

# Analysis of the Characteristics of the KOSDAQ Market by Measuring Similarities with the KOSPI Market

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In contrast to its international recognition as a successful SME exchange, domestic recognition of the KOSDAQ market is not positive. Sluggish stock market performance, high price volatility, absence of institutional investors, and difficulties facing growth firms to enter the market are often cited as problems with the KOSDAQ market. Some argue that the undervaluation of the KOSDAQ market is due to the perception that it is inferior to the KOSPI market, and that market independence should be strengthened to improve the KOSDAQ market. Reflecting the views, KOSDAQ measures were announced early this year to enhance its autonomy and independence, e.g., giving more discretionary power to the KOSDAQ Market Committee.

However, direct comparison of the KOSPI and KOSDAQ markets could lead to distorted interpretation of analysis results. It is hard to conclude whether differences between the KOSDAQ and KOSPI markets naturally result from KOSDAQ stocks' characteristics, i.e., low price and small capitalization, or the differences come from the undervaluation and inherent problems of the KOSDAQ market. In order to make a meaningful comparison between the markets, I analyze the listed firms by dividing the KOSPI-listed firms into two groups, firms similar to the KOSDAQ-listed firms and firms different from the KOSDAQ-listed firms. The result shows that the size of the KOSDAQ-listed

\* All opinions expressed in this paper represent the author's personal views and thus should not be interpreted as Korea Capital Market Institute's official position.

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firms are significantly different from that of the KOSPI-listed firms, and the size difference may affect other characteristics of the KOSDAQ market. To achieve independent growth of the KOSDAQ market, evaluation and plans should be made with consideration of the fundamental differences between the two markets.

Since its inception in 1996, the KOSDAQ market has grown substantially, continuing on its growth trend to date. The KOSDAQ market, which started with total market capitalization of KRW 8.6 trillion at the end of 1996, has experienced remarkable growth. In 2017, 1,270 companies are listed in the KOSDAQ market, and the market capitalization is KRW 283 trillion. This development of the KOSDAQ market is exceptional given that most stock markets for small and medium enterprises (SMEs) in Europe and Asia were closed down or exist today in name only.

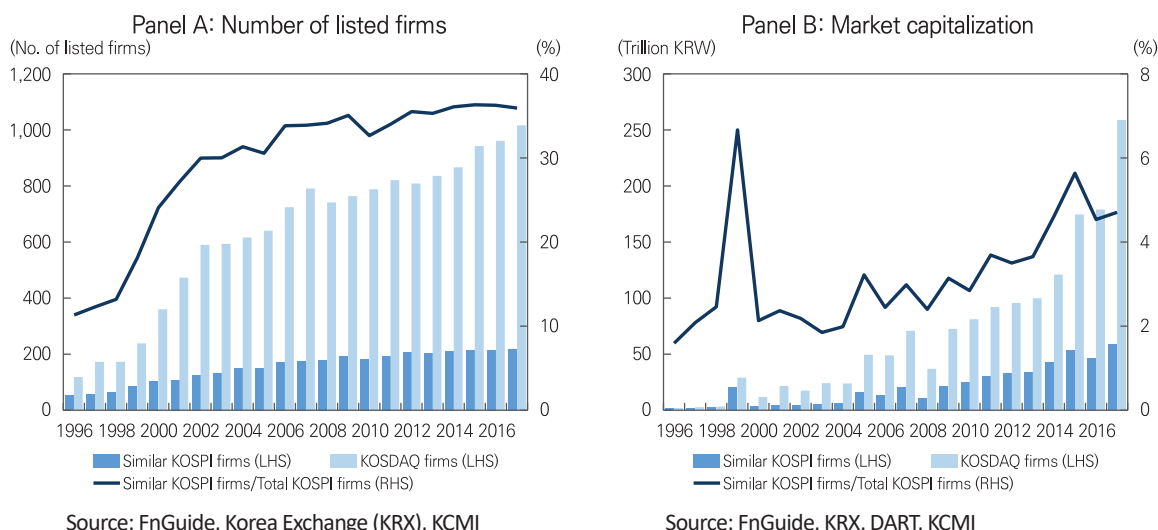
Although the KOSDAQ market is recognized as a successful SME market on the global scene, its domestic recognition tells a different story. Previous administrations came up with plans to revitalize the KOSDAQ market during their first years in office. This suggests that tacit perception among market participants has continued that the KOSDAQ market is stagnant and undervalued. Furthermore, whenever a company moved its stock listing from the KOSDAQ market to the KOSPI market, crisis fears hung over the KOSDAQ market. High market volatility and absence of institutional investors are also seen as long-standing issues with the KOSDAQ market.

