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RASDAQ: The final curtain

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Abstract. *The present paper continues the studies of Pop et al. (2014) and Pop et al. (2015) and completes the previous studies by presenting a brief survey of RASDAQ's entire active life, the profile of RASDAQ indices, and focusing on the last 911 RASDAQ listed companies: their profile and their decision to be transferred on other market segments or to be delisted. The results of the present study confirms, from another viewpoint, the findings of Pop et al. (2014) and Pop et al. (2015): RASDAQ most important role was to assist the ownership concentration process, thus this role was fulfilled much later compared with the similar markets that existed within the former communist countries. The fulfillment of this role was confirmed by: a) no important trading activity for most of the listed companies between 2013 and 2015; b) weak January and weekend effects; c) low free float. Furthermore, by choosing to put an end to RASDAQ, the Romanian authorities acknowledged the fulfillment of this role and the fact that a radical transformation of this controversial market was almost impossible.*

Keywords: equity market, Granger causality, January effect, weekend effect, RASDAQ.

JEL Classification: G14, G19.

Introduction and review of literature

RASDAQ, the alternative market established in 1996 to provide a trading platform for the bulk of the Romanian privatized companies, lived its last trading months in 2015. RASDAQ market was closed on October 27th 2015, after 19 years since the official opening in September 1996, while the trading started at the end of October or beginning of November 1996 (according to Pop et al., 2014). During the (almost) two decades of life, RASDAQ went through four main sub-periods, identified by Pop et al. (2014): 1) *October/November 1996 to December 2000*; this beginning period was marked by problems related to forced listings, price manipulations, illegal transactions, and share thefts; the investigations of Earle et al. (2001), Earle and Telegdy (2002), and Pajuste (2002) revealed RASDAQ as an opaque and illiquid market, which lagged behind in the process of ownership concentration, compared to the security exchanges of the other former communist countries; 2) *January 2001 to December 2003*; RASDAQ was incorporated and became The Electronic Exchange RASDAQ in a trial to correct the dark market image acquired during the first sub-period; 3) *January 2004 to December 2005*; this sub-period was dedicated to prepare the merger with Bucharest Stock Exchange (BVB)(1). 4) *January 2006 to October 2015*; RASDAQ became a distinct trading platform within BVB; starting with 2008 this period was influence by endless discussions related to RASDAQ legal status; by 2010 the problem became wide spread; a solution was found during October 2014 (Law no. 151/2014); RASDAQ was declared an unregulated market that have to be closed, and the listed companies were presented with the alternatives to be transferred on the existing regulated markets or to be delisted.

The present paper continues the studies of Pop et al. (2014) and Pop et al. (2015). To the best of our knowledge, no important or extensive new studies regarding RASDAQ emerged since 2014. Therefore the first two categories of studies mentioned by Pop et al. (2014) remained unchanged and it will be pointless to repeat their description. Thus, for the category of miscellaneous studies that include RASDAQ, the paper of Brasoveanu et al. (2014), which used RASDAQ companies for the validation of a new model to estimate the financial performance, must be mentioned.

The current investigation completes the previous studies of Pop et al. (2014) and Pop et al. (2015) by presenting a brief survey of RASDAQ's entire active life, the profile of RASDAQ indices, and by focusing on the last 911 RASDAQ listed companies: their profile and their decision to be transferred on other market segments or to be delisted. The results of the present study confirms, from another viewpoint, the findings of Pop et al. (2014) and Pop et al. (2015): RASDAQ most important role was to assist the ownership concentration process, thus this role was fulfilled much later compared with the similar markets of the former communist countries. Furthermore, by choosing to put an end to RASDAQ, the Romanian authorities acknowledged the fulfillment of this role and the fact that a radical transformation of this controversial market was almost impossible.

Methodology

Since the present paper continues the investigations presented by Pop et al. (2014) and Pop et al. (2015), the general hypotheses for the Granger causality, the January effect, and the weekend effect and the models are the same, and therefore will not be reproduced within this study. Thus, the present study investigates a larger number of Granger causalities: between the three RASDAQ indices and between the RASDAQ indices and the BVB indices. Also, the January effect and the weekend effect are investigated for all the three RASDAQ indices. The data for the indices were extracted using the BVB website. The data for the companies were collected, also, from the BVB website, and from the Ministry of Public Finance website, as of October 22nd.

The situation at the close of RASDAQ as of October 2015

The closing of RASDAQ was announced during October 2014 for October 2015. The last trading day for the RASDAQ listed companies was October 22nd, 2015. The last day of RASDAQ was October 27th, 2015, when all the trades that took place on October 22nd were settled.

At the end of October 22nd 2015, RASDAQ still registered a number of 308 tradable companies and 183 suspended companies (the main reasons for this status being either the absence of a contract with an accepted/approved register company, or the insolvency). The 491 listed companies at the end of RASDAQ represented 53.90% of the 911 companies listed as of December 2014. This situation shows how slow the shareholders and managers of the listed companies reacted in order to clarify the situation of the respective companies. This situation is confirmed by the Table 1 that shows the delisting rhythm between November 2014 and October 2015.

Table 1. *The delisting rate/rhythm between November 2014 and October 2015*

Month	Number of delisted companies
November 2014	9
December 2014	4
January 2015	5
February 2015	10
March 2015	8
April 2015	4
May 2015	20
June 2015	92
July 2015	92
August 2015	82
September 2015	47
October 2015, before 22nd	59
October 2015, 26th and 27th	491

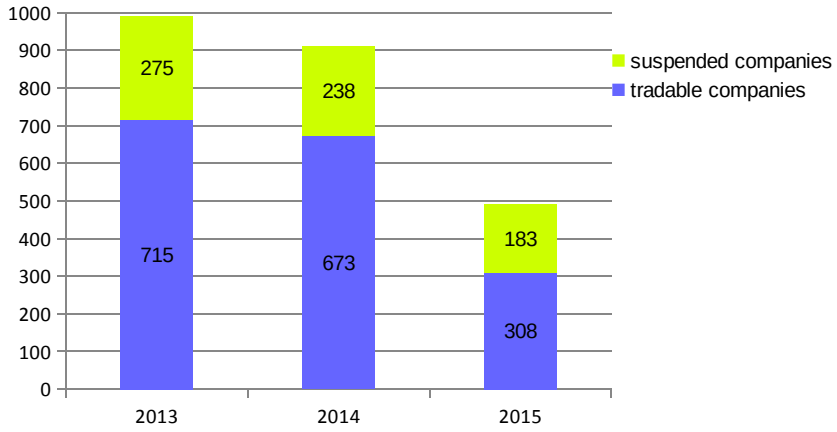
Source: RASDAQ monthly reports available at http://www.bvb.ro/TradingAndStatistics/Publications/Monthly Reports and authors' calculations for the month of October 2015.

Graph 1 presents the situation at the end of the last trading period as of 2013, 2014 and 2015. The number of suspended companies decreased at a very low pace and they represented 37.23% of the remaining RASDAQ companies as of October 27th 2015.

It is interesting to mention that of the 308 tradable companies, 25 (or 8.12%) were never traded since start listing, 5 (1.62%) registered just one trade during their entire listing period, and were not traded since 2000 or earlier. Other 34 companies (11.04%) were not traded since 2006 or earlier. The combined number of these companies represents about 21% if the tradable companies and they should have been delisted since long before the closing of RASDAQ. Thus, 152 companies (49.35%) registered transactions during 2015.

Between 26th and 27th of October 2015, 13 of the tradable companies were transferred on AeRO, while other 2 were transferred on BVB main market.

Graph 1. *The structure of RASDAQ listed companies as of the end of 2013, 2014, and as of the end of October 2015*



Source: authors' compilation based on data available at www.bvb.ro

In the case of the 183 suspended companies, 50 companies (27.32%) were never traded since start listing, while 10 (5.46%) registered only one trade since start listing, and were not traded since 2002 or earlier. Other 75 companies (40.98%) were not traded since 2006 or earlier. The combined number of these companies represent 73.76% of the suspended companies; they also should have been since long delisted from RASDAQ. Their presence among the listed companies during the last days of RASDAQ only shows how indifferent their manager and shareholders were toward the status of listed company. It also shows how difficult it was (due to a way too complicated web of regulations concerning the listed companies resulted from the privatization process) to eliminate such inactive companies from those listed on RASDAQ.

RASDAQ between November 1996 and October 2015

Table 2 presents the comparative situation of RASDAQ and BVB regarding the listed companies and the market capitalization. As highlighted by the previous studies of Pop et al. (2014) and Pop et al. (2015), despite the very large number of listed companies, RASDAQ overpassed BVB only between 1996 and 2000 when the number of daily traded companies was higher than 400 (Table 3). Thus, the RASDAQ opaque trading system and the greed of intermediaries that generated the illegal trading and share theft

(Pop et al., 2014) took their toll and since 2001 RASDAQ capitalization became lower than BVB capitalization. It remained constantly lower up until the closing, in October 2015. Not only the bad reputation of RASDAQ and the incertitude regarding its status influenced this evolution. The large number of listed companies and their lack of transparency also had an important influence of the trading. This situation also indicate that, excluding the companies that were never traded since listing and those that registered just one trade since listing, the majority of RASDAQ listed companies were either of no interest for investors due to their already established structure of shareholders or due to their lack of commercial success, the weak performances of RASDAQ companies were confirmed by the findings of Brasoveanu et al. (2014). Table 3 and Table 4 support the idea formulated above showing within RASDAQ a low level of daily trading and a small number of companies (almost insignificant when compared with the listed companies) paying dividends.

The last 10 months of trading activity at RASDAQ were uneventful. The trading activity decreased compared to the previous year, indicating that no important changes in shareholder structures occurred during this period, for the majority of the traded companies. This situation supports the idea that these shareholder structures were already established and only in a small number of cases a majority position concentration occurred. The idea is confirmed by the data in Table 5 which shows a smaller number of deal (special) transactions, purchasing offers and takeover bids compared to 2014, while the sales offers and special sales were only slightly higher than the similar transactions of 2014.

Table 2. *Listed companies and market capitalization for BVB and RASDAQ*

Year	BVB				RASDAQ			
	Number of listed companies	Newly listed	Delisted	Market capitalization (ECU/EUR mn)	Number of listed companies	Newly listed	Delisted	Market capitalization (ECU/EUR mn)
1996	17	8	0	48.53	1,561	1,561	0	329.84
1997	76	59	0	560.28	5,367	3,911	105	1,333.47
1998	126	50	0	317.32	5,496	236	107	706.02
1999	127	15	14	298.09	5,516	44	24	972.09
2000	114	1	14	450.51	5,382	77	211	865.71
2001	65	3	52	1,361.08	5,084	82	380	1,188.53
2002	65	1	1	2,646.45	4,823	61	322	1,764.90
2003	62	0	3	2,991.02	4,442	20	401	1,943.72
2004	60	3	5	8,818.82	3,998	17	461	2,064.32
2005	64	5	1	15,311.35	3,683	10	325	2,241.35
2006	58	2	8	21,414.91	2,420	3	1,266	3,126.44
2007	59	3	2	24,600.75	2,019	3	404	6,985.67
2008	68	10	1	11,629.77	1,753	3	269	3,079.08
2009	69	3	2	19,052.65	1,561	4	196	2,937.67
2010	74	5	0	23,892.21	1,309	1	247	2,526.45
2011	79	6	1	16,385.91	1,184	0	125	2,366.93
2012	79	2	2	22,063.37	1,086	1	99	2,800.28
2013	83	4	0	29,980.44	982	1	105	1,774.47
2014	83	2	2	28,986.52	911	0	71	1,668.52
2015	84	5	4	32,248.17	0	0	911	553.84

Note: the data for are reported as of the end of the year; the only exception is 2015 where the market capitalization for both BVB and RASDAQ is reported as of October 16th, 2015 (the last day when the capitalization data was reported for RASDAQ).

