications of results and financial forecasts (11.1%), strategic information from the companies (10.8%), analysts’ recommendations (8.9%) and to a lesser extent: political and regulatory reasons (4.8%), announcements and payment of dividends (4.2%), mergers and takeovers (4.1%) and new issues of securities (4.1%). The events which during the last five years most frequently determined significant changes in share prices of companies composing the WIG 20 index were factors related directly to the financial or raw material market, but also global moods and assessments of investors connected with a given sector. This trend was best seen in

51 Fixing cudów czy mobilizacja popytu (Miracle fixing or demand mobilisation)?, T. Hońdo “GG Parkiet” 24-01-2009.
the period of crisis in the years 2008–2009, in particular with regard to extractive and fuel companies as well as the banking sector.

Making a decision to buy shares in Warsaw market, investors took into account for example changes in index portfolios of the WSE itself as well as global and regional markets rather than the assessment of economic factors of a given company. It may also be stated that their assessment of investment bargains was dominated by a short-term perspective, which does not encourage company managements to focus on value creation and long-term generation of profits. It is reflected for example in share price turbulences going through the Warsaw trading floor together with the announcement of periodic financial reports of companies. This category of events is at the same time “responsible” for the biggest double-digit declines or rises of quotations and consequently for the highest scale of share price deviations, incomparable with investors’ reactions to unadjusted results on the mature markets.

While the examination of the stock market companies in the USA indicates that the board members there are too often groundlessly afraid that they will be punished for not meeting the forecasts by the decline in the share price of their companies, in Poland the turbulences caused by the publications of financial reports do not translate directly into the appraisal of the managerial staff work. The personnel changes in the companies listed of the WSE do not have a direct connection with the current results obtained by the companies, which on the one hand gives the managers a chance to verify their performance from a longer perspective, on the hand however it poses a question about the criteria applied by the supervisory bodies to appraise the board members work.

The analysis of short-term abnormal share price fluctuations on the Warsaw trading floor also indicates that short-term anomalies are seldom caused by the factors connected with the creation of value in the company and the current and adequate assessment of its economic results. The reasons for a deviation may be most frequently found in the global moods and market trends but also in the short-term speculative expectations. A considerable scale of discrepancy between the results expected by the market and presented by the company and also a delayed reaction to the data included in the periodic reports reflected by a share price fall for a few days after the publication of negative information discloses considerable information non-efficiencies on the Warsaw trading floor. They are confirmed by short-term anomalies connected with the rise in share prices as an aftereffect of the “index effect”, falls or

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rises in quotations as a result of publication of analysts’ reports, announcements of dividends or mergers and takeovers.

The analysis proves that the only events shaping the share price affected by company boards are announcements connected with the strategy of companies: investments, asset management, conclusion of important contracts etc. The research results also indicate that many announced plans, in particular by companies controlled by the State Treasury are perceived by the market as surprising and incoherent. That is why it is recommendable that, despite inefficiencies existing on the market, the maximisation of the market value should be the key task for managers.

5. Final remarks

The analysis of short-term abnormal fluctuations of share price on the Warsaw Exchange conducted by the authors proves that the events which in the period January 2007 to 15th August 2012 most frequently determined essential short-term abnormal share price changes were the factors directly connected with the financial and raw material market or the sector the company operates in, and not the information concerning the company itself. It may be stated that the assessment of investment prospects is dominated by short-term perspective which does not favour focusing on the fundamental assessment of the company ability to create value in the future. The research results also indicate a significant role of the quality of investor relations in the company for the share price stability. A separate issue analysed in the research is the impact on value creation of the information passed in the State Treasury companies in which the dominating shareholder seldom forecasts the market consequences of strategic decisions it makes in relation to the controlled companies.

The obtained research results indicate big overreactivity of the Warsaw stock market reinforced by numerous short-term anomalies connected with information inefficiency, which is a future challenge for companies in the area of effective communication of corporate value building strategy to investors in Warsaw.
References


Alternative investments are very popular among investors in the period of economic downturn. During the last period of time, the art market, especially the market of painting has become very popular segment of alternative investments. The extension of the investment portfolio of works of art leads to efficient portfolios curve shifts upwards. This fact means that the portfolios, which include works of art can bring higher returns with the same level of risk than investment portfolios without this group of assets. The paper presented the current prevailing trends in the Polish art market in the paintings as well as the factors determining the development of this market.

**Keywords:** art market, paintings, investment portfolio construction.
1. Introduction

In the era of the growing interest in alternative investment, paintings became considered as one of the most desirable category of collectible objects. The numerous articles and reports started to be released by experts specialized in the new domain combining knowledge from diverse areas – history of art, economy, law. The main purpose of the majority of the publications is to inform collectors about the current art world’s condition and to ensure investors that a painting by the recognized artist is an asset that is never expected to lose its market value. However, the variety of art types and the unique features of an individual piece lead to the observation that the fine art trade cannot be reflected with one general analysis that would give the response to the collectors’ question whether allocating capital in a piece of art is safe or not? Although the long-term performance of the art market is regarded as better than the traditional financial products’ market, there are several factors influencing the profitability of investing in artworks. Both, the volatility of prices and the vulnerability to the effects of a financial crisis, vary according to such elements like the style of a piece, the position of the artist, the period of creating and the medium. Therefore, to estimate the investment potential of an artwork, it is necessary to distinguish future, currently noted and terminating trends by analyzing different époques, manners and types of media. After the description of art as an alternative asset and the general overview of the Polish art trade, the tendencies are classified as those registered on the particular markets – on the Pre-war Art market (Old Masters’ works), on the Contemporary Art market (named also as the Modern Art market) and on the Ultra-Contemporary Art market (Young Art market).

The purpose of this article is to demonstrate the complexity of the domestic paintings art market and the necessity of considering each individual piece in a particular context of the tendencies regarding the group it is classified into. As the research reflects only the auction market sales, there is no examination of the transactions contracted in galleries, due to the lack of data reflecting non-auction results. The main sources of information on hammer prices and estimations come from the portals like: Artinfo and Artprice, as well as the lists published on particular auction houses’ websites.

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1 Skate’s, Skate’s Focus, Poland’s Art Market – The Rising Star of Central Europe, 2013, p.19–20.
2 Old Masters are understood as painters creating before the Second World War. Globally, the term relates to European painters working before about 1800.
2. Art as an alternative investment

One of the most popularly discussed issue related with the after-crisis recovery of the economy is how to invest the capital in an alternative, nontraditional way. The term Alternative Investments describes those investments that are not considered traditional forms of capital allocation. Therefore they form a separate category of assets not containing stocks, bonds or investment funds, however the definition of term varies in different publications. The broad group includes such forms of capital involvement like collecting pieces of art or other collectible assets, investing in infrastructural projects or in raw materials. There can be pointed numerous reasons explaining the interest of investors in alternative forms, one of the most fundamental is the diversification of portfolio. What characterizes the nontraditional investments is a relatively low correlation with the condition of the financial markets, therefore they become significantly popular in times of slowdowns on the stock market. Alternative assets though do not reflect directly the financial market trends, moreover, in comparison to the capital market, their rates of return are considered relatively high in the long term investment horizon. The objective of alternative investments’ managers is to generate the profit independently of situation on financial markets. Such a goal can be achieved due to some of the basic features of alternative assets. Firstly, there is a factor of additional diversification observed – proper selection of the alternative assets can lead to the increase of the rate of return of the whole portfolio without the growth of the risk exposure. Some of the non-classical assets can decrease the portfolio’s risk, however others can result in the increment of both, the rate of return and the risk exposure. As the second feature, there can be pointed the long investment horizon. Many of the alternative assets are characterized with the limited liquidity, which might be considered as a disadvantage. That constraint, however, can also recompensate the higher profits in the future. The third distinction listed

5 There are two main types of indicators mentioned in the article – rates of return and the level of prices, because of different data affordable for the Polish and global art market. International institutions that register auction sales publish reports with rates calculations and the own analysis of the Polish art market was based on the auction prices.
6 K. Borowski, op.cit., p.255.
7 Ibidem.
8 Ibidem.
is the function of protecting the portfolio’s value in times of recession. Alternative assets proved to continue its growth of value when other forms of investment on the financial markets turned out less profitable.

Another term that relates to some of alternative investments but does not equate the whole class is Emotional Investment. Emotional character of that category is based mostly on the influence of subjective feelings and perception on the valuation of assets.9 Other features referring to the group are uniqueness of the objects, esthetics and taste qualities.

The section that is narrower, but constitute part of both classes of assets – alternative assets and emotional investments – is formed by collectible assets. The list of such objects is very long and contains various types such as collectible wines, old cars, Chinese porcelain, antique jewellery or pieces of art.10 In terms of valuation, an object of that kind is worth as much as the client is willing to pay for it.11 Due to the low liquidity of collectible assets markets, dealers often experience difficulties in achieving the expected price level. As a result, items are frequently sold for a lower price or the transaction is postponed for a longer period. The advantageous feature of collectible assets is the fact that their value increases with the inflation’s growth, even sometimes exceeding it. Moreover, the collector is able to derive satisfaction from owning a tangible collectible object, especially when it is kept in apartment, however such an exhibition is also connected with additional insurance costs and installation of alarming systems. In Poland, the collectible assets market is in the development phase, however since 1970s it represents most profitable segment, art market.12 Collecting art in Poland started to be considered as an investment in the beginning of the 20th century.13 As the market developed significantly since that period, there can be distinguished some of its characteristics.14

- The expected profit depends on various factors – subjective, like the individual esthetics taste, behavioral, as there can be observed numerous trends, and market factors, like for instance the supply of pieces by a particular artist.
- The historical information about the rates of return, risk and liquidity of the art market is not available, which constitutes a difficulty in analyzing and forecasting trends.

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11 Ibidem.
12 Ibidem.
13 P. Niedziółka, op. cit., p.197.
14 P. Niedziółka, op. cit., p.197–198.
• Investments in art are long-term and does not generate a constant profit.\textsuperscript{15} However, their most distinctive feature is the lowest correlation with the external socio-economical factors,\textsuperscript{16} which results with the uninterrupted growth of assets’ value in times of stock market perturbations.

• For the reason above, pieces of art can diversify the investor’s portfolio effectively. Such a choice can be illustrated as by the Modern Portfolio Theory, which states that the rationally behaving investor carefully chooses the proportions of different assets to maximize the expected portfolio’s return for a given amount of risk or minimize the risk for a given expected return's level.\textsuperscript{17}

\textbf{Diagram 1. Portfolio curves according to the Modern Portfolio Theory}

![Diagram of Portfolio curves according to the Modern Portfolio Theory]

Source: Own development.

As Harry M. Markowitz assumes investors on a perfect market are risk averse and their decisions are based on utility expectancies, they choose such a combination of assets that generates the highest profit at the lowest risk. Considering Markowitz’s model, the expected portfolio’s rate of return is calculated as the weighted average of expected rates of return of various instruments that construct the portfolio.\textsuperscript{18} There-

\textsuperscript{15} Except of the situation when the piece is rented.
\textsuperscript{17} M. Czerwonka, B. Gorlewski: Finanse behawioralne: zachowania inwestorów i rynku, Warsaw, Warsaw School of Economics, 2012, p.139–142.
\textsuperscript{18} Ibidem.
fore, the risk minimization due to the diversification of assets is possible when the instruments chosen are not correlated with each other. The diagram I.1 illustrates two situations concerning assets choices – the first curve illustrates the portfolio possibilities with no art assets involved, the second – with pieces of art included. According to the Modern Portfolio Theory, diversification of assets with artworks leads to the increment of the rate of return with no additional risks what is presented on the diagram 1.

As investments in art are rather long-term, the recommended period of holding a piece is 5 years.\textsuperscript{19} In Poland, the investments in pieces of art are dominantly purchases of paintings, with relatively low share of other media – paintings, graphics, photography and sculpture.\textsuperscript{20}

3. Art sales at auction in Poland

As the domestic art market is considered to be in its initial phase of development,\textsuperscript{21} the number of professional reports focusing on the local sales is relatively low. The major institutions that provide information publishing the auction records in the Internet are portals like: Artinfo.pl\textsuperscript{22} and its global archetype Artprice.com.\textsuperscript{23} The results are also revealed by some of the auction houses, however there is no instrument to detect if the transaction communicated was contracted in reality. Although, the situations of cancelling the sale are rather rare, therefore there are reasonable reasons to analyze the hammer prices’ lists as the basic information on the art market performance. Since the early 1990s the auctions in Poland are conducted regularly by twelve auction houses, the most prosperous of them are located in Warsaw. The oldest ones are Rempex established in 1989 and Polswiss Art and Agra-Art operating since 1990. In terms of the total turnover as well as the number of lots sold in 2012, the leading auction house was DESA Unicum which originated as an enterprise run in the 1980s by the state. The current name of the institution is the result of the alliance between the privatized DESA and the auction house Unicum in 1998. Considering the geographic distribution of the total turnover, the tendency toward the centralization of the local art trade is observed since its beginnings. In the period

\begin{itemize}
  \item \textsuperscript{19} K. Borowski: Nowe kierunki bankowości inwestycyjnej – rynek dzieł sztuki, op. cit., p.325.
  \item \textsuperscript{20} Skate’s, op. cit., p.18–19.
  \item \textsuperscript{21} P. Niedziółka, op. cit., p.204.
\end{itemize}
from 1990 to 2000, 90% of the total value of sales was generated in Warsaw. During the following decade, the capital’s share increased by 4% accounting for USD 105m of the turnover in 2010. The total value of sales in other cities was calculated for USD 6.8m that year. Among other significant localizations are Cracow, Lodz and Katowice, however most of the clients still perceive these cities as less developed markets and purchase artworks in Warsaw. Wrocław, Poznań, Toruń and Częstochowa are also involved in art trade, but the sales remain incomparably low there. Analyzing the capital market, the diagram 2 presents the annual turnover of four of the most considerable players. As can be read, DESA Unicum registered in 2012 the highest total value of works sold organizing 33 auctions. Despite that, it would be problematic to define the undisputed leader, due to the fact that Agra-Art generated a relatively high turnover at only four auctions. Other companies – Rempex and Sopocki Auction House – held in 2012 fifteen and eleven auctions, respectively. As regards the number of lots sold that year, DESA Unicum noted 2 605 sales, Rempex – 1 087, Agra-Art – 805 and Sopocki Auction House – 799.

