STOCK SPLITS AND LIQUIDITY FOR TWO MAJOR CAPITAL MARKETS FROM CENTRAL–EASTERN EUROPE

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Abstract. In the stock market there occur some events that contradict the efficient market hypothesis therefore they are called anomalies. One of the mysterious corporate events which has attracted the attention of numerous researchers is a stock split. I perform the review of implications of splitting the stock for market liquidity of companies listed on the Warsaw Stock Exchange and the Vienna Stock Exchange. I use event study, in particular Market model method and Market adjusted return method, to inspect the behavior of abnormal changes in daily trading volume for stock splits performed between 2000 through 2011 over a short run and assuming a longer time interval. Moreover, I juxtapose the results for both stock exchanges to examine whether the stock split phenomenon for two major capital markets from this part of Europe can be better explained by means of existing theories on stock splits. The research is aimed at analyzing the implications of the split for market liquidity, i.e. whether there occurs an immediate effect following the split as well as whether this corporate event improves the level of market liquidity over long run. Furthermore, the goal of the paper is to investigate whether the investors can cash in on the stock split, more specifically, whether they can profit from lower transaction costs. I document a significant growth in the market liquidity of stock splitting firms over 36 months following the split for both capital markets what is indicative of lower transaction costs for investors. The 1–percent significant results are consistent with the liquidity hypothesis on stock splits.

1. Introduction

The financial literature abounds with the issues that rivet the attention of numerous researchers and practitioners. Stock splits seem to be unique owing to some of the characteristics that are not present elsewhere. One of the features that make them special is their illusive simplicity. More specifically, managers accomplish stock splits expecting different outcome but in each case there will be at least one common consequence, this is increased number of shares outstanding. One may further ask about the rationale behind splitting the stock. As predicted by signaling hypothesis management may try to convey positive news on company's financial standing via stock splits. The benefit of splitting the stock is the fact the either the announcement or the factual split do not oblige management to achieve any objective like a particular level of EPS (earnings per share) in contrast to e.g. a conference call organized for media during which a CEO declares achievement particular goals. Breach of public declaration could impair the management's ability to signal to the market in the future.

Theoretically, the only consequence of splitting the stock should be an increase in the number of shares outstanding accompanied by decreased stock price according to the split factor applied. In spite of their straightforward nature and/or no expected benefits or costs except for the fees paid to respective regulatory bodies or consulting firms from the perspective of market efficiency stock splits entail anomalous reactions, inter alia increased volatility of returns (Ohlson, Penman 1985; Desai *et al.* 1998), improved liquidity (Maloney, Mulherin 1992; Muscarella, Vetsuypens 1996 – the evidence with respect only to small trades; Arnold, Lipson 1997; Lipson 1998; Anshuman, Kalay 2002; Dennis 2003 – the evidence with respect only to small traders; Dennis, Strickland 2003; Dhar *et al.* 2004; Goyenko *et al.* 2006; Leung *et al.* 2006; Pavabutr, Sirodom 2008), deteriorated liquidity (Conroy *et al.* 1990; Koski 1998; Schultz 2000; Gray *et al.* 2003; Dennis 2003 – the evidence with respect only to large traders) or changed tick size (Angel 1997; Easley *et al.* 2001). On the contrary, Fama (1998) supports the market efficiency hypothesis stating that results indicative of anomalous reactions following the split can be dependent on the methodology employed.

Additionally, stock splits may be used a tool to shift the stock price to a desired trading range when it departs too much from it as a result of e.g. pre–split run–up. Furthermore, stock splits can serve as a tool for managers to dilute the voting power of larger shareholders and to allow small investors to purchase the stock as presumed by the hypotheses that underline greater easiness of acquiring round lots by those that do not own the stock and/or those who intend to rebalance their portfolios. But in no case, however, at least theoretically, stock splits cannot be attributed to enhanced ability of generating positive cash flows or to improve the earnings power. Taking into account the fact that stock splits can be costly in both: measurable or intangible terms, i.e. as a consequence of the fees required to fulfill the legal obligations set by respective capital market regulatory bodies or by disappointing investors who under the signaling hypothesis on stock splits expect improved performance, the unresolved puzzle of splits has still attracted the attention of the academicians and practitioners.