Source: Based on the data available at http://www.bvb.ro/TradingAndStatistics/GeneralStatistics.aspx

Table 3. *The trading activity at daily level on BVB and RASDAQ*

Year	BVB – daily averages				RASDAQ – daily averages			
	Number of traded companies	Number of trades	Volume (thou)	Turnover (ECU/EUR mn)	Number of traded companies	Number of trades	Volume (thou)	Turnover (ECU/EUR mn)
1996	11	213	14	0.05	479	n/a	220	0.03
1997	42	2,949	2,871	0.12	523	1,938	3,415	1.51
1998	84	2,283	4,300	0.85	683	2,136	5,483	1.50
1999	74	1,611	4,076	0.34	473	1,088	8,719	0.96
2000	58	1,968	7,098	0.37	322	561	4,850	0.63
2001	52	1,416	8,947	0.59	220	354	3,125	0.42
2002	47	2,680	16,142	0.91	160	270	8,686	0.56
2003	44	1,776	13,386	1.05	143	285	3,579	0.45
2004	44	2,494	51,205	2.34	144	440	4,756	0.57
2005	46	4,487	67,282	8.63	128	583	7,073	1.20
2006	48	5,789	54,925	11.27	129	575	4,813	1.02
2007	52	6,112	55,333	16.47	243	2,673	17,476	5.10
2008	53	5,317	50,031	7.54	208	1,486	7,965	1.70
2009	51	5,248	57,594	4.80	93	748	6,203	0.55
2010	51	3,467	52,259	5.21	92	826	6,097	0.56
2011	54	3,507	64,844	9.17	74	447	4,893	0.53
2012	51	2,576	50,103	6.67	56	271	2,896	0.20
2013	52	2,519	52,236	10.14	52	258	2,744	0.27
2014	54	3,139	46,442	11.69	51	255	1,801	0.19
2015	53	2,720	26,682	8.05	34	181	849	0.07

Source: authors' calculations based on the data available at www.bvb.ro

Table 4. *Dividend paying companies at BVB and RASDAQ*

Year	BVB listed companies that paid dividends	RASDAQ listed companies that paid dividends
2000	56	79
2001	46	99
2002	34	103
2003	34	80
2004	28	81
2005	26	36
2006	26	35
2007	26	77
2008	27	72
2009	26	66
2010	26	33
2011	31	1
2012	33	52
2013	31	0
2014	36	36

Source: based on data provided by BVB at http://www2.bvb.ro/ListedCcompanies/StatusDivid.aspx

Table 5. *The structure by types of trades at RASDAQ (% of total trades as of the end of every year)*

Year	Regular trades	Deal (special) trades	APAPS/ AVAS	Ministry of Public Finance	Purchasing offers & takeover bids	Sales offers & special sales	Other offers
2000	65.28	n/a	7.99	6.95	19.37	0.41	-
2001	56.92	n/a	0.54	7.08	28.39	7.07	-
2002	39.36	n/a	0.65	0.00	55.58	4.41	-
2003	37.21	5.02	0.17	0.00	52.71	4.90	-
2004	63.15	5.17	0.08	0.00	30.14	1.46	-
2005	57.95	34.65	0.00	0.00	5.74	1.66	-
2006	81.84	10.31	0.00	0.00	4.76	3.09	-
2007	72.04	23.37	0.00	0.00	2.63	1.96	-
2008	71.39	20.50	0.00	0.00	7.37	0.74	-

Year	Regular trades	Deal (special) trades	APAPS/ AVAS	Ministry of Public Finance	Purchasing offers & takeover bids	Sales offers & special sales	Other offers
2009	64.49	24.87	0.00	0.00	10.63	0.00	-
2010	70.24	28.24	0.00	0.00	1.48	0.03	-
2011	43.03	51.21	0.00	0.00	2.63	3.12	-
2012	48.90	48.22	0.00	0.00	1.93	0.95	-
2013	50.84	31.99	0.00	0.00	4.21	0.40	12.51
2014	55.40	26.62	0.00	0.00	16.24	1.74	0.00
2015	71.68	17.50	0.00	0.00	8.50	2.32	0.00
Average	*59.36*	*25.21*	*0.59*	*0.88*	*15.77*	*2.14*	*4.17*

Sources: Authors' compilations based on CNVM annual reports for the years 2000 to 2006. (http://www.cnvmr.ro/ro/raportanual.htm) and based on BVB monthly reports for RASDAQ for the years 2007 to 2015 (http://www.bvb.ro/TradingAndStatistics/Bulletins.aspx?t=1)

The influence of ownership structure (through the free float) on the traded companies was revealed and discussed by Pop et al. (2014) and Pop et al. (2015). Table 6 continues to support this idea by showing that the companies with a high level of ownership concentration were rather either not traded or registered just one transaction. Table A1 (within Annex section) gives more detailed information on this problem, showing a very high number of companies within the 1 to 49 transaction category.

Table 6. *The ownership structure for the RASDAQ tradable companies (%)*

Category	75% or more owned by one entity (state, company or individual)			between 50% and 74.99% owned by one entity (state, company or individual)		
	2013	***2014***	***2015***	***2013***	***2014***	***2015***
Never traded	48.28	48.15	53.57	34.48	29.63	28.57
Odd lot trades	66.67	50.00	n/a	16.67	37.50	n/a
0 trades	39.41	40.00	37.96	28.57	28.95	30.09
1 trade	29.79	40.74	45.65	31.91	27.78	28.26
2 or more trades	33.49	33.76	35.34	30.93	29.32	29.15

Note: Odd lot transactions were eliminated since December 2nd 2014. (http://www.bvb.ro/press/2014/comunicat_de_presa_eliminarea_pietei_odd_lot_04112014.pdf)
Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015.

First and second tier at RASDAQ were introduced in 2002 as part of the transformation process that began in January 2001. Table 7 and Table 8 present the evolution of these two categories. The number of companies that decided to fulfill higher reporting and transparency standards and were transferred within the 1st and 2nd tier at RASDAQ was very low, given the several thousands of listed companies. At a fist glance, their importance within RASDAQ capitalization and turnover seems low. Nevertheless, one should bear in mind that these companies represented less than 0.1% of the RASDAQ listed companies. Therefore, from this viewpoint, their contribution to RASDAQ capitalization and turnover should not be neglected. The data also indicate a more constant trading activity within these two categories. Nevertheless, the daily trading as presented in Table 8 is thin, thus it is similar to the overall thin trading at RASDAQ's level, as presented in Table 3.

Table A2 from Annex gives supplementary information regarding what happened with the companies listed within the 1st and 2nd tier since December 2013, based on the previous information provided by the studies of Pop et al. (2014) and Pop et al. (2015). In the case of 1st tier companies, 3 out of 4 (75%) were transferred on AeRO, while in the

case of 2nd tier companies the rate is a bit lower: 4 out of 7 (57%) were transferred on AeRO. Thus, it would have been expected that some of these companies to be transferred on BVB main market. It is not clear if the transfer on AeRO was an internal decision only given the lower reporting and transparency standards required, or these companies were never selected to be listed on BVB main market.

Table 7. *First and second categories/tiers at RASDAQ*

Year	Number of listed companies		% of the tier in market capitalization		% of the tier in market turnover	
	1st tier	2nd tier	1st tier	2nd tier	1st tier	2nd tier
2002	10	25	n/a	n/a	7.53	1.31
2003	15	17	14.47	4.76	13.00	5.42
2004	11	17	7.16	9.03	21.45	4.39
2005	9	17	3.96	11.94	17.27	19.36
2006	9	13	6.40	4.31	7.61	3.18
2007	9	11	4.48	3.85	3.90	1.33
2008	7	9	5.22	3.88	3.32	12.74
2009	6	9	3.72	4.42	7.67	2.31
2010	5	9	1.86	4.17	11.14	1.14
2011	4	8	3.03	1.63	8.91	0.96
2012	4	7	3.52	2.18	5.44	1.98
2013	4	7	3.15	2.63	2.69	0.50
2014	4	6	2.23	2.58	0.68	1.36
2015	0	0	3.74	1.94	1.41	0.49
average	-	-	4.84	4.41	8.00	4.03

Note: Figures reported as the end of the year. During 2015 the number of listed companies within the first category decreased from 4 to 2 on June 5th, from to 2 to 1 on June 26th and the last company was delisted on September 21st. Within the second category the evolution of the listed companies was as follow: they decreased from 6 to 4 on March 27th, from 4 to 3 on June 19th, from 3 to 1 on July 29th, while the last company was delisted on October 16th.

Source: authors' calculations based on the data available at www.bvb.ro and previously available at www.rasdaq.ro

Table 8. *The trading activity at daily level on RASDAQ's 1st and 2nd tier*

Year	1st tier daily averages				2nd tier daily averages			
	Number of traded companies	Number of trades	Volume (thou)	Turnover (ECU/EUR mn)	Number of traded companies	Number of trades	Volume (thou)	Turnover (ECU/EUR mn)
2002	8	38	237	0.016	11	17	51	0.003
2003	9	50	468	0.022	9	16	65	0.009
2004	10	92	1,144	0.077	7	20	54	0.016
2005	8	127	1,118	0.120	8	39	649	0.135
2006	6	64	416	0.063	6	26	91	0.026
2007	7	135	625	0.144	7	67	162	0.049
2008	5	72	305	0.042	5	29	83	0.162
2009	3	38	192	0.029	2	8	59	0.009
2010	3	66	306	0.045	2	6	27	0.005
2011	2	39	285	0.021	2	7	15	0.002
2012	1	4	49	0.015	2	6	22	0.002
2013	1	3	13	0.004	2	5	25	0.001
2014	1	4	6	0.001	1	3	8	0.001
2015	1	3	5	0.001	1	2	1	0.000

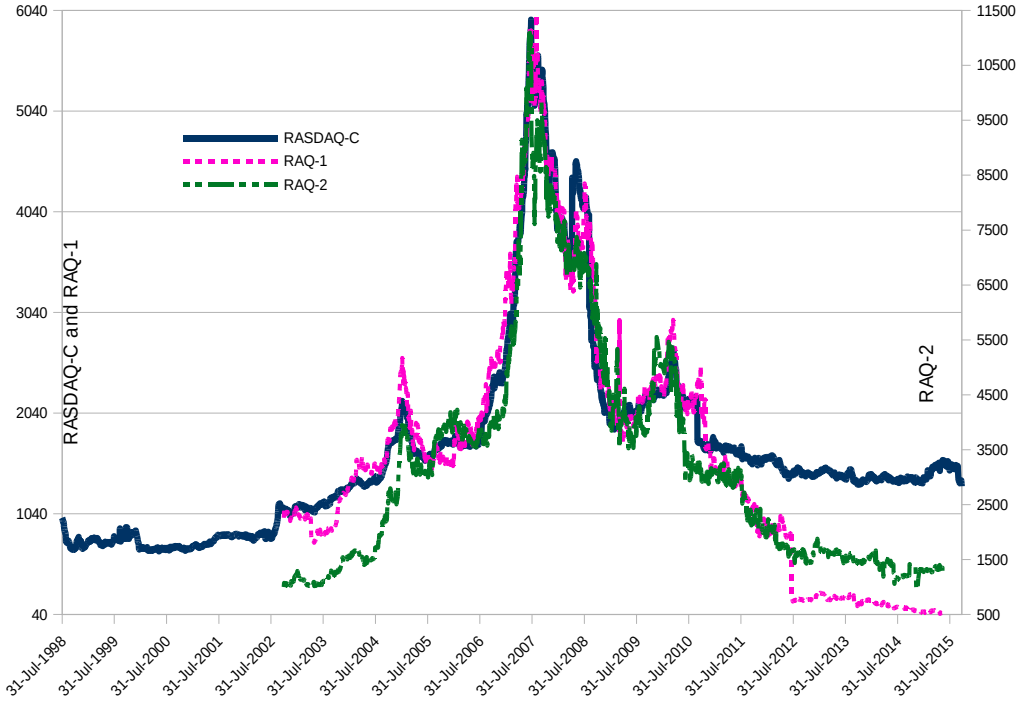
Source: authors' calculations based on the data available at www.bvb.ro

The RASDAQ indices

Three indices[(2)] were calculated for RASDAQ during its life: 1) RASDAQ-C (composite), the oldest index, launched on July 31st 1998; this index included all the RASDAQ companies; 2) RAQ-1 calculated for the first tier/category, and 3) RAQ-2 calculated for the second tier/category. The last two indices were both launched on October 28th 2002.

The evolution of these indices is presented in Graph 2 and shows similar shapes between 2005 and 2011. Thus, since 2012 until the close of RASDAQ, the indices dedicated to the first and second category exhibited a downward trend mainly due to the decline in number of the respective listed companies. The unclear status of RASDAQ, as discussed by Pop et al. (2014), also influenced the evolution of RASDAQ-C index which never recovered after 2012 when the effects of the financial and economic crisis were diluted.

Graph 2. *RASDAQ-C, RAQ-1 and RAQ-2 evolution*



Source: authors' compilations based on the data available at www.bvb.ro

Table 9 presents the descriptive statistics for the absolute values and the daily returns of the three indices. It is interesting to observe that all the three indices reached their higher values during the 2007 rally, while the lower values were reach outside the financial crisis period. In the case of daily returns, the higher values were reached during the volatile period of 2008-2009 under the influence of the financial crisis. In the case of RASDAQ-C, the lowest daily return was reached during the same period, while for RAQ-1 and RAQ-2 indices, the minimum returns were reached during 2012 and respectively 2014 under the influence of delisting process. As expected for a composite index, RASDAQ-C exhibited

the lowest standard deviation, while the highest was registered by RAQ-1. The daily returns for RASDAQ-C and RAQ-1 show very fat tails, while for RAQ-2 these seems comparatively low, thus kurtosis is also high in this last case. RAQ-1 is the only index with a negative daily return average and it is also the only one showing an important skew to the left, consistent with the negative average.