Diagram 2. Auction turnover in 2012 in PLN

Source: own calculations using auction data published by particular auction houses on its official websites or published using the portal Artinfo.pl. No manipulation fees are considered.

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24 Skate’s, op.cit., p.16.
Studying the dynamic of the domestic auctions, the number of sessions organized is showing an almost constantly positive trend. As in 2000 it was 62, in the period from 2004 to 2012 the value was below the threshold of 80 only once. Similarly upward tendency describes the changes of the number of lots sold – from 2002 to 2010 there was a gradual growth registered, although from 2010 to 2012 the pace accelerated. There were 3 886 pieces sold at local auctions in 2010, in 2011 it was 5 384 and in 2012, spectacularly, 6 591. The year 2012 brought also the second highest historical turnover for the whole Polish art market. The total volume of sales was assessed for PLN 60.5m and the increase in comparison to the previous year was of about 25%.

As it can be observed on the Annual Turnover diagram, the sales values were fluctuating also throughout the months. It is commonly known that collectors are more inclined to purchase pieces of art by the end of a year, therefore the fourth quarter is usually the most profitable for the dealers. Despite the third quarter is generally considered the less busy auction season, there was a significant increase in the sales from July to September in 2012. In terms of the turnover, it exceeded the values of 2011 by above 30%, the growth of the number of lots sold was calculated for more than 65%. That results are the effect of the gradual change of auction houses’ strategy – as the market started to recover after the crisis, the companies intensified efforts to minimize the period of a summer slowdown by organizing additional sessions. The impact of crisis was observed on the local art market in 2010 in relation to almost every category of art – in general, only the less expensive offer (drawings, graphics) were more demanded that year.


Source: Skate’s, Skate’s Focus, Poland’s Art Market – The Rising Star of Central Europe, 2013, p.10.

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26 Skate’s, op.cit., p.11.
27 Ibidem, p.10.
According to the Skate’s report,\textsuperscript{28} the accumulated turnover at Polish auctions from 1991 to 2011 is estimated for more than PLN 500m. Concerning the sales’ effectiveness, there are no reliable sources of information to calculate their values in that period. In 2012 the proportion of the number of pieces sold to the number of lots offered was about 39\%, which is more by the 2.8\% compared to the previous year. The report contains also the Average Price Distribution scheme calculated for the first half of 2012, where the market is divided between three segments – Art before 1945, Post-war Art and Ultra-Contemporary Art. According to the diagram, the most expensive pieces are by the Old Masters. In comparison to the traditional works’ market, Contemporary Art has a lower share of hammer prices above PLN 100 000, as well as the lower share of prices in the interval from PLN 10 000 to PLN 100 000. The remain category of Young Art requires the lowest capital involvement, as there were no auction transactions exceeding the threshold of PLN 50 000 registered. The dominating price interval in case of the Ultra-Contemporary Art is limited by PLN 2 000. Such a proportion, composed with the increasing number of Young Art lots sold, leads to the significant decrease of the average price on the local market. By the number of pieces sold – Ultra-Contemporary Art constitutes 44\% of total sales (generating however 8\% of the total value), the Contemporary Art forms 30\% (31\% of the value) and Art before 1945 – 26\% (which stands for 62\% of the value).\textsuperscript{29}

The proportion of media available at auctions is highly correlated with the statistics above. As the share of Young Art pieces sold is growing, the share of painting is expanding due to the almost absolute domination of that medium in Ultra-Contemporary Art category. The prevalence of painting is also considered as one of the distinctive features of the Polish fine art market – it stands for 56\% of the lots sold and for 72\% of their total value.\textsuperscript{30} The second popular category are Drawings that form 17\% of the number of pieces purchased at auctions, which is 20\% in terms of value. Graphics’ share in lots is assessed for 14\%, however because of the lower prices their share in the auction market value is 2\%. Arts & Crafts named also as Applied Arts – antiques and design have a 10\%-share in lots sold and a 5\%-share in the value. Other categories like Sculpture (2\% of the number of lots sold, 1\% of the total value) and Photography (1\% of the number of lots and below 1\% of the value) are significantly underrepresented, which is also recognized as one of the local characteristics. In terms of the underrepresentation of some artworks’ classes, there

\textsuperscript{28} Skate’s, op.cit., p.9.
\textsuperscript{29} Skate’s, op.cit., p.14.
\textsuperscript{30} Skate’s, op.cit., p.18–19.
is the strict separation between the artists whose works are traded on the domestic market and local artists whose works are available entirely abroad.

One of the commonly analyzed issues is also the performance of the art market in comparison to the Annual Rates of Return of other assets. Pieces of art, considered as a stable investment and a portfolio’s diversification, became the objects of strictly economic calculations – the diagram 4 presents the correlation of art with the traditional assets of the capital market. In the analyzed period, the Annual Rate of Return on the investment in art is estimated for above 25%, which is relatively high, comparing to the stocks from WIG20 index that generated 8.7%.


The graph based on the repeated sales is related to another domestic characteristic which is the low liquidity of the Polish art market. According to the authors of the report,31 of the total number of lots sold at auctions from 1989 to 2012 which is approximately 35 000, about 1 100 were repeated sales. Consequently, there can be noted that the investment horizon on the local art market is relatively long which is considered an important limitation. The term of investment is long in almost all categories of collectible assets, in case of art it is recommended to sell the piece in no shorter horizon than 5–7 years. Although, the market situation varies both sea-

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31 Skate’s, op.cit., p.19.
sonally and according to such factors like more of less clear tendencies observed on a particular artist works’ market.

In a global perspective, the art market in Poland is estimated for about 0.2% of the international trade.\textsuperscript{32} The auction turnover in 2012, assessed for PLN 65–70 million is considered to be one of the best results in the history, while the volume of transactions on the global market decreased by 4% over 2012 to USD 35,5 million.\textsuperscript{33} The general level of art prices in Poland is incomparable to the level established on developed European art markets. The gap is demonstrated by the fact, that pieces available at foreign auctions almost never appear in domestic catalogues because they are generally not affordable for the local collectors. The most explicit example is the international trade of works by Polish artists recognized abroad, whose pieces are not offered in Poland because they are considered too expensive. For that reason, oil or acrylic paintings by Wilhelm Sasnal or sculptures and installations by Magdalena Abakanowicz are presented at domestic auctions very rarely – in case of Wilhelm Sasnal 1% of paintings are sold in Poland (7% in Germany, 33% in the USA and 59% in UK), in case of sculptures by Magdalena Abakanowicz – 4% of lots are sold at local auctions (73% in the USA and 23% in other European countries).\textsuperscript{34} The only representation of works by domestic artists recognized globally are pieces in less expensive media, which are graphics and small drawings or sketches.

There are also different factors that determine the prices on the global and the local markets, because auction records in Poland are generally not affected by the fluctuations of sales in other countries, which is caused by the fact the domestic offer is almost not traded abroad. Among the major price-growth factors on the Polish art market are:

- the development of marketing strategies of auction houses that started to promote the auctions as cultural events in various media,
- the differentiation of the auction offer affecting the price growth rather negatively – new types of auctions, like sales of photography, design, works on paper, are mostly to attract the new segment of clients with the more affordable offer,
- educational actions of the institutions, both museums and dealers,
- the promotion of pieces of art as alternative assets for portfolio diversification,
- the development of institutions publishing analytical reports on the auction sales,
- the establishment of institutions that advise in the art investment area and manage the collection professionally,
- the implementation of Internet auction platforms by the auction houses.

\textsuperscript{32} Portal Rynek i Sztuka, Raport – rynek sztuki 2013, 2013, p.34.
\textsuperscript{33} TEFAF Maastricht, The Global Art Market, with a focus on China and Brazil, 2013, p.4.
\textsuperscript{34} Own calculations using auction data published by the portal Artprice.com.
4. Trends on the polish painting market

As it was stated in the Introduction, general trends registered on the Polish auction market can be divided in accordance to the creation period and the medium of the piece. Therefore, to estimate the investment potential of an artwork, it is necessary to allocate it in a proper context of those various factors. Considering the period of creation, the majority of lots can be classified as:

1. Pre-war Art,
2. Contemporary-Art or Young Art described also as Ultra-Contemporary.

While the tables with the top global auction results consist mainly of contemporary pieces, similar reports in Poland usually reflect the very traditional taste of collectors. Such conservative preferences are one of the most noticeable characteristics of the local market, however, they do not eliminate other observable trends. Despite the growing interest in the Post-War and Ultra-Contemporary Art, the segment of the collectors of Polish art dating before 1945 is perceived the most stable. From the historical point of view, the situation is natural and explainable due to the disturbed development process of the auction market. Fast increase in sales after the system transformation was based substantially on the traditional art trade and only after the certain period institutions started to promote a new modern taste. The sales if the 20th century art started to seriously increase in 2000, while the first auctions of the Ultra-Contemporary pieces began in 2006. The numbers of works sold of young artists’ are rising dramatically, nevertheless, the highest prices are mostly attributed to the Old Masters. According to the analysis of the period from 1991 to the half of 2012,35 the artists which works have the highest total value are Jacek Malczewski (USD, 12.7 million), Józef Brandt (USD, 5.4 million) and the only representative of the modern culture, Jerzy Nowosielski (USD, 4.5 million). In the same period, Jacek Malczewski, with the number of lots sold accounted for 454, was also the artist of the greatest popularity. The second position of this ranking is held by Jerzy Kossak (380 lots sold), followed by Alfons Karpiński (361). By the average hammer price, Eugeniusz Zak is ranked first with the average price of USD 235 000. Pieces of Henryk Siemiradzki were priced at USD 180 000 averagely and of Władysław Czachórski at USD 165 000.

35 Skate’s, op.cit., p.16.
Table 1. Top 10 Auction Art Sales in Poland, 2012

<table>
<thead>
<tr>
<th>Rank</th>
<th>Artist</th>
<th>Title</th>
<th>Medium</th>
<th>Size, cm</th>
<th>Auction House</th>
<th>Date</th>
<th>Hammer Price, PLN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stanisław Wyspiański (1869–1907)</td>
<td>Portrety rodziny Sternbachów, 1904</td>
<td>Crayon, paper</td>
<td>47 × 62</td>
<td>Agra-Art, Warsaw</td>
<td>18-Mar–2012</td>
<td>1 850 000</td>
</tr>
<tr>
<td>3</td>
<td>Eugeniusz Zak (1884–1926)</td>
<td>Autoportret, 1916</td>
<td>Oil, canvas</td>
<td>100 × 80</td>
<td>Agra-Art, Warsaw</td>
<td>18-Mar–2012</td>
<td>760 000</td>
</tr>
<tr>
<td>4</td>
<td>Józef Brandt (1841–1915)</td>
<td>Przeprawa wojska (U przewozu), 1871</td>
<td>Oil, canvas</td>
<td>65 × 157</td>
<td>Desa Unicum, Warsaw</td>
<td>13-Dec–2012</td>
<td>700 000</td>
</tr>
<tr>
<td>5</td>
<td>Józef Brandt (1841–1915)</td>
<td>Ucieczka, about 1890</td>
<td>Oil, canvas</td>
<td>61 × 100.5</td>
<td>Agra-Art, Warsaw</td>
<td>09-Dec–2012</td>
<td>510 000</td>
</tr>
<tr>
<td>6</td>
<td>Eugeniusz Zak (1884–1926)</td>
<td>Marzyciel, 1925</td>
<td>Oil, canvas</td>
<td>66 × 46.5</td>
<td>Polswiss Art, Warsaw</td>
<td>28-Feb–2012</td>
<td>495 000</td>
</tr>
<tr>
<td>7</td>
<td>Jan Stanisławski (1860–1907)</td>
<td>Ogród zaczarowany, 1895–1900</td>
<td>Oil, canvas</td>
<td>135 × 265</td>
<td>Agra-Art, Warsaw</td>
<td>02-Jun–2012</td>
<td>400 000</td>
</tr>
<tr>
<td>8</td>
<td>Józef Brandt (1841–1915)</td>
<td>Niebezpieczna przeprawa, about 1900</td>
<td>Oil, canvas</td>
<td>49.5 × 70</td>
<td>Polswiss Art, Warsaw</td>
<td>11-Oct–2012</td>
<td>320 000</td>
</tr>
<tr>
<td>9</td>
<td>Wilhelm Kotarbiński (1849–1922)</td>
<td>W ciszy wieczornej, Zadumana, about 1900</td>
<td>Oil, canvas</td>
<td>151.3 × 98</td>
<td>Agra-Art, Warsaw</td>
<td>18-Mar–2012</td>
<td>280 000</td>
</tr>
<tr>
<td>10</td>
<td>Mela Muter (1876–1967)</td>
<td>Kobieta z psem, 1912</td>
<td>Oil, canvas</td>
<td>105.5 × 110</td>
<td>Polswiss Art, Warsaw</td>
<td>26-Apr–2012</td>
<td>275 000</td>
</tr>
</tbody>
</table>

Source: Skate’s, Skate’s Focus, Poland’s Art Market – The Rising Star of Central Europe, 2013, p.11–12.