Stock splits diminish the stock price thus enabling individual investors with capital restraints to afford to purchase a round lot of the splitting stock. As more and more individual investors trade in the splitting firm's stock one might expect that the market liquidity is likely to improve in the wake of this corporate event. Therefore, I hypothesize that a positive effect for the market liquidity of companies listed on both: the Warsaw Stock Exchange and the Vienna Stock Exchange should be expected. The contribution of the paper into the literature dedicated to the issue of stock splits and their impact on stock's characteristics consists in analyzing for the first time, to my knowledge, the impact of stock splits on market liquidity over a longer time interval, i.e. over three years following the event, simultaneously for the Polish and the Austrian capital markets. Additionally, the novelty of the article results from comparing the effects of the split for companies listed on two of the main stock exchanges of the Central–Eastern Europe. The paper is structured as follows: section 2 presents the research studies on the impact of splits on market liquidity, section 3 describes the research sample and methods used, section 4 includes the results, and section 5 concludes.

2. Review of the literature

Lin *et al.* (2009) test the hypothesis that management of joint–stock companies that encounter some market liquidity problems or even trading discontinuity may be inclined to split the stock to increase the fraction of uninformed traders who are expected to create more liquidity. The authors claim that a greater number of so called liquidity providers can positively impact the brokers making the market for stock splitting firms who, in turn, are likely to decrease the trading costs thus implying more trading in the shares. Based on the analysis of the sample of 2,109 stock–split events from the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) covering the time period 1975–2004 as well as of 1,612 events from NASDAQ (National Association of Securities Dealers Automated Quotations) covering the time period 1985–2004 Lin *et al.* (2009) document a diminution in the level of trading discontinuity following the stock split as well as the slippage in trading costs. Moreover, the authors argue that along with the alleviated liquidity risk as a result of the split the cost of equity capital has also declined since market participants are willing to accept lower liquidity premium, more specifically, the cost of equity capital has dropped by 2.42 percentage points or, equivalently, by 17.3%. Although the benefits for companies facing before the split lower market liquidity appear to be greater rather than for those more liquid Lin *et al.* (2009) find that all of them derive benefits from the event. Interestingly, the former splitting firms according to the research of Lin *et al.* (2009) decide to apply a greater split factor. In sum, Lin *et al.* (2009) indicate that stock splits improve liquidity.

Huang *et al.* (2008) address the issue of stock splits from a different perspective. In particular, the authors focus on the relationship between the motivations of managers to perform the split and the magnitude of splitting activity, i.e. whether the motivations of management frequently splitting the stock differ from the motivations of

management of firms that less frequently perform the split. The analysis includes 3,253 stock–split announcements from 1967 through 2000 of companies from NYSE, AMEX, and NASDAQ. Huang *et al.* (2008) generalize a conclusion that splitting companies experience a considerable pre–split run–up as well as a major increase in operating performance. Importantly, the companies that split less frequently are the entities that excel the frequent splitters in the magnitude of the pre–split run–up and they reflect more improved operating performance. Additionally, the authors claim that the market reaction to the announcement is positive for both groups of splitters over short run as well as over long run. Summarizing, Huang *et al.* (2008) provide evidence on enhanced market liquidity for the splitting firms and conclude that the results for frequent splitters are supportive of the liquidity hypothesis.

Ferris *et al.* (1995) review the consequences of stock splits for liquidity of companies listed on NYSE as well as on other American stock exchanges from the time interval of 1983 thorough 1989. Based on the research sample of 1,131 stock–split events the authors provide evidence that the dollar volume depth declines significantly in the post–split era for both buy and sell transactions. Importantly, as opposed to the notion that stock splits are aimed to bring the stock price to a desirable trading range even the most actively traded issues report a statistically significant deterioration of the trading liquidity. Furthermore, the authors document a considerable 21–percent growth in the quoted bid–ask spreads from .011 to .014 from the pre–split to the post–split time period what supports the results for the trading volume and can be interpreted as an additional cost for investors when transacting in the splitting stock.

On the other hand, Ferris *et al.* (1995) consider the issue of the relation between the split factor employed and bid–ask spreads that occur following the split. As indicated by the results, there exists a positive relation between the two variables, i.e. stocks splitting firms with the highest split factors experience the greatest rise in the resultant spreads, e.g. for the stock–split events of more than 2–for–1 the increase in the mean (median) bid–ask spread amount to 62.5% (57%) whereas for events of the factor lower than 1.5 the respective growth rate equal roughly 17.6% (12.5%). Additionally, Ferris *et al.* (1995) contend that the average size of the men transaction size in the aftermath of the split decreases what contradicts the fundamental expectations of a stock split as tool to allow market participants to acquire round lots. Nevertheless, the average number of daily transactions climbs and there can be observed an increase in the frequency of trades for both buy and sell orders. In summary, the authors find the overall market liquidity drops as a result of the stock split what is contrary to the liquidity and/or [optimal] trading range hypotheses on stock splits.