Table 9. *Descriptive statistics for RASDAQ indices*

Descriptive statistics	Absolute values			Daily returns (%)		
	RASDAQ-C	RAQ-1	RAQ-2	RASDAQ-C	RAQ-1	RAQ-2
Mean	1,677.37	1,676.76	3,254.64	0.0129	-0.0246	0.0390
Mode	685.31	189.32	1,210.73	0.0000	0.0000	0.0000
Median	1,455.40	1,542.35	2,941.03	0.0278	0.0000	0.0000
First Quartile	1,068.51	823.45	1,520.51	-0.3419	-0.8210	-0.6798
Third Quartile	1,895.17	2,240.08	4,040.93	0.3777	0.8780	0.7195
Standard deviation	986.67	1,293.61	2,121.97	1.1422	3.2229	2.5230
Kurtosis	4.10488	0.56057	1.05565	137.83532	128.80451	17.74598
Skewness	1.96384	0.90899	1.23843	0.37539	-5.84856	-0.32619
Minimum	668.15 (17/06/2000)	48.51 (22/05/2015)	956.54 (17/12/2014)	-22.9266 (2/09/2008)	-76.4437 (17/07/2012)	-29.8750 (8/12/2014)
Maximum	5,946.13 (24/07/2007)	5,998.05 (28/08/2007)	11,092.24 (23/07/2007)	26.3203 (6/05/2008)	28.7674 (2/04/2009)	20.8825 (30/11/2009)
Period	31/07/1998 to 22/10/2015	28/10/2002 to 4/06/2015	28/10/2002 to 18/06/2015	1/08/1998 to 22/10/2015	29/10/2002 to 4/06/2015	29/10/2002 to 18/06/2015

Source: authors' calculations based on the data available at www.bvb.ro

Table 10 presents the annual performances of the RASDAQ indices compared to the BVB composite index, the inflation rate and the interest rates for bank deposits. Between 1998 and 2001, RASDAQ performed better in comparison with BVB, but poorly relative to the inflation rate and bank deposit interest rate. It also can be observed that RASDAQ did not follow the BVB rally of 2002 and 2004, except for RAQ-2. This situation was induced by the lack of confidence in RASDAQ, as explained by Pop et al. (2014). Also, for 2008, when the climax of the financial crisis was reached, RASDAQ exhibited a lesser decrease than BVB. These evolutions seem to support the idea that RASDAQ was rather not interesting for portfolio investors and appealed for those interested in ownership concentration. The best year, in terms of annual returns, was 2007. However, this situation was rather created by speculative rallies for some companies (mainly listed on XMBS market), where the daily price variations were not limited. Some of these huge variations were presented by Pop et al. (2014). Since 2010, RASDAQ registered only negative returns, with only one exception for 2013 in the case of RAQ-1. As mentioned above, the negative returns were triggered mainly by the uncertainty related to RASDAQ market status within BVB. Thus, the high number of listed companies and their modest performances (Brasoveanu et al., 2014), the quasi absence of dividend policies, the lack of transparency (see the absence of websites, as highlighted by Pop et al. (2014) and Pop et al. (2015)) and the high level of ownership concentration, did not enticed the potential investors.

Table 10. *RASDAQ indices annual returns (%) compared with the BVB annual returns (%), inflation rate (%) and the interest rate for bank deposits (%)*

	RASDAQ-C	RAQ-1	RAQ-2	BET-C/Plus	Inflation rate	Interest rate
1998	-54.39	-	-	-99.54	59.1	38.3
1999	22.48	-	-	-4.99	45.8	45.4
2000	-16.00	-	-	7.39	45.7	32.4
2001	20.04	-	-	-6.47	34.5	26.2
2002	27.22	-14.94	87.37	124.02	22.5	18.4
2003	21.89	26.15	31.72	22.62	15.3	10.8
2004	39.32	59.69	72.60	98.29	11.9	11.3
2005	-2.56	-22.97	50.32	31.63	9.0	8.3
2006	33.96	70.35	-1.09	25.07	6.6	6.5
2007	95.29	60.09	101.46	26.27	4.9	6.7
2008	-54.37	-49.90	-39.29	-69.68	7.9	9.6
2009	7.67	5.22	12.36	34.62	5.6	11.9
2010	-25.17	-38.97	-41.93	13.49	6.1	7.3
2011	-6.46	-38.92	-36.70	-16.73	5.8	6.3
2012	-11.00	-81.65	-11.21	6.29	3.3	5.4
2013	-3.78	2.28	-16.58	16.25	4.0	4.5
2014	-1.66	-60.17	-13.37	-1.21	1.1	3.0
2015	-2.11	-10.25	-2.64	0.24	-0.6	1.9

Source: authors' calculations based on the data available at www.bvb.ro

Despite the similar evolution of the RASDAQ indices in absolute values, the correlations of their daily returns show weak relations between these indices (Table A3 in Annex), RAQ-1 influence over RASDAQ-C variability being of about 3.80%, while the influence of RAQ-2 is even lower, of about 2.08%. Thus, the relationship is weak, the Granger causality results (Table A4 in Annex) show that these three indices influenced each other for the lags 2 to 20. There is no Granger causality for the first lag in the case of RASDAQ-C and RAQ-1. In the case of RAQ-2, this index is Granger caused both by RASDAQ-C and RAQ-1 for the first lag, while its influence upon RASDAQ-C for the same lag is weaker, and it has no influence over RAQ-1. The situation is consistent with the relative modest profile of the first and second category within RASDAQ capitalization and turnover, as highlighted in Table 7 and Table 8.

The relationship between the RASDAQ indices and BVB indices was also investigated, as Table A5 and Table A6 (in Annex) show. The correlations between RASDAQ indices and BVB indices are also weak, thus there are comparatively stronger than those registered between RASDAQ-C, RAQ-1, and RAQ-2. The simple regression results also show that, at individual level, the six BVB indices explain more of the RASDAQ-C variability than RAQ-1 and RAQ-2. This remains true also in the case of RAQ-1, while for RAQ-2 variability, their influence can be considered very small.

Further, the Granger causality between the RASDAQ indices and BVB indices was investigated. Table 11 presents in a synthesized form the data from Table A6 (Annex). RASDAQ-C is Granger caused by all BVB indices, except for 1 lag in the case of BET-BK; it also Granger causes BET and BET-FI indices for all lags, and BET-C/Plus and BET-XT for 5, 10, and 20 lags. Thus, the influence of BVB indices upon RASDAQ-C is stronger. RAQ-1 is Granger caused by 5 of the BVB indices, and has a lower influence upon these indices than RASDAQ-C. No influence was found in relation with BET-BK (a situation confirmed to some extend by the simple regression results which show that only

1.68% of the RAQ-1 variability is explained by BET-BK). RAQ-2 has a similar behavior to RASDAQ-C: it is Granger caused by the BVB indices and in some cases Granger causes the respective indices. The influence of BVB indices upon RAQ-2 is stronger. The results suggest that RASDAQ market evolution was, up to a point, under some influence of BVB. Thus, the regression results indicate a weak relationship between these two markets. This situation is consistent with the RASDAQ market perception as a place for ownership concentration rather than portfolio investment. Thus, the bidirectional relationship with some of the BVB indices (mainly BET and BET-FI) might have been induced by the respective indices constituents and the ownership positions these constituents have within RASDAQ listed companies.

Table 11. *The Granger causality results between RASDAQ indices and BVB indices*

	RASDAQ-C	**RAQ-1**	**RAQ-2**
BET	The indices Granger cause each other, with a stronger influence of BET upon RASDAQ-C.	RAQ-1 Granger causes BET, except for 4 and 5 lags, and it is Granger caused by BET for lags 2 to 20. The BET influence for the respective lags is stronger.	RAQ-2 does not Granger cause BET for 1, 2, and 3 lags. For the remaining lags and influence was detected. BET Granger causes RAQ-2, except for lag 1.
BET-C/Plus	RASDAQ-C does not Granger cause BET-C/Plus for lags 1 to 4. An influence was found for 5, 10, and 20 lags. BET-C/Plus Granger causes RASDAQ-C.	RAQ-1 does not Granger cause BET-C/Plus for all lags. BET-C/Plus Granger causes RAQ-1.	RAQ-2 does not Granger cause BET-C/Plus for all lags. BET-C/Plus Granger causes RAQ-2.
BET-FI	The indices Granger cause each other, with a stronger influence of BET-FI upon RASDAQ-C.	RASDAQ-C does not Granger cause BET-FI for all lags. BET-FI Granger causes RAQ-1.	RAQ-2 Granger causes BET-FI for lags 3, 4, 5, and 20 and it is Granger caused by it for all lags.
BET-XT	RASDAQ-C Granger causes BET-XT for 1, 2, 5, 10, and 20 lags and it is Granger caused by BET-XT for all lags. The influence of BET-XT is stronger.	RAQ-1 Granger causes BET-XT for 1 lag and 20 lags, and it is Granger caused by BET-XT for all lags.	RAQ-2 Granger causes BET-XT for 1 lag, 5 lags, and 20 lags, and it is Granger caused by BET-XT for all lags.
BET-NG	RASDAQ-C does not Granger cause BET-NG for lags 1 to 4. An influence was found for 5, 10, and 20 lags. BET-NG Granger causes RASDAQ-C.	RAQ-1 does not Granger cause BET-NG, except for 20 lags. BET-NG Granger causes RAQ-1.	RAQ-2 does not Granger cause BET-NG, and it is Granger caused by it for all lags.
BET-BK	RASDAQ-C does not Granger cause BET-BK for all lags. Thus it is Granger caused by BET-BK for lags 2 to 20.	**RAQ-1 does not Granger cause BET-BK and it is not Granger caused by it.**	RAQ-2 Granger causes BET-XT for 3, 4, 10, and 20 lags, and it is Granger caused by it for lags 2 to 20.

Note: Detailed information regarding BVB indices can be found at: http://www.bvb.ro/FinancialInstruments/Indices/Overview
Source: authors' calculations based on the data available at www.bvb.ro

Based on the RASDAQ indices, the presence of anomalies was investigated. The hypotheses in these cases were formulated as follow: *RASDAQ exhibits a January effect*, and *RASDAQ exhibits a weekend effect*), similar to the previous papers of Pop et al. (2014 and 2015). The presence of anomalies would indicate that RASDAQ represented an interesting alternative for portfolio investments. The results are presented in Table A7 (in Annex) for January effect and in Table A8 (in Annex) for the weekend effect. The January effect was calculated previously by Pop et al. (2015) for RASDAQ-C for the periods August 1998 - December 2013 and respectively August 1998 – December 2014. The reported results showed a weak January effect of 0.0200 for both periods. The results from Table A7 indicate also a weak January effect for all the three RASDAQ indices(3).

Thus, RASDAQ-C index seemed to have a slightly enhanced January effect (0.0380) for the entire period: August 1998 – October 2015, compared to the previously reported results. This might be explained by a slightly increased interest for some of the remaining RASDAQ companies before the closing of the market. Thus, in general, the January effect can be considered a negligible one at RASDAQ level, no matter if the companies were listed within the base category, or the first or second category. Table 12 shows that all RASDAQ companies fell within the nano capitalization group (see footnote 4 in Pop and Balint, 2013), with more than half having a market capitalization lower than EUR 1.12 millions. If RASDAQ would have been an interesting alternative for portfolio investment, this situation could have supported and enhanced the January effect. However, the January effect is not significant and it also indicates that RASDAQ market was rather not taken into consideration by the portfolio investors.

Table 12. *Structures of RASDAQ traded companies by capitalization*

	Structure by capitalization in 2014	**Structure by capitalization in 2015**
RON < 1mn (EUR < 0.25mn)	24.33%	24.05%
RON 1 to 4.99mn (EUR 0.25 to 1.12mn)	32.37%	30.57%
RON 5 to 9.99mn (EUR 1.13 to 2.24mn)	16.07%	16.85%
RON 10 to 49.99mn (EUR 2.25 to 11.24mn)	21.21%	21.12%
RON 50 to 99.99mn (EUR 11.25 to 22.49mn)	2.90%	4.04%
RON ≥ 100mn (EUR ≥ 22.5mn)	3.12%	3.37%

Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2014 and October 22nd 2015.

The weekend effect is almost nonexistent at RASDAQ level and also within the first and second category. The findings for RASDAQ-C are consistent with the results reported by Pop et al. (2015) for 2013 and 2014. The absence of anomalies for RASDAQ was also confirmed by Dumitriu et al. (2011).

The current results point toward a weak January effect and an almost nonexistent weekend effect for RASDAQ. This situation indicates that RASDAQ was seldom perceived as a market for portfolio investments, and rather was used for ownership concentration within the listed companies.

An interesting information is provided by the calculation of January Barometer for the three RASDAQ indices (Table A9 in Annex). January Barometer was introduced by Yale Hirsh in 1972 for S&P index and states that as the index goes in January, so goes the year (Hirsh and Hirsh, 2008). At the level of 2007, the accuracy ratio for S&P index was of 75.4% (Hirsh and Hirsh, 2008). While Yale Hirsh never explained the rational behind this January Barometer, it might have its roots in the January effect.