The most frequently listed in the top records’ table is Józef Brandt. Together with Józef Chełmoński, artists represent almost the half of the highest results ranking. Both painters are associated with the same artistic environment named in the literature of discipline as the Munich School. Relating to the ranking of the Polish artists by the number of lots sold mentioned before, the two representatives of the national taste described above are followed by a painter creating in a completely different formula.
As Jacek Malczewski and Juliusz, Wojciech and Jerzy Kossak are strongly associated with the traditional style and political involvement, Alfons Karpiński dedicated himself mostly to flowery compositions. Eugeniusz (Eugene) Zak, listed twice on the top records’ table of 2012, and Mela Muter (Melania Mutermilch) listed once are the best representatives of the trend. Although artists from that circle where studying and working abroad almost the whole professional life, some of them participated also in the Polish artistic development.

Despite the fact that there is no contemporary piece on the list of ten highest auction records in Poland, it is Modern Art that is forecasted to be the key trend in art collecting. It is reported that traditional preferences are becoming rare on the global market, however the most popular category of art turns out also the most difficult to define precisely, especially in Europe. In the majority of cases items considered contemporary are those created after the Second World War. Nevertheless, such an attitude can be very problematic while analyzing for instance Polish art market – the artistic output of local avant-garde groups that developed in the pre-war period is definitely classified as modern. After 1945 many of artists from that environments continued their activity in an unchanged manner so that it is often experienced that particular pieces created before and after the war do not vary formally. For that reason, the categorization of unique works while analyzing the market has to contain some quality measures, especially in case of describing the position of one artist.

As it was mentioned, the popularity of Modern Art is increasing – in 2012 its share in number of lots sold36 was assessed for 30% and when the auction sales are broken down by value, the Contemporary Art stands for 31% of the annual turnover in Poland. Unfortunately the group of highest-quality masterpieces which is not numerous forms a narrow section of the offer. Another important observation is that the market position of the group of painters mentioned above is overall improving. While analyzing the sales results from particular artists’ works it is commonly noticed that the decline of annual turnover in the after-crisis years was dramatic. Some classics paintings’ prices ‘proved to be robust to financial crisis’ can be rather understood in context of a very fast recovery of some artists pieces’ market. There can be given various examples of such an accelerated growth after the significant fall, one of the most suitable is the market of Jerzy Nowosielski’s paintings.

The tendencies on the Polish art market are rather more like nuances that can be detected in a more specified analysis of collectors’ preferences. However, there is one major trend observed since 2007 – a radical shift on the market that became dominated by the supply of unknown artists’ works. There is no official statement on how to define that group, but the term used most frequently is Young or Ultra-Contemporary

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36 Skate’s, op.cit., p.14.
Art. Artists classified to that category are usually under forty years old, nevertheless not the age is the main criterion but rather the popularity being in primary stages of development. First auctions of the Young Art were launched in Poland at the end of 2006. Before that date, there was practically no Ultra-Contemporary piece presented in an auction catalogue, therefore the change noted is considered the most significant transformation in the capitalistic history of that market. The number of lots by unknown artists increased by a factor of 14 from 2007 and stands at about 1 400 pieces sold annually. While examining the auction market structure of 2012, Young Art constituted 44% of lots sold, but in terms of value its share was estimated for 8%. The average price distribution analysis proves that proportion with the information that about 80% of lots sold in the first half of 2012 were priced below PLN 2 000. In general, the high inflow of ultra-contemporary artworks has a very positive impact on the effectiveness of auction sales, but also influences negatively the average price on the local art market which diminished since the Young Art auctions became regular.

Beside the stimulus of becoming an art collector, which is considered prestigious, and the incentive of having an originally decorated house, what motivates some clients is also the so-called ‘Sasnal’s effect.’ The term describes the process of gaining very high rates of return from the investment which requires a low capital involvement. In reality, such an effect is being noticed very rarely and the international popularity of Sasnal should not be expected in relation to every young artist in an auction catalogue. Therefore, what is recommended by specialists is not to be driven by financial reasons only, but primarily by one’s esthetical choices. Nevertheless, what can be added about the ‘Sasnal’s effect’ is that it is partially realized in almost every case, but in a very micro scale. Many of artworks offered are sold at virtually dumping prices, consequently the significant drop of their level is rather not foreseen. According to that attitude, an investment in Young Art is regarded as safe.

## 5. Conclusions

As the primary purpose of the article was to demonstrate the complexity of the domestic paintings, the basic classifications of pieces were in accordance to the artwork’s period of creating and its medium. In terms of the first criterion, there were three categories determined – Old Masters’ pieces, Contemporary Art and Young Art, named also as Ultra-Contemporary. The styles considered within the pre-war group

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37 Skate’s, op.cit., p.13.
were the Munich School, the Young Poland’s esthetics and École de Paris, the School of Paris. The analysis presents that the traditional Polish art paintings constitute one of the most stable segments, as well as requiring the highest capital involvement. The category of contemporary pieces is represented by such artists like Jerzy Nowosielski, Jan Tarasin or Stefan Gierowski. Despite the decreasing supply of the ‘contemporary classic’s’ best works, the prices of pieces by authors listed are constantly relatively high. There can be also noted potential consequences of the lowering quality of contemporary pieces offered in auction catalogues, like for instance the expected correction of the dynamic growth of prices. Regarding the Ultra-Contemporary Art market, the increasing share of the Young Art in the number of lots sold in Poland is recognized as the most radical transformation registered in its history. Despite the high amount of lots purchased by the new segment of collectors and the considerable sales effectiveness, the increment of prices is gradual, however constant.

References

10. TEFAF Maastricht, The Global Art Market, with a focus on China and Brazil, 2013.

11. Internet Sources:


Abstract

The prime concern of this article is to present an instrument called an actual stock split. This article aims to determine the effectiveness of the conducted actual stock splits in the background of the factors specific for the company, the stock of the company and the phase of the stock market. The article presents the results of empirical studies of foreign markets, and the results of empirical research conducted by the author on the Warsaw Stock Exchange. The parameter observed in the study is an abnormal rate of return. In this study the Author analyzes the impact of the actual split on stock prices. The results of Author’s research on WSE are in contrast to the regularities captured in most of presented foreign studies.

Keywords: split, capital market, Warsaw Stock Exchange, WSE, abnormal (rate of) return, CAR.
1. Introduction

An overriding objective of all companies, regardless of whether they are listed on a stock exchange, or remain private, is to strive to create and maximize their value. The whole decision-making process at operating, non-operating and financial level should be subordinated to this objective.

This article presents an instrument called the actual stock split. A stock split is an activity consisting in the reduction of the nominal value of stock, while maintaining an unchanged value of the capital stock of the company. This article aims to determine the effectiveness of the conducted actual stock splits in the background of the factors specific for the company, the stock of the company and the phase of the stock market.

The article describes the results of empirical studies that have been conducted both on foreign markets, as well as on the Polish market. Moreover, the author presents the results of his own empirical studies on this issue conducted on the Warsaw Stock Exchange. A parameter observed in the study is an abnormal rate of return by means of which the author analyzes the impact of the actual split on stock prices.

2. Motives for stock splits

The main reasons for managers to make efforts aiming at a stock split include: motives based on the theory of behavioral finance, signaling theories, a motive for the improvement of liquidity and alternative theories concerning the motives for making splits, including technical changes on the stock market and “management entrenchment”.

Traditionally, stock splits are associated with signaling theory. Already in 1969 E.F. Fama et al. noted in their study that splits occurred most often when the stock price of a company grow stronger in relation to other securities listed on the stock exchange.¹ A stock split is a signal of the stock overvaluation. The main reasons for

conducting splits also included attempts to enhance the interest in the company among stock market analysts and investors (neglected firm hypothesis).2,3

The first alternative explanation of splits motives are technical changes in the stock markets, such as changing the minimum step quotes, change in the minimum nominal value of stock, a change in the existing currency, as well as changes in tax law.4,5,6 “Management entrenchment” refers to the use of stock split by the management to increase the number of individual investors and, at the same time, to reduce the number of institutional investors, which results in the reduced level of monitoring and control over the company’s management.7

In terms of behavioral theories, one should pay attention to the liquidity hypothesis, connecting the reduction in the value of stock with the increased liquidity of stock, which may lead to the growth in a number of stockholders.8 Enhanced liquidity obtainable after a stock split is explained by means of the optimal price range hypothesis and the hypothesis on the optimal accuracy limits.9,10

3. Overview of the results of studies on the impact of the split on stock prices in the United States and in Europe

In the case of markets in the United States, the actual stock splits have been presented in the study conducted by Grinblatt, Masulis and Titman as well as by Moloney and Mulherin. The first study involving a larger number of events and a longer period

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(1360 events in the years 1967 to 1976) was related to the NYSE and AMEX stock exchanges, and the study by Moloney and Mulherin was focused on the NASDAQ market (446 events in the years 1985–1989).\textsuperscript{11,12}

The studies on the American market indicate the existence of positive above-average rates of return in the area of an actual reduction in the nominal value of stock. In the case of an actual split on “day 0,” an above-average rate of return achieves the value of even 1.64%. The positive impact of the split on stock prices confirm the cumulative value of above-average rates of return (CAR). In the case of 21-day event window, CAR values for the actual split range from 2.27% to 3.96%.

In Europe, the study results indicate the diversity of the achieved abnormal returns depending on the country. A case of the German market indicates a positive reaction of the rate to the actual splits, however, at a lower level than in the case of markets in the United States.\textsuperscript{13} In contrast to the German market, the Swiss market was characterized by negative returns.\textsuperscript{14} Interesting are very high returns observed in the Cypriot market, reaching 20.9% of CAR in the 21-day event window.\textsuperscript{15}

In the case of the Polish market, in the results of his observations, apart from the day zero, Gurgul pointed to negative market reactions, which remained in a sharp contrast to the markets of the United States, in another study, Rudnicki presented that in even longer event window (81 days), market reaction is negative.\textsuperscript{16,17}

The following table shows the summary of the studies on above-average rates of return achieved by stockholders at the actual stock splits on individual markets.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
Market & Above-Average Rates of Return (CAR) \\
\hline
NYSE & 2.27% to 3.96% \\
AMEX & \\
NASDAQ & \\
German & \\
Swiss & \textsuperscript{14} \\
Cypriot & 20.9% of CAR \textsuperscript{15} \\
Polish & \\
\hline
\end{tabular}
\end{table}

\textsuperscript{13} C. Wulff, \textit{The Market Reaction to Stock Splits – Evidence from Germany}, Institute of Banking, Humboldt-Universität zu Berlin, 1999, pp.1–33.
\textsuperscript{17} J. Rudnicki, \textit{Czy podział akcji maksymalizuje bogactwo akcjonariuszy?}, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, No. 246, Wrocław 2012.
Table 1. Above-average returns achieved by stockholders at the actual stock splits on the markets in the United States and Europe – the daily data in % (CAR – cumulative average abnormal return in %)

<table>
<thead>
<tr>
<th>Stock splits</th>
<th>Study</th>
<th>Stock exchange</th>
<th>Study period</th>
<th>Size</th>
<th>CAR (-10;10)</th>
<th>CAR (-5;5)</th>
<th>CAR (-2;2)</th>
<th>CAR (-1;1)</th>
<th>-1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Grinblatt, Masulis, Titman*</td>
<td>Nyse, AMEX</td>
<td>1967–1976</td>
<td>1360</td>
<td>2.27</td>
<td>2.14</td>
<td>1.36</td>
<td>1.33</td>
<td>0.09</td>
<td>0.72</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>Maloney, Mulherin</td>
<td>NASDAQ</td>
<td>1985–1989</td>
<td>446</td>
<td>3.96</td>
<td>3.44</td>
<td>3.04</td>
<td>2.47</td>
<td>0.47</td>
<td>1.64</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td>Weight average</td>
<td></td>
<td></td>
<td></td>
<td>2.69</td>
<td>2.46</td>
<td>1.77</td>
<td>1.61</td>
<td>0.18</td>
<td>0.95</td>
<td>0.48</td>
</tr>
<tr>
<td>Europe</td>
<td>Wuuff</td>
<td>German market (FSE)</td>
<td>1994–1996</td>
<td>83</td>
<td>0.95</td>
<td>0.81</td>
<td>0.56</td>
<td>0.28</td>
<td>0.25</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kunz, Rosa – Majhensek</td>
<td>Swiss market (SWX)</td>
<td>1992–2001</td>
<td>34</td>
<td>-0.06</td>
<td>-0.14</td>
<td>-0.30</td>
<td>-0.38</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charitou, Vafeas, Zachariades**</td>
<td>Capriot market (CSE)</td>
<td>1999–2000</td>
<td>45</td>
<td>20.09</td>
<td>9.15</td>
<td>10.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight average (without Capriot market)</td>
<td></td>
<td></td>
<td></td>
<td>0.56</td>
<td>0.36</td>
<td>0.11</td>
<td>0.07</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>Gurgul</td>
<td>WSE in Warsaw</td>
<td>1995–2005</td>
<td>17</td>
<td>-2.31</td>
<td>-1.46</td>
<td>-1.00</td>
<td>-0.22</td>
<td>-0.68</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The sample comprised only splits announced by the companies making acquisition of another entity – split announcement occurred prior to the announcement of the acquisition planned.
** The sample comprised only equal splits, or higher than 5:4 (1.25).