Guo *et al.* (2008) approach the relationship between stock splits and liquidity considering the sample composed of 138 stock–split events from the Tokyo Stock Exchange spanning the period of 1996 through 2005. The authors draw a conclusion that stock splits contribute to numerous positive changes in stock characteristics from the perspective of managers and shareholders. Specifically, Guo *et al.* (2008) observe improved

trading in the post–split shares and enhanced market liquidity. What is more, the stock splits have imply narrowing of the information asymmetry between managers and share-holders as well as diminished probability of informed trading. The authors note an influx of small individual investors that generate greater liquidity of the stock what is consistent with the trading range hypothesis. Authors' further finding is a substantial rise in the number of trades clustering at ask prices what is indicative of greater buy-ing activity among investors. Guo *et al.* (2008) interpret the results as supporting the signaling hypothesis.

The implications of stock splits for the subsequent liquidity have been also analyzed by Park and Krishnamurti (1995) who consider the research sample of 873 stock splits announced by companies listed on NASDAQ between April 1, 1983 through June 30, 1987. The authors observe, what is in line with the evidence of Ohlson and Penman (1985), a material increase in the mean (median) variance of daily returns by 44.13% (46.50%) for the time interval following the ex split date as compared to the period preceding the announcement day. In addition, Park and Krishnamurti (1995) concur that the growth in variance that occurs after splitting the shares is insensitive to the move-ments of stock price between bid and ask prices. Moreover, the mean (median) relative bid–ask spreads, i.e. $\dfrac{ask - bid}{\dfrac{bid + ask}{2}}$, goes up in the period following the split by 18.11% (17.39%) what indicates that the liquidity worsens in the wake of the split what, in turn, can be translated into greater transaction costs. The authors conclude that the rise in the post–split volatility of stock returns as measured with the variance is not solely due to the effect attributable to the bid–ask spread changes.

Lipson and Mortal (2006) examine stock splits and liquidity from the perspective of tick size considering the research sample of 342 companies listed on NYSE that announced a 2–for–1 stock split between 1993 through 2003. The trading volume is observed to remain steady after the effective date of the split. The authors claim that the cumulative abnormal returns for the time interval of three years following the stock split are statistically significant but the evidence is mixed, in particular, the cumulative ab-normal returns in the first years after the ex date are positive whereas for the remaining two the results are negative. What is more, Lipson and Mortal (2006) contend that the preferred trading range for a given company is not [solely] underlain by the magnitude of the relative tick size. Not surprisingly, larger companies are characterized with higher post–split stock prices. Interestingly, number of stock splits is found to be significantly determined by the rate of returns achieved by a company in the prior year. The stock split activity appears not to be essential in explaining the decreased tick sizes, and so the authors prove that the relative tick sizes are immaterial in the stock–split–decision–mak-ing process performed by firms. Lipson and Mortal (2006) perform also a review of the changes in clientele around and in the period following the split. As indicated by other studies, the number of shareholders goes up following the split as does the number of analysts covering the splitters. The realized spreads, i.e. „difference between the current

trade price and the mid–quote outstanding five minutes later"[1], grow considerably as a result of the split.

Chemmanur *et al.* (2008) approach stock splits analyzing brokerage commissions paid by institutional shareholders in the period preceding and subsequent to the stock split. The time period under consideration spans from 1999 through 2005 and contains 601 institutions and 1,701 stock–split events from NYSE, AMEX, and NASDAQ. Curiously, the institutional trading in the stock splitting firms has constituted 11% of the whole trading volume in the period of three months preceding the stock split. The authors document an increase in the amount of commissions paid by institutions following the stock split in terms of both total brokerage paid as well as in terms of per–dollar traded basis. More specifically, the average commission rate per dollar traded has increased from 6.58 b.p. during the pres–split time period to 10.65 b.p. thereafter. When analyzing the total amount of commissions paid institutions one might observe a relatively sizeable growth in the magnitude of $112.18m (from the level of $139.94m on average during the period preceding the split to the level of $252.12m thereafter). Chemmanur *et al.* (2008) argue that the results are supportive of the information production hypothesis, i.e. analysts and brokerage companies are likely to produce information on those firms in case of which they expect to receive greater commissions. Further, the information produced is then conveyed to institutional investors, to a greater extent to those that pay higher commissions. In line with this argumentation, Chemmanur *et al.* (2008) report that those institutional market participants earn greater abnormal returns following the split what ensues from superior information gained from brokers encouraged to provide this group of customers with more detailed knowledge. The effect of increased abnormal gains persists even after adjusting for higher commissions.