In most cases, however, criticisms faced by the KOSDAQ market have been raised without giving careful consideration to where the problems come from, the nature of the stock market or the characteristics of companies listed on the market. In this article, I classify and compare companies listed on the KOSPI and KOSDAQ markets into two groups: the group of firms sharing similarities (the similar group) and the group of firms with different characteristics (the dissimilar group) for meaningful comparison of the two stock markets. Then, I investigate how much different the features of the KOSDAQ-listed firms and the KOSPI-listed firms are.

**Comparing similar listed firms between the KOSPI and KOSDAQ markets**

The KOSPI firms and the KOSDAQ firms were sorted into either the similar group or the dissimilar group, based on industry classification and proximity between firms in terms of financial size.<sup>1)</sup> As the analysis is intended to identify the characteristics of general firms listed on the KOSDAQ market, several listed entities are excluded from the analysis, including listing-transferred firms which usually outperform the other firms.

**Figure 1. Trends of the KOSDAQ firms and the similar KOSPI firms**



The comparative analysis of the KOSDAQ firms and the KOSPI firms since the launch of the KOSDAQ market in 1996 reveals that the number of securities listed on the KOSPI market, which are similar to those listed on the KOSDAQ market in terms of industry classification and financial size, has increased every year. Out of 467 KOSPI firms in the analysis for the year of 1996, 53 exhibited high similarity to the KOSDAQ firms, representing only 11% of listed firms on the KOSPI market. On the other hand, 219 out of 609 KOSPI firms were matched with the KOSDAQ firms in 2017, which pushed the proportion of similar KOSPI firms up to 36%.

The increase was attributed primarily to the growth of the KOSDAQ market. Over the past two

1) For the sake of comparison, most similar companies are selected in terms of total assets and total equity among KOSPI and KOSDAQ companies that fall within the same industry category according to FnGuide Industry Classification Standard. To measure the degree of similarity, a distance  $d(i, j)$  between KOSPI firm  $j$  and KOSDAQ firm  $i$  is defined as follows:

$$d(i, j) = \left(1 - \frac{Asset_j}{Asset_i}\right)^2 + \left(1 - \frac{Equity_j}{Equity_i}\right)^2$$

decades, the number of firms listed on the KOSDAQ market has continued to rise and the average size of the KOSDAQ firms has increased as well. The growth of the KOSDAQ firms has led to an increase in the number of the KOSDAQ firms that are characteristically similar to KOSPI firms.<sup>2)</sup>

Despite the rise in the number of similar firms, however, their percentage of the total market value is still negligent. From 1996 to the early 2000s, except for 1999, the similar KOSPI firms accounted for around 2% of KOSPI's market capitalization. In spite of a persistent increase thereafter, the similar KOSPI firms as a percentage of KOSPI's market capitalization stood at merely 4.7% at the end of 2017. Even during a dotcom boom in 1999, the proportion was unprecedentedly high at 6.7% but still low in absolute terms.

### **Comparing the characteristics of the KOSDAQ firms and the dissimilar KOSPI firms**

When comparing the characteristics of the KOSDAQ firms and the dissimilar KOSPI firms, their differences are starkly revealed. Table 1 below compares the KOSDAQ firms and the dissimilar KOSPI firms in terms of size, stock price profitability and stability, investor composition and trading activity.

