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MOGUĆNOST PRIMENE GRAHAMOVOG POKAZATELJA NA BEOGRADSKOJ BERZI

Rezime

Fundamentalna analiza predstavlja analizu relevantnih faktora za procenu vrednosti akcija na nivou grana delatnosti i kompanijskom nivou u cilju utvrđivanja unutrašnje vrednosti akcija, tj. da li su akcije potcenjene ili precenjene. Graham je kombinacijom svog iskustva i znanja razvio principe koji danas predstavljaju osnovu prilikom fundamentalnog vrednovanja kompanija. Jedan od Grahamovih predloga je da se kod selekcije akcija služi pokazateljem da iznos koji se dobije množenjem odnosa tržišne cene i zarade po dionici i odnosa tržišne cene i knjigovodstvene cene akcije treba da bude manji od 22,5 kako bi akcija bila privlačna za kupovinu. Na osnovu Grahamovog pokazatelja u nastavku rada će se analizirati da li se na Beogradskoj berzi skrivaju akcije koje su interesantne za kupovinu.

Ključne reči: P/E koeficijent, P/B koeficijent, Grahamov pokazatelj

JEL klasifikacija: G11, G12

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Summary

Fundamental analysis is an analysis of the factors relevant for valuation of the stocks on the level of the industrial branch and on the company level, with the objective of determining internal stock value, i.e. whether stock is undervalued or overvalued. Graham combined his experience and knowledge in order to develop principles that are deemed today to be the basis for fundamental valuation of companies. One of Graham's proposals in selecting stocks is to use that indicator which shows that the sum obtained by multiplying price-to-earning per share ratio with the price-to-book ratio is lower than 22.5 in order to make that share attractive for purchase. On the basis of Graham Indicator, this paper will also analyze whether there are stocks traded on the Belgrade Stock Exchange which are out of sight yet interesting for purchase.

Key words: P/E ratio, P/B ratio, Graham Indicator

JEL Classification: G11, G12

OPTION FOR THE GRAHAM INDICATOR APPLICATION ON THE BELGRADE STOCK EXCHANGE

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Uvod

Jedno od najvažnijih dostignuća u razvoju aktivnog upravljanja portfoliom u poslednjih nekoliko godina predstavlja kreiranje portfolio strategija zasnovanih na vrednosti (engl. *value investing*) odnosno rastu orjentisanom investiranju (engl. *growth investing*) u hartije od vrednosti. Razlika između vrednosti orjentisanog investiranja i rastu orjentisanog investiranja najbolje se može definisati na osnovu razlike u fokusu interesa menadžera jednog, odnosno drugog investicionog stila. Dominantnu distinkciju među njima predstavlja *ugao posmatranja* P/E racia, odnosno njegovih komponenti - cene i zarade po akciji (EPS).

Zarada po akciji (EPS) može se računati prema tekućim kao i prema budućim performansama kompanije. U principu rastu - orjentisan investitor će se fokusirati na: (1) EPS komponentu P/E racia i njene ekonomske determinante; (2) nastojati da u portfolio uključi akcije onih kompanija kod kojih očekuje brz rast EPS-a; (3) pretpostaviti da će P/E racio ostati konstantan na kratak rok, implicirajući rast cena tih akcija kao rezultat realizacije očekivanja u rastu prihoda kompanije. Nasuprot rastu - orjentisanog investitora, vrednosno orjentisani investitor će: (1) zanemariti tekuće prihode, odnosno fundamentalno ekonomske razloge i (2) pretpostaviti da je P/E racio ispod ravnotežnog nivoa, i da će tržište to ispraviti rastom cene akcije sa malim promenama u prihodima.

Dakle, rastu - orjentisani investitor usmeren je na tekuće i buduće performanse kompanije, sa malom pažnjom na cenovno vrednovanje akcije, dok je vrednosno orjentisani investitor usmeren upravo ka ceni akcije, predviđajući tržišnu korekciju i popravljajući fundamentalnih performansi kompanije. Kako je sasvim jasna konceptualna razlika između ova dva investiciona stila u praksi nije uvek jednostavno klasifikovati pojedinačnu akciju kao stvarno atraktivnu jednom ili drugim stilu investitora. Stoga, u tom slučaju u velikoj meri mogu pomoći upravo finansijski indikatori kao što su P/E, P/B koeficijenti, dividendni prinos, stopa rasta

EPS-a. Njihovom analizom uspešno možemo dopuniti detaljniju analizu vrednovanja hartija od vrednosti kompanije.

Graham je smatrao da se pažljivom analizom finansijskih izvještaja mogu otkriti potcenjene akcije. Tokom godina je utvrdio veliki broj različitih pravila za određivanje najznačajnijih finansijskih pokazatelja i ključnih vrednosti na osnovu kojih se može proceniti da li je akcija potcenjena. Knjiga je kroz mnoga izdanja imala značajan uticaj na stručnu javnost za investiranje. Dakle, bila je toliko uticajna i uspešna da su Grahamove tehnike postale opšteprihvaćene pa se pomoću njih više nisu mogle pronaći povoljne prilike za investiranje. Svoju drugu knjigu *Inteligentni investitor* (engl. *The intelligent investor*) dopunio je i izradio 1949. godine, te prema rečima Warrena Buffeta ona se smatra najboljom knjigom o ulaganjima koje je ikada napisana. U svojim knjigama do u detalja je razvio i objasnio maržu sigurnosti i koncept investiranja.

Model kapitalizacije dobiti i dividendi razvili su američki ekonomisti i investitori *Benjamin Graham* i *David LeFevre Dodd* i objavili ga u čuvenoj knjizi "*Security Analysis*" 1934. godine. Kao osnov analize poslužilo im je kretanje cena akcija.¹ Vrednost običnih akcija predstavljena je u ovom modelu kao proizvod sume dividendi po akciji i jedne trećine zarada po akciji sa normalnim odnosom cena i zarada. Ovaj model matematički se može izraziti pomoću sledeće formule:

$$P_0 = \left(D_0 + \frac{1}{3} EPS \right) \frac{P}{EPS} \quad (1)$$

Modelom kapitalizacije dobiti i dividendi se nastoji uključiti u vrednovanje potencijalni rast preduzeća zadržavanjem dela ostvarenih zarada. Model se temelji na sledećem pravilu: *Dve trećine ostvarenih zarada nakon odbijanja kamata i poreza u zreloom preduzeću treba plasirati njegovim vlasnicima u novčanim dividendama, dok preostalu jednu trećinu treba zadržati za investiranje.* Isto je tako moguće prilagođavanje modela, tako da se umesto stope reinvestiranja od jedne trećine uzme neki drugi procenat recimo 40% ili 50% od

¹ Njihove ideje je dalje razvio *John Burr Williams* 1938. godine u svojoj knjizi "*Teorija investicione vrednosti*". On je predložio da se vrednost akcije posmatra kao sadašnja vrednost budućih dividendi.

Introduction

One of the most important achievements in the development of active portfolio management over the last several years is the creation of the value investing portfolio strategies, i.e. growth investing in securities. The difference between value investing and growth investing may best be defined on the basis of the difference in the focus of interest of one or the other investment style manager. The dominant distinction between them is the *angle of perception* of the P/E ratio, i.e. its components - price, and earning per share (EPS).

Earning per share (EPS) may be calculated according to the current but also future performances of a company. In principle, growth investor will be focused on the following: (1) EPS component of the P/E ratio and its economic determinants; (2) he will strive to include in his portfolio stocks of such companies that are expected to have a fast growth of the EPS; (3) he will assume that the P/E ratio will remain constant over a short-term, implicating price growth of this stock as a result of company earnings growth expectations. Opposite to the growth investor, value investor will: (1) disregard current earnings, i.e. fundamental economic reasons, and (2) will assume that the P/E ratio is below balancing level, and that the market will rectify this through stock price growth, with slight change in earnings.

Hence, the growth investor is focused on both current and future company performances, with little attention paid to the price valuation of stock, while the value investor will be focused actually on the price of stock, forecasting market correction and improvement of fundamental company performances. Although there is completely clear conceptual difference between these two investment styles, in actual practice it is not always easy to classify individual stock as truly attractive to one or the other investment style. In this case what can greatly be of help are actually financial indicators, such as the P/E, P/B ratios, earnings from dividends, EPS

growth rate. Their analysis will help us to complete successfully a detailed analysis of the company stock valuation.

Graham argued that with a careful analysis of financial reports we can discover underrated shares. Over the years, he determined a large number of different rules for determination of the most significant financial indicators and the key values, on the basis of which it is possible to evaluate whether a share is underrated or not. His book through many editions had an important impact on the professional investment public. It was so influential and successful that Graham's techniques became generally recognised, and without them it was no longer possible to find good investment opportunities. His second book, *The Intelligent Investor*, was supplemented and published in 1949, and was described by Warren Buffett as "by far the best book on investing ever written". In his books, Graham developed in great detail and explained the safety margin and the investment concept.

Profit and dividend capitalisation model was developed by the American economists and investors *Benjamin Graham* and *David Lefebvre Dodd*, and published in their famous book "*Security Analysis*" in 1934. The basis of their analysis was the stock prices movement.¹ The value of common shares was presented in this model as the product of the sum of dividends per share and one third of earnings per share, under normal price-to-earning ratio. This model can be mathematically expressed by the following equation:

$$P_0 = \left(D_0 + \frac{1}{3} EPS \right) \frac{P}{EPS} \quad (1)$$

Profit and dividends capitalisation model is intended to include in the valuation also the potential company growth by retaining one part of earnings made. Model is based on the following rule: "*Two thirds of earnings made, after deduction of interest and taxes, in a mature company should be placed to their owners in monetary dividends, while the remaining one third should be retained for investment.*" It is also possible to adjust

¹ Their ideas were further developed by *John Burr Williams* in the year 1938, in his book "*Investment Value Theory*". He proposed that the stock value be perceived as the present value of future dividends.

zarada, a sve zavisno od industrije i kompanije i sve u cilju što realnijeg vrednovanja. Grahamova formula kod izbora podcenjenih akcija je izbor zadovoljavajuće marže sigurnosti, odnosno iznos koji se dobija množenjem odnosa tržišne cene i zarade po akciji, kao i odnosa tržišne cene i knjigovodstvene cene akcije koji treba biti manji od 22,5, kako bi akcije bile privlačne za investiranje. Na osnovu datog u radu ćemo testirati da li na Beogradskoj berzi postoje akcije koje su atraktivne za potencijalne i stvarne investitore, tj. koje su podcenjene.

Tržište kapitala u Srbiji i selekciju akcija u sastavu berzanskog indeksa BELEXline

Na tržištu hartija od vrednosti u Republici Srbiji u periodu januar - decembar 2011. godine na berzi i van berze ostvarena je ukupna vrednost prometa u iznosu od 2.589,0 mlrd. dinara, što je za 7,7% manji promet u odnosu na ukupnu ostvarenu vrednost prometa u istom periodu prethodne godine (2.803,7 mlrd. dinara). Ukupno ostvarena vrednost prometa akcija na berzi i van berze za posmatrani period iznosila je 34,0 mlrd. dinara ili 333,4 miliona evra, što je za 1,6 puta veća u odnosu na ostvarenu vrednost prethodne godine. Tržišna kapitalizacija na berzanskom tržištu akcija na dan 31. decembar 2011. iznosila je 777,7 mlrd. dinara ili 7,43 mlrd. evra, što predstavlja povećanje listiranih akcionarskih društava u posmatranom periodu za 0,7%.

Struktura prometa u poslednjih pet godina na najbolji način pokazuje koliko su snažni efekti svetske finansijske krize uticali na tržište kapitala u Srbiji. Ako se može pronaći element za pozitivno očekivanje to je svakako bolji rezultat u prometu u odnosu na 2010. godinu, kao i značajan porast transakcija u poslednje dve godine. Sa očekivanjem uključenjem akcija Telekoma Srbije u 2012. godini realno je očekivati kontinuirano visok broj transakcija, ali i doprinos razvoju Prime Marketa i listinga Beogradske berze.

U ovom radu prilikom selekcije akcija koje će se analizirati, kao uslov uzeto je da se

pojedina akcija u 2011. godini nalazila unutar berzanskog indeksa BELEXline. Takođe, kao sledeći kriteriji je uzet da faktor FFC za pojedinu akciju iznosi više od 50%.

BELEXline je indeks ponderisan tržišnom kapitalizacijom koja se nalazi u slobodnom prometu (engl. *free float*), koji se ne prilagođava za isplaćene dividende i nije zaštićen od dilutacionog efekta, koji se javlja usled isplate dividendi. BELEXline se sastoji od akcija kojima se trguje na tržištima Beogradske berze i koje su ispunile kriterijum za ulazak u indeksnu korpu. Težina komponenti u indeksu je ograničena na maksimalnih 10% u odnosu na free - float tržišnu kapitalizaciju indeksa. BELEXline je dizajniran kao osnovni *benchmark* za praćenje kretanja cena na srpskom tržištu kapitala. Dakle, BELEXline je dizajniran na način koji najbolje opisuje ukupna *broad market* tržišna kretanja i koji može služiti kao podloga za kreiranje strukturiranih proizvoda i derivata na domaćem i inostranom tržištu. Cena akcije koja se koristi za izračunavanje indeksa BELEXline je prevladavajuća, tj. cena zatvaranja koja je formirana u trgovanju akcijama koje čine indeksnu korpu.

Prilikom izračunavanja vrednosti indeksa u bilo kojem trenutku relevantna količina akcija određenog izdavaoca koja se koristi prilikom računanja, obuhvata ukupan broj običnih akcija pomnožen *free float* faktorom (FFC) na dan poslednje revizije indeksne korpe. Free float faktor (FFC) je procenat akcija koji se nalaze u slobodnom prometu i koji je javno dostupan potencijalnim investitorima.² Pod pojmom akcija koje nisu u slobodnom prometu smatraju se akcije koje su u vlasništvu: (1) lica koja pojedinačno poseduju više od 5% akcija od ukupno izdatih akcija izdavaoca, izuzimajući akcije koje se nalaze u vlasništvu investicionih i penzionih fondova, društva za upravljanje fondovima, osiguravajućih društava, brokersko dilerskih društava i druge akcije na kastodi računima; (2) akcije koje poseduju međunarodne i strane organizacije i institucije za razvoj, ukoliko poseduju više 5% akcija od ukupno izdatih akcija izdavaoca; (3) akcije koje poseduje Republika Srbija, uključujući akcije koje poseduju organi, organizacije i ustanove osnovane posebnim

² FFC se dobija kada se od ukupnog broja akcija oduzmu akcije koje se nalaze u slobodnom prometu (engl. *non free float*)

the model, and instead of the reinvestment rate of one third, some other percentage may be used, for example 40% or 50% of earnings, depending on the industry and company, for purpose of a realistic valuation. Graham's equitation in the selection of underrated stocks is the selection of satisfactory safety margin, i.e. the amount which is obtained by multiplying price-to-earning ratio per share, and the price-to-book ratio of a share, that should be below 22.5, in order to make stocks attractive for investment. On the basis of the facts presented in this paper, we shall test whether there are stocks on the Belgrade Stock Exchange which are attractive for potential and real investors, i.e. stocks that are underrated.

Capital market in Serbia and selection of stocks within the stock exchange BELEXLine index

On the securities market of the Republic of Serbia, in the period January - December 2011, on the stock exchange and over-the-counter a total value of trading was made in the value of 2,589.0 billion dinars, which is for 7.7% lower turnover in respect to the total value of trading during the same period of the previous year (2,803.7 billion dinars). Total value of stocks traded on the stock exchange and over the counter, during the observed period amounted to 34.0 billion dinars or 333.4 million EUR, which was 1.6 times higher in respect to the value reached during the previous year. Market capitalisation on the stock marking trading in shares, as of 31 December 2011, reached 777.7 billion dinars or 7.43 billion EUR, or a growth of listed shareholding companies in the observed period of 0.7%.

The structure of turnover in the last five years is the best indicator of robust effects that the world financial crisis had on the capital market in Serbia. If an element may be found for some positive expectations this would certainly be a better result in trading than the one from 2010, and a significant growth of transactions during the last two years. With the anticipated inclusion of Telekom Serbia shares

in 2012, it is realistic to expect a continued high number of transactions, but also a boost to the development of the Prime Market and the Belgrade Stock Exchange listing.

In this paper, during the selection of stocks to be analysed, a requirement was for an individual share in 2011 to have been included in the stock exchange index BELEXLine. In addition, another criterion was for the factor FFC for individual share to be above 50%.

BELEXLine is an index weighted by market capitalisation which is in free float, which is not adjusted for dividends paid, and is not protected from diluting effect which appears when dividend is paid. BELEXLine consists of shares traded on the Belgrade Stock Exchange markets, and which have complied with the criteria for inclusion in the index basket. The weight of components in the index is limited to a maximum 10% in respect to the free float market index capitalisation. BELEXLine is designed as the basic benchmark for monitoring price movement on the Serbian capital market. Hence the BELEXLine is designed in the way which is the best description of the total broad market movements, and which may serve as a basis for creation of structured products and derivatives on both the domestic and the foreign market. The share price used for the BELEXLine index calculation is the prevailing one, i.e. the closing price which was formed during trading of shares making up the index basket.

In calculating the index value, at any given moment in time, the relevant quantity of shares of a certain issuer which is used in calculation covers the total number of common shares multiplied by the free float factor (FFC) on the day of the latest revision of the index basket. The free float factor (FFC) is the percentage of shares which are in free float and which is publicly accessible to potential investors.² The term 'non free float shares' designates those shares that are owned by the following: (1) persons who own individually more than 5% of shares from the total of shares issued by the issuer, with the exception of shares owned by investment and pension funds, funds management companies, insurance companies, brokerage and dealing

² FFC is obtained when from the total number of shares, those shares are subtracted which are non free float.

zakonima od strane Republike.

Bazni datum BELEXline indeksa je 30.09.2004. godine sa baznom vrednošću od 1.000 indeksnih poena, ukupne tržišne kapitalizacije 121.509.581.652,00 dinara. U baznom periodu definiše se vrednost indeksa na 1.000 indeksnih poena, a zatim ograničava uticaj pojedinih komponenti i ujedno definiše broj akcija sa kojima će svaki izdavalac pojedinačno učestvovati indeksnoj korpi. Indeksna korpa se sastoji od običnih akcija sa pravom glasa sa kojima se trguje na Beogradskoj berzi, pri čemu se izbor hartija zahteva na sledećim pokazateljima: (1) frekventnost u otkrivanju cene (cilj indeksa je da predstavi kretanje cena akcija kojima se trguje na najmanje 10% od ukupno zakazanih trgovanja u prethodnom kvartalu) i (2) free float tržišna kapitalizacija hartije (cilj indeksa je da predstavi kretanje što većeg procenta free float tržišne kapitalizacije akcija na Beogradskoj berzi).

Tokom prethodne godine kretanje oba indeksa Beogradske berze je bilo precizno podeljeno na dva gotovo identična perioda ali ipak suprotnih predznaka. Tokom prve polovine godine jasno je zabeležen period rasta, pri čemu je uzlazni trend kretanja cena pratio i ukupan rast trgovačkih aktivnosti i prometa. U periodu do 31.05.2011., kada su oba indeksa dostigla svoje maksimalne vrednosti i to: BELEX 15 na nivou od 828,79, a BELEXline 1.495,83 indeksna poena, prinosi indeksa su iznosili 27,16% odnosno 16,62% respektivno. Nakon dostizanja ovih maksimuma, nastupio je konstantan pad koji je potrajao do kraja kalendarske godine, gde su najniže vrednosti zabeležene tokom decembra 2011. godine. BELEX 15 je svoju najnižu vrednost zabeležio tokom trgovanja, tj. 15.12. kada se spustio na 484,03 poena, dok je opšti indeks BELEXline svoj minimum zabeležio dan ranije kada je upisana vrednost od 963,00 poena. U odnosu na 2010. godinu, kada su zabeležene minimalne oscilacije indeksa, tokom prošle godine raspon cena je bio izuzetno visok i iznosio je preko 40% za BELEX15, odnosno 36% za BELEXline.

Proračun odnosa između tržišne cene i zarade po akciji

Za akcije koje zadovoljavaju navedene

kriterije korišćeni su podaci iz finansijskih izveštaja za 2011. godinu. Neto finansijski rezultat za pojedino akcionarsko društvo podeljen je sa brojem izdatih akcija umanjenih za vlastite akcije i tako je dobijen pokazatelj zarade po akciji akcionarskog društva (engl. *Earning per share - EPS*). Na osnovu statističkih podataka Beogradske berze uzeta je zadnja tržišna cena pojedine akcije na dan 07.08.2012. godine. Ova dva pokazatelja stavljena su u odnos na način da je cena akcije u brojiocu a zarada po akciji u imeniocu i tako je dobijen odnos pojedinačne cene akcije i zarade po akciji (engl. *Price/Earning ratio - P/E*). Dobijeni podaci za akcije iz sastava berzanskog indeksa BELEXline prikazani su u tabeli br. 1. U skladu sa Grahamovim pravilima ovaj odnos kod ulaganja ne bi smeo prelaziti 15.

Tabela br. 1: Cene akcija, zarade po akciji i odnos cene i zarade

Simbol akcije	Cena akcije na dan 6.08.2012.	Zarada po akciji	P/E racio
AIKB	1.400,00	291,81	4,80
ENHL	436,00	27,94	16,11
JMBN	10.492,00	881,00	11,91
MTLC	1.685,00	398,81	4,24
UNBN	1.780,00	207,82	8,56
JESV	4.001,00	1.249,75	3,20
GMON	2.200,00	731,09	3,01
ALFA	5.993,00	2.749,31	2,18
PLNN	12.000,00	2.426,84	4,94
TIGR	290,00	70,99	4,11
INFM	2.250,00	14,12	159,33
JGPK	2.500,00	381,22	6,56
PLNM	700,00	80,84	8,66
BASB	898,00	2,82	319,01
RMBG	364,00	42,33	8,60
SMPO	190,00	37,83	5,02
TRBG	1.300,00	480,87	2,70
IRTL	270,00	17,45	15,47
TLFN	108,00	91,40	1,18
COKA	1.800,00	436,66	4,12

Izvor: <http://www.belex.rs/trgovanje/indeksi/belexline/korpa>
(Proračun autora)

companies, and other shares held on custody accounts; (2) shares owned by international and foreign organisations and development institutions, in case they own more than 5% of shares from the total amount of shares of the issuer; (3) shares owned by the Republic of Serbia, including shares owned by the authorities, organisations and institutions established under special laws of the Republic.

The base date for BELEXLine index is 30 September 2004, with the base value of 1,000 index points, and the total market capitalisation of 121,509,581,652.00 dinars. In the base period, index value is defined on 1,000 index points, and then the impact is limited of certain components, at the same time defining the number of shares with which every issuer individually will participate in the index basket. Index basket consists of common shares with voting right, traded on the Belgrade stock market, where the choice of shares is based on the following indicators: (1) price discovery frequency (index objective is to present share prices movement which are traded at not less than 10% of the total scheduled trading in the previous quarter; and (2) free float share market capitalisation (index objective is to present movement of as high as possible percentage of free float shares market capitalisation on the Belgrade Stock Exchange).

During the previous year, movement of both indexes on the Belgrade Stock Exchange was precisely divided into two almost identical periods, yet with opposite signs. During the first half of the year there was a clearly recorded period of growth, where the growing price movement trend was following also the total growth of trading activities and turnover. In the period up to 31 May 2011, when both indices reached their maximum values as follows: BELEX 15 on the level of 828.79, and

BELEXLine 1,495.83 index points, index yields amounted to 27.16% i.e. 16.62% respectively. Upon reaching this maximum values, a constant fall was to follow and it lasted up to the end of the calendar year, when the lowest values were recorded during December 2011. BELEX 15 recorded its lowest value during trading, i.e. on 15 December, when it fell to 484.03 points, while the general index BELEXLine recorded its minimum one day earlier, when the recorded value was 963.00 points. In respect to 2010, when minimal index oscillations were recorded, during the previous year the price range was extremely high and reached over 40% for BELEX 15, i.e. 36% for BELEXLine.

Calculation of the price-to-earning per share ratio

For those shares that comply with the above stated criteria, data was used from the financial report for 2011. Net financial result for an individual shareholding company was divided by the number of issued shares, decreased for equity shares and thus an indicator was obtained showing *Earning per Share - EPS* of the shareholding company. On the basis of statistical data of the Belgrade Stock Exchange, the last market price of an individual share was taken on the day of 7 August 2012. These two indicators were presented as a ratio by placing the share price in the numerator, and earning per share in the nominator, obtaining the individual share price and earning per share ratio: *Price/Earning ratio - P/E*. The received data on shares from the BELEXline stock exchange index are shown in Table 1 below. Under the Graham rules, this ratio in investments must not exceed 15.

Proračun odnosa tržišne i knjigovodstvene cene akcije

Nakon što su izračunati podaci o odnosu cene i zarade akcija iz sastava berzanskog indeksa BELEXline, na osnovu istih finansijskih izveštaja izračunavaju se i odnosi između tržišne i knjigovodstvene cene posmatranih akcija. Za cene akcije uzeti su berzanski podaci, dok je knjigovodstvena cena izračunata tako što su pozicije kapitala i rezervi iz bilansa posmatranih akcionarskih društava podeljene sa brojem izdatih akcija. Dakle, dati podaci su podeljeni i tako su dobijeni odnosi tržišne i knjigovodstvene cene akcija (engl. *Price/Book ratio* - P/B). Prema Grahamovim principima ovaj odnos za investitore ne bi smeo nikada preći 1,5.

Tabela br. 2: Odnos tržišne i knjigovodstvene cene akcija u sastavu indeksa BELEXine

Simbol akcije	Cena akcije na dan 7.08.2012.	Knjigovodstvena cena	P/B
AIKB	1.400,00	4.666,67	0,30
ENHL	436,00	703,23	0,62
JMBN	10.492,00	19.429,63	0,54
MTLC	1.685,00	2.632,81	0,64
UNBN	1.780,00	11.866,67	0,15
JESV	4.001,00	6.453,23	0,62
GMON	2.200,00	3.283,58	0,67
ALFA	5.993,00	23.050	0,26
PLNN	12.000,00	11.881,18	1,01
TIGR	290,00	1.705,88	0,17
INFM	2.250,00	5.232,55	0,43
JGPK	2.500,00	2.403,85	1,04
PLNM	700,00	3.888,88	0,18
BASB	898,00	1.448,39	0,62
RMBG	364,00	2.141,18	0,17
SMPO	190,00	6.333,34	0,03
TRBG	1.300,00	2.549,02	0,51
IRTL	270,00	1.687,50	0,16
TLFN	108,00	2.160,00	0,05
COKA	1.800,00	5.454,55	0,33

Izvor: <http://www.belex.rs/trgovanje/indeksi/belexline/korpa> (Proračun autora)

Proračun Grahamovog pokazatelja

Za proračun adekvatnog nivoa marže sigurnosti, tj. prostora između tržišne cene akcije i njene intristične vrednosti, za određenu akciju Graham je predložio jednostavan proračun i jednostavan način za utvrđivanje podcenjenosti akcije, tj. umnožak između odnosa tržišne cene akcije i zarade po akciji (P/E) kao i odnos tržišne cene i knjigovodstvene cene (P/B). Ako se uzmu referentni brojevi, tj. za odnos P/E iznosi 15, a za odnos P/B 1,5 i ako se sada pomnože ova dva referentna broja dolazi se do broja 22,5 što predstavlja graničnu vrednost za podcjenjene akcije. One akcije za koje navedeni pokazatelj ima vrednost ispod 22,5 trebale bi da daju dovoljnu maržu sigurnosti za investitore, i obrnuto, one akcije kod kojih je ovaj pokazatelj iznad 22,5 ne pružaju dovoljnu maržu sigurnosti i investitori ne bi trebali ulagati u takve akcije. Na osnovu datog može se izraziti formula za proračun intristične cene akcije:

$$\frac{P}{E} \times \frac{P}{B} = 22,5 \quad (2)$$

Na osnovu prethodne formule može se izračunati intristična vrednost akcije, pomoću sledeće formule:

$$P^2 = 22,5 \times E \times B \quad (3)$$

odnosno:

$$P = \sqrt{22,5 \times E \times B} \quad (4)$$

Proračun Grahamovog pokazatelja za akcije u sastavu berzanskog indeksa BELEXline kao i proračun njihove intristične vrednosti, kao i pokazatelja rasta ili pak pada tržišne cene u odnosu na intrističnu vrednost ilustruje tabela br. 3.

Table 1 Share price, earning per share, and Price/Earning ratio

Share symbol	Share price on 6.08.2012	Earning per Share	P/E ratio
AIKB	1.400,00	291,81	4,80
ENHL	436,00	27,94	16,11
JMBN	10.492,00	881,00	11,91
MTLC	1.685,00	398,81	4,24
UNBN	1.780,00	207,82	8,56
JESV	4.001,00	1.249,75	3,20
GMON	2.200,00	731,09	3,01
ALFA	5.993,00	2.749,31	2,18
PLNN	12.000,00	2.426,84	4,94
TIGR	290,00	70,99	4,11
INFM	2.250,00	14,12	159,33
JGPK	2.500,00	381,22	6,56
PLNM	700,00	80,84	8,66
BASB	898,00	2,82	319,01
RMBG	364,00	42,33	8,60
SMPO	190,00	37,83	5,02
TRBG	1.300,00	480,87	2,70
IRTL	270,00	17,45	15,47
TLFN	108,00	91,40	1,18
COKA	1.800,00	436,66	4,12

Source: <http://www.belex.rs/trgovanje/indeksi/belexline/korpa>
(Calculated by author)

Table 2 Price-to-book ratio of share prices within the BELEXLine index

Share symbol	Share price on 7.08.2012	Book price	P/B
AIKB	1.400,00	4.666,67	0,30
ENHL	436,00	703,23	0,62
JMBN	10.492,00	19.429,63	0,54
MTLC	1.685,00	2.632,81	0,64
UNBN	1.780,00	11.866,67	0,15
JESV	4.001,00	6.453,23	0,62
GMON	2.200,00	3.283,58	0,67
ALFA	5.993,00	23.050	0,26
PLNN	12.000,00	11.881,18	1,01
TIGR	290,00	1.705,88	0,17
INFM	2.250,00	5.232,55	0,43
JGPK	2.500,00	2.403,85	1,04
PLNM	700,00	3.888,88	0,18
BASB	898,00	1.448,39	0,62
RMBG	364,00	2.141,18	0,17
SMPO	190,00	6.333,34	0,03
TRBG	1.300,00	2.549,02	0,51
IRTL	270,00	1.687,50	0,16
TLFN	108,00	2.160,00	0,05
COKA	1.800,00	5.454,55	0,33

Source: <http://www.belex.rs/trgovanje/indeksi/belexline/korpa>
(Calculated by author)

Calculation of the price-to-book share price

After calculating data on the price/earning ratio for shares within the stock index BELEXLine, on the basis of the same financial report calculation is made of the price-to-book ratio of the observed shares. Share price data was taken from the stock exchange, while the book price was calculated by capital and reserves items in the balance sheets of the observed shareholding company and divided by the number of issued shares. Hence, the given data was divided and the market price and book price of shares was obtained - the *Price/Book ratio* - P/B. In line with the Graham principles this ratio for the investors should never exceed 1.5.

Graham Indicator calculation

For calculating an adequate level of safety margin, i.e. the space between a share market price and its intrinsic value for any given share, Graham proposed a simple calculation and a simple manner for determining whether a share is underrated, i.e. multiplier between the Price/Earning per share (P/E) ratio, and the Price/Book (P/B) ratio. If we are to take reference numbers, i.e. for the P/E ratio the figure 15, and for the P/B ratio 1.5, and if we are now to multiply these two reference numbers, the result obtained is the number 22.5, which designates a marginal value for underrated shares. Those shares having the said indicator below 22.5 should offer a sufficient safety margin for investors, and vice versa, the shares having this indicator above 22.5 do not offer sufficient safety margin,

Tabela 3: Proračun Grahamovog pokazatelja, intristične cene i potencijala rasta/pada za određene akcije na Beogradskoj berzi

Simbol	P/E	P/B	P/E x P/B	EPS	Knjigovodstvena cena	Intristična cena	Cena na dan 7.08.2012.	Potencijal rasta/pada
AIKB	4,80	0,30	1,44	291,81	4.666,67	5.535,35	1.400,00	295,38%
ENHL	16,11	0,62	9,99	27,94	703,23	664,89	436,00	52,49%
JMBN	11,91	0,54	6,43	881,00	19.429,63	19.625,08	10.492,00	87,05%
MTLC	4,24	0,64	2,71	398,81	2.632,81	4.860,53	1.685,00	188,46%
UNBN	8,56	0,15	1,28	207,82	11.866,67	7.449,02	1.780,00	318,48%
JESV	3,20	0,62	1,98	1.249,75	6.453,23	13.470,74	4.001,00	236,68%
GMON	3,01	0,67	2,02	731,09	3.283,58	7.349,37	2.200,00	234,06%
ALFA	2,18	0,26	0,57	2.749,31	23.050	37.760,57	5.993,00	530,08%
PLNN	4,94	1,01	4,99	2.426,84	11.881,18	25.470,74	12.000,00	112,26%
TIGR	4,11	0,17	0,69	70,99	1.705,88	1.650,68	290,00	469,20%
INFM	159,33	0,43	68,51	14,12	5.232,55	1.289,33	2.250,00	-42,69%
JGPK	6,56	1,04	6,82	381,22	2.403,85	4.540,80	2.500,00	81,63%
PLNM	8,66	0,18	1,56	80,84	3.888,88	2.659,60	700,00	279,94%
BASB	319,01	0,62	197,79	2,82	1.448,39	303,15	898,00	-66,24%
RMBG	8,60	0,17	1,46	42,33	2.141,18	1.428,04	364,00	292,32%
SMPO	5,02	0,03	0,15	37,83	6.333,34	2.321,80	190,00	1.122,00%
TRBG	2,70	0,51	1,38	480,87	2.549,02	5.251,60	1.300,00	303,97%
IRTL	15,47	0,16	2,47	17,45	1.687,50	813,97	270,00	201,47%
TLFN	1,18	0,05	0,059	91,40	2.160,00	2.107,61	108,00	1.851,49%
COKA	4,12	0,33	1,36	436,66	5.454,55	7.320,53	1.800,00	306,69%

Izvor: Proračun autora

Primenom jednačine (4) došlo se do podatka da je 18 akcija po Grahamovom pokazatelju podcenjeno, s tim da akcije akcionarskog društva „Telefonija“ a.d. Beograd imaju najviši potencijal za rast (1.851,49%), kao i akcije kompanije „Simpo“ a.d. Vranje (1.122,00%). Iza navedenih akcija sa najvećim potencijalom dalje slede: „Alfa plam“, a.d. Vranje (530,08%), „Tigar“ a.d. Pirot (469,20%), „Univerzal banka“ a.d. Beograd (318,48%). Iz date tablice se mogu uočiti i dve akcije koje su po Grahamovom pokazatelju precenjene. To su akcije društva „Informatika“ a.d. Beograd (-42,69%) i akcije društva „BAS“ a.d. Beograd (-66,24%).

Zaključak

Prema *Banjaminu Grahamu* prag sigurnosti

automatski postoji kada je cena hartije od vrednosti značajno niža od intristične vrednosti. Iako je intristična vrednost u principu neuhvatljiva kategorija ona se razlikuje od objavljene tržišne cene i dovoljno ju je približno izračunati da bi se mogla uporediti sa cenom. Cilj svakog investitora je da zaradi na osnovu kupoprodaje akcija, tj. na rastu vrednosti kupljenih akcija. To je moguće ako cena akcije poraste nakon izvršene kupovine ili naplatom dividende. Dakle, investitori su u stalnom traganju za akcijama čija će cena rasti. Stoga, zanima ih koliko će cena porasti i koliko će dugo trajati taj rast. Postoje određeni stavovi da vrednost akcije treba da odražava stvarnu ekonomsku vrednost preduzeća.

Primećujući jedan od Grahamovih pokazatelja na tržištu kapitala u Srbiji htelo

and investors should not invest in such shares. On the basis of the above stated, it is possible to express an equation for calculation of the intrinsic share price:

$$\frac{P}{E} \times \frac{P}{B} = 22,5 \quad (2)$$

On the basis of the above equation it is possible to calculate the intrinsic share value, by aid of the following equation:

$$P^2 = 22,5 \times E \times B \quad (3)$$

or:

$$P = \sqrt{22,5 \times E \times B} \quad (4)$$

The calculation made of Graham Indicator for shares in the BELEXLine stock exchange index, and also calculation made of their intrinsic value, as well as growth indicators or fall in market price in respect to their intrinsic value, are presented in Table 3.

Table 3 Calculation of Graham Indicator, intrinsic price and potential growth/fall of a given share on the Belgrade Stock Exchange

Symbol	P/E	P/B	P/E x P/B	EPS	Book price	Intrinsic price	Price on 7.08.2012	Potential growth/fall
AIKB	4,80	0,30	1,44	291,81	4.666,67	5.535,35	1.400,00	295,38%
ENHL	16,11	0,62	9,99	27,94	703,23	664,89	436,00	52,49%
JMBN	11,91	0,54	6,43	881,00	19.429,63	19.625,08	10.492,00	87,05%
MTLC	4,24	0,64	2,71	398,81	2.632,81	4.860,53	1.685,00	188,46%
UNBN	8,56	0,15	1,28	207,82	11.866,67	7.449,02	1.780,00	318,48%
JESV	3,20	0,62	1,98	1.249,75	6.453,23	13.470,74	4.001,00	236,68%
GMON	3,01	0,67	2,02	731,09	3.283,58	7.349,37	2.200,00	234,06%
ALFA	2,18	0,26	0,57	2.749,31	23.050	37.760,57	5.993,00	530,08%
PLNN	4,94	1,01	4,99	2.426,84	11.881,18	25.470,74	12.000,00	112,26%
TIGR	4,11	0,17	0,69	70,99	1.705,88	1.650,68	290,00	469,20%
INFM	159,33	0,43	68,51	14,12	5.232,55	1.289,33	2.250,00	-42,69%
JGPK	6,56	1,04	6,82	381,22	2.403,85	4.540,80	2.500,00	81,63%
PLNM	8,66	0,18	1,56	80,84	3.888,88	2.659,60	700,00	279,94%
BASB	319,01	0,62	197,79	2,82	1.448,39	303,15	898,00	-66,24%
RMBG	8,60	0,17	1,46	42,33	2.141,18	1.428,04	364,00	292,32%
SMPO	5,02	0,03	0,15	37,83	6.333,34	2.321,80	190,00	1.122,00%
TRBG	2,70	0,51	1,38	480,87	2.549,02	5.251,60	1.300,00	303,97%
IRTL	15,47	0,16	2,47	17,45	1.687,50	813,97	270,00	201,47%
TLFN	1,18	0,05	0,059	91,40	2.160,00	2.107,61	108,00	1.851,49%
COKA	4,12	0,33	1,36	436,66	5.454,55	7.320,53	1.800,00	306,69%

Source: Calculated by author

se utvrditi da li postoje određene akcije čija je tržišna cena značajno niža od intristične cene. Nakon proračuna Grahamovog pokazatelja za akcije koje su u toku ove godine bile u sastavu berzanskog indeksa BEEEXline, može se zaključiti da na Beogradskoj berzi postoji osamnaest akcija koje su potcenjene po Grahamovom pokazatelju. Ono što će u budućem periodu biti atraktivno je praćenje cena podcenjenih akcija u odnosu na druge akcije u sastavu berzanskog indeksa BELEXline.

Međutim prilikom interpretacije ovih racia treba biti prilično oprezan jer se može desiti i da kupovina hartija sa njihovim visokim vrednostima donese obnormalni prinos. Posmatrano sa druge strane i hartije od vrednosti sa niskim P/B i P/E raciom mogu biti precenjene. Zato je poželjno da se Grahamov pokazatelj dopuni sa F_SCORE modelom radi potpunije analize.

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When applying the equation (4), the result obtained indicated that 18 shares after Graham Indicator were underrated, where the shares of the shareholding company "Telefonija" a.d. Belgrade are having the highest growth potential (1,851.49%), as well as shares of company "Simplo" a.d. Vranje (1,122%). Following the said shares, shares with the highest potential are: "Alfa plam", a.d. Vranje (530.08%), "Tigar" a.d. Pirot (469.20%), "Universal banka" a.d. Belgrade (318.48%). The above table shows also two shares that, according to the Graham Indicator, are overrated. These are the shares of "Informatika" a.d. Belgrade company (-42.69%), and shares of society "BAS" a.d. Belgrade (-66.24%).

Conclusion

According to *Benjamin Graham* - the safety threshold automatically is present when the price of a security is substantially lower than its intrinsic value. Although intrinsic value, in principle, is an elusive category, it differs from the disclosed market value and it is sufficient to calculate its approximation in order to be able to compare it with the price. The objective of every investor is to earn money from his purchase of shares, i.e. to gain from growth in value of purchased shares. This is possible if the share price is to grow after the purchase is made, or when dividend is collected. Hence

investors engage in a constant quest for shares that will have their price grow. They are also interested how much the price will grow and for how long this growth will continue. There are certain stances that the share value should reflect the real economic value of the company.

In observing one of the Graham indicators on the capital market in Serbia, the intent was to determine whether there are certain shares having their market price substantially lower than their intrinsic price. Upon calculation of the Graham Indicator for shares which were quoted within the BELEXLine stock exchange index during this year, it may be concluded that at the Belgrade Stock Exchange there are eighteen shares which are underrated under the Graham Indicator. What will be attractive over the forthcoming period is monitoring of prices of the underrated shares in respect to the other shares within the BELEXLine stock exchange index.

During the interpretation of these ratios, however, there should be substantial caution as it may happen that trading and purchase of shares with high ratio values may bring about abnormal return. When observed from another angle, it is possible even for the securities with the low P/B and P/E ratios to be overrated. Hence it is helpful for the Graham Indicator to be supplemented with the F_SCORE model for purpose of a more comprehensive analysis.