

Junior stock exchanges as an instrument of small technology-based firms support

The article analyses the concept of alternative capital markets (junior stock exchanges) and discusses in which way these stock exchanges are able to stimulate innovation. The author comes up with the concept of a junior stock exchange and determines it as such a segment of a major stock exchange, which motivates small technology-based firms to obtain financing via IPO through lowered requirements and support in different areas from government or exchange itself. Thereafter the article defines quantitative and qualitative characteristics and compares existing junior stock exchanges with each other and major stock exchanges based on these characteristics. Finally, author makes a conclusion that even though junior stock exchanges tend to be inferior in terms of quantitative characteristics, such exchanges may serve as an instrument of support of small technology-based firms due to specific kinds of support of such companies: informational, marketing and financial support and lower entry barriers.

Keywords: small technology-based firm, IPO, capital markets, stock exchanges, junior stock exchanges.

Introduction

In modern economic science, innovation is considered a major driver of economic development. This research will consider innovation not as a process of turning new ideas in a new commercially beneficial product but as a final product of that process which is based on a continental approach to definition of that term and Russian legislation (127-FZ). In developed countries the main producers of innovation are small private firms (we will further identify them as small technology-based companies or STBF) for which lack of financing remains one of the major issues at the early stages of their life including the growth stage as shown in several researches [1, 2]. At this stage, a technology-based company have several options of financing of its activity: self-financing, debt financing, equity financing. First two ways of financing can sometimes be unavailable or too expensive for small firms especially if they need funds for large innovation projects. Self-financing via retained earnings may be unavailable for small companies as there might be just not enough retained earnings accumulated. Debt financing in turn might be too expensive due to high level of interest rates, which is explained by high level of uncertainty related to innovation activity. The problem of debt financing of technology-based SME's becomes especially critical it times of economic downturn and recession due to high credit risk set by banks [3]. Thus, IPO could be a prospective way of financing of such companies allowing a small technology-based firm to gain access to capital market and grow very fast using its opportunities. Nevertheless, even access to those opportunities for such companies may be restricted due to high requirements



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of main boards of stock exchanges. This is the reason why biggest world's stock exchanges started to create market sectors for small growing companies. There are examples of «growth markets» or «alternative markets» created by NASDAQ stock exchange (NASDAQ Capital market), Hong Kong stock exchange (Growth enterprise market). London Stock Exchange (Alternative investment market – AIM), Moscow stock exchange (Innovation and investment Market) and many others.

Already conducted researches on junior stock exchanges (also referred as «public equity feeder markets» or «alternative markets») contain some findings about particular markets (especially, AIM – the most development alternative market) and discuss only some aspects related to such markets: relation of eased regulation and performance of listed companies [4], comparison of the junior exchanges of Asian-Pacific region to AIM stock exchange [5]. Among other findings these researches show that the junior stock exchanges are inferior to the main boards in many aspects but still STBF choose them for an IPO. Hence, there is a need for a clear determination of the characteristics of such an exchanges for their better comparison with larger boards using both quantitative and qualitative indicators.

The purpose of this research is to investigate the phenomena of «growth markets», detect the outstanding characteristics of such markets compared to the main boards of the stock exchanges and to understand in which way these exchanges may serve as an instrument of STBF support. Therefore, this research consists of three logical parts: consideration of a concept of a junior stock exchange, determination of qualitative and quantitative criteria and comparison of junior exchanges and main boards of major financial markets based on these criteria.

