

How to Improve the Exchange-Traded Derivatives Market in Korea

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Despite its short history, Korea's exchange-traded derivatives market has achieved significant growth since the KOSPI200 futures contract was listed on the Korea Exchange (KRX) in 1996. However, Korea's futures and options markets have several problems as follows. First, most of the derivatives trades within the KRX are concentrated on KOSPI200 futures and options. Second, the markets for futures and options on interest rates, foreign currencies, and commodities are still underdeveloped. Third, individual investors still account for a high percentage of the trading volume in the equity index futures and options markets and have experienced huge losses from trades. Both the government and the KRX need to stimulate the listing of new non-equity derivatives products and revitalize the existing products that have low trading volumes, through either developing relevant benchmark indices or improving the supply-demand imbalance and distribution structures of the spot markets. In addition, to deter excessive speculative trading by individual investors, the related authorities should apply tightened investor qualification criteria, such as investment purposes, investment experience, and the size of assets.

I. Introduction

Despite its short history, the exchange-traded derivatives market in Korea has grown to stand shoulder to shoulder with the world's prominent futures exchanges at least

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

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in terms of trading volume. However, it has been confronted with several important problems to address for quality improvement, such as product lines that are weighted heavily towards financials, the high trading volume concentrated on a few products, and the excessive speculation and huge losses of individual traders.

Currently, Korea Exchange (KRX) is the only futures exchange in Korea. It lists 15 futures and options products whose underlying assets encompass individual equities, equity indices, interest rates, currencies, and commodities. Among the products, only five products including KOSPI200 futures and options are actively traded, and KOSPI200 futures and options account for most of the trading volume.

The derivatives market is a marketplace established to manage the price risk of a certain underlying asset. If used properly, the market returns economic benefits to individual economic agents and the national economy. For instance, suppose an import company hedges against a potential price increase of an imported commodity, given that the foreign exchange rate moves within a certain stable range. Then, the import company would have less incentive to raise its sales prices even when international commodity prices actually rise significantly. In contrast, non-hedging companies end up bearing losses by themselves or are highly likely to transfer the price increment to domestic consumers. Therefore, the government and KRX should make systematic efforts so that more diverse futures and options products, which can enhance economic benefits of economic agents, can be actively traded.

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On the other hand, exchange-traded derivatives are in general regarded as a useful investment vehicle due to low transaction costs and the availability of diverse investment strategies, but can be very risky because of their excessive financial leverage. Therefore, futures and options contracts are not suitable for amateur traders who have less investment experiences and wealth. This leads to a need for reasonable barriers to market entry since individual traders still account for a high percentage of the trading volume in KOSPI200 futures and options markets.

In this article, I look at the status and problems in the exchange-traded derivatives market in Korea, and then seek ways to address the problems.

II. Current Market Status and Problems

1. History and Current Market Status

As shown in Table 1, Korea's exchange-traded derivatives market was established in May 1996 when the KOSPI200 futures contract was listed on the Korea Stock Exchange (KSE). In July 1997, the KSE listed the KOSPI200 options contract, which has been the most actively traded exchange-traded derivative product in the world for many years. At last, the Korea Futures Exchange (KOFEX) was established in April 1999 in order to trade futures and options products based on more assorted financials (KRW/USD exchange rate futures and options, certificates of deposit (CD) futures) and commodities such as gold. Since then, the KOFEX continued listing the 3-year Korea treasury bond (KTB) futures, options on the 3-year KTB futures, the KOSDAQ50 equity index futures and options, the 364-day monetary stabilization bond (MSB) futures, and 5-year KTB futures, while the KSE listed futures on seven individual equities.

In January 2005, the Korea Exchange (KRX) was created through the integration of the KSE, the KOFEX, and the Korean Securities Dealers Automated Quotation (KOSDAQ), and became the only securities and derivatives exchange in Korea. The KRX added new futures products whose underlying assets were the KOSTAR equity index, the KRW/JPY exchange rate, the KRW/EUR exchange rate, the 10-year KTBs, individual equities, lean hogs, mini-gold, and options contracts on individual equities, while the KRX unlisted several illiquid products, such as the CD futures, options on the 3-year KTB futures, the KOSDAQ50 equity index futures and options, and the 364-day MSB futures. Currently, the KRX lists five futures and options on individual equities and equity indices (KOSPI200 futures and options, KOSTAR futures, and futures and options on individual equities), three interest rate futures (3-year, 5-year, and 10-year KTB futures), four currency futures and options (KRW/USD futures and options,

KRW/JPY futures, and KRW/EUR futures), and three commodity futures (gold, mini-gold, and lean hogs).

Table 1. The History of Listing Exchange-traded Derivatives in Korea

Date	Derivative	Underlying Asset	Asset Class
May 1996	KOSPI200 futures	KOSPI200 index	Equity index