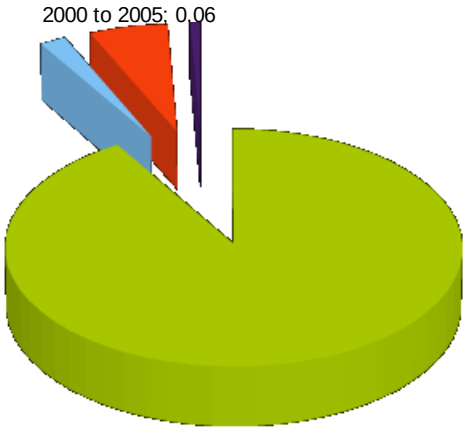
When applied for the RASDAQ indices, the accuracy ratios differ: only 52.94% in the case of RASDAQ-C (of the 17 years of observations, the barometer was correct only in 9 cases), and rises to 76.92% for RAQ-1 and RAQ-2, predicting the right direction of the respective categories in 10 cases out of 13. While for the entire RASDAQ market (represented by RASDAQ-C) it is not unexpected to see a low accuracy ratio due to the weak January effect, the high level of accuracy ratio in the case of RAQ-1 and RAQ-2 with a similar weak January effect, suggest more investigations are needed in order to explain the predicting power of the January Barometer at RASDAQ level.

The last companies listed on RASDAQ: December 2014-October 2015

Between December 10th 2014 and October 22nd 2015 the last remaining 911 companies were listed on RASDAQ market. As Graph 3 shows, the majority of these companies (91.32%) start listing between November 1996 and December 1997, while RASDAQ started trading in October/November 1996. These 'veteran' companies were introduced to RASDAQ during a period when the majority of the privatized companies start listing (Table 2).

It is interesting to mention that 5.60% of the 911 companies which start listing between 1998 and 2010 resulted from spin-offs of already listed RASDAQ companies. None of the remaining 911 companies start listing after 2010. Furthermore, it is worth mentioning that 2 of the 911 companies were originally listed on BVB market; they entered RASDAQ in 2002 (FOSB, former FOR at BVB) and 2003 (RCHI, former CHI at BVB). Both these companies were transferred on AeRO, the ATS platform offered by BVB. In addition, 4 companies (of the 911) started listing on RASDAQ, were transferred on BVB and re-transferred on RASDAQ(4). Thus, being reintroduced on RASDAQ under the same initial symbol, they appear as they were always listed on this market; the exact day of their return on RASDAQ was almost impossible to retrace as of October 2015.

Graph 3. *The structure by year of listing of the RASDAQ remaining 911 companies*



Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Another fact that deserve to be noticed: the Romanian State still held majority positions (through ministries and agencies) in 31 of the 911 companies when the respective companies were delisted or transferred on other markets, as Table 13 shows(5). Of these 31 companies, 15 were traded during 2014-2015, while 7 tradable companies registered 0 trades, and the remaining 9 were suspended for various reasons. It is also interesting to mention that 4 of the 31companies are from the travel & tourism sector (NEOL, BIBU, LITO and the controversial MAIA).

Table 13. *The RASDAQ listed companies where Romanian State held a majority position as of their delisting or transfer*

State owned through	Traded companies			Tradable companies - 0			Suspended companies		
	on	on	deliste	on	on	delisted	on	on	deliste
Ministry of Economy	1	7	-	-	-	1	-	-	3
Ministry of Education	-	-	-	-	1	1	-	-	-
Ministry of Youth & Sports	-	1	-	-	-	-	-	-	-
Ministry of Culture	-	-	-	-	1	-	-	-	-
AAAS	-	2	3	-	1	2	-	-	5
Cluj County Council	-	1	-	-	-	-	-	-	-
Sibiu Development Agency	-	-	-	-	-	-	-	-	1

Notes: IARV is the only traded company transferred on BVB main market (standard segment). The traded companies transferred on AeRO are: RORX, IORB, IPHI, NEOL, STNM, AVIO, LITO (controlled through the Ministry of Economy), BIBU (Ministry of Youth and Sports), CLUJ (Cluj County Council), CPHA and COKG (through AAAS). The delisted companies of the traded group were UTRQ, TAPI, and CAST (all controlled through AAAS). Within the tradable companies with 0 transactions, those transferred on AeRO are: ANIM (Ministry of Culture), INAR (AAAS – Autoritatea pentru Administrarea Activelor Statului/The Authority for State Assets Administration), and INCT (Ministry of Education); the delisted companies were: ICSC (Ministry of Economy), INCT (Ministry of Education), MUSC, FRTI (AAAS). All the companies within the suspended group were delisted; these companies were: CAER, MAIA, ROME (Ministry of Economy), SIEM (Sibiu Development Agency), and ORAX, MEOX, SETR, AGLS, HOLS (AAAS); of these last 5 companies, 3 (MEOX, SETR, and AGLS) were never traded since start listing.
Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Table 14 presents the structure of listed and traded companies by sectors. The differences in structure registered in 2015 resulted from the fact that for the respective year the information provided by the Romanian Ministry of Public Finance were used, being up to date. The important increase of the service sector was generated by many companies changing their main activity toward services (especially letting and subletting their real estates.

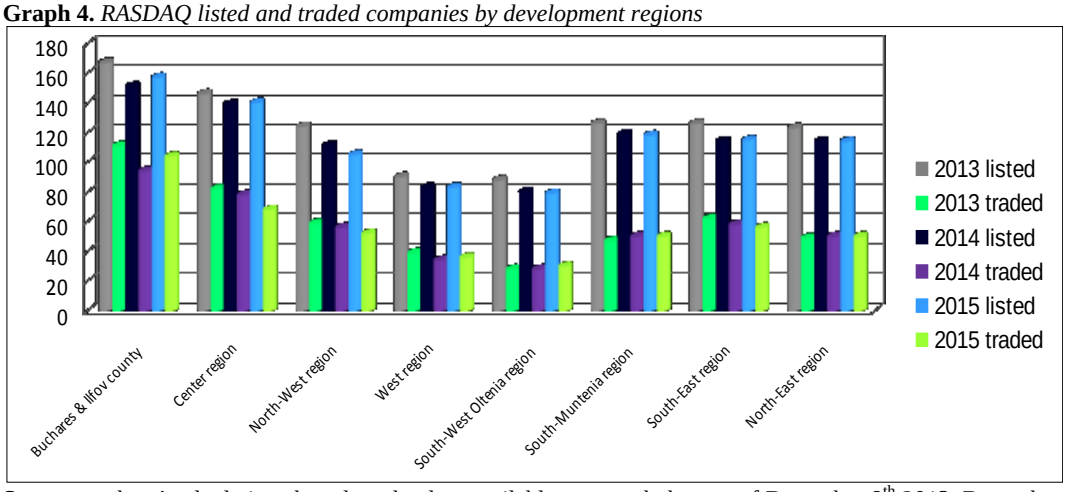
Table 14. *RASDAQ listed and traded companies by sector (%)*

Sector	Listed companies			Traded companies		
	2013	2014	2015	2013	2014	2015
Agriculture, forestry and fishing	7.83	8.17	12.97	5.03	5.13	4.49
Industry	43.78	43.83	36.15	46.33	47.10	44.94
Constructions	8.39	8.47	10.00	8.60	8.26	9.66
Services	13.15	13.08	19.01	13.84	13.84	19.55
Tourism & travel	8.11	7.88	6.59	8.81	9.82	7.41
Transports	6.99	6.84	6.26	4.40	9.38	3.82
Trade	9.65	9.66	7.58	9.85	9.38	8.54
Other sectors (science & technology, culture & recreation, financial intermediation)	2.10	2.08	1.43	3.14	2.46	1.57

Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015 and on www.mfinante.ro as of October 2015.

Graph 4 presents the structure of the listed and traded companies by development regions. Bucharest and Ilfov County concentrated the highest number of companies, with a slight increase between December 2014 and October 2015. This situation was due to the transfer of headquarters of companies from various counties in Bucharest or Ilfov County, as a decision of their majority shareholder(s). South-West Oltenia is the region with the lowest number of listed and traded companies, reflecting its low profile status within Romanian economy.

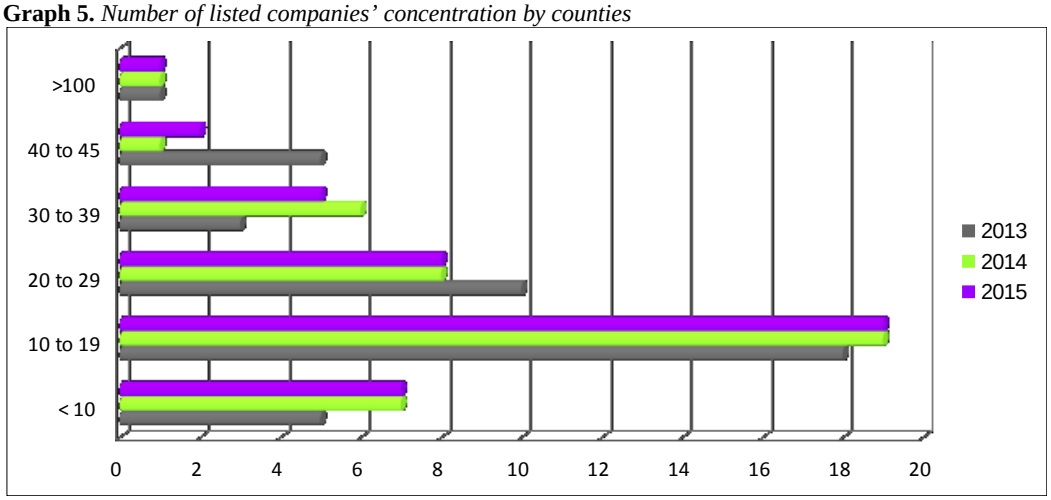
Graph 4. *RASDAQ listed and traded companies by development regions*



Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015.

Graph 5 presents the number of counties and the concentration of companies within these counties. The majority of the counties listed between 10 and 19 companies. Only Bucharest registered more than 100 listed companies (137 as of October 2015). The other seven counties that concentrated between 30 and 45 listed companies during 2015 were: Brasov (42), Cluj (32), Constanta (40), Prahova (37), Sibiu (39), Suceava (30), and Timis (38). Except for Suceava, the other six counties have an important level of economic development.

Graph 5. *Number of listed companies' concentration by counties*

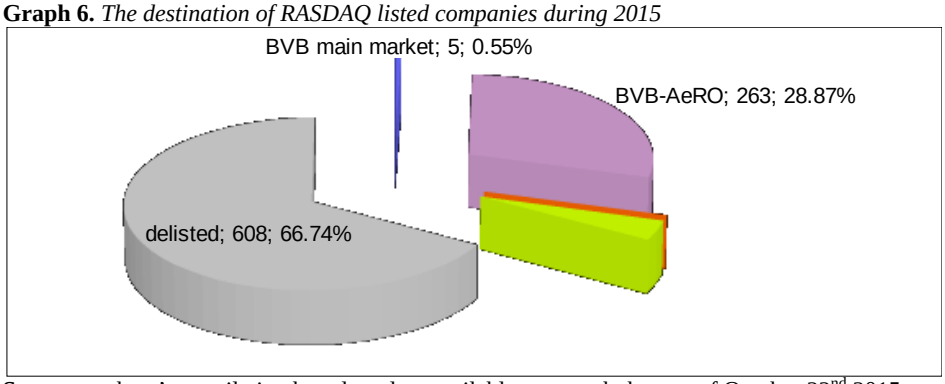


Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015.

Graph 6 shows what happened with the last RASDAQ listed companies during 2015. Almost 67% of these companies were delisted(6), about 29% were transferred on the AeRO segment at BVB, only 5 companies were transferred on BVB main market, while the only closed-end fund (XFOA), was transferred on the ATS segment dedicate to these

instruments at BVB. SIBEX, a smaller Romanian exchange located in Sibiu and better known for the derivative trading, welcomed about 4% of the RASDAQ companies on its ATS segment.

Graph 6. *The destination of RASDAQ listed companies during 2015*



Source: authors' compilation based on data available at www.bvb.ro as of October 22nd 2015.

Table 15 and Table 16 give more details regarding to the last 911 companies listed on RASDAQ. The data show that the bulk of delisting occurred mainly at the closing of RASDAQ, indicating a relative indifference of their shareholders toward the status of their company on a market that was announced to be closed. This case is particularly true for the companies that were suspended for various reasons. It seems that they were 'forgotten' on RASDAQ; one must notice the 51 suspended companies that were never traded since start listing and the other 10 companies that registered just one transaction since start listing. Most of these 61 companies were introduced in RASDAQ in 1996 or 1997 and have the 'suspended' status for years.

The shareholder interested to see their company continuing to be listed, expressed their option before October 22nd for the majority of the companies transferred on other platforms. The only exception occurs for the companies transferred on BVB, where for 2 out of 6 companies (30%) the move occurred between October 22nd and October 27th, at the close of RASDAQ.

The fact that the ownership structure was already established and the companies did not raise the interest of investor is reflected by the important number of the delisted companies that did not registered any trade during 2015, thus tradable. The relative low interest for the companies that announced their transfer is shown in Table 16. The majority of the companies transferred on AeRO and on SIBEX registered between 1 and 49 trades, confirming the already established ownership structure, with no important exists or new entries at shareholder level. The exception occurs for the companies transferred on BVB main market. It seems that they attracted the investors' interest since 4 of them (about 67%) registered more than 500 trades, and 1 (about 17%) registered more than 100 trades.