Junior stock exchanges as a part of a national financial system

Financial market is considered an important instrument of distribution of financial flows and proper functioning of a financial market leads to increase of investment and as a result to GDP growth. In the core of financial markets there are stock exchanges. Such institutions deal with securities openly traded in the market providing its emitents with higher liquidity and business reputation. Major stock exchanges of developed countries have reached significant level of development; for example, by the end of 2015 NYSE – largest stock exchange in the world had market capitalization of \$18,38 trln, NASDAQ – \$9,56 trln and LSE – \$3,24 trln. Despite high level of development of such exchanges, listing on their main boards may be unavailable for small technology-based companies due to heavy requirements to get a listing and keep it in the future. Hence, many stock exchanges began to create special segments for small fast-growing and technology-based companies: NASDAQ-Capital Market in US, JASDAQ in Japan, EuroNext in Europe, of Innovation and Investment Market in Russia and of course the first and largest junior exchange – Alternative investment Market (AIM) in London (by the end of 2015 AIM had the biggest market capitalization among other junior exchanges – \$108 bln [10]). So, we can see the worldwide tendency of creation of markets for small fast growing companies. AIM which was created in 1995 as the sector of the London Stock exchange will be in the center of our further research because of streamlined mechanisms of STBF support. We will compare its characteristics with main board of LSE and other stock exchanges in order to understand their distinguishing characteristics.

The researches put an emphasis on such characteristics of junior exchange as lower level of requirements [8], higher agency costs and bonding costs [5], higher volatility [6]. All these factors affect the decision of management of technology-based companies and we may divide them into 2 categories: qualitative and quantitative factors.

Qualitative factors are related to entrance barriers and stimulus for entrance. Quantitative factors represents to efficiency of the stock exchange as an instrument of funds attraction.

It is possible to formulate a definition of a junior exchange as an instrument of STBFsupport based on factors mentioned above. Junior stock exchange is a stock exchange separated from the main market in order to help attracting investment for fast-growing STBF through reduced entry barriers, simplified listing process and mechanisms of support of new IPOs.

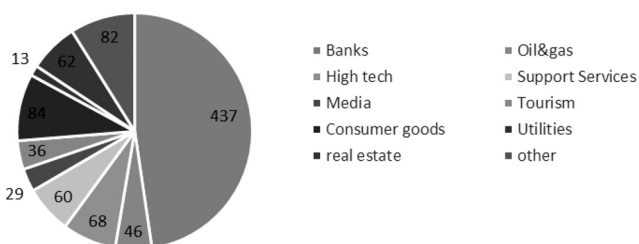


Fig. 1. Structure of LSE by industry and number of companies (31.12.2015) [10]

Qualitative characteristics of junior stock exchanges

Qualitative factors affecting listing on junior stock exchanges may be divided into 3 categories:

- type of companies listed;
- level of stock exchange requirements;
- support for companies listed in a stock exchange.

At the beginning, it is necessary to mention that companies listed a junior exchange have smaller size in average and more often belong to high-tech industries. As «high-tech» we define such industries as Pharmaceuticals & Biotechnology, IT, telecommunications and airspace based on the approach suggested by S. Valdaytsev [7]. According to statistics of London Stock Exchange, average market capitalization of AIM companies was at the level of £70 mln while average capitalization of the Main Board companies reached £3,083 mln [10]. In addition, industry structure of AIM tend to include more high-tech industries – 21% or 215 companies compared to 7% or 68 on LSE (fig. 1, 2).

Besides characteristics of listed companies junior stock exchanges tend to differ from common exchanges in terms of less strict requirements for listing.

First and main kind of requirements are financial requirements the most important of which is minimal capitalization of the company seeking to get a listing. It may also be an insurmountable barrier for small firms, which have not achieved a sufficient stage of development yet. For instance, AIM do not have a capitalization barrier while the minimal value of this indicator for the main boards is £700,000.

Second financial requirement is percentage of company's shares issued during an IPO. AIM does not have a threshold for new shares while the Main Board set a threshold at 25%. Such a limitation may affect small technology company's decision of IPO because of high cost of equity and unwillingness to dilute ownership (Myers and Majluf, 1984, pecking order theory [9]).

Other financial requirements vary from one exchange to another and may include requirements for amount of net income for prior periods (NASDAQ), amount of cash flow, net assets (JASDAQ in Japan). But overall trend is that these requirements are also lower on junior stock exchange.