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2) Until now, all of listing transfers between the two stock markets were the moves from the KOSDAQ market to the KOSPI market. Among KOSDAQ-listed firms, large-cap firms with strong performance moved to the KOSPI market. Accordingly, if firms shifting their stock listings to the KOSPI market are included in the analysis, analysis results could be distorted before and after the firms left the KOSDAQ market. Apart from companies that moved to the KOSPI market, the analysis also excludes special purpose acquisition companies (SPACs), foreign companies, financial institutions, companies whose stock trading was suspended for 10 or more days per year, companies whose stocks were on the watch list for 10 or more days per year and companies that close their books in any month other than December.



**Table 1. Comparison of the features of the KOSDAQ firms and the dissimilar KOSPI firms**

			1996~2000		2001~2010		2011~2017	
			Dissimilar Kospi firms (A)	Kosdaq firms (B)	Dissimilar Kospi firms (A)	Kosdaq firms (B)	Dissimilar Kospi firms (A)	Kosdaq firms (B)
			Ratio (B/A)		Ratio (B/A)		Ratio (B/A)	
Size	Assets	KRW 100 mil.	2,470	338	4,203	528	8,585	1,018
		x	0.14		0.13		0.12	
	Equity	KRW 100 mil.	850	140	2,193	304	4,201	594
		x	0.16		0.14		0.14	
	Market cap	KRW 100 mil.	445	150	1,520	321	3,274	758
		x	0.34		0.21		0.23	
Stock price profitability and stability	Stock price	KRW	9,268	11,688	14,474	3,231	21,607	5,290
		x	1.26		0.22		0.24	
	Yearly stock returns <sup>2)</sup>	%	-13.61	27.52	16.17	1.87	-0.55	1.76
		x	1.48		0.87		1.02	
	Daily stock price volatility	%	4.32	4.79	2.92	4.08	2.25	3.07
		x	1.11		1.40		1.36	
Investor composition	Individual investors	%	91.87	96.75	78.65	97.02	68.83	94.00
		x	1.05		1.23		1.37	
	Institutional investors	%	3.35	0.67	5.46	0.35	7.97	0.69
		x	0.20		0.06		0.09	
	Foreign investors	%	0.55	0.02	4.54	0.77	10.96	3.57
		x	0.03		0.17		0.33	
Trading activity	Trading value	KRW 100 mil.	1,731	755	2,149	1,569	3,645	2,656
		x	0.44		0.73		0.73	
	Trading volume	10,000 shares	1,597	813	1,996	3,548	2,057	3,925
		x	0.51		1.78		1.91	
	Turnover	%	263	177	145	378	89	275
		x	0.67		2.61		3.08	

Note: 1) Numbers above are computed by averaging the annual median values of each sample group by period.

2) Yearly stock returns indicate the ratio of year-ending balance in KOSDAQ investment to year-ending balance in KOSPI investment when the same amount of money is invested in each of the two markets.

Source: FnGuide, KRX, DART, KCFI

First, the KOSDAQ firms are significantly different in size from the dissimilar KOSPI firms. From 2011 to 2017, the assets and equity ratios of the KOSDAQ firms to the dissimilar KOSPI firms are only 0.12 and 0.14, respectively. That is, the assets and equity of the dissimilar KOSPI firms are 8.3 times and 7.1 times higher than those of the KOSDAQ firms, respectively. These differences remain almost unchanged. Since the early and mid-2000s, the assets ratio of the KOSDAQ firms

to the dissimilar KOSPI firms is between 0.11 and 0.13, and the equity ratio fluctuates between 0.13 and 0.16 without change in the overall trend. In other words, large-cap firms representing two thirds of KOSPI firms and 95% or more of KOSPI's market capitalization are much bigger in size than the KOSDAQ firms. On the other hand, the KOSDAQ firms and the dissimilar KOSPI firms are not greatly different from each other in market value compared to their differences in assets and equity. The relative ratio of the KOSDAQ firms' average market value to the dissimilar KOSPI firms' average market value was 0.21 from 2001 to 2010 and 0.23 for 2011 and thereafter. This implies that market views on the KOSDAQ firms relative to their financial scale were positive, partly reflecting growth expectations for the firms.