Table 15. *RASDAQ listed companies: what happened between December 10th 2014 and October 27th 2015 (the last trading day: October 22nd 2015)*

Details	Total	Since start listing		Zero trade between December 2014 and October 2015 (never traded and just one trade excluded)
		never traded	just one trade	
Delisted until October 22nd	138	5	0	61
Transferred on AeRO until October 22nd	246	2	1	58
Transferred on SIBEX until October 22nd	32	0	0	6
Transferred on BVB-ATS (fund units) until October 22nd	1	0	0	0
Transferred on BVB-main market until October 22nd	3	0	0	0
Suspended as of October 22nd	**183**	**51**	**10**	**117**
of which delisted	179	51	10	114
of which transferred on AeRO	4	0	0	3
Tradable as of October 22nd	**308**	**25**	**5**	**126**
of which delisted	291	25	5	121
of which transferred on AeRO	13	0	0	3
of which transferred on BVB-main market	2	0	0	0
of which transferred on SIBEX	2	0	0	2
Total	911	83	16	**368**

Source: authors' calculations based on data available at www.bvb.ro as of October 22nd 2015.

Table 16. *The destination of the RASDAQ companies structured by trades*

Number of trades within 52 weeks	The destination of the RASDAQ companies				
	Transferred to BVB main market	Transferred to BVB ATS	Transferred on BVB AeRO	Transferred on SIBEX	Delisted
1 to 49 trades	1	0	143	21	180
50 to 99 trades	0	0	19	2	16
100 to 499 trades	1	0	30	2	19
>500 trades	3	1	5	1	2
Total	**5**	**1**	**197**	**26**	**223**

Source: authors' calculations based on data available at www.bvb.ro as of October 22nd 2015.

Table 17 presents the profile of the RASDAQ companies transferred on other trading platforms. The information is completed with the descriptive statistics, where appropriate, included in Table 18. It must be noted that the closed-end fund (XFOA) was excluded from the profile, considered to be a different type of security.

The companies transferred on BVB main market have the highest market capitalization (average RON 81.64mn), and registered a more intense trading activity (an average of 2,041 trades); within this group of companies, 3 out of 5 (60%) paid dividends. The price to book (p/b) ratio based on the last reported price shows that the companies transferred on BVB were overvalued (average p/b ratio of 2.75), but this ratio is relative close to normality, compared with the situations registered in the cases of AeRO and SIBEX transferred companies. Also the relative high level of liquidity determined a low last price variation (an average of 0.13%), within the +/- limit of 15% imposed for the BVB main market traded companies. Four of the BVB transferred companies had a free float larger than 25% (an average of 32.15%). Neither of the companies transferred on BVB main market came from the first and second category. All the companies within this group were 'veteran' companies, listed since 1996-1997, and all are industrial companies. It is

interesting to mention that of the companies transferred on BVB main market only one have the headquarter in Bucharest, the remaining four came from Alba County (2), Brasov County (1), and Mures County (1).

The companies transferred on AeRO have a considerable lower market capitalization (average RON 15.22mn), registered a moderate to low trading activity (an average of 84 trades), and only about 19% of the companies paid dividends. The p/b ratio is higher (an average of 4.86) compared to that of companies transferred on BVB main market, with an extreme value of 195.00 registered for RORX. The p/b ratio for the companies transferred on AeRO also revealed that 110 companies (41.83%) registered a ratio lower than 1; of these companies, 80 companies had a p/b ratio lower than 0.5; about 54% of this group of companies registered a p/b higher than 1, with 22 companies having p/b ratios larger than 10.00. The variation of the last price is high, in relation with the moderate to low liquidity of these groups, with important extreme values: -99.22% for FOSP and 1,566.67% for CODG (both companies being traded on XMBS market which does not impose limits for the price variation). The average free float of 20.16% is lower than for the companies transferred on BVB main market. Of the companies transferred on AeRO, three came from the RASDAQ first category, and other 4 came from the second category. Within these companies transferred on AeRO, 90.49% were also 'veteran' companies, listed since 1996-1997. There is an interesting situation: the shareholders of two companies that were never traded on RASDAQ since start listing chose to transfer them on AeRO. Five of the companies transferred on AeRO were not traded since 2005 or earlier and other 7 were not traded since 2006-2010. This group of companies is dominated by those within the industry sector (41.44%), followed by the service sector (20.15%), while the construction and travel & tourism have a representation of 11.03% and respectively 9.89%. The companies transferred on AeRO came from a larger pool of counties; thus, Bucharest provided 23.57% of these companies, while 30.80% came from: Constanta County (18 companies), Brasov County (14 companies), Sibiu County (14 companies), Galati County (13 companies), Prahova County (12 companies), and Cluj County (10 companies).

The companies transferred on SIBEX have the lowest capitalization (average RON 7.39mn), a low trading activity (an average of 72 trades), and only 2 of the 34 companies paid dividends. The p/b ratio is high, an average of 7.86, with the extreme value of 140.00 for SOFT. Due to the low liquidity, the last price variation is also very high, with an average of 85.41%, and extreme values of -92.15% for CNFG and 1,300.00% for SIRJ. Similar to the companies transferred on AeRO, these companies were traded on XMBS market, with no limits on price variation. The average free float for the companies transferred on SIBEX is of 25.40%, higher than for the companies transferred on AeRO, but lower than for those transferred on BVB main market. All the companies transferred on SIBEX came from the RASDAQ base category. Of the 34 companies, 30 (88.24%) were 'veteran' companies, listed since 1996-1997. Similar to the companies from the previous group, the dominant activities of the companies transferred on SIBEX are related to the industry sector and service sector. Since SIBEX has headquarter in Sibiu, it is no surprise that Sibiu County provided the larger number of the transferred companies: 7 (20.59%).

Table 17. *The profile of RASDAQ companies transferred on BVB main market, AeRO and SIBEX (XFOA excluded)*

	BVB	**AeRO**	**SIBEX**
Total	5	263	34
By capitalization			
RON ≥ 100mn	1	9	-
RON 50 to 99.99mn	2	8	-
RON 10 to 49.99mn	2	59	9
RON 5 to 9.99mn	-	44	6
RON 1 to 4.99mn	-	90	8
RON < 1mn	-	53	11
By types of market			
RGBS	3	51	2
XMBS	2	212	32
By dividend payment during the last 3 years			
Paid dividends	3	50	1
No dividends	2	213	33
Listed since			
1996-1997	5	238	30
1998-1999	-	6	1
2000-2005	-	17	1
2006-2010	-	2	2
2011-2014	-	-	-
Not traded since			
Never traded	-	2 (AGCM, PARC)	-
1996-1999	-	2 (CICO, SIEP)	-
2000-2005	-	3 (BADE, CAXY, AVUT)	-
2006-2010	-	7	1
2011-2012	-	10	2
2013-2014	-	48	6
By transactions			
0 trades or suspended	0	66	8
1 to 49 trades	1	143	21
50 to 49 trades	0	19	2
100 to 499 trades	1	30	2
≥ 500 trades	3	5	1
Selected details on ownership			
State owned (majority)	1	14	-
SIFs or FP majority	-	38	2
By p/b ratio based on the last reported price			
n/a	-	2	-
p/b < 1	-	110	13
p/b = 1	-	9	1
p/b > 1	5	142	20
By price variation for the last registered trade			
n/a	-	13	-
negative	3	90	16
zero	-	56	7
positive	2	104	11
By free float			
< 10%	1	95	5
10% to 24.99%	-	89	17
≥ 25%	4	79	12
By type of activity			
Agriculture, forestry and fishing	-	7	1

	BVB	AeRO	SIBEX
Industry	5	109	19
Constructions	-	29	2
Services	-	53	8
Tourism & travel	-	26	1
Transports	-	8	-
Trade	-	22	3
Other sectors (science & technology, culture & recreation, financial intermediation)	-	9	-

Note: XFOA was excluded from the traded companies since, in fact, it is an investment fund and therefore should be evaluated based on a different set of characteristics.
Source: authors' calculations based on data available at www.bvb.ro as of October 22nd 2015.

Table 18. *Descriptive statistics for the RASDAQ companies transferred on BVB, AeRO and SIBEX*

	BVB	AeRO	SIBEX
By capitalization (RON mn)			
Average	81.64	15.22	7.39
Median	72.08	3.72	3.63
Standard deviation	75.99	44.84	10.28
Minim	10.20 PREB	0.02 FORO	0.10 COMJ
Maxim	205.47 ALBZ	579.59 ATRA	39.76 BALO
By transactions			
Average	2,041	84	72
Median	2,203	11	8
Standard deviation	1,771	476	276
Minim	24 MECE	0	0
Maxim	4,082 MCAB	7,300 PRSN	1,612 ARAX
By p/b ratio based on the last reported price			
Average	2.75	4.86	7.86
Median	3.07	1.24	1.75
Standard deviation	0.65	16.22	24.03
Minim	1.88 IARV	0.01 ELRD, ARCV	0.04 MEMI
Maxim	3.40 MECE	195.00 RORX	140.00 SOFT
By the variation of last price (%)			
Average	0.13	24.37	85.41
Median	-1.26	0.00	0.00
Standard deviation	4.72	152.45	292.98
Minim	-5.56 MECE	-99.22 FOSP	-92.15 CNFG
Maxim	7.26 MCAB	1,566.67 CODG	1,300.00 SIRJ
By free float (%)			
Average	32.15	20.16	25.40
Median	32.03	15.91	24.43
Standard deviation	15.94	17.26	16.32
Minim	8.89 MECE	0.06 AVUT	2.03 BALO
Maxim	53.73 PREB	100.00 PRIN	58.50 SIGS

Source: authors' calculations based on data available at www.bvb.ro as of October 22nd 2015.

Table A10 (in Annex) presents the situation of RASDAQ companies owned by the BVB listed investment companies (SIFs or Societati de Investitii Financiare and FP or Fondul Proprietatea). It can be seen that SIFs and FP did not exit any majority position during the last months of RASDAQ activity. Thus, these investment companies choose to exit some of their minority positions during 2015; the highest number of exists appears in the case of SIF Transilvania (SIF3), while SIF Oltenia (SIF5) did not make any changes compared to the previous year. The majority of the companies where SIFs and FP owned a (controlling or minority) position were transferred either on AeRO (68.09% of them) or on SIBEX (7.08% of them). The detailed situation is presented in Table 19.

Table 19. *The destination of the RASDAQ companies where the BVB listed investment companies owned a position*

Investment company name & symbol	Transferred on AeRO	Transferred on SIBEX	Delisted
SIF Banat-Crisana (SIF1)	9	3	8
SIF Imobiliare plc* (SIFI)	5	0	2
SIF Moldova (SIF2)	12	1	8
SIF Transilvania (SIF3)	27	3	10
SIF Muntenia (SIF4)	22	3	13
SIF Oltenia (SIF5)	16	0	0
Fondul Proprietatea	5	0	2

Note*: SIF Imobiliare plc (SIFI) is controlled by SIF Banat-Crisana (SIF1) and is currently listed on AeRO; SIF1 transferred to SIFI portfolio mainly the companies involved in real estate and some hotel companies.
Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Selected findings regarding the last 911 listed RASDAQ companies are presented in Table A11, A12, A13, and A14 (in Annex). Each table is dedicated to a group of the 911 companies, based on their status: tradable or suspended. The market capitalization was used as the main criteria for splitting the companies into subgroups within Tables A11, A12, and A13. The equity capital was used within Table A14, since for the tradable thus never traded companies the market capitalization could not be determined.

Table A11 presents the descriptive statistics for the 445 companies that registered transactions between December 10th 2014 and October 22nd 2015. It shows that this group of companies is dominated by those with a market capitalization lower than RON 5mn, with 30.56% having a capitalization between RON 1mn and RON 4.99mn, and 24.04% with a capitalization lower than RON 1mn. The companies within these two sub-groups also registered the lowest level of transaction. The most traded sub-group was that including the companies with a capitalization between RON 50mn and RON 99.99mn. In general, 77.53% of the companies registered between 1 and 49 trades, between December 2014 and October 2015. The price to book (p/b) ratio shows that, within all the sub-groups, the companies were overvalued, thus in the case of the last sub-group the average p/b ratio is close to 1. The companies with the highest capitalization (larger than RON 100mn) registered the largest average p/b ratio. It is also worth noticing that the maximum p/b ratios within all sub-groups are very high. In general, 56.40% of the companies registered a p/b ratio larger than 1 (the sub-group with the capitalization between RON 1mn and RON 4.99mn registering 61.03% of overvalued companies), while only 39.55% of the companies registered a p/b ratio lower than 1 (the sub-group with the lowest capitalization had the most undervalued companies, 73.83%). The lack of

liquidity for most of the companies resulted in large price variations, also with very high maximum values. The majority of the companies within this group can be considered 'veteran' companies, which start listing since 1996-1997. Between 1998 and 2010, only 39 new listings occurred; of these new listings, 23 (58.97%) resulted from spin-offs of already listed RASDAQ companies, and 2 other companies were transferred from BVB market. The group of traded companies was dominated by the industry sector (44.94% of the companies), followed by the services sector (19.55% of the companies). Most companies within this group had headquarters in Bucharest (91), followed by Sibiu County (25), Cluj County (21), and Prahova County (20). The last three counties concentrated mainly companies with a capitalization lower than RON 50mn.