Second kind of requirements is related to accounting and reporting issues. It includes standards of financial reporting (IFRS, US GAAP, etc.) and duration of their implementation. Common practice is reporting using IFRS standards, as it is the easiest way to attract foreign investors. Besides it includes duration of following financial reporting standards and audit of the financial

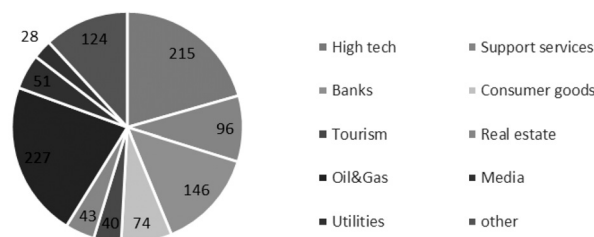


Fig. 2. Structure of AIM by industry and number of companies (31.12.2015) [10]

statements (for example, AIM requires six months of audited financial statement compared to nine on the Main Board).

Thirdly, junior stock exchanges tend to have simpler legal requirements. For example, listing on a main board requires approval from UKLA (United Kingdom listing authority) while for newcomers of a junior market only FSA (Financial Services Authority) approval is required which is easier to obtain.

Finally, junior exchanges have less strict requirements concerning disclosure of information. For instance, emission prospect in AIM contains less information and a company need to publish lesser amounts of reports (pro forma financial statement, significant transactions report etc.).

As we found out before, junior stock exchanges are characterized by less strict entrance barriers for new emittents in main business areas. Besides exchange requirements, there is an aspect that is even more important for STBF – support of such companies. Even though every stock exchange is interested in development of its emittents, for small companies acting in high tech industries this support may be determinant for the very decision of going public.

Firstly, it is informational and consultative support of young companies. AIM has an institute of NOMAD (Nominated advisor), Russian Investment and Innovation Market followed the same example and created an institute of listing agents. Listing agents are responsible for a wide range of pre-IPO consulting services, business valuation right before an IPO and support in post-IPO activities. It is especially important for STBF because it often appears that such companies do not have a management with significant experience in completing such complicated processes as IPO.

Second direction of small business support is financial support from the stock exchange itself or the government. We will describe this issue based mostly on Russian example since AIM does not rely much on this kind of support and financial support of its emittents remains limited.

It is possible to define several types of government financial support of SME`s listing on junior exchanges:

- Grants from state-owned funds for a purpose of IPO preparation. In Russia such grants are held by the Foundation for Assistance to Small Innovative Enterprises in Science and Technology and can be up to 10 mln roubles [11].
- Tax incentives. In Russia there is a tax incentive for investors which are supposed to support liquidity of shares of STBF (0% income tax for sales of shares of RII emittents held for more than 1 year. AIM provides similar tax incentives for investors but it is applicable for investment fund investing in AIM shares (Venture Capital Trusts) and decreases capital gain tax.
- Soft lending with company`s shares as a collateral. As described before, debt financing may be inaccessible for STBF due to lack of public history and small amount of assetssuba, which may serve as a collateral. In Russia some state-owned or regional funds provide loans up to 30 mln roubles at a rate of 1-1,5 times key rate set by the Bank of Russia.

- Subsidies to reimburse listing costs (no more than 5 mln roubles and 2/3 of costs)
- In addition, there are several kinds of support from the exchange itself, which are common for all the junior stock exchanges:
- Support in marketing activities (investor relations, organization of road shows etc.)
- Measures to keep liquidity of shares on a secondary market after an IPO (ex: market maker programs) [11].

Quantitative characteristics of junior stock exchanges

A method suggested by the World Bank is generally used to compare financial systems of different countries. In our opinion, it may be used to compare different stock exchanges to support the decision-making process before an IPO and to distinguish in which way junior stock exchange differ from min boards around the world.