4. Scope of the study and description of the sample

Within the empirical research conducted by the author on the Warsaw Stock Exchange, the historical period (sessions prior to the event) and the period immediately before and after the actual split (from the selected day before the event to the selected day after it) were subjected to scrutiny. A selected “window” of research (+/- a day of information) contains specific additional rates of return achieved by owners – stockholders.
An additional rate of return is defined as a difference between an actual rate of return realized in a given period and a rate of return that would be expected on the basis of the stock characteristic line and the behavior of the market during this period. This indicator expresses the surplus of the rate of return actually acquired by the investor over the expected average rate of return obtainable at a given level of risk.

The conducted study takes into account the date of actual splits carried out in the years 2005–2012. The dates of the appearance of the first specific information about the planned split were determined, among other things, on the basis of Internet archives of web portals Parkiet, Puls Biznesu, money.pl, bankier.pl, stock exchange services, wp.pl, onet.pl, biznes polska.pl and the websites of companies. Closing prices of individual stocks and the value of the WIG [Warsaw Stock Exchange Index] at the end of the session in the estimated window and in the event window were obtained from the archives of the Internet portal of quotations GPWInfoStrefa.pl.

The date of the event is defined as the date of the actual stock split, i.e. the first day on which the stocks were traded with a changed nominal value. The number of dates includes 53 events determined on the basis of the stock exchange yearbooks. For the entire sample of the events the median in a split factor reached 1–10, yet only 13 splits were made with a split factor higher than or equal to 1–20.

The following figure shows the composition of the sample according to the occurrence of splits in a given business situation on the Warsaw Stock Exchange.

Figure 1. The sample regarding the actual split according to the Warsaw Stock Exchange situation

Source: Own research.

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5. Results and conclusions of empirical research conducted on the Warsaw Stock Exchange

The results of studies regarding abnormal rates of return on or about the actual split show:
1. the value of obtained cumulative average abnormal returns;
2. the value of obtained cumulative average abnormal returns in separate industries;
3. the value of obtained cumulative average abnormal returns with respect to the split value;
4. the impact of activity on the Warsaw Stock Exchange on obtaining abnormal returns;
5. the impact of the value and liquidity of company’s stock (with respect to the Warsaw Stock Exchange and the industry) on the obtained abnormal returns.

The author also conducts a comparison of obtained results to global studies.

The results of studies regarding abnormal rates of return on or about the actual split divided into different industries and in total have been shown in Table 2 and Figure 2.

Table 2. Abnormal returns at the actual split divided into industries

<table>
<thead>
<tr>
<th>Period</th>
<th>Total</th>
<th>Construction</th>
<th>Light industry</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>–2</td>
<td>0.48%</td>
<td>–0.08%</td>
<td>1.30%</td>
<td>0.51%</td>
</tr>
<tr>
<td>–1</td>
<td>0.62%^b</td>
<td>–0.44%</td>
<td>3.11%</td>
<td>0.54%^c</td>
</tr>
<tr>
<td>0</td>
<td>–7.27%^d</td>
<td>0.39%</td>
<td>0.37%</td>
<td>–10.02%^d</td>
</tr>
<tr>
<td>1</td>
<td>–1.20%</td>
<td>–1.42%</td>
<td>–5.68%^b</td>
<td>–0.57%</td>
</tr>
<tr>
<td>2</td>
<td>–1.35%</td>
<td>2.46%</td>
<td>–9.06%^d</td>
<td>–1.24%</td>
</tr>
<tr>
<td>(–1; 1)</td>
<td>–7.85%</td>
<td>–1.47%</td>
<td>–2.20%</td>
<td>–10.05%^d</td>
</tr>
<tr>
<td>(–2; 2)</td>
<td>–8.72%^d</td>
<td>0.91%</td>
<td>–9.96%</td>
<td>–10.78%^d</td>
</tr>
<tr>
<td>(–5; 5)</td>
<td>–7.78%^d</td>
<td>1.91%</td>
<td>–9.75%</td>
<td>–9.76%^d</td>
</tr>
<tr>
<td>(–10; 10)</td>
<td>–7.43%^d</td>
<td>10.20%^d</td>
<td>–18.61%</td>
<td>–10.07%^d</td>
</tr>
</tbody>
</table>

^a Statistically at the level of 1%. ^b Statistically at the level of 2%.
^c Statistically at the level of 5%. ^d Statistically at the level of 10%.

Source: Own research.
As a result of the analysis of the abnormal return in the actual split, one may come to a conclusion that the actual split is related to negative AR and CAR. In the period before “day 0” positive AR is to be observed (“bull position”), however, from “day 0” strongly negative abnormal return occurs. The average abnormal return for the entire sample of 53 cases on “day 0” reached the value of minus 7.27% with statistical significance at the level of 10%. CAR analyzed was also negative in all cases and three of them were statistically significant. The lowest value was obtained by CAR (–2; 2), which amounted to minus 8.72% with statistical significance at the level of 10%. An observation worth paying attention to is a different changing process of CAR with respect to companies from the construction sector in a 21-day time window, which reaches the value of 10.20% with statistical significance at the level of 10%.

The results of the studies indicate as well that the split factor does not change the state of facts with respect to the negative AR and CAR. All single and cumulative average abnormal returns which obtained statistical significance were negative. The lowest value, minus 10.25%, was reached for CAR (–2; 2) for splits smaller or equal 1 to 10 with statistical significance at the level of 10%. It seems that in longer 21-day periods bigger splits have higher negative CAR, however, no statistical significance obtained for this interdependence was found (see Figure 3 and Table 3).
Table 3. Abnormal returns at the actual split based on the amount of the split

<table>
<thead>
<tr>
<th>Period</th>
<th>&lt;= 1 to 10</th>
<th>&gt; 1 to 10</th>
<th>&gt; 1 to 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>1.62%</td>
<td>-1.91%d</td>
<td>-2.19%d</td>
</tr>
<tr>
<td>-1</td>
<td>0.14%</td>
<td>1.63%a</td>
<td>1.50%a</td>
</tr>
<tr>
<td>0</td>
<td>-8.77%d</td>
<td>-4.10%</td>
<td>-5.37%</td>
</tr>
<tr>
<td>1</td>
<td>-1.18%</td>
<td>-1.24%</td>
<td>-1.61%</td>
</tr>
<tr>
<td>2</td>
<td>-2.06%d</td>
<td>0.16%</td>
<td>0.78%</td>
</tr>
<tr>
<td>(-1; 1)</td>
<td>-9.81%d</td>
<td>-3.71%</td>
<td>-5.48%</td>
</tr>
<tr>
<td>(-2; 2)</td>
<td>-10.25%d</td>
<td>-5.46%</td>
<td>-6.90%</td>
</tr>
<tr>
<td>(-5; 5)</td>
<td>-8.94%d</td>
<td>-5.31%</td>
<td>-5.55%</td>
</tr>
<tr>
<td>(-10; 10)</td>
<td>-6.08%</td>
<td>-10.30%</td>
<td>-10.32%</td>
</tr>
</tbody>
</table>

a Statistically at the level of 1%. b Statistically at the level of 2%. c Statistically at the level of 5%. d Statistically at the level of 10%.

Source: Own research.

The results of the author’s studies are in clear contrast to other outcomes of previously presented studies from foreign markets. In contradiction to the studies by Grinblatt, Masulis and Titman as well as Maloney and Mulherin for the markets of the United States of America, and by Wulff for the German market and Gurgul for the Polish market, the values of AR on the day of the actual split were negative.
Moreover, the average abnormal return on “day 0” was statistically significant. The negative average AR on the first day after “day 0” is also in opposition to the studies from foreign markets. The only market which corresponds to the studies with its own negative AR is the Swedish market.

It is worth emphasizing that unlike the majority of the results of foreign market studies all CAR were negative. This fact constitutes the confirmation of the previous observations of Gurgul for the Polish market and Kunz et al. for the Swiss market.

According to the previously conducted observation, the majority of actual splits occur on the growing market (24 out of 54 cases), the second period when the splits occur most often is the slump on the market. Results are presented in Table 4 and Figure 4.

### Table 4. Abnormal returns at the actual split dependent on the situation on the WSE

<table>
<thead>
<tr>
<th>Period</th>
<th>Bottom (I)</th>
<th>Bull (II)</th>
<th>Peak (III)</th>
<th>Bear (IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>−2</td>
<td>−0.68%</td>
<td>0.61%</td>
<td>2.15%</td>
<td>0.24%</td>
</tr>
<tr>
<td>−1</td>
<td>1.80%c</td>
<td>0.59%c</td>
<td>2.63%</td>
<td>0.04%</td>
</tr>
<tr>
<td>0</td>
<td>1.14%</td>
<td>−8.20%</td>
<td>4.88%</td>
<td>−10.13%</td>
</tr>
<tr>
<td>1</td>
<td>0.03%</td>
<td>−1.33%</td>
<td>−4.71%</td>
<td>−0.61%</td>
</tr>
<tr>
<td>2</td>
<td>−0.12%</td>
<td>−2.98%</td>
<td>−4.25%</td>
<td>0.84%</td>
</tr>
<tr>
<td>(−1; 1)</td>
<td>2.97%</td>
<td>−8.94%</td>
<td>2.81%</td>
<td>−10.70%</td>
</tr>
<tr>
<td>(−2; 2)</td>
<td>2.17%</td>
<td>−11.31%</td>
<td>0.70%</td>
<td>−9.61%</td>
</tr>
<tr>
<td>(−5; 5)</td>
<td>0.54%</td>
<td>−9.19%</td>
<td>0.93%</td>
<td>−9.41%</td>
</tr>
<tr>
<td>(−10; 10)</td>
<td>−0.68%</td>
<td>0.61%</td>
<td>2.15%</td>
<td>0.24%</td>
</tr>
</tbody>
</table>

*a Statistically at the level of 1%. b Statistically at the level of 2%. c Statistically at the level of 5%. d Statistically at the level of 10%.*

Source: Own research.

The results of the studies show obtaining positive abnormal rates of return in the peak of growth cycle. Nevertheless, the study has failed to prove statistical significance.

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The results of the studies on abnormal rates of return on or about the day of the actual split, divided according to the company’s size have been shown in Table 5 and Figure 5. (Small WSE/Industry is a group of companies smaller or equal to the medium for WSE/Industry, and Big WSE/Industry of appropriately bigger ones), and according to the liquidity of stock in Table 6 and Figure 6 respectively (Low WSE/Industry is a group of companies with stock liquidity smaller or equal to the medium for WSE/Industry, and High WSE/Industry of appropriately bigger ones).

Table 5. Cumulative abnormal returns at the actual split dependent on the size of the company

<table>
<thead>
<tr>
<th>Period</th>
<th>Small WSE</th>
<th>Big WSE</th>
<th>Small Industry</th>
<th>Big Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>−2</td>
<td>0.83%</td>
<td>0.18%</td>
<td>0.48%</td>
<td>0.49%</td>
</tr>
<tr>
<td>−1</td>
<td>−0.06%</td>
<td>1.22%c</td>
<td>−0.85%</td>
<td>1.58%a</td>
</tr>
<tr>
<td>0</td>
<td>−4.09%</td>
<td>−10.11%d</td>
<td>−6.95%d</td>
<td>−7.48%</td>
</tr>
<tr>
<td>1</td>
<td>−3.22%c</td>
<td>0.61%</td>
<td>−3.31%d</td>
<td>0.19%</td>
</tr>
<tr>
<td>2</td>
<td>−1.80%</td>
<td>−0.94%b</td>
<td>−1.95%</td>
<td>−0.95%d</td>
</tr>
<tr>
<td>(−1; 1)</td>
<td>−7.37%</td>
<td>−8.28%</td>
<td>−11.11%b</td>
<td>−5.72%</td>
</tr>
<tr>
<td>(−2; 2)</td>
<td>−8.34%</td>
<td>−9.05%</td>
<td>−12.57%c</td>
<td>−6.18%</td>
</tr>
<tr>
<td>(−5; 5)</td>
<td>−3.83%</td>
<td>−11.30%d</td>
<td>−6.43%</td>
<td>−8.67%</td>
</tr>
<tr>
<td>(−10; 10)</td>
<td>−0.49%</td>
<td>−13.63%c</td>
<td>−3.31%</td>
<td>−10.14%d</td>
</tr>
</tbody>
</table>

a Statistically at the level of 1%. b Statistically at the level of 2%. c Statistically at the level of 5%. d Statistically at the level of 10%.

Source: Own research.
Figure 5. Cumulative abnormal returns at the actual split dependent on the size of the company

Negative cumulative rates of return have been obtained with respect to both big and small stock exchange companies. In a few cases, the statistical significance has been obtained.