Table A12 presents the tradable companies which were not traded between December 10th 2014 and October 22nd 2015. This group does not include any company with a capitalization larger than RON 100mn. The last two sub-groups concentrate the bulk of this group of companies, 66.82% having a capitalization lower than RON 1mn, and 21.33% with a capitalization between RON 1mn and RON 4.99mn. The average p/b ratio indicates an overvaluation for 4 of the 5 sub-groups, and an under-valuation for the sub-group with the lowest capitalization. In general, 60.66% of the companies had a p/b lower than 1, most of them having a capitalization lower than RON 1mn. Within this group of companies, 42 (19.91%) did not register any trade since 2005 or earlier. The low liquidity of this group of companies is reflected by the last price variation, which shows extremely high level for average and also for maximum values. As within the previous group, most of this group companies are 'veteran' companies, listed since 1996-1997. Between 1998 and 2005 only 18 new listings occurred, of which 13 (72.22%) resulted from spin-offs of already listed RASDAQ companies, and only 5 companies were newly introduced on RASDAQ. The companies within this group have a more even spread between the sectors: industry (22.27%), services (16.59), agriculture and transports (9.95% each), and construction (9.48%). This situation suggests that the absence of trading activity is company related rather than sector related. The counties with the highest number of companies within this group are: Bucharest (22), followed by Cluj County (15), Suceava County (11), and Botosani County (10).

Table A13 presents the suspended companies(7) during the period December 10th 2014 - October 22nd 2015. Similar to the previous groups, this group also concentrates an important number of companies, 54.87%, within the lowest capitalization (less than RON 1mn) sub-group. It is followed by 24.34% of companies which were never traded since start listing. The p/b ratio indicates an overvaluation of companies within 5 sub-groups, while the lowest capitalization sub-group was also undervalued. In general, 55.31% of these suspended companies registered a p/b ratio lower than 1, with the majority being concentrated within the lowest capitalization sub-group. The last price variation show high values for four sub-groups, indicating a high volatility within the groups with the capitalization lower than RON 5mn. Also the extreme values for these two sub-groups are very high. It should be noticed that, while apparently the average free float increases as the capitalization decreases, the evolution comes from the fact that in the case of the lowest capitalization sub-group and inside the never traded sub-group, an important number of companies did not report their shareholder structure; they appear with: 100%

other shareholders. Within this group of suspended companies, 91 (40.27%) did not register any trade since 2005 or earlier. Similar to the previous two groups, the majority of companies are 'veteran' companies, listed since 1996-1997. Only 19 new listings occurred between 1998 and 2010, 15 resulting of spin-offs of already listed RASDAQ companies. The sector with the most suspended companies was agriculture (30.53%), followed by industry (19.91%) and services (18.58%). The counties with the most suspended companies were: Bucharest (23), Brasov (12), Timis (12), and Maramures (10).

A separate table (Table A14) was dedicated to the tradable companies between December 10th 2014 and October 22nd, which were never traded since they start listing. For the majority of these companies, the equity capital is lower than RON 1mn. Thus never traded, one company was transferred on AeRO. As in the case of previous groups, the majority of these companies start listing since 1996-1997. It seems that the sectors which did not capture the potential investor interest were: agriculture (28.57%) and services (32.14%), hence the other sectors show at least one company. It is worth noting that none of these companies is located in Bucharest.

These profiles offered, for the first time, an in-depth view of the last 911 RASDAQ listed companies.

Conclusions

The last year (in fact 10 months) of RASDAQ's life did not generate an intense trading activity. Only 48.90% of the listed companies were traded, and the majority of them registered between 1 and 49 trades. The situation of the other companies was as follow: 9.12% of companies were never traded since start listing (the percentage includes the tradable and the suspended companies within this category); 14.62% of companies did not registered any trading since 2005 or earlier (the percentage includes the tradable and the suspended companies within this category); 8.79% of companies were suspended for various reasons; while 18.57% of companies did not register any trade during the last months, while tradable. This situation indicates that the ownership structure of the tradable companies was already established and there was no interest in trading the respective companies. The relative indifference of the listed companies owners regarding the status of their respective companies and the investors interest toward the, is reflected by at least the following facts: a) almost 24% of the companies were either never traded or were not traded over the last decade or earlier; it would have been normal for the respective companies owners to withdrew the companies from listing; b) over 50% of the listed companies were delisted during the final days of RASDAQ, between October 26th 2015 and October 27th 2015; in most cases, the decision was forced by the Romanian Financial Supervisory Authority. Moreover, to these two facts, the lack of updated financial reporting must be added; while this situation was not reported within this paper, it is mainly true for the suspended companies, the majority of never traded companies, and for those not traded for over a decade.

Despite the declared interest of BVB officials regarding the potential transfer of RASDAQ listed companies on the main market, this ended up with a very low number of

companies being listed within the standard category: five companies from the industry sector; they were followed in April 2016 by a company which was delisted from RASDAQ in 2015. The only investment fund listed on RASDAQ (XFOA), was transferred on the ATS segment dedicated to fund units at BVB. Only less than a third of the RASDAQ listed companies, 263 (or 28.87%), decided to be transferred on the ATS platform, AeRO, developed by BVB for smaller companies. They were followed in June 2016 by just one more company which was delisted from RASDAQ in 2015. Other 34 (3.73%) companies decided to be transferred on SIBEX ATS segment. It is not clear (and needs to be investigated) if the decision to be listed mostly on AeRO was taken by the respective companies majority owners given the more relaxed listing condition of the ATS platform, or the decision resulted after being rejected by the BVB main market listing committee.

The findings of this paper also show that 63.85% of the last 911 RASDAQ listed companies have a capitalization lower than RON 5mn. Most of the companies within the lowest capitalization sub-group (less than RON 1mn) proved to be undervalued, while the companies within the other capitalization sub-groups were overvalued, in some cases highly overvalued (see Table A12 to A13 in Annex). The last price variation was also large for most cases, suggesting high price volatility related with low frequency transactions and the fact that most companies were traded within the XMBS market segment which imposed no price limits.

The analysis of the RASDAQ indices revealed that: a) the base category and the other two categories (first and second) exhibit a weak relationship and b) that Granger causality existed among them. Thus, the contribution of the first and second category to RASDAQ's capitalization and turnover remained modest. Further, when analyzed in relation with the BVB indices, RASDAQ indices, in general, seemed to be Granger caused by most of the BVB indices; thus, the regression analysis showed a weak relationship among these indices. It can be safely said that RASDAQ was subject to weak influences from BVB indices.

The weak January effect and an even weaker weekend effect, calculated for the entire period of these indices life span, confirmed the findings of the previous researches that showed RASDAQ to be a market of low interest for portfolio investor, and having rather an important role in the process of ownership concentration.

If the problem related to its legal status would not have occurred, it is not clear for how long the existence of RASDAQ would have continued (or rather lingered). The aforementioned problem forced the decision to close the RASDAQ market, a decision that otherwise would required years of endless discussions and legal complications related to the (even more complicated) Romanian privatization process. RASDAQ reached a turning point in its existence: it needed a complete transformation in order to become more attractive for investors. Thus, RASDAQ image was still influenced by the scandals related to illegal trading and share theft at the turn of the century, despite the changes made in 2003 to correct the wrongdoings. By keeping the XMBS market, RASDAQ presented a high volatility risk for any portfolio investor. By not imposing uniform reporting standards, most of the listed companies neglected to share the needed

information for any investor to make a decision. By keeping as listed companies several hundreds of inactive companies, made the selection process difficult for any type of investor. It seems that there was no active relationship with the listed companies, therefore the indifference of respective companies' owners toward the status of their company. Moreover, while the new listings were relatively scarce on Romanian capital markets, RASDAQ managed to attract a very low number of new companies; the majority of new listings resulting from spin-offs of already listed RASDAQ companies.

Therefore, with all the problems accumulated during almost two decades of existence, one should face the truth that RASDAQ has played it role in assisting the ownership concentration within the listed companies resulted from the privatization process. It was the time for RASDAQ to be closed and put an end to a controversial market segment, which tainted image would have followed the name no matter how radical the future changes would have been.

Notes

(1) In order to avoid any confusion with other stock exchanges from CEE countries, like Budapest Stock Exchange, Bratislava Stock Exchange, Belgrade Stock Exchange and Bulgarian Stock Exchange, hereinafter the Romanian abbreviation BVB (Bursa de Valori Bucuresti) will be used for Bucharest Stock Exchange.

(2) A brief description of these indices can be found at https://www.bvb.ro/info/indices/INDICII%20PIETEI%20RASDAQ.pdf, last accessed August 2nd 2016.

(3) It is interesting to mention that in the case of RAQ-1 a modest August effect is present (however similar to the January effect), suggesting that RASDAQ investors seemed interested by the first category companies during the summer months. Also a very small December effect was detected in the case of RAQ-2.

(4) These 6 companies are: ASAM (ASM on BVB), COVG (NVR on BVB), HIJA (HDJ on BVB), and INTE (INT on BVB).

(5) The situation is unclear for one company, MAIA. It is reported as being under the State control at BVB, while the information offered by the Romanian National Registry Office (Oficiul National al Registrului Comertului) show it as being privately held by a family through a foundation and a company (for more details see Balint and Pop, 2015).

(6) During 2016 two of the RASDAQ delisted companies were introduced to BVB; one, NAPO, entered the standard category within the main market in April, while SPTU was included within the standard category of the AeRO segment in June. Within the present study, both these companies remain as 'delisted'.

(7) The identified reasons for their suspension were: a) their equity capital was under the minimum limit of EUR 25,000, as established at the beginning of 2006: 91 companies (40.27%); b) they became insolvent of bankrupt: 47 companies (20.80%); of the 47 companies, 40 announce their insolvency or bankruptcy in 2014 or 201; c) they were involved in mergers, takeovers, spin-offs, voluntary liquidations or adjusting the equity capital: 40 companies (17.70%); d) they did not have a contract with a registry company: 27 companies (11.95%); e) they announce their decision to withdrew from RASDAQ listing or their shareholder general assembly was underway: 13 companies (5.75%); f) they were investigated by the Romanian Financial Supervisory Authority: 6 companies (2.65%); g) the motive was not announced and could not be established: 2 companies (0.88%).

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Annex

Table A1. *Selected findings regarding the RASDAQ companies that registered at least 1 trade*

Number of trades within 52 weeks	Number of companies			Of which with a free float < 25%			Number of companies with no websites			Number of companies that paid dividends during the last 3 years			Number of companies belonging to the respective trading segment					
													XMBS[1]			RGBS[2]		
	2013	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*
1 to 49 trades	328	308	345	229	222	238	155	143	149	30	20	40	299	279	306	29	29	39
50 to 99 trades	59	51	37	40	29	28	18	10	6	9	4	7	47	39	26	12	12	11
100 to 499 trades	70	68	52	46	47	32	12	12	8	14	13	10	47	49	32	23	19	20
>500 trades	20	21	12	4	4	1	0	0	0	4	4	4	5	7	2	15	14	10
Total	**477**	**448**	**446**	**319**	**302**	**299**	**185**	**166**	**163**	**57**	**41**	**61**	**398**	**374**	**366**	**79**	**74**	**80**

Note 1: A quote-driven market segment, using only indicative quotes that represent only the intention and not the obligation to execute an order. Further negotiation might occur and the final price might vary widely from the displayed intention. From anecdotal sources, most of Romanian brokers discourage the trading on XMBS in order to protect their clients.

Note 2: An order-driven market, based on auction system, displaying firm quotes and representing the intention to buy/ sell at the respective price. Considered a more reliable trading segment and preferred by investors, at the recommendation of their brokers. Apart from the Table 3, only anecdotal sources confirmed this situation.

Source: authors' calculations based on data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015.