This method suggests 4 basic quantitative characteristics of the stock exchange:

1. Financial depth measured by market capitalization to GDP ratio.
2. Financial access (inclusion) measured by percentage of top-10 companies in total market capitalization.
3. Financial efficiency measured by trade volume to market capitalization ratio.
4. Financial stability measured by variation coefficient [12].

In this chapter of the research we will compare largest stock exchanges and their alternative markets based on these criteria and understand in which way they are connected with each other. Understanding of this aspect allows us to conclude which factors are the most important and which are not.

We used data from the financial databases (yahoo finance, investing.com etc.) and websites of the exchanges. We examined 8 exchanges which were largest by market capitalization by the end of 2015: NYSE, NASDAQ, LSE, Hong Kong Stock exchange, Moscow stock exchange, Deutsche Börse, Euronext, Tokyo Stock exchange and corresponding junior markets. For all these exchanges we calculated 4 indicators described above.

All the exchanges included in the analyzed data were divided into several segments:

- type of financial system – anglo-saxon or continental;
- level of development of the financial market – Developed or developing;
- type of the exchange – main board, junior market and NASDAQ (which was decided to consider separately).

Based on the criteria determined before and the segmentation of stock exchanges we prepared descriptive statistics:

- analysis of weighted average values of the indicators by segments (market capitalization was used as a weight) (Table 1);
- analysis of correlation between indicators (Table 2-4).

Table 1

Weighted average values of quantitative indicators by segments Source: author's calculations [10, 13-17]

	Depth	Access	Efficiency	Stability
	Mrkt Cap/GDP	% of top-10	Trade volume/Mrkt Cap	Variation coeff
World	88%	24,96%	1,09	5,62%
1. Level of development				
Developed	93%	23,84%	1,13	3,99%
Developing	29%	37,02%	0,66	8,27%
2. Type of a stock exchange				
Main boards	98%	21,89%	0,83	4,61%
Junior markets	2%	32,88%	0,60	6,83%
NASDAQ	49%	36,71%	2,15	3,18%
3. Type of a financial system				
Copntinental	74%	30,26%	0,81	3,54%
Anglo-saxon	93%	22,87%	1,20	6,43%

The conducted research revealed some important findings:

First, some differences among different segments of the stock exchanges arise:

- Stock exchanges of developed countries demonstrate overall better quantitative characteristics than exchanges of developing countries. It may be assumed that this is connected to gap in development of financial systems and financial institutions.
- Stock exchanges of countries with Anglo-Saxon type of financial system demonstrate overall better quantitative characteristics than exchanges of Continental type. It can be explained by the fact that even though level of development of the financial system in general may be the same, focus of financial system on different type of financing (equity or debt financing). It concerns junior markets as well. For example, junior markets from UK and US demonstrate very low market concentration – 10 largest companies have a share of 21% in total market capitalization of NASDAQ-CM and only 19% in AIM. This indicator is even lower than average value of this indicator for developed markets around the globe (21,89%).
- Main segments of stock exchanges demonstrate overall better quantitative characteristics than

Table 3

Correlation table for quantitative indicators. Developed markets Source: author's calculations, [10, 13-17]

	Depth	Access	Efficiency	Stability
	Mrkt Cap/GDP	% of top-10	Trade volume/Mrkt Cap	Variation coeff
Mrkt Cap/GDP	1			
% of top-10	-0,80	1		
Trade volume/Mrkt Cap	0,07	-0,29	1	
Variation coeff	-0,74	0,61	-0,44	1

Table 2

Correlation table for quantitative indicators. World Source: author's calculations [10, 13-17]

	Depth	Access	Efficiency	Stability
	Mrkt Cap/GDP	% of top-10	Trade volume/Mrkt Cap	Variation coeff
Mrkt Cap/GDP	1			
% of top-10	-0,50	1		
Trade volume/Mrkt Cap	-0,19	0,16	1	
Variation coeff	-0,45	0,17	0,24	1

their junior segments. It is explained by the lower level of development of junior markets. Nevertheless, for some Asian exchanges, intensity of trade is higher in junior stock exchanges than in main boards.