Table 6. Abnormal returns at the actual split dependent on the liquidity of the company’s stock

<table>
<thead>
<tr>
<th>Period</th>
<th>Low WSE</th>
<th>High WSE</th>
<th>Low Industry</th>
<th>High Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>–2</td>
<td>0.52%</td>
<td>0.43%</td>
<td>0.016%</td>
<td>1.02%</td>
</tr>
<tr>
<td>–1</td>
<td>1.03%c</td>
<td>0.04%</td>
<td>1.15%d</td>
<td>–0.27%</td>
</tr>
<tr>
<td>0</td>
<td>–11.36%d</td>
<td>–1.51%</td>
<td>–10.55%d</td>
<td>–1.85%</td>
</tr>
<tr>
<td>1</td>
<td>–0.19%</td>
<td>–2.62%</td>
<td>–0.98%</td>
<td>–1.56%</td>
</tr>
<tr>
<td>2</td>
<td>–2.86%</td>
<td>0.78%</td>
<td>–3.41%d</td>
<td>2.06%</td>
</tr>
<tr>
<td>(–1; 1)</td>
<td>–10.52%</td>
<td>–4.10%</td>
<td>–10.38%</td>
<td>–3.68%</td>
</tr>
<tr>
<td>(–2; 2)</td>
<td>–12.86%d</td>
<td>–2.88%</td>
<td>–13.63%d</td>
<td>–0.61%</td>
</tr>
<tr>
<td>(–5; 5)</td>
<td>–12.49%d</td>
<td>–1.14%</td>
<td>–13.03%d</td>
<td>0.88%</td>
</tr>
<tr>
<td>(–10; 10)</td>
<td>–14.35%c</td>
<td>2.32%</td>
<td>–16.90%d</td>
<td>8.18%</td>
</tr>
</tbody>
</table>

a Statistically at the level of 1%. b Statistically at the level of 2%. c Statistically at the level of 5%. d Statistically at the level of 10%.

Source: Own research.
In the case of both groups distinguished according to the level of stock trade liquidity negative abnormal rates of return have been observed, which shows that the liquidity level does not influence the obtained effectiveness. In a few cases regarding small companies statistical significance has been obtained.

6. Conclusions

Given the assumption that decisions and actions taken by managers are reasonable if they increase the value of the enterprise, i.e. affect the occurrence of cumulative above-average rates of return, it should be noted that the results of studies over actually conducted splits do not provide clear guidance. In different states, different results were obtained.

The results of own research conducted on the Warsaw Stock Exchange are in contrast to the regularities captured in most of the presented studies. The effect of events of the actual split with regard to “day 0” and CAR is strongly negative. For all studied splits for “day 0” the value AR amounts to minus 7.27% and CAR (–10, 10) minus 7.49%, respectively. Finally, on the basis of own studies conducted on the Warsaw Stock Exchange, the author of the study concludes that:

- market reaction to the actual split on the WSE is negative;
- results of the studies compared to most foreign studies are divergent;
• there is no impact of the situation on the Warsaw Stock Exchange on abnormal rates of return;
• the size of the company and liquidity of its stocks (in respect of the Stock Exchange and the industry) does not affect abnormal returns.

The results of the studies indicate a lack of positive impact of the actually conducted splits on abnormal rates of return. Moreover, no significant positive impact of internal and external factors has been observed on the development of rates of return on the stocks of companies engaged in such an operation. It appears that the source of the difference in results between Polish market and developed markets is that WSE is still developing, and some signals might be interpreted differently.

References


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Theoretical and Practical Aspects of the Real Estate Taxation System Reform in Poland – An Outline of the Concepts of the Target Solution

Abstract

This article presents a concept of the target solution in the area of the real estate taxation system. In the first part, four basic areas of the real estate taxation system reform were isolated and outlined: construction and introduction of a complete and coherent cadastre system, the procedure of general taxation on real estates as the manner to assess the value of all real estates in order to determine their cadastre value, management and administration of the cadastre system, and the scope of the tax autonomy of the communes. In the second part, in order to enrich the concept presented here, an attempt was made to develop some implementation issues, such as: methodology of determining the cadastre value of real estates and the rates of the tax ad valorem.

Keywords: real estate taxation, cadastre value of real estates, rates of the tax ad valorem.
1. Introduction

The real estate taxation in Poland requires a thorough reform. The ultimate defect of the applicable real estate taxation construction is, first of all, the taxable base. This is: the area (in the case of land and buildings) or the value accepted for the needs of tax depreciation (in reference to the building). The concept of introduction of a tax based on the real estate value – postulated for 20 years – is not only an issue of adaptation of the Polish tax system to the solutions existing in developed European countries, but also an essential element of making the local government finances system more effective. A rational real estate taxation system, as an essential element of the sources of own incomes of the local government units, after all should secure the general social needs realized by the local government and also be acceptable and recognized as being just by tax-payers.

The purpose of this article is to make an attempt to present the concept of a target solution within the real estate taxation system. This article consists of two parts. In part one four basic areas of the reform are isolated and outlined: development and introduction of the cadastre system, the procedure of the general taxation of real estates, management and administration of the cadastre system and the scope of the tax autonomy of the communes. In the second part, in order to enrich the concept presented here, some implementation issues are developed, such as: election of the taxable base, problems relating the practice of tax rate determination.

2. The Concept of the Tax Based on the Real Estate Value

The fundamental element of the concept of real estate taxation should be the unification of the principles of real estate taxation and the acceptance of the construction of a new single tax on real estates. Similarly like in a majority of EU states, the value of the tax on real estates should be dependent on the real estate value. When systemizing the issues related with the future change of the real estate taxation system we should indicate its following areas:¹

2.1. Construction and introduction of a complete and coherent cadastre system

In Poland a fully identified tax base is still lacking, i.e. a reliable and complete register of real estates arranged by subjects. The condition of works progress in this area leaves much to be desired. Only the complete and uniform registration of real estates can make a chance for the positive implementation and execution of a new real estate taxation system.

Introduction of the cadastre system, however, cannot be reduced exclusively to a fiscal aspect. In a majority of states with developed market economy a well operating cadastre system is considered to be the basis for the operation of the state. The evolution of the role of a cadastre system cannot remain without influence on the solutions of the Polish real estate cadastre. It is worth to emphasize the fact of the multi-functional use of the cadastre system in order to support a well balanced economic development of the state. The development process of information and communication technologies, as well as the ever greater social consciousness of the multi-functionality of the cadastre systems undoubtedly lead to the development of a general demand for cadastre information.\(^2\)

The integrated cadastre system built in Poland as a modern model of the cadastre system has as its purpose functional integration of the register of lands and buildings, real estate registers, tax registers and also other public registers in the future. Creation of a complete data base is a time-consuming and expensive procedure. Its value and utility in the process of managing developed and undeveloped real estates should not be disputed. Rational management of real estates on a specific territory requires spatial reconnaissance and evaluation of its economic, cultural, social and environmental resources. Sine data relating the space and its facilities will be collected in one central system it will become possible to make optimum decisions.

2.2. The procedure of the general taxation of real estates as a way to carry out a general price assessment of all real estates in order to determine their cadastre value

General taxation of real estates is brought down to price assessment covering, as a rule, a large number of real estates, as a result of which the cadastre value of real

estates is determined – being the basis for taxation of real estates with tax *ad valorem*. General taxation, so far, in Poland is regulated by the law on real estate management\(^3\) and by the ordinance relating the general taxation of real estates.\(^4\) The responsibility for it will be vested with the authorities keeping the real estates cadastre. Property experts will assess the value of sample real estates, not only in order to determine the cadastre value (the value closest to the market value), but also in order to drawn maps and taxation tables. Determination of the cadastre value of real estates can be imprecise due to the subjective and individual approach of an expert. Due to the unification of the general taxation process it will be possible to limit this factor partially.

When determining the cadastre value of a real estate one should pay attention to the essential elements which can prejudge the success of the accepted model. First, the principles of rationalization of the taxation system, i.e.: clarity (all participants in the system should understand its idea), universality (all persons who meet the conditions set out by the law consistently bear the tax liability), stability (liquidation of unnecessary fluctuations, considerate introduction of changes), predictability (participants in the system are aware of the financial consequences), honesty (precise determination of preferences, reducing the burden amount), justice (persons with similar income and property situation bear similar financial burdens).\(^5\) Secondly, the course of the price assessment process, i.e. the choice of the manner of the property price assessment and the applied taxation procedure tools (individual price assessment of real estates, taxation map, taxation table).

### 2.3. Cadastre system management and administration

Acceptance of the proper assessment model does not end the entire taxation process. Its regular updating is also required. In the future the cadastre value, due to various factors, will change after all. It should be expected that negligence in this area (lack or rare updating of the real estate value assessment, rare and ineffective control of the real estate condition) will decidedly limit the perspective of justice and effectiveness of tax *ad valorem*.\(^6\)

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\(^3\) Ustawa z dnia 21 sierpnia 1997 r., tekst jednolity, DzU 2010, nr 102, poz. 651 ze zm.

\(^4\) Rozporządzenie Rady Ministrów z dnia 29 czerwca 2005 r., DzU 2005, nr 131, poz. 1092.


\(^6\) This problem has appeared in some EU countries, among others in Germany and France. For example, in Germany the tax value of economic goods does not reflect properly the real value of a real estate. See more: Ch. Spengel, J.H. Heckemeyer, B. Zinn, *Reform der Grundsteuer: Ein Blick nach Europa*, “Der Betrieb” 2011, Nr 1.
The stage of management and administration of the cadastre system should take into account: the procedure of verifying the honesty and justice of price assessment, control of the real estate condition, updating of the real estate value (current, the so-called additional and consecutive general real estate price assessments applied in a specific cycle). Inadequate solution of this problem would not be without influence mainly on the non-fiscal consequences of the reform (doubts relating just distribution of tax burdens, relating the tax amount with the inadequate real estate value, negative influence on stimulation of an economically effective management and use of real estate and on the rationalization of the spatial structure of cities and villages).

2.4. The scope of the communes’ tax autonomy

Application of the tax ad valorem model means not only change of the calculation (the value criterion of the measurement), but also the issue of the rights to shape the tax construction elements. Local government units, as it is in the present law regulations, should be entitled to define tax rates and the catalogue of the possible tax relief and exemptions.

3. Methods of determining the cadastre value of real estates

The cadastre value determined in the process of the general taxation is one of the many indications of the economic value. It is not equivalent to the market value of a real estate, although it should be close to it. A key issue of the general taxation is a sample real estate which, as a taxation unit, should include characteristic features and the average parameters of the features typical for a specific type of real estate in a specific taxation zone. On the basis of the sample real estates the unit value of a real estate and of its components will be calculated. In the case of each taxation zone, the unit value of 1m$^2$ of the taxation unit area of which the sample real estate is composed, will be determined.

The unit values of the land and the land components presented in the taxation map and in the taxation tables depend on specific characteristic features indicated by the legislator. In the case of a developed land or land destined for building development, land destined for purposes other than agriculture and forests, these features are: location, destination in the local development plan, or the manner of use in case of absence of such plan, technical infrastructure, development status, soil class, shown in the real estate cadastre. In the case of agricultural and forest land: location, type
of land, technical infrastructure used for agricultural or forest production, soil class. In the case of buildings: location, type of building, manner of use, indoor installations, technical data in the meaning of the real estate cadastre, degree of building wear. In the case of premises: location in a building, type of the premises, manner of use, indoor installations, degree of the premises wear.

The cadastre value of a real estate consisting of land and land components can be recorded as:

$$W_K = W_jG \cdot P_G + \sum W_{jcsG} \cdot P_{csG},$$

where: $W_{jG}$ – unit value of land (taxation maps); $P_G$ – land area; $W_{jcsG}$ – unit value of the land components (taxation tables); $P_{csG}$ – area of the land components.

Real estate assessment for tax purposes should be carried out in a mass way. Determination of the cadastre value for the needs of the tax on real estate, due to a very large number of the assessed real estates (tens of millions of real estates), within a relatively short time and with application of a uniform approach should have exactly this character. Such assessment will be possible only through mathematical modeling of the real estate value. For this modeling sample surveys, methods of mathematical statistics and econometric theory will be used. Algorithmization of the assessment process requires relevant database (sufficiently large and the relationships between bases containing map and table data), and also access to electronic calculation techniques.

So, special role in the general taxation of real estates is played by the applied algorithms of mass assessment. First of all, we should say, what Z. Adamczewski emphasizes, that the applied algorithm should be an unambiguous and sufficiently detailed description of the action leading to the solution of a specific problem. Aware of the fact that the developed mass assessment algorithms can have better and worse forms, let us accept, following the above mentioned author, a catalogue of the criteria according to which the digital algorithm of real estates general taxation should be selected:

- The simplicity of the model but also its substantial correctness and adequacy with the factual conditions,

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8 Z. Adamczewski, Problemy identyfikacji obiektów i algorytmów powszechnej taksacji nieruchomości w Polsce, ”Przegląd Geodezyjny” 2005, nr 12.

9 Ibidem.
• Resistance to digital errors and restrictions of linear algebra,
• Easiness and low costs of collecting empirical data,
• Ability to assess strictly enough the precision of determination of the cadastre value,
• Easiness to perceive the algorithm by a citizen (which is brought down to the ability to provide simple explanations in the case of a complaint, whereas in the case of an educated citizen – to ensure repetition in person of the calculation of his/her real estate's cadastre value ability).

4. Problems concerning the practice of determining the rate of the tax \textit{ad valorem}

In the tax practice of a majority of the market economy states, proportional rates are applied. The mean tax rate is from 0,5\% to a few per cent of the real estate value. Introduction of a high percentage rate into the construction of the tax \textit{ad valorem} undoubtedly will affect disadvantageously the motivation of tax-payers to increase the taxable base (to improve the condition of the real estate) and to develop their business activity.