Table A2. *Selected conditions for 1st and 2nd tier constituents as of December 2013, December 2014, and October 2015*

1st category: equity capital = minimum EUR 1mn free float = minimum 15%								
Company symbol	**Equity capital (EUR mn)**			**Free float (%)**			**Comments 1**	**Comments 2**
	2013	2014	2015	2013	2014	2015		
BRCR	1.0	1.0	1.0	58.02	57.27	57.26	-	transferred on AeRO
PTRO	47.5	47.9	47.9	1.64	1.64	1.64	under minimum free float	delisted in 2015
SEVE	2.8	2.8	2.8	10.52	10.52	10.52	under minimum free float	transferred on AeRO
UPET	6.7	6.7	6.7	34.00	34.00	34.00	-	transferred on AeRO
2nd category equity capital = minimum EUR 0.5mn free float = minimum 10%								
Company symbol	**Equity capital (EUR mn)**			**Free float (%)**			**Comments**	**Comments 2**
	2013	2014	2015	2013	2014	2015		
AUTT	0.9	-	-	13.50	-	-	-	delisted in 2014
CMVX	3.2	3.2	3.2	8.63	8.63	8.63	under minimum free float	transferred on AeRO
CONFM	0.6	n/a	0.6	49.05	49.05	49.05	suspended 2013;	delisted in 2015
FLAO	0.8	0.9	0.9	22.89	22.89	22.89	-	transferred on AeRO
INOX	2.4	2.5	2.5	47.71	47.71	47.71	-	transferred on AeRO
TEHO	1.2	1.3	1.3	12.75	7.24	6.76	under minimum free float in 2014 and 2015	delisted in 2015
UNISEM	8.4	1.8	1.8	23.05	23.05	23.09	-	transferred on AeRO

Source: based on the data available at www.bvb.ro

Table A3. *Correlations and simple regression results for RASDAQ indices*

Dependent variable	RAQ-1	RAQ-2
RASDAQ-C: correlation coefficient	0.1957	0.1453
RASDAQ-C: intercept estimate	0.0186	0.0148
RASDAQ-C: slope estimate	0.0644	0.0610
RASDAQ-C: p-value	0.0000	0.0000
RASDAQ-C: adjusted R squared (%)	3.7988	2.0799
RAQ-1: correlation coefficient	-	0.0520
RAQ-1: intercept estimate	-	0.0407
RAQ-1: slope estimate	-	0.0429
RAQ-1: p-value	-	0.0000
RAQ-1: adjusted R squared (%)	-	2.6739

Source: authors' calculations based on data available at www.bvb.ro

Table A4. *Granger causality concerning the RASDAQ indices (p-values)*

Hypotheses	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 10	Lag 20
H1: RASDAQ-C does not Granger cause RAQ-1 and it is not Granger caused by it							
H1a: RASDAQ-C does not Granger cause RAQ-1	0.1036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H1b: RAQ-1 does not Granger cause RASDAQ-C	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H2: RASDAQ-C does not Granger cause RAQ-2 and it is not Granger caused by it							
H2a: RASDAQ-C does not Granger cause RAQ-2	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H2b: RAQ-2 does not Granger cause RASDAQ-C	0.0371	0.0006	0.0020	0.0050	0.0002	0.0001	0.0000
H3: RAQ-1 does not Granger cause RAQ-2 and it is not Granger caused by it							
H3a: RAQ-1 does not Granger cause RAQ-2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H3b: RAQ-2 does not Granger cause RAQ-1	0.0655	0.0010	0.0010	0.0000	0.0000	0.0000	0.0000

Source: authors' calculations based on data available at www.bvb.ro

Table A5. *Correlations and simple regression results for RASDAQ indices in relation with BVB indices*

Dependent variable	BET	BET-C/Plus	BET-FI	BET-XT	BET-NG	BET-BK
RASDAQ-C: correlation coefficient	0.1984	0.1814	0.2038	0.2815	0.2844	0.2369
RASDAQ-C: intercept estimate	0.0031	0.0095	0.0115	-0.0183	-0.0179	-0.0324
RASDAQ-C: slope estimate	0.1342	0.1143	0.0899	0.1897	0.1955	0.1599
RASDAQ-C: p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
RASDAQ-C: adjusted R squared (%)	3.9126	3.2686	4.1284	7.8847	8.0448	5.5518
RAQ-1: correlation coefficient	0.1998	0.1595	0.1698	0.1866	0.1848	0.1323
RAQ-1: intercept estimate	-0.0490	-0.0317	-0.0418	-0.0891	-0.0896	-0.1526
RAQ-1: slope estimate	0.4021	0.2672	0.2334	0.3874	0.3916	0.4229
RAQ-1: p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
RAQ-1: adjusted R squared (%)	3.9600	2.5135	2.8537	3.4359	3.3700	1.6808
RAQ-2: correlation coefficient	0.1229	0.0955	0.0991	0.1288	0.1167	0.1777
RAQ-2: intercept estimate	0.0275	0.0358	0.0312	-0.0144	-0.0146	-0.0483
RAQ-2: slope estimate	0.1940	0.1253	0.1068	0.2029	0.1876	0.3998
RAQ-2: p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
RAQ-2: adjusted R squared (%)	1.4803	0.8797	0.9512	1.6126	1.3143	3.0917

Source: authors' calculations based on data available at www.bvb.ro

Table A6. *Granger causality concerning RASDAQ and BVB indices (p-values)*

Hypotheses	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 10	Lag 20
H4: RASDAQ-C does not Granger cause BET and it is not Granger caused by it							
H4a: RASDAQ-C does not Granger cause BET	0.0109	0.0585	0.0369	0.0115	0.0013	0.0000	0.0000
H4b: BET does not Granger cause RASDAQ-C	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H5: RASDAQ-C does not Granger cause BET-C/Plus and it is not Granger caused by it							
H5a: RASDAQ-C does not Granger cause BET-C/Plus	0.2680	0.1642	0.1447	0.0617	0.0003	0.0000	0.0000
H5b: BET-C/Plus does not Granger cause RASDAQ-C	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H6: RASDAQ-C does not Granger cause BET-FI and it is not Granger caused by it							
H6a: RASDAQ-C does not Granger cause BET-FI	0.0078	0.0008	0.0027	0.0093	0.0001	0.0000	0.0000
H6b: BET-FI does not Granger cause RASDAQ-C	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H7: RASDAQ-C does not Granger cause BET-XT and it is not Granger caused by it							
H7a: RASDAQ-C does not Granger cause BET-XT	0.0137	0.0318	0.0674	0.0608	0.0066	0.0000	0.0000
H7b: BET-XT does not Granger cause RASDAQ-C	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H8: RASDAQ-C does not Granger cause BET-NG and it is not Granger caused by it							
H8a: RASDAQ-C does not Granger cause BET-NG	0.3577	0.6167	0.2569	0.0652	0.0494	0.0000	0.0000
H8b: BET-NG does not Granger cause RASDAQ-C	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H9: RASDAQ-C does not Granger cause BET-BK and it is not Granger caused by it							
H9a: RASDAQ-C does not Granger cause BET-BK	0.4015	0.7004	0.4149	0.5087	0.4669	0.5914	0.2995
H9b: BET-BK does not Granger cause RASDAQ-C	0.8678	0.0032	0.0035	0.0059	0.0113	0.0324	0.0470
H10: RAQ-1 does not Granger cause BET and it is not Granger caused by it							
H10a: RAQ-1 does not Granger cause BET	0.0348	0.0185	0.0371	0.0651	0.0824	0.0167	0.0001
H10b: BET does not Granger cause RAQ-1	0.1683	0.0003	0.0000	0.0000	0.0000	0.0001	0.0000
H11: RAQ-1 does not Granger cause BET-C/Plus and it is not Granger caused by it							
H11a: RAQ-1 does not Granger cause BET-C/Plus	0.9125	0.2090	0.3460	0.4516	0.4839	0.3216	0.0617
H11b: BET-C/Plus does not Granger cause RAQ-1	0.0467	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
H12: RAQ-1 does not Granger cause BET-FI and it is not Granger caused by it							
H12a: RAQ-1 does not Granger cause BET-FI	0.0784	0.2102	0.3096	0.2778	0.4007	0.2867	0.0550
H12b: BET-FI does not Granger cause RAQ-1	0.0161	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H13: RAQ-1 does not Granger cause BET-XT and it is not Granger caused by it							
H13a: RAQ-1 does not Granger cause BET-XT	0.0175	0.0623	0.1657	0.3399	0.4297	0.2194	0.0020
H13b: BET-XT does not Granger cause RAQ-1	0.0098	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
H14: RAQ-1 does not Granger cause BET-NG and it is not Granger caused by it							
H14a: RAQ-1 does not Granger cause BET-NG	0.3278	0.1204	0.1505	0.2670	0.4183	0.0875	0.0002
H14b: BET-NG does not Granger cause RAQ-1	0.0208	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H15: RAQ-1 does not Granger cause BET-BK and it is not Granger caused by it							
H15a: RAQ-1 does not Granger cause BET-BK	0.3182	0.2277	0.2888	0.1312	0.2180	0.5597	0.4474
H15b: BET-BK does not Granger cause RAQ-1	0.9458	0.9981	0.9987	0.9885	0.9836	0.6243	0.8876
H16: RAQ-2 does not Granger cause BET and it is not Granger caused by it							
H16a: RAQ-2 does not Granger cause BET	0.0670	0.2779	0.4293	0.0394	0.0002	0.0023	0.0030
H16b: BET does not Granger cause RAQ-2	0.0947	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H17: RAQ-2 does not Granger cause BET-C/Plus and it is not Granger caused by it							
H17a: RAQ-2 does not Granger cause BET-C/Plus	0.8578	0.6129	0.8222	0.3705	0.0692	0.3960	0.3247
H17b: BET-C/Plus does not Granger cause RAQ-2	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H18: RAQ-2 does not Granger cause BET-FI and it is not Granger caused by it							
H18a: RAQ-2 does not Granger cause BET-FI	0.7034	0.4157	0.0217	0.0322	0.0496	0.1261	0.0178
H18b: BET-FI does not Granger cause RAQ-2	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H19: RAQ-2 does not Granger cause BET-XT and it is not Granger caused by it							
H19a: RAQ-2 does not Granger cause BET-XT	0.0479	0.2115	0.4414	0.0696	0.0126	0.0868	0.0018
H19b: BET-XT does not Granger cause RAQ-2	0.0074	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H20: RAQ-2 does not Granger cause BET-NG and it is not Granger caused by it							
H20a: RAQ-2 does not Granger cause BET-NG	0.3024	0.6107	0.7995	0.4232	0.3906	0.5208	0.1838
H20b: BET-NG does not Granger cause RAQ-2	0.0057	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H21: RAQ-2 does not Granger cause BET-BK and it is not Granger caused by it							
H21a: RAQ-2 does not Granger cause BET-BK	0.4215	0.3572	0.0188	0.0322	0.0543	0.0011	0.0006
H21b: BET-BK does not Granger cause RAQ-2	0.8430	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: the p-value for accepting the hypotheses should be higher than 0.05.
Source: authors' calculations based on the data available at www.bvb.ro

Table A7. *The January effect at RASDAQ*

	RASDAQ-C	RAQ-1	RAQ-2
μ	0.0380	0.0308	0.0324
a_1	-0.0291	-0.0201	-0.0287
a_2	-0.0499	-0.0680	-0.0975
a_3	-0.0323	-0.0126	-0.0187
a_4	-0.0526	-0.1157	-0.0405
a_5	-0.0268	-0.0346	-0.0655
a_6	-0.0341	-0.1790	-0.0375
a_7	-0.0119	0.0347	-0.0339
a_8	-0.0654	-0.0751	-0.0181
a_9	-0.0254	-0.0626	-0.0030
a_{10}	-0.0391	-0.0529	-0.0240
a_{11}	-0.0504	-0.0520	0.0085
R_{t-1}	0.2049	-0.0079	0.0537

Source: authors' calculations based on the data available at www.bvb.ro

Table A8. *The weekend effect at RASDAQ*

	RASDAQ-C	RAQ-1	RAQ-2
μ	0.0009	0.0017	0.0013
a_1	-0.0021	-0.0080	-0.0025
a_2	-0.0005	-0.0025	-0.0024
a_3	-0.0010	-0.0053	-0.0010
a_4	-0.0002	0.0037	0.0006
R_{t-1}	0.1527	0.2255	-0.1437

Source: authors' calculations based on the data available at www.bvb.ro

Table A9. *The January Barometer for RASDAQ indices*

Year	RASDAQ-C		RAQ-1		RAQ-2	
	January change (%)	Year change (%)	January change (%)	Year change (%)	January change (%)	Year change (%)
1999	8.47	22.48	-	-	-	-
2000	-14.64	-16.00	-	-	-	-
2001	3.92	20.04	-	-	-	-
2002	-1.18	27.22	-	-	-	-
2003	5.75	21.89	6.90	26.15	16.77	31.72
2004	2.11	39.32	9.22	59.69	7.18	72.60
2005	27.37	-4.26	23.93	-22.97	41.03	55.32
2006	0.69	33.96	4.30	70.35	-1.92	-1.09
2007	10.57	95.29	20.63	60.09	10.95	101.46
2008	-11.95	-54.37	-8.73	49.90	-4.63	-39.29
2009	-5.92	7.67	-5.40	-5.22	-19.27	-12.36
2010	-0.98	-25.17	-5.57	-38.97	-4.44	-41.93
2011	3.13	-6.46	-1.48	-38.92	-1.98	-36.70
2012	1.55	-10.57	1.07	-81.65	0.33	-11.21
2013	1.79	-3.78	40.11	2.28	-0.79	-16.58
2014	2.83	-1.66	-1.39	-60.17	4.33	-13.37
2015	2.96	-2.56	-7.84	-22.51	-0.49	-5.59

Note: For 2015, the year change was not annualized.
Source: authors' calculations based on the data available at www.bvb.ro and following the idea of Yale Hirsh as described in Hirsh and Hirsh (2008).