- NASDAQ stock exchange occupies a special place in the list of stock exchanges as it is characterized by the highest market efficiency (trade value/capitalization ratio – 2,15) and stability (variation throughout 2015 was at the level of 3,18%) than both junior markets and main stock exchanges.

Next category of findings is related to correlation between financial indicators of the stock exchanges. In this part of the research, we detected correlation between quantitative characteristics of different stock exchange. For better understanding of nature of junior stock exchanges, the last ones and the main boards were considered separately.

Analysis of the open market data made possible to come up with following findings:

- The key factor for all kind of exchanges is market capitalization/GDP ratio because most of other indicators appeared to have medium or strong correlation with it. It means that this stock exchange indicator may be used as a main indicator of overall level development of a financial market in general and of a stock exchange in particular.
- In general, main boards and junior markets demonstrate the same interrelations between financial indicators but it is necessary to mention some aspects of difference. Firstly, data shows that main boards are characterized by significantly higher correlation between accessibility to financial market and financial depth than the same correlation calculated for junior markets. It may be assumed that access to junior

Table 4

Correlation table for quantitative indicators. Developing markets Source: author's calculations, [10, 13-17]

	Depth	Access	Efficiency	Stability
	Mrkt Cap/GDP	% of top-10	Trade volume/Mrkt Cap	Variation coeff
Mrkt Cap/GDP	1			
% of top-10	-0,40	1		
Trade volume/Mrkt Cap	-0,48	0,14	1	
Variation coeff	-0,64	0,00	0,22	1

market is determined by the level of entry barriers (which may differ significantly in different markets) rather than by the level of overall development of the financial market.

Conclusion

We conducted this research based on the assumption that junior capital markets have a great impact on national innovation system through creating an opportunity for STBF to gain access to financing using opportunities of an open financial market and a status of a public company. However, in order to be able to use the power of the instrument of an IPO, small technology-based company should be able to make a reasonable choice of a stock exchange. This choice should be based on objective characteristics, which were identified in this research.

In terms of quantitative characteristics that depend on the type and the level of development of a financial system, junior stock exchanges are losing to large main boards for mature companies. Nevertheless, they may serve as an instrument of stimulation of small technology-based firms' IPO due to two key factors:

- Low requirement of junior stock exchanges and therefore low entry barriers for young innovative firms.
- Support from the stock exchange in terms of market maker programs, consulting and information services and relationships with investors. Besides there could be government support in a form of tax incentives, grant financing or activities aimed to maintain liquidity of shares after an IPO.

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Альтернативные биржевые площадки как инструмент поддержки малых инновационно ориентированных компаний

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Статья рассматривает концепцию альтернативных биржевых площадок и анализирует, каким образом такие площадки стимулируют инновационную деятельность. Автор формулирует концепцию подобных площадок, определяя их как такой сегмент фондовых бирж, который нацелен на мотивацию малых инновационно ориентированных компаний к получению финансирования путем выхода на IPO с помощью сниженных требований и поддержке в определённых аспектах от государства или самой биржи. После этого автор определяет количественные и качественные характеристики таких площадок и сравнивает крупнейшие мировые альтернативные биржи по этим характеристикам. В заключении автор делает вывод о том, что несмотря на то, что альтернативные биржевые площадки скорее отстают от основных в части количественных характеристик, такие площадки могут служить инструментом поддержки малых инновационно ориентированных фирм через специфические виды поддержки таких компаний: информационную, маркетинговую, финансовую, а также через пониженные барьеры входа.

Ключевые слова: инновационно ориентированная компания, первичное публичное размещение, рынки капитала, фондовые биржи, альтернативные биржевые площадки.