Special attention should be paid to the issue of the possible tariff variation depending on the type, destination and location of a specific real estate. For example, whether real estates related with business activity should be burdened with higher tax rates than other real estates. Decidedly higher taxation on business real estates implies certain doubts relating the economic effectiveness and justice. A key point of this controversy is whether it is possible to meet the criterion of effectiveness of local payments if payments consumed by the owners of the housing sector will be subsided mainly from the taxes burdening business real estates. Referring to the article by H. Kitchen,\textsuperscript{10} we shall present arguments supporting a negative reply to that question. Namely, the payments level in every administrative district is defined, first of all, by the needs of the housing sector („inhabitants have the right to speak out”). This fact prejudges that the subsiding of services provided for its benefit causes that the tax rate will be lower than without subsidies and this entails excessive payments on the side of the local authorities. Referring to the second criterion, i.e. justice, it should be noticed that this criterion will not be met, either, if the beneficiaries of local payments are not fully burdened with their costs. In the American and Canadian literature relating this subject within the

last 20–30 years there were few empirical studies concerning the excessive taxation of the business real estates. All of them showed – quoting H. Kitchen – a characteristic thing: “business real estates made use of public payments to a lower degree than the housing sector, at the same time, paying higher taxes”\textsuperscript{11}

The supporters of higher taxation on real estates related with business activity justify it by saying that it is necessary because of cancellation of the obvious asymmetry of tax burdens. The arguments are as follows: since businesses can, in order to determine the taxable base for income tax purposes include the expenses incurred with the aim of achieving income in the costs of income generation (also taxes on property), and the owners who are inhabitants of housing real estates are deprived of such possibility, the need to prevent the phenomenon of lack of symmetry in tax burdens between these two categories of taxable real estates does require higher taxation on business real estates. Thus, let us make an attempt to determine whether really only in the case of businesses the economic taxable income, due to the above described mechanism of deduction of taxes on real estates from the taxable base for income tax purposes, is reduced. This trend of understanding and arguing was accepted by R. Boadway and H. Kitchen.\textsuperscript{12} From the analysis conducted by the authors the following conclusions follow: owners who are inhabitants do not need to add to the taxable base the hypothetic rent which they would be forced to pay were they not the owners of their real estates, neither – in a majority of countries – do they need to add the capitalized profits realized during the sale of the inhabited real estates. Thus, the effect of such exclusions is similar as in the case of businesses which can deduct taxes on real estates from the taxable income. A very important conclusion results from it for the tax practice: it is difficult to justify theoretically the higher rates of tax on real estates for the commercial and industrial real estates.

There is still the problem of the possible exporting of burdens related to tax on commercial and industrial real estates. Because it is known that depending on the flexibility of the demand for the products exported from a specific administrative district the phenomenon of tax burdens export onto the residents of other districts is possible. Transfer of taxes to local government units can bring about various consequences, among others, the phenomenon of tax export. In the light of such diagnosis one should admit that if higher effective taxation on real estates related with business activity will indeed lead to relatively higher sale prices of products and services exported from a specific administrative district to other districts, then the authorities of that local

\textsuperscript{11} Ibidem, p.10–11.

government will contribute to a transfer of a part of the burdens onto the residents of other districts. In reality, the degree of the tax-payers’ reaction to the amount of the tax rate depends on many factors. In practice, it is rather difficult to count that the entrepreneurs when making decisions on the location will only limit themselves to the amount of the tax on real estates – one of the elements of the costs of conducting business activity. If it were so, we would deal with a very strong concentration of businesses in the local government units which apply lower taxation. In this situation, it is justified to suppose that the entrepreneurs, when paying higher taxes on real estates for the very advantageous location, have benefits related to economic benefits created owing to such location. We should also pay attention to the fact that it will be possible to transfer the consequences of the higher taxation onto the consumers, lessees or employees. So, finally, we can expect a higher probability of export of the tax on real estate which can also lead to a disadvantageous allotment of resources.

In the context of the issue of effective use of the proportional rates in the role of a stimulator of business processes, we should also comment on the higher taxation on equity engaged in business real estates in relation to the capital invested in other production factors. Namely, reduction of tax burdens imposed on industrial real estates leads to a cancellation of the variation of the tax rates on tangible capital. Taking this into account it would be possible to diminish the disturbances of the market mechanism caused by the distorting taxes in the area of decisions relating the structure of the production factors applied by the entrepreneur, and by the same, obtaining of positive results in the form of the more advantageous allocation of the resources in the domestic economy.

It is enormously important to resolve who should define the rates of the tax on real estates and – in the case of indicating the local government authorities as the parties responsible for it – to determine whether the rates of tax on real estates should be limited. Assuming that the local government units should be treated as active entities of fiscal policy it should not be strange that one can support the solution aimed at strengthening of their financial independence. This will take place as a result of transfer of the right to determine own rates of tax income to relevant government levels, which means a strict relationship between the liability for the accumulated resources of public funds and rights to distribute them.

One of the most important problems related with the use of tax tools is the strength of their influence. Its expression for tax-payer is the scale of the financial benefits or discomfort. Thus, the possibility to apply by the local government variable rates of tax on real estates depending on the costs of provision of public services for the benefit of specific real estates (e.g. according to their type or location) is important. This, in turn, forces the necessity to undertake activities aimed at development of the
standards and costs of the services in the area of public utility. In this process one should take into account – which is declared by E. Denek – both the specific features of the service activity in meeting the needs of the community, and various types of features of the very service process not only according to fields of activity but also according to the components of such fields. The following arguments can be quoted to justify the attitude relating application of variable rates by the local government. First, in the case when their construction does enable to catch the variation in the use of public services depending on the type or the location of the real estate, it can be considered to be more just. Secondly, they are effective – however, it is necessary that their construction should reflect the costs of the provided public services. In such a case there are no motives as a result of which, in order to avoid tax burdens, the households and businesses would change their behaviour or location. Thirdly, the local government authorities in order to implement specific preferences, e.g. preferences relating the directions of shaping the rational spatial structure of cities, can use them for informed influencing the decisions of the local community.

Increase of the rights to shape the taxation tariff is related, however, with the risk of appearance or intensification of irrational attitudes of the local government units as a part of managing the public funds (wastefulness, unjustified excessive expenditures). The practice of the top-down limitation of the ability of the local government in the area of determination of the local tax rates is evaluated by the supporters of such limitations as one of the effective forms of rationalization of the public expenditures. There are very few results of the examinations relating the correlation between the top-down determined limit of the local tax rates and the amount of the local government’s expenditures. For example, examinations carried out in the United States do not provide the grounds to formulate unambiguous conclusions.

Thus the process of transfer of the rights to fully shape the tax rates to lower levels than the government level automatically brings about the problem of the liability for the shaping of own income potential of the Local Government Units (JST). Granting of such right to local government authorities alone does not necessary mean automatically the policy of excessive fiscality implemented by them. It is worth to notice that local authorities, feeling a strong pressure on the increase of expenditures, will be disposed to increase the amount of tax burdens, however, they should also take into account the consequences of such decisions. The usually non-consistent attitude

of tax-payers – electors is not meaningless, i.e. their minimum comprehension of the relationship between the expenditures level and the taxes amount (the following opinion is expressed: “taxes should be decreased decidedly and a majority of the budgetary expenditures, of course apart from the expenditures for administration, should be increased”). Pressure on decrease of taxes, however, is felt stronger. Lack of the response expected by the public can mean loss of power during the next elections for the local government. So, let us assume that just the local government authorities, due to thorough evaluation of the tax ability of tax-payers present on their area as well as the knowledge of the specific features of their area, should shape local taxes in a possibly most rational manner. This obviously would support the idea of rejection of any limits which in such a situation would only narrow the field of the decision-making by the local government through limitation of flexibility and financial independence in accumulating the public funds for the implementation of own tasks. It seems that more significance can be ascribed to a natural form of control which is a consequence of tax competition. A relatively large number of communes in Poland means that the local tax rates are determined in a competitive environment. Therefore, council of each commune, aware of the tax rates applicable in the neighboring communes will avoid considerable differences in rate amount. Concluding, one can form a view that the presented arguments supporting the top-down limitations of local tax rates are insufficient. However, this does not prejudge that the only entity responsible for the determination of local rates of taxes on property should be the local government authorities. It should be recognized that the rights of the local government to conduct independent financial economy cannot be treated in all circumstances as unlimited rights. I consider the rational limitation of local tax rates an example of such limitation made in a more general interest which, undoubtedly, the interest of the state is in an unitarian state (counteracting the phenomenon of increasing differences in the level of income of particular local government units in Poland).16

5. A summary

Conducting of a reform of real estates taxation in Poland should be considered a complex and difficult task. Calculation of the amount of tax ad valorem means the necessity to codify the manner of calculation of each real estate’s value. Thus the postulate of just taxation of real estates requires uniform assessments within each

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tax jurisdiction. Any departure from the principle of uniformity in the assessment of real estate value would lead to injustice and deformation of the local tax policy. For obvious reasons assessment of every real estate cannot be made by drawing of an appraisal report. It seems that it will be the most justified to use the procedure of general taxation on real estates in which the value will be determined on the basis of the value factors general for all real estates. However, the assessment of industrial real estate can pose a problem. Most frequently they are a very varied group due to variety and complexity of the land components.

A very important issue in the context of just and productive tax base is its timeliness. In order to ensure timeliness of the tax base, periodical assessments and their verifications should be conducted. Frequent assessment updating in general is evaluated positively in the context of justice, transparency and social approval for the tax base. However, it is not always cost-effective to increase the frequency of updating of the cadastre value because the costs of such procedure can be higher than the financial profits. In general, it seems reasonable that the assessment frequency cycle should be three to five years, whereas the time between the consecutive updatings of assessment value would be indexed respectively.

An overview of the issues related with the implementation of the tax on real estates proves that the success of its introduction will depend not only on the basic elements discussed above, i.e. effective system of the general real estate taxation and a well balanced taxation amount, but also on the social and economic conditions. Actually, changes should be spread in time (necessity to announce changes in advance) and legitimized in such a way as to enable tax-payers’ approval.

Also, we cannot omit discussion relating the transitory period which would allow tax-payers to adjust his/her assets to the new conditions. For example, persons with scarce financial resources and low current income, who for various (historical) reasons own real estates with the value assessed at a very high level, should have adequate time to make a decision whether they will be forced to sell their real estate and buy another one which they will be able to maintain. At this point we should also remember the conditions of the Polish real estate market. Therefore, I think that a few years of the adaptation period will be required (3–5 years) which will enable to observe certain justice standards underlined in this article.
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A Few Critical and Updating Remarks on the Arthur Lewis Theory of Development with Unlimited Supplies of Labour

Abstract

The aim of this paper is twofold. Firstly, we show Lewis’s groundbreaking concept of 1954. Secondly, we contribute relevant elements to the criticism of this concept and which are significant for contemporary Development Economics, which has not formulated a unique paradigm of pulling developing economies out of the poverty trap so far. Updating remarks on Lewis’s theory are focused on the following problems: population dynamics and economic growth; accumulation and depreciation of physical capital; the null consumption of capitalists; human capital accumulation, savings, growth and development; and the number of market contributors and their influence on the price mark-up. Critical and updating remarks concerning the Lewis model presented in this paper do not undermine the general conclusions, supplementing them, and incorporating this model into the contemporary exogenous growth theory.

Keywords: development economics, labour supply, subsistence sector, economic growth.

1 Although Lewis – according to the labour supply – uses an adjective “unlimited” it seems more reasonably to use the terms of “labour surplus” (comparatively: “labour force reserve”) because the subject of his paper are labour force reserves hidden (or: unused) in the subsistence (agriculture) sector of the economy.
Arthur Lewis's article entitled “Economic Development with Unlimited Supplies of Labour” of 1954 became one of the most recognized papers in Development Economics and deeply influenced this field in economics. This article should be reconsidered once again mainly due to Lewis’s contribution to the development of economics and the controversy that has been fueled in the researcher’s milieu.²

The aim of this paper is twofold. Firstly, it shows Lewis’s groundbreaking concept of 1954. Secondly, it contributes relevant elements to the criticism of this concept which do not undermine the timelessness of the author’s concept, but are significant for contemporary Development Economics, which has not formulated a unique paradigm of pulling developing economies out of the poverty trap so far. The paper is organized as follows. In the first section we briefly outline the historical background of different theories in Development Economics. Then we move onto critical arguments concerning the Lewis concept, and afterwards we present our own critical remarks.

1. The Lewis Concept within The Timeline of Arousing a New Area of Research – Development Economics

Collateral damage and physical capital pounding after World War II created a natural incentive for the preparation of recovery plans in Europe, as the continent suffered the warfare the most. The precursors of European recovery theories were P. Rosenstein-Rodan (the author of the ‘big push theory’) and K. Mandelbaum. Also in the following decades, as far as the process of decolonization advanced, there were attempts to formulate a strategy of economic policy that might be implemented in the developing Asian and African economies and make them reach their Balanced Growth Paths (or at least pulling them out of the poverty trap). The basic recommendation regarded the need of an introduction to the free market economy institutions because only this mechanism may guarantee an optimal (or close to optimal) allocation of the factors of production. Collaterally to the introduction of free market institutions, the main source of long run growth (and therefore development) was sought in the classical paradigm of savings, transfigured in investment, which should in turn enlarge the available stock of capital, which would increase the aggregate product. Interesting concepts of R. Nurkse (theory of sustainable development, 1953), H. Leibenstein (theory of critical effort, 1957), and H. Chenery (theory of double trap – low savings

² Lewis received the Nobel prize in Economics in 1979, sharing it with Theodore Schultz.
and investment, 1962) highlighted the indisputable role of savings (investment) in the process of economic development. Within these surroundings the Lewis concept is developed, that we outline briefly in the following section. However, we have to mention, that although the Lewis theory relates to the unlimited labour supply (surplus, reserve), we also find there the crucial role of savings and capital accumulation in holding the economic growth up. It enters therefore into a wide compilation of papers concerning the role of savings for economic growth and development.