Second, the stock prices of the KOSDAQ firms are far lower than those of the dissimilar KOSPI firms. The stock prices of the KOSDAQ firms, as measured by the median, are rather higher than those of the dissimilar KOSPI firms in the late 1990s owing to unusual market conditions such as the bearish KOSPI market in the wake of the Asian financial crisis in 1997, and a surge in the KOSDAQ market prompted by the dotcom bubble in the late 1990s. However, after the collapse of the bubble in 2000, the gap between the stock prices of the KOSDAQ and KOSPI firms has been widened, and the gap between the markets has not been resolved. While KOSDAQ stock prices that had skyrocketed amid the dotcom bubble plummeted after the bubble burst, the relationship between the two markets was reestablished. The KOSDAQ market became characterized by low-priced small cap stocks as compared with the KOSPI market.

Third, low-priced small caps made the stock market more accessible to individual investors. Prior to 2000, the KOSDAQ firms and the dissimilar KOSPI firms showed no significant difference in the share of individual investors in total trading value. Since 2001, however, the share of individual investors has significantly increased in the KOSDAQ market. By contrast, the dissimilar KOSPI companies, characterized by high-priced mid and large caps, experienced a drop in the proportion of individual investors and an increase in the participation of institutional investors and foreign investors. The proportion of individuals trading KOSDAQ stocks from 2011 to 2017 averaged 1.37 times the proportion of individuals trading the dissimilar KOSPI stocks, while the proportion of institutional investors trading KOSDAQ stocks was 0.09 times. Notably, the proportion of foreign investors has been growing in both stock markets, and the rise in the proportion of foreign investors is faster in the KOSDAQ market than in the KOSPI market.

Fourth, the active participation of individual investors affects trading activity in the stock



market. The annual average trading ratio of the KOSDAQ firms to the dissimilar KOSPI firms is 1.78 from 2001 to 2010 and 1.91 from 2011 to 2017. The trading volume of the KOSDAQ firms is about twice as high as that of the dissimilar KOSPI firms. The turnover ratio of the KOSDAQ firms has been more than three times higher than that of the dissimilar KOSPI firms since 2011.

In summary, only one-third of the KOSPI firms are practically comparable to the KOSDAQ firms. Moreover, most of the comparable stocks are small caps, and the market capitalization of the stocks is less than 5%. The size gap directly affects various factors. The stock prices of small cap firms are generally lower than those of mid or large cap firms. The individual investors generally have a high proportion in the stocks with low prices, and they actively trade in those stocks. These features are also observed in the comparison of the KOSDAQ firms and the dissimilar KOSPI firms.

### Implications

The KOSDAQ firms and the KOSPI firms are starkly different in size. Direct comparison of the firms without considering the size difference could lead to distorted interpretation. For example, the proportion of institutional and foreign investors in the KOSPI market is higher than in the KOSDAQ market, which is likely to be a natural result because the KOSPI market has more large-cap firms than the KOSDAQ market. In this case, it is not reasonable to conclude that the low participation of institutional investors is a fundamental problem of the KOSDAQ market itself.

To properly interpret phenomena, size and other differences should be considered when comparing the KOSDAQ market with the other stock market. In other words, it is important to distinguish problems of the KOSDAQ market itself from fundamental differences between the two stock markets, which stem from the characteristics of firms listed on each market. If the KOSDAQ firms exhibit no significant difference in terms of performance from the similar KOSPI firms, and the gap between the KOSDAQ firms and the large-cap KOSPI firms is growing, the fundamental reason behind the phenomenon is highly likely to be disproportionate growth environment between small-sized firms and mid to large-sized firms rather than the market problem. On the other hand, if the KOSDAQ firms are undervalued relative to the similar KOSPI firms in size and other aspects, the main cause may lie in the market itself. Therefore, plans based on the analysis of the fundamental causes should be devised to promote the development of the KOSDAQ market.