Table A10. *RASDAQ companies owned by the BVB listed investment companies*

Investment company name & symbol	Owned companies' status	Owned companies									Total		
		75% or more			50% to 74.99%			Less then 50%					
		2013	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*	*2013*	*2014*	*2015*
SIF Banat-Crisana (SIF1)	Listed	**4**	**3**	**3**	**0**	**1**	**1**	**20**	**18**	**16**	**24**	**22**	**19**
	Traded	*2*	*1*	*2*	*0*	*0*	*1*	*7*	*10*	*5*	*8*	*11*	*8*
	0 trades	2	2	1	0	1	0	5	4	7	7	6	8
SIF Imobiliare plc* (SIFI)	Listed	**6**	**6**	**6**	**2**	**1**	**1**	**0**	**0**	**0**	**8**	**7**	**7**
	Traded	*6*	*4*	*4*	*1*	*1*	*1*	*0*	*0*	*0*	*7*	*5*	*5*
	0 trades	0	2	2	0	0	0	0	0	0	0	2	2
SIF Moldova (SIF2)	Listed	**2**	**2**	**2**	**0**	**0**	**0**	**23**	**21**	**19**	**25**	**23**	**21**
	Traded	*2*	*2*	*2*	*0*	*0*	*0*	*12*	*15*	*14*	*14*	*17*	*16*
	0 trades	0	0	0	0	0	0	6	5	4	6	5	4
SIF Transilvania (SIF3)	Listed	**10**	**10**	**10**	**6**	**6**	**6**	**37**	**32**	**24**	**53**	**48**	**40**
	Traded	*6*	*8*	*7*	*6*	*6*	*5*	*24*	*19*	*13*	*36*	*33*	*25*
	0 trades	4	2	3	0	0	1	7	8	8	11	10	11
SIF Muntenia (SIF4)	Listed	**6**	**6**	**6**	**2**	**2**	**2**	**33**	**31**	**30**	**41**	**39**	**38**
	Traded	*5*	*2*	*3*	*1*	*1*	*1*	*27*	*21*	*21*	*33*	*24*	*25*
	0 trades	0	0	2	0	0	0	4	6	5	4	6	7
SIF Oltenia (SIF5)	Listed	**4**	**4**	**4**	**3**	**2**	**2**	**14**	**10**	**10**	**21**	**16**	**16**
	Traded	*4*	*4*	*4*	*3*	*2*	*2*	*13*	*8*	*10*	*20*	*14*	*16*
	0 trades	0	0	0	0	0	0	0	1	0	0	1	0
Fondul Proprietatea	Listed	**2**	**1**	**1**	**1**	**1**	**1**	**10**	**8**	**5**	**13**	**10**	**7**
	Traded	*2*	*1*	*1*	*1*	*1*	*1*	*6*	*4*	*3*	*9*	*5*	*5*
	0 trades	0	0	0	0	0	0	3	2	1	3	2	1

Source: authors' calculations based on the data available at www.bvb.ro as of December 9th 2013, December 9th 2014, and October 22nd 2015.

Table A11. *Descriptive statistics of the traded companies between December 10th 2014 and October 22nd 2015 structured by market capitalization*

	RON ≥ 100mn	RON 50 to 99.99mn	RON 10 to 49.99mn	RON 5 to 9.99mn	RON 1 to 4.99mn	RON < 1mn
Number of companies	**15**	**18**	**94**	**75**	**136**	**107**
By capitalization (mn)						
Average	156.91	65.16	19.85	7.17	4.18	0.41
Median	158.12	60.12	17.99	6.90	3.62	0.38
Standard deviation	42.12	13.56	8.32	1.43	2.53	0.30
Minim	103.76 UARG	50.64 UTBT	10.03 INSI	5.06 SELC	1.01 MVUL	0.009 INTR
Maxim	251.28 BUTU	90.30 CCEV	45.84 RCHI	9.93 PIMS	4.95 MEOY	0.99 ICSI
By transactions						
Average	335	856	136	60	29	13
Median	93	89	33	12	13	5
Standard deviation	856	1,912	270	186	52	27
Minim	4 FRAB	4 FAMO, AGEM	1 (5 companies)	1 (5 companies)	1 (13 companies)	1 (22 companies)
Maxim	3,410 ALBZ	7,300 PRSN	1,612 ARAX	1,518 ARCV	467 METY	194 DOFA
By p/b ratio based on the last reported price						
Average	28.33	6.85	7.94	4.64	3.66	1.03
Median	4.00	2.48	3.16	3.88	1.77	0.40
Standard deviation	57.59	12.13	18.06	4.67	6.26	3.02
Minim	0.07 TPRO	0.03 PRSN	0.02 TUAA	0.01 ARCV	0.02 SOMR,TRSK,CLEL	0.002 STUD
Maxim	195.00 RORX	43.50 BUCU	140.00 SOFT	20.00 NUCA	45.00 IPRO	29.00 IPRA

	RON ≥ 100mn	RON 50 to 99.99mn	RON 10 to 49.99mn	RON 5 to 9.99mn	RON 1 to 4.99mn	RON < 1mn
By price variation for the last registered trade (%)						
Average	55.21	37.08	51.08	168.07	32.21	27.20
Median	0.27	0.00	0.00	0.00	0.00	0.00
Standard deviation	205.84	118.33	222.78	873.41	142.35	168.25
Minim	-32.43 METV	-26.54 ELNG	-87.50 RMRM	-77.76 VESE	-95.97 BMIA	-99.22 FOSP
Maxim	797.56 FRAB	476.92 FORD	1,566.67 CODG	6,566.67 NUCA	1,000.00 STFI	900.00 STRD,AZOA
By free float (%)						
Average	11.06	13.07	16.36	19.70	23.11	25.53
Median	8.63	7.87	10.54	15.95	19.83	23.35
Standard deviation	8.49	12.36	14.73	15.33	16.65	16.29
Minim	1.25 RORX	0.60 BBGA	0.00 TERU	0.34 RSCA	0.73 CEDO	0.77 AVIL
Maxim	32.03 ALBZ	35.11 IARV	66.62 IPRU	68.99 UZIN	75.81 SOTA	75.41 AGBJ

Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Table A12. *Descriptive statistics of the tradable companies with 0 trades between December 10th 2014 and October 22nd 2015 structured by market capitalization*

	RON ≥ 100mn	RON 50 to 99.99mn	RON 10 to 49.99mn	RON 5 to 9.99mn	RON 1 to 4.99mn	RON < 1mn
Number of companies	**0**	**1**	**15**	**9**	**45**	**141**
By capitalization (mn)						
Average	-	-	23.02	7.36	2.48	0.26
Median	-	-	19.07	7.11	2.37	0.15
Standard deviation	-	-	11.97	1.54	1.05	0.25
Minim	-	-	10.81 STOZ	5.06 CEPO	1.01 SIOB	0.001 ROVZ
Maxim	-	90.59 FOCU	49.37 CONS	9.66 MEOR	4.89 AGCW	0.99 TRCV
By p/b ratio based on the last reported price						
Average	-	-	5.09	7.27	3.69	0.92
Median	-	-	2.36	4.60	1.20	0.40
Standard deviation	-	-	6.48	8.69	5.03	3.81
Minim	-	-	0.20 ARCU	0.40 TXIN	0.02 FRTI	0.004 ROVZ
Maxim	-	4.76 FOCU	24.16 ARGO	28.00 URBA	22.00 GHIM	45.00 PTDB
By price variation for the last registered trade (%)						
Average	-	-	111.32	341.51	360.25	43.24
Median	-	-	10.00	2.35	0.00	0.00
Standard deviation	-	-	357.80	859.17	1,854.90	250.71
Minim	-	-	-20.00 PTRC	-50.50 TXIN	-93.98 FRTI	-99.71 AGBT
Maxim	-	3,866.67 FOCU	1,300.00 SIRJ	2,455.56 ROMS	11,850.00 IASO	2,122.22 MUSC
By free float (%)						
Average	-	-	6.83	18.84	12.72	22.41
Median	-	-	3.31	11.69	10.14	17.46
Standard deviation	-	-	6.88	23.98	11.50	17.73
Minim	-	-	0.60 AVBW	3.52 ROMS	0.02 LACU	0.06 AVUT
Maxim	-	1.96 FOCU	23.87 PTRC	81.11 CEPO	39.62 IASO	100.00 PRIN

Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Table A13. *Descriptive statistics of the suspended companies between December 10th 2014 and October 22nd 2015 structured by market capitalization*

	RON ≥ 100mn	**RON 50 to 99.99mn**	**RON 10 to 49.99mn**	**RON 5 to 9.99mn**	**RON 1 to 4.99mn**	**RON < 1mn**	**never traded**
No. of companies	**2**	**2**	**8**	**7**	**28**	**124**	**55**
By capitalization (mn)							
Average	386.85	78.29	14.25	7.04	2.41	0.13	-
Median	386.85	78.29	13.32	6.94	2.12	0.03	-
Standard deviation	272.57	10.78	2.77	1.08	1.25	0.21	-
Minim	194.12 DUCL	70.67 GIUR	11.02 SMRZ	5.62 SAIG	1.07 AUVR	0.001 LEAR	-
Maxim	579.59 ATRA	85.91 WINI	18.53 SAHE	8.40 TVRL	4.82 GALA	0.96 TERA	-
By p/b ratio based on the last reported price							
Average	6.88	8.14	2.82	4.04	2.06	0.50	-
Median	6.88	8.14	0.60	2.50	1.00	0.24	-
Standard deviation	5.20	9.70	4.37	4.24	4.65	0.73	-
Minim	3.20 ATRA	1.28 GIUR	0.05 MAIA	0.08 VULC	0.02 ATLK	0.02 PEHA	-
Maxim	10.55 DUCL	15.00 WINI	10.66 TCII	12.00 CICO	25.00 LAUX	4.85 AGCJ	-
By price variation for the last registered trade (%)							
Average	-2.54	-3.60	76.05	79.13	896.18	140.19	-
Median	-2.54	-3.60	-11.00	0.00	0.00	0.00	-
Standard deviation	3.59	3.22	279.52	201.16	3,320.12	571.02	-
Minim	-5.08 ATRA	-5.88 GIUR	-70.45 AVRE	-68.75 DIHA	-96.00 AURV	-96.30 MUTE	-
Maxim	0.00 DUCL	-1.32 WINI	760.87 ICSH	500.00 CICO	14,900.00 SIEM	4,750.00 AGCJ	-
By free float (%)							
Average	2.61	5.51	4.89	25.19	17.18	42.32	63.72
Median	2.61	5.51	3.28	24.16	14.05	31.95	87.34
Standard deviation	2.33	2.75	5.04	13.93	17.20	34.27	40.56
Minim	0.96 ATRA	3.56 WINI	0.25 TCII	7.84 CICO	1.23 TUOL	0.43 AMNC	0.63 COEF
Maxim	4.25 DUCL	7.45 GIUR	16.57 INOR	47.17 DIHA	81.08 CONC	100.00 (24 companies)	100.00 (25 companies)

Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.

Table A14. *The structure by equity capital of tradable companies that were never traded during the RASDAQ listing period*

	RON 1 to 4.99mn	**RON < 1mn**
total	**4**	**24**
transferred on BVB	-	-
transferred on AeRO	1	1
transferred on SIBEX	-	-
delisted before Oct.22	-	1
delisted on Oct.26/27	3	22
Listed since		
1996-1997	3	23
1998-1999	1	-
2000-2005	-	1
2006-2010	-	-
2011-2014	-	-
Selected details on ownership		
State important minority positions (≥35%)	1	1
Structure by free float		
< 10%	4	13
10% to 24.99%	-	3
≥ 25%	-	8
Structure by activity sector		
Agriculture, forestry and fishing	1	7
Industry	-	2
Constructions	1	1
Services	-	9
Tourism & travel	2	1
Transports	-	2
Trade	-	2
Other sectors (science & technology, culture & recreation, financial intermediation)	-	-
Descriptive statistics for free float (%)		
Average	0.73	21.08
Median	0.66	8.05
Standard deviation	0.53	22.70
Minim	0.16 RMSU	0.03 ROVE
Maxim	1.42 BRCE	60.04 RECY
Descriptive statistics of equity capital (mn)		
Average	2.13	0.27
Median	2.08	0.16
Standard deviation	0.92	0.23
Minim	1.08 BRCE	0.09 AGCM
Maxim	3.30 RMSU	0.76 GOLF
Structure by counties (only the counties where the companies have the headquarter registered)		
Alba (AB)	-	1
Botosani (BT)	-	1
Calarasi (CL)	1	1

	RON 1 to 4.99mn	**RON < 1mn**
Constanta (CT)	-	1
Dolj (DJ)	-	1
Giurgiu (GR)	-	1
Gorj (GJ)	-	1
Iasi (IS)	-	1
Ilfov (IF)	-	2
Mehedinti (MH)	-	2
Olt (OT)	1	-
Prahova (PH)	-	2
Salaj (SJ)	-	1
Sibiu (SB)	1	-
Teleorman (TR)	-	1
Timis (TM)	-	4
Tulcea (TL)	1	-
Valcea (VL)	-	1
Vaslui (VS)	-	2
Vrancea (VN)	-	1

Source: authors' calculations based on the data available at www.bvb.ro as of October 22nd 2015.