The above cited papers formalised the inception of Development Economics, which may be perceived as both counterweight and addendum for the classical and neo-classical economics. Its main objection was a negation of the free market economy paradigm. It was claimed that this type of market is reserved only for already developed countries, and functions well only in those. Hence, in the developing countries the main type of management of the production and distribution is the non-market economy (command economy) or partial market economy. Therefore, it is not advisable to implement the same institutions and recommendations regarding the economic policy in developing countries, that already exist in developed economies. There was a need for a separate analysis of these two different economic mechanisms.

It is hard to categorise unambiguously the Lewis concept in the history of economic thought. It was firstly classified as a part of Development Economics. The date of this paper (1954) situates it within the time frame of the Keynesian school dominance, although – as the author accents in the introduction – “this essay is written in the classical tradition, making the classical assumption, and asking classical question.” During the reading one may get the impression, that the opening sentence is a kind of smokescreen. Although the Lewis concept indicates a lot of common denominators with the classical economics, it cannot be classified unambiguously to this school. For instance – according to the classical school – agriculture is perceived as the capitalist sector, because the farmer-capitalists lease the ground from landlords and employ a workforce. The landlords who rent the ground to farmer-capitalists obtain remuneration – after marginalistic revolution – according to the marginal productivity of the production factor. The farmers negotiate with hired workers the method of division of the generated product (after paying the rent back to landlords) between them.

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3 Due to the restricted volume of presented paper we cannot describe all the influential theories of development. It would have been recommended to pay closer attention to the following: theory of cumulative causation (Gunnar Myrdal), theory of development through international trade, and conditional convergence hypothesis. One should also not underestimate the role which human capital accumulation plays, i.e. the factor of development and growth theory that was overlooked for decades. The main contribution in this field may be connected with the paper of Mankiw, Romer i Weil (1992).

4 An interesting overview was given by Bernanke, Gürkaynak (2002).
Similarly – in the spirit of the classical school – the Lewis economy consists of two sectors (industrial and agricultural\textsuperscript{5}), but the second one is not the sector of farmer-capitalists. It is defined as a subsistence sector with two sets of subjects – landlords and workers, between whom the wages are negotiated. In the industrial sector the wages are higher, which encourages the agricultural workers to switch the workplace. Lewis showed special interest in moving from economic dualism (two extremely different sectors) to a homogenous economic organism in the spirit of S. Kuznets. He also assumed that a very important factor in the process of economic growth and development is technological progress. In his opinion economic development along with rising demand for food may be overcome by imports from abroad.

Lewis was not sure about the strong involvement of government in the process of development. He referred with disbelief to the concept of an unlimited state (\textit{all-powerful state}), whose aim would have been not only the creation of starting conditions for development but also the determination of demand for all (relatively: more) economic activity and produced goods. In his opinion, the most important factor of development was a strong private sector, that functions alongside the state sector. He also refused – which is a distinguishing feature for Development Economics – the neoclassical paradigm of full employment, market clearing conditions, perfect competition, and general equilibrium.

2. Unlimited Labour Supply as a Key to Development\textsuperscript{6}

At the very beginning of the article, Lewis emphasizes that the assumption of the presence of an unlimited labour supply is not fulfilled all over the world.\textsuperscript{7} For sure it should not be referred to already developed countries with an established market economy and highly productive agriculture, that nevertheless has a very small contribution to the aggregate production of this economy, but mainly to the developing

\textsuperscript{5} It has to be specified what exactly the subsistence sector is. Lewis defines it as an agricultural sector, but indeed it should be described as a sector of production to satisfy one’s own needs (there are no savings remaining). In the following sections we use the terms “subsistence” with “agriculture” interchangeably.

\textsuperscript{6} A comprehensive description of a long way to his paper one may find in Tignor i Tignor (2005). It is worth noting here, that the concept came into author’s mind during his walks in Bangkok. He discovered that relative prices of coffee and steel and the wealth and poverty of nations have the same background. It is only the neoclassical assumption of stable labour supply that has to be rejected. One receives the “unlimited” (surplus, reserve) labour supply, that sustains the wages at low levels, enabling cheap production of coffee and high profits in the industry. This leads to economic dualism of a country or the whole global economy, where one labour supply is a reserve for the second one.

\textsuperscript{7} But he seeks similarities to the 18\textsuperscript{th} century England, where the industrial revolution has started. In Lewis’s opinion it was possible mainly due to the unlimited labour supply in agriculture from which were outflows of workers to more productive (better paid) industry observed.
countries. The unlimited labour supply may be observed in those countries, where the population is relatively high in comparison to the aggregate capital stock and natural resources. Due to the shortage of capital goods, there exist sectors of the national economy, where the marginal productivity of labour is positive but infinitesimal (close to zero), zero, or even negative (e.g. agriculture). This phenomenon is observed not only in the subsistence sector, but also in the so called casual-job-sector (season and minor jobs). Lewis enumerates as examples: servants, longshoremen, short-haul carriers, luggage bearers, gardeners, and small shopkeepers – all of them earn a small amount of money, and their casual income does not come from permanent employment. Lewis states that – much like in agriculture – also in the sector of minor services it is advisable to reduce the number of employed (even to half) and move them to industry, without any losses in production.

The economy consists of two sectors (branches): industry and agriculture. In industry renewable capital is used in production (accumulation), and capitalists rent the capital and obtain in return the rent (remuneration). In agriculture, the farmers (peasants) generate the product using a traditional technology of production, without using the renewable capital, and do not pay for renting it. This sector is though not only constrained to peasants – it includes also craftsmen and minor service providers. In both sectors there may be basic foodstuff and production tools manufactured, but it is assumed that initially the majority of land is used as a production factor in agriculture and the manufacturing output stems mainly from the capitalist sector.

It is obvious that as a result of agrarian overpopulation, the main aim of functioning of agriculture is to serve as a reservoir of workforce for the industry. The

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8 In reference to shopkeepers, Lewis submits the following example. In densely populated societies (but also in cities that are local trade centres, e.g. in the Sub-Saharan Africa), the marketplaces crowded with stalls offer a wide variety of products. Every shopkeeper has a very low income from sales (it corresponds to the market competition where profits equal to zero). But if we reduce the number of shopkeepers, for the well-being of customers it might be neutral, or even positive, because the price mark-up might be lower.

9 The unlimited labour supply except for the above mentioned types of works relates also to women's work in the household (mothers and daughters), that might be produced better and/or cheaper due to economies of scale (specialization and labour division) and sold on the market or outsourced.

10 This clearly means that in agriculture there exists mass unemployment (hidden unemployment). In times of the Lewis paper it was a controversial issue, although already announced by J. Robinson in the 1930s. According to the UN definition, by hidden unemployment we define those, who are working freelance and are so numerous that in comparison to the available ground and capital stock which they possess, that moving part of them to work in other sectors of the economy would not affect the output generated in agriculture negatively (United Nations 1951).

11 This economy consists in fact of more than 2 sectors. Lewis depicts it in the following way: one economy consists of a large amount of small islands and on the each of them there are 2 sectors (e.g. an exclusive shop in the surroundings of shops offering products of low quality; one large plantation equipped with machines surrounded by little farms using basic tools; one highly recapitalized sector of the economy – mining, and the rest suffering from the lack of money). In the Lewis’ economy – which is remarkable for economic dualism – there are branches that are over-invested and under-invested.
GDP per capita in this sector is lower than that in industry because it is not powered by the use of capital, so it is reasonable to assume that this sector is unproductive (or at least of very low productivity). The profits made by capitalists are entirely saved (invested), so that the aggregate stock of capital is accumulated and enlarged. The more capital is accumulated in the industry, the faster labour demand rises for a labour force that may be taken out of the unproductive agriculture. Thus this pure absorption mechanism of unlimited labour supply, the aggregate output and GDP per capita in this economy are going to rise.

The remuneration in the Lewis economy can be explained as a wage equal to the subsistence minimum. Lewis called it wage at the subsistence level. The labour supply is therefore in surplus so long, as it exceeds the labour demand at the given level of remuneration. In industry, on the other hand, wages are set in the amount of the value of the output produced in agriculture plus commuting and dwelling costs. The Lewis argumentation is clear, convincing and intuitive: if the wages in both sectors were set equally, there would not be any incentives to migrate between sectors (from rural areas into cities). If the wage is higher that the equilibrium wage, it generates a positive difference between labour demand and labour supply, and thus creates a labour supply surplus. A good geometric illustration was proposed by Meier and Rauch (2005).

Figure 1. Unlimited Supplies of Labour in the Lewis economy

![Figure 1. Unlimited Supplies of Labour in the Lewis economy](source)


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12 We know otherwise that capital employs labour and not conversely.
In the figure above the subsistence sector is defined by letter A (agriculture), and industry – M (manufacturing). According to the law of diminishing marginal returns of labour, the employment both in agriculture and manufacturing is rising until it reaches the value of the marginal product of labour equal to the wages, w. The slope of VMPLA-curve depends on the technology of production in this sector (i.e. production function) and the relation of soil and labour supply; in the industry the slope of VMPLM-curve is determined by respectively: technology of production and the relation of capital stock and labour supply. The section OAO_M denominates the total available labour supply in this economy. According to the law of diminishing marginal returns, the total employment in the subsistence sector will equal O_AL_A, and in manufacturing O_ML_M. The difference in the total available labour supply and total employment in both sectors – illustrated with the L_AL_M section – represents the reserved (surplus) labour supply.\(^{13}\) As one may suppose, due to economic development there will be an increase in labour demand that will shift the VMPLM-curve to the left, so that the gap between the total labour supply and its surplus will vanish.

According to the Lewis theory there are two phases of economic development. In the first one there exists a surplus in labour supply in the subsistence sector, whereas in manufacturing the aggregate employment is a function of the aggregate stock of capital. The rising investment requires the absorption of the labour force from the subsistence sector (reallocation). In the first phase GDP per capita in the subsistence sector determines the level of wages in manufacturing, which in turn influences the relation capital-labour in this branch. The GDP per capita (value of the marginal product of labour) generated in manufacturing passes the level of wages, and as a consequence, capitalists save (invest) the surplus (profits), raising the available stock of capital. Although the aggregate savings are very low in the first phase of economic development (mainly due to the low relation of profits to GDP in the capitalists’ sector), they rise along with the GDP growth and are relatively higher (in relation to GDP), and their rising share may be directly converted into investment. After this phase (when the labour surplus is already absorbed), the economy moves to the second stage of economic development in which it develops according to the well-known classic-neoclassical model. In general, the movement from the first to second stage is a classical view of growth.

In the second phase, the wages and the capital-labour relation are higher due to investment in the modernised economy. The pace of capital accumulation is higher

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\(^{13}\) Todaro (1997) defines the labour surplus as underemployment (not full employment), which he describes as a situation in which employees work in a lower time dimension than they may be prone to work.
than the pace of the fertility rate as long as the manufacturing experiences grow. This stage is called by the author as ‘neoclassical’, which can reasonably suggest that remunerations of capital and labour are equal to their marginal productivities. In the second phase of economic development, wages in the capitalists’ sector do not depend on the remuneration in the subsistence sector, and the marginal productivities are influenced by the shape of production function and the capital-labour ratio in the whole economy. The culmination of the switch between two phases of economic development is the absorption of the subsistence sector, which does not imply that farming stops.\textsuperscript{14} When the labour supply surplus has already been absorbed by the capitalists sector, the economic dualism (dichotomy) ceases and GDP and GDP per capita grow in the whole economy. In the modernized economy in the long run, GDP may be raised only due to the additional accumulation of capital or technological progress.\textsuperscript{15}

The Lewis’ concept was very quickly acknowledged as one of the most interesting theories of development. There are numerous empirical studies based on this theoretical framework and the expansion of it:

a) the broadening of the market of goods and the introduction of intersectoral terms of trade (reflected in the study of Fei et al., 1964),\textsuperscript{16}

b) the introduction of job reallocation between the sectors influenced not only by wage differentials but also by the probability of finding a job in the formal economy (Harris, Todaro, 1970).\textsuperscript{17}

In the second paper, the authors assume that with the exception of the subsistence sector the wage will be defined due to the interactions between the following institutions: labour unions and the government which set the minimum wage. This concept was fortified by Fields (1975).\textsuperscript{18} In his paper he claims that there exist three possibilities of the engagement of migrants from the subsistence sector: employment in the formal economy, explicit unemployment in cities or informal employment.

\textsuperscript{14} Lewis remarks that he does not identify the capitalists’ sector as solely the manufacturing (industry). If it was so (if the capitalist sector does not produce food at all, and only buys it from the subsistence sector, the increase in the demand for food – as a derivative of the absorption of labour supply surplus – will contribute to the increase in its price. This will negatively affect the profits (remarkable downturn), and that will lower the investment level in the economy and the growth will be inhibited.

\textsuperscript{15} Enke (1962) distinguishes one more – transient transition phase, so that his analysis consists of three stages of economic development.


in cities, which was already mentioned by Lewis in his paper. According to Fields (1975), after migrating to cities there will be nobody who will decide to be unemployed and relying solely on the system of social insurance that is under construction (or even not developed at all) or partially working. Instead of that, employees that are threatened by unemployment after migrating to cities, will rely on the help of their relatives living in rural areas and working in the subsistence sector, simultaneously working for a low value of their productivity in manufacturing, which means that the marginal product of their work will be infinitesimal. Such a situation one can observe in agriculture – certainly there will be a labour supply surplus. Kindleberger (1967)\textsuperscript{19} used the Lewis model successfully in describing the explanation of wage migration from North Africa to South Europe.

More recently Ercolani and Wei (2010) used the so called Lewis-Ranis-Fei model as a framework to investigate the Chinese dynamic growth between 1965–2002. They found that China’s economic growth is mainly attributable to the development of the non-agricultural (industrial and service) sector, driven by rapid labour migration and capital accumulation. The reallocation of labour away from agriculture has made a positive net contribution to China’s rapid economic growth by around 1.23 percent. The rise in the marginal productivity of agricultural labour indicates the absorption of redundant agricultural labour.

3. The Opponents’ Criticism

The Lewis article – of which the author was conscious before its publication – encountered arraignment. The issue of the existence the so called ‘unlimited supplies of labour’ defined as a stock of manpower with very low, infinitesimal or even negative marginal productivity of labour was questioned. In Lewis’s opinion, the labour supply might have been moved to the more productive branch of economy (industry, manufacturing), the result of which would be an increase in the aggregate GDP and GDP per capita in the whole economy (everyone will be better-off) and pushing it towards a long and stable growth path.

Schultz (1964)\textsuperscript{20} went on record saying that both the whole concept and its particular assumptions, are groundless. He instanced the case of India, where a withdrawal of a significant amount of manpower from agriculture and shifting it to industry


generated a decline in agricultural production. He negatively tested empirically the Lewis hypothesis (assumption) concerning the lack of loss by the absorption of the labour supply surplus. The polemic about Schultz’s criticism was raised by Sen.\(^{21}\) In his paper of 1967 he stated that people who keep on working in agriculture may work harder and – as a result of this – maintain the aggregate product on an unaltered level, mainly due to the division of labour or the introduction of new technology (specialization of production) – so the withdrawal of part of the labour supply may not necessarily lead to a decrease in production in this sector.

Bauer (1956)\(^{22}\) in his review of Lewis’s book “The Theory of Economic Growth” stated that Lewis depicted the dichotomic division of the national economy into two branches too firmly. In his view it is a mistake not to discern the permanent innovation of production observed in agriculture. Besides, in the concept of labour supply surplus, there is an incorporation of opportunity cost in agriculture (subsistence sector) missing, which may include the seasonal rise in earnings or different preferences according to the use of free time.

An interesting commentary was carried out by Enke (1962).\(^{23}\) He pointed out the inconsistency of Lewis’s reasoning deduction. He evokes Lewis’s reasoning, according to which the product generated at the subsistence level is constant. That in turn indicates the null marginal productivity of labour in this sector (which Lewis did not indicate). Lewis also highlights that working in this sector brings infinitesimal (but positive, slightly above zero), null or even a negative marginal product. This inconsistency may be – according to Enke – explained in the following way: if we assume that the number of hours worked by an adolescent in the subsistence sector is changing inversely to changes in the amount of manpower, one may show that the relation of one peasant’s marginal product to his average product may be very low (infinitesimal) or even lower than the relation of the marginal product of one hour worked on the average product.\(^{24}\) When the economy is going to absorb the subsistence sector, its production has to diminish.\(^{25}\)


\(^{24}\) Lewis had been referring to this argument for a couple of years and finally stressed that his inexactness was misunderstood. His aim was to distinguish between the marginal product of one hour worked and marginal product of one worker.

\(^{25}\) The last worker who will operate on the very large ground, will have significant and positive marginal product of his labour.
There is something more interesting regarding the marginal product of labour. If the wage migration to cities (development centres of manufacturing) leads to the depletion of maintained people in the subsistence sector and an increase in the supply of land (in per capita units), the marginal product of one worker should rise and the aggregate product in this sector cannot be constant. Besides, it is the relation of the marginal average production of one worker in the subsistence sector that matters. If we assume, for instance, that there are three people dependent on one worker, the product generated by him is four times larger than his personal consumption. Therefore the wage migration is possible, because it diminishes the generated product only remotely. Furthermore, wage emigration will contribute to the increase in marginal production above the average individual consumption. Therefore it is more profitable to maintain the worker in the subsistence sector because it will increase the production more than the value of the production arising in the form of consumption. Emigration will be profitable only when in manufacturing the net wage (the gross wage less commuting costs or living costs at home) will be at least equal to the marginal product of an emigrant worker in the second sector.

According to Enke, the labour supply does not necessarily have to ‘run away’ from the subsistence sector to – concentrated mainly in cities – manufacturing. The only condition is to recapitalize the subsistence sector, simply there – equip the peasants with the appropriate tools. To ensure economic development and to sustain it, it is necessary to redeploy the labour supply surplus to manufacturing, but simultaneously recapitalize the subsistence sector so that it is possible to modernize it and with a lower number of peasants employed there to maintain or – in the small closed economy – to increase the product generated there. Besides, after the reallocation of the labour surplus to manufacturing there is a need to increase the production of the consumables, because those who have remained in the subsistence sector reflect the propensity to consume more food than they are able to produce, and if additionally the economy is closed, the rising demand for consumables submitted by manufacturing will contribute to the increase in wages paid in the subsistence sector and the move of price relation between food and capital goods on the minus side of manufacturing.

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26 One may assume that after the migration of a worker (the sole wage-earner, breadwinner), the remaining members of the family divide the work between themselves, which in fact is equivalent to working on average more hours yearly, striving to keep the generated product unchanged.

27 Besides the expected wage in manufacturing, it is the higher of two values: consumption in the subsistence sector plus living costs in cities and the value of the marginal product of labour in this sector.

In this section we will refer to a few issues, that were unsaid or simplified in Lewis's original paper (due to which the model became more clear in its logical order), or just unexplained then.

4.1. Population and Growth

In Lewis’s opinion, demography does not explain why changes in birth rate relate to the process of economic development. The death rate (mortality rate) diminishes with economic development due to well known reasons (a dense transport network enables the development of health care and guarantees prevention from epidemic and common illnesses; increase in the quality of food stuffs and changes in the lifestyle positively affect the average length of life; the improvement of sanitary conditions and access to water). The puzzle of the fall in birth rate along with the increase in wealth was unriddled by van de Kaa (1987) and Lesthaeghe (1991). They proved that the fall in the birth rate is determined by changes in mentality reflected in observable changes in preferences (most of all in the self-realization need). The formulated postulates were named the theory of second demographic transition. One may summarize them in four following points.

1. Changes in fertility are generated by: delay in the decision making process concerning marriage, the increase in the number of informal relations, and the rise in the number of divorces.
2. The age of a mother bearing the child for the first time rose remarkably and there is an increase in the number of children born in informal relations.
3. The decrease in the fertility rate is an effect of a move from preventative contraception to conscious procreation, which was enabled by making contraceptives easily available.

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29 In literature one may find also the theory of the first demographic transition (van de Kaa, 1987), according to which the number of children born declines (and the death rate of the total population rises) with economic development because of better access to public health care institutions and conscious contraception. Most of the developed countries find themselves in the last phase – demographic regress, which means that in the same reference period there are more people dying than children being born, so the number of the population declines.
4. Changes in the fertility model were induced by the prolongation of the average length of a human’s life from the subsistence frontier (characteristic to the primitive equilibrium) to the biological frontier.

4.2. The Null Consumption of Capitalists

The author in his model assumes that all profits generated in manufacturing are saved and all wages are consumed. Although this assumption is reductive, binding the model, it is hard to agree that capitalists spare all the income they receive. On the other hand, one may assume that capitalists consume only part of their incomes and the rest they allocate for investment. In case that the capitalists profits are – along with the increase of the aggregate product – more and more higher, and consumption remains stable, the amount of savings (the difference between the profits of rented capital and consumption) approaches the amount of profits. One may conclude therefore, that only in a few cases it is true that the capitalists profits are wholly saved. This generalization is groundless though.\footnote{The assumption of saving all profits from renting capital by capitalists would have been reasonable (although will be exposed to criticism) in the free market (prosperous) economy.} If we moderate his assumption in the following way, we may without any loss prove that the economy will be developing despite the profit consumption by capitalists. Of course economic development will be slower, because the amount of profits earned by capitalists (the ABC area in Fig. 1) will in fact be lower than defined by Lewis.

4.3. Accumulation and Depreciation of Physical Capital

Similarly the assumption of physical capital, which is not accumulated in the subsistence sector and only in manufacturing, because all investment is made only in this sector. Both assumptions are not reflected in the empirical data and are only simplifications. If we assume that physical capital is given also in the subsistence sector – holding that it is the subject of depreciation instead of accumulation (e.g. agricultural tools) – we challenge the definition of the manufacturing sector provided by Lewis, but the proposed model seems to be more suitable and realistic. Furthermore, we do still have two production sectors in the economy, but in one of them (manufacturing), physical capital is both depreciated and accumulated; in the second one (subsistence, agriculture) – only depreciated. This spin of the economy approaches it to the observable functioning of the subsistence sector both in under-
developed and developing countries. The introduction of the depreciation process naturally leads to the weakening of the development process.

4.4. Human Capital, Costs, and Profits

Finally one can hardly agree with the lack of the incorporation of human capital into the theoretical framework, perceived as a necessity of retraining the workers that move from the subsistence to the manufacturing sector. The lack of this type of capital leads to the misperception of the production process in manufacturing, which is – in relation to agriculture – a technologically advanced sector of production. The absorption of the labour supply surplus though requires its retraining, which in fact translates into an increase in labour costs resulting in the decrease of the capitalists profits. This in turn influences the growth rate negatively (similarly as in the above mentioned remarks). If the retraining costs exceeded the value of the capitalists profits, the economy instead of experiencing development would have been affected by economic regress. Therefore it may result in the fact that the labour supply surplus instead of being a development engine will be the source of economic regress.

4.5. The Case of a Number of Market Contributors and the Lowering of the Price Mark-up

Lewis cites an example of a local bazaar in a town, where every tradesman receives a very low income, which in fact means that working conditions of this local market are close to perfect competition. He additionally claims that if the number of stalls was reduced (e.g. as a result of the absorption the labour surplus from subsistence sector), for the consumer’s wealth it would be neutral or they even may gain from it, because the price mark-up may have been lowered. It is hard to agree with this reasoning. The lower is the number of market contributors, the lower the wealth of consumers will be (with regard to situation of the infinite number of contributors). A small number of contributors, to increase the gained profits, may introduce very high price mark-ups, lead to price fixing or market segmentation according to differences in price elasticities of demand on different sub-markets. It is a heroic assumption to claim that a lower number of tradesmen will behave altruistically and do not leap at the opportunity to increase gained profits (lowering the consumers’ surplus) through the price increase.
4.6. Savings, Growth and Development

Lewis states that people do not save due to the low relation of the capitalist sector to the aggregate GDP and not due to the lack of opportunity or income to be saved. If the manufacturing sector was larger, the profits gained by capitalists would have been a larger share in the output generated in this economy, so the aggregate savings (and therefore investment) would have been – relatively to output – larger. But there arises one more question concerning the engine of the manufacturing sector’s growth. This sector is developing because of capital accumulation, which is derivative of the amount of profits gained by capitalists in manufacturing. According to Lewis, the assumption that capitalists do not consume but save the profits earned (which in fact means that the savings rate is equal to one), means that the main engine of GDP growth are savings (precisely: the accumulated capital), that in turn depend on the generated GDP. In Lewis's opinion savings increase the output and output increases savings – there occurs something that we may define as “economic growth perpetuum mobile”. This argumentation is not satisfactory though, because Lewis does not define the incentive which is responsible for the switch between one phase of development to another (the factor responsible for the absorption of the labour supply surplus). In the theory of Lewis, the possibility of steering the savings rate is excluded, unlike in exogenous growth models, that assume that the savings rate is lower than one (non-zero consumption), owing to which one may manipulate it to accelerate the growth rate temporarily, to increase the equilibrium level of GDP per capita, and to maximise the level of consumption. It is more reasonable to assume (as in (b)) that capitalists do not save all but a significant part of the profits they gain, which means that the savings rate is lower than one and it is possible to steer this parameter. Raising the savings rate in manufacturing, capitalists may increase the aggregate investment, which in turn may increase the aggregate output in the economy. Changes in the savings rate therefore would influence economic growth and development.

31 Larger means the larger value of product generated there in relation to the aggregate GDP.
32 Lewis finds that to move the labour supply surplus from the subsistence to the manufacturing sector, wages in the second branch have to be at most 30 per cent higher than in agriculture. The absorption of the labour supply surplus depends on the labour demand increase in manufacturing, which in turn depends on the potential increase in capitalists profits, which are defined as a difference between marginal labour productivity and wages in this sector. An increase in savings will require a faster productivity growth than the growth of wages.
5. Concluding Remark

Almost sixty years after the release of the Lewis’s seminal paper, the model proposed by him does not lose on topicality. The hypothesis of labour supply surplus existence seems to be confirmed in highly populated countries (e.g. China P.R., India, and Bangladesh). The existence of a dual economy is observed in reference to the less populated countries of Central and/or Sub-Saharan Africa. Bourguignon-Morrison (1995) highlights the relevance of the concept of dualism and explains how it can be used to explain the observable economic divergence. Moreover, the persistence of a dual economy with low wages in the presence of labour supply surplus may lead to an increase in the stock of savings and/or in savings rate, and hence – to economic growth and development.

Critical and updating remarks concerning the Lewis model of development under ‘unlimited labour supply’ presented in the following paper do not undermine the general conclusions, supplementing them, and incorporating this model into the contemporary exogenous growth theory.

References