Chemmanur *et al.* (2008) provide evidence indicative of decreased information asymmetry in the aftermath of the split as more and more analysts commence on covering the stock splitting firm. The authors substantiate that there exists a positive relation between the amount of commissions paid by institutional investors and the reduction of information asymmetry after splitting the shares, i.e. the greater the amount of commissions settled by institutions after the split the closer the information gap. In addition, the average trading volume in dollar terms ascends from $343.52m to $407.1m when comparing the pre–split period with the post–split one as well as institutional investors keep on transacting in large volumes. Interestingly, the authors point out that for institutions that pay relatively high commissions the extent of trading, i.e. net buying, comprises a good predictor of the 6–month and 12–month returns whereas for those low–commission–paying ones there is observed no predictive power. To be more precise, one may notice that the average amount of money invested in each splitting stock by institutions analyzed is equal to $3.35m over the month following the factual split date and in percentage terms is equal to 1.51%, net of commissions. Chemmanur *et al.* (2008)

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[1] Lipson, M. L.; Mortal, S. 2006. Effect of stock splits on clientele – Is tick size relevant?, *Journal of Corporate Finance* 12: 891.

reason that the amount of the brokerage paid determines the informational advantage thus making up a source of superior performance over those who pay lower brokerage fees, specifically the performance of high–commission–paying companies outstrip their counterparts' by 35 b.p. in abnormal returns terms and by 58 b.p. when analyzing the raw returns although they bear greater transaction costs, i.e. they pay higher commission rates 15 b.p. as compared with 4.2 b.p.

At the other extreme, Chemmanur *et al.* (2008) also deal with the issue of the number of analysts following the splitting company. As indicated by the research, the number of analysts covering the splitter climbs after the split by 31% whereas the forecast error with respect to the earnings forecast diminishes by 21% when comparing the pre–split era. Earnings become less volatile following the stock split, i.e. historical earnings stability improves by 43%. Summarizing, the authors conclude that increased commission expenses incurred by institutional traders following stock splits do not only induce more information production for them by brokerage firms but also allows them to outperform other market participants due to the informational edge. The results are supportive of information production hypothesis on stock splits.

Kadapakkam *et al.* (2005) analyze with the link between stock splits and liquidity proxied by bid–ask spread. The research sample includes the time span of 1995 through 2002. The authors develop and test the broker promotion hypothesis and trading inconvenience hypothesis. The former one proclaims that stock splits spur brokers to promote the splitting stocks since they offer better commissions after the event. In turn, the latter hypothesis assumes that the returns earned in the wake of the split are derived from the trading inconvenience. Specifically, investors prefer not to purchase the splitting shares in the period from the record day to the split ex date, therefore the stock prices soar after the split. To examine the effect of splitting the stock Kadapakkam *et al.* (2005) partition the sample into the following subsamples with respect to the time interval: 1995–1996 (the era of $1/8^{th}$ pricing), 1998–1999 (the period of $1/16^{th}$ pricing), and 2001–2002 (decimal pricing). The authors find that the relative spread during the first period mentioned above increases significantly, i.e. by 78% following the effective split date. This finding provides a measurable incentive for brokers to promote the splitting stock as they represent a lucrative profit opportunity. Additionally, the activity of small investors surges by 89% as measured with the frequency of small trades. The authors offer an interpretation that the small–investor trading is to some extent ascribable to broker promotion fueled by the changes in bid–ask spreads. Furthermore, the post–split stock prices hover more closely around the ask price what is indicative of a greater interest of the buying side of market participants. More notably, Kadapakkam *et al.* (2005) document a positive and statistically significant relation of the changes in spreads and the frequency of small trades.

Mukherji *et al.* (1997) add an important piece in the puzzle of stock splits and their impact on the ownership structure of the splitting entities by inspecting the conse-

quences of splits for the NYSE– and AMEX–listed shares between 1984 through 1988. The authors on the basis of the 690 stock–split events generalize the conclusion that a potential stock–split candidate is three times as large as an average company listed on the aforementioned stock exchanges, i.e. the size as measured with total assets of an average splitter amount roughly to $1,263m as compared with average firm whose total assets are worth $324m. With respect to the ownership structure the authors find a 3.49–percent growth in the number of shareholders over the post–split year, among which both the number of individual shareholders and institutional ones go up by 2.72% and 21.83%, respectively. Hence, one might deduce that stock splits enlarge the shareholders' base thus stabilizing the stock price and/or dispersing the impact of large shareholders on management who may be interested in carrying their own interest which, in turn, is not always in tandem with the owners' one. The last implication is consistent with managerial entrenchment hypothesis.

Mukherji *et al.* (1997) also prove that the magnitude of the split factor is positively related to the number of individual and institutional shareholders what is supportive of the signaling explanation of stock splits, i.e. stock splits are utilized by managers who strive to convey to the market their positive outlook for the company's future financial health, e.g. they expect improvement in the cash flows generated and/or enhancement in earnings. Moreover, there is observed positive and statistically significant relation of announcement abnormal returns to the number of shareholders in the split year. The authors also find that the value of private information signaled by management in the form of the split is positively related the number of shareholders. Overall, the findings of the authors underpin the signaling hypothesis on stock splits.

3. Sample and method

I investigate the issue of stock splits and their influence on the subsequent market liquidity of the companies listed on the Vienna Stock Exchange and the Warsaw Stock Exchange that split the shares in between 2000 through 2011. The proxy for market liquidity is the trading volume. To the initial sample of the companies from the former stock exchange I include only companies listed in the official market (*amtlicher Handel*), and so I exclude those from the OTC market (over–the–counter), from the unregulated market (*sonstiger Wertpapierhandel*), and from the unregulated third market (*ungeregelter dritter Markt*). The final sample is composed of nineteen stock–split events and due to the lack of data (six issues) what ensues inter alia from the fact that those stocks are delisted – the data was derived from Yahoo! Finace – or as a results of the fact that some of the stock have been rarely traded (at least 50% of sessions in the 200–trading–day from the estimation period, i.e. from the event window [–240;–41], were with no trading in the stock or during at lest 25% of the trading sessions from the 3–year time period following the split were with no trading in the stock). The research sample is comprised of eight stock–split events. In case of companies listed on the Warsaw Stock Exchange the initial sample is comprised of 85 events and due to delisting or a takeover some of the data are missing

thus constituting the final sample composed of forty–two stock splits. The data source for the companies from the Polish capital market is stooq.pl.

To analyze the immediate impact, more specifically, on the ex date, of stock splits on market liquidity and both over shorter time horizon, i.e. within the event window [–41:+41], as well as over longer time period, i.e. over the 3–year time span I use event study methodology and measure the abnormal changes in daily trading volume (share volume) using two methods, in particular Market model method and Market adjusted return method.

Market Model Method

Within the former method one must regress the changes in daily trading volume of the splitting firm on the changes in daily trading volume of a [broad] market index. As a proxy for the market index for Warsaw Stock Exchange the WIG index (Warsaw Stock Market Index) and the ATX index (Austrian Traded Index) have been applied. The abnormal change in daily trading volume is the difference between the change in daily trading volume for a splitting firm, the intercept ($\hat{\alpha}_j$) derived from the regression analysis, and the product of the slope coefficient ($\hat{\beta}_j$) and the change in daily trading volume for the stock market index:

$$r_{it} = R_{it} - \hat{\alpha}_j - \hat{\beta}_j R_{mt} + \varepsilon_{it}, \tag{1}$$

where:

R_{it} – change in daily trading volume on i stock on t day;

R_{mt} – change in daily trading volume for a market index on day t;

$\hat{\alpha}_j$ – intercept from the regression analysis;

$\hat{\beta}_j$ – slope coefficient from the regressi analysis;

ε_{it} – statistical error.

Market Adjusted Return Method

The underlying assumption is that the *ex ante* expected return on a security is constant both with respect to other securities and time. This model is consistent with the assumptions of CAPM with $\beta_i = 1$. for all companies whereas $\alpha_i = 0$. The abnormal change in daily trading volume on *i* splitting firm on day *t* equals:

$$r_{it} = R_{it} - R_{mt}, \tag{2}$$

where:

R_{mt}– change in daily trading volume for a market index.

Statistical Significance of the Results

To examine whether the results are statistically significant one tests the null that the 1–day abnormal return for a particular splitting stock is equals zero. One also assumes

that the rates of return for are independently and normally distributed. The t statistic is the following ratio:

$$t = \frac{r_{jt}}{\hat{S}(r_j)},$$

(3)

where:

r_{jt} – the abnormal rate of return for i company at time t;

$\hat{S}(r_j)$ – standard deviation of the rate of return for i firm computed based on the data within the estimation period:

$$\sqrt{\frac{1}{199} \sum_{t=-240}^{-41} (r_{jt} - \overline{r}_j)^2},$$

(4)

To test the null that 1–day abnormal returns for the whole sample equals zero one must first estimate the average abnormal return and the resulting standard deviation in the estimation period:

$$AR_t = \frac{1}{N} \sum_{j=1}^{N} r_{jt}$$

(5)

and the resulting statistic is:

$$t = \frac{AR_t}{\hat{S}(AR)} = \frac{\frac{1}{N} \sum_{j=1}^{N} r_{jt}}{\sqrt{\frac{1}{199} \sum_{t=-240}^{-41} (AR_t - \overline{AR})^2}},$$

(6)

where:

$$\overline{AR} = \frac{1}{200} \sum_{t=-240}^{-41} (AR_t).$$

(7)

4. Results

In case of the Market model method the parameters derived when regressing the rates of returns on a given stock on the returns on a market index were not statistically significant for the majority of the sample, i.e. for 75.00% and 73.81% for the Vienna Stock Exchange and the Warsaw Stock Exchange, respectively, therefore the overall results remain immaterial.

Under the Market adjusted return method I observe no statistically significant 1–day abnormal changes in liquidity as measured with trading volume on the ex date for the whole sample of companies listed on the Vienna Stock Exchange whereas for the Polish capital market I find 5–percent significant abnormal changes. The enhanced interest in the Polish splitting stocks is indicative of the fact that market participants expect improved performance of the splitter and/or can ensue from the fact that more investors can afford the round lots of the stock. Nevertheless, the overall conclusion for 1–day market reaction in terms of changes in liquidity in case of the two capital markets from Central–Eastern Europe considered is mixed.

To further to capture the positive effect of splits and to examine the impact of stock splits on long–lasting trading liquidity I analyze the behavior of share volume over the 3–year time interval. The results are exhibited in the Figures 1 through 2.
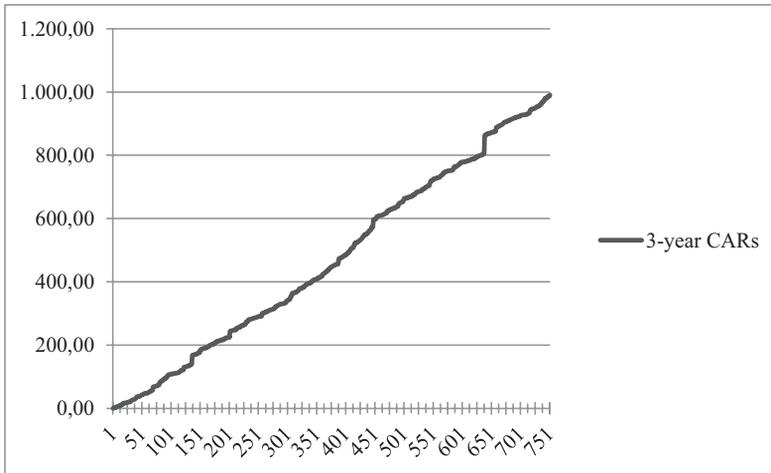
Fig. 1. 3–year cumulative abnormal changes in trading volume for the Vienna Stock Exchange
(Source: own study)
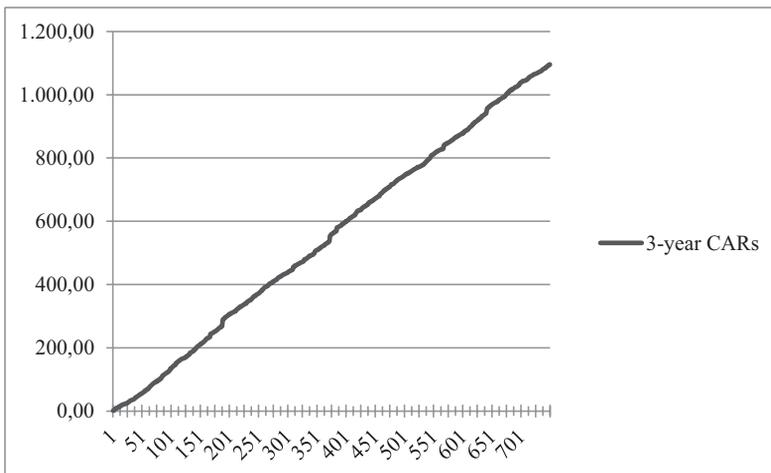
Fig. 2. 3–year cumulative abnormal changes in trading volume for the Warsaw Stock Exchange
(Source: own study)

As can noticed on Figures 3 and 4 the cumulative abnormal changes in daily trading volume that proxy for market liquidity of the splitting stocks have trended upward over the whole event window. The market liquidity has considerably improved in the wake of the stock split and the conclusions pertain to both stock exchanges, i.e. for the Warsaw Stock Exchange and the Vienna Stock Exchange. The steeply upward–sloping curves

reflect the fact that a stock split can be viewed as the tool enhancing the market liquidity of the stock not only immediately after the event but also over a longer horizon, in particular over subsequent 36 months. In fact, similar shapes of the curves presented on the above charts strengthen the previous conclusion. Moreover, the prior results for the event window [–40;+40] being consistent with liquidity hypothesis on stock splits have been confirmed by the outcome for long run. A practical implication of the results are lower transaction costs for existing and prospective shareholders of splitting firms what is translated into a greater interests in these stocks. An alternative and/or complementary explanation of management's motivation to split the stock appears to be an endeavor to adjust the stock price to desired trading range when it achieves the level at which some of the investors might perceive it as too high thus doubting further appreciation and selling off the stock.

Summarizing, stock splits influence positively one of the stock's fundamental characteristics, in particular its market liquidity, benefiting not only managers since more liquid shares can stabilize the stock price thus lowering the cost of equity but also market participants owing to lower transaction costs. The results from two different stock exchanges located the same part of Europe are consistent with each other thus solidifying the finding of favorable impact of splits.

5. Conclusions

Amid different theories developed over time to explain the phenomenon of stock split, especially its impact on subsequent market liquidity, one can find some that underline positive expectations of splitting company's stakeholders. As predicted by the liquidity hypothesis the research conducted for the purposes of the paper has proven improved market liquidity in the aftermath of the split. Even though the evidence on 1–day abnormal changes in market liquidity that is proxied by trading volume for the Warsaw Stock Exchange and the Vienna Stock Exchange is mixed, i.e. the 1–day abnormal change in trading volume under the Market adjusted return is significant only for the former stock exchange, the results for longer time periods are supportive of the aforementioned hypothesis on stock splits, i.e. of the liquidity hypothesis. Notably, what appears to be of a fundamental value from the perspective of the existing and prospective shareholders of splitting firms the long–run market liquidity dramatically rises for the Warsaw Stock Exchange and the Vienna Stock Exchange in the wake of the split. The cumulative abnormal changes in daily market liquidity, 1–percent significant, whereas trading volume was tapped as its proxy, continue their ascent over the event window [–40;+40] as well as over the period of three years following the split. The enhanced market liquidity is very likely to translate into narrower bid–ask spreads due to lower liquidity risk faced by brokers making the market for the splitting stock and hence into lower trading costs as a whole. Taking into account the fact that greater liquidity observed for two major stock exchanges from the Central–Eastern Europe brings forth the

stock price stabilization the results also provide the evidence that stock splits are able to decrease the volatility of [abnormal] rates of return. In brief, greater market liquidity and lower volatility of [abnormal] rates of return are the arguments that support the notion of positive effects of stock splits. Alternatively, stock splits in the two capital markets in this part of Europe can be accompanied with greater value of splitting companies. In summary, the results obtained for the Warsaw Stock Exchange and the Vienna Stock Exchange show almost identical direction of the change in market liquidity and are consistent with one of the first the theories trying to explain the stock–split phenomena, i.e. with the liquidity hypothesis.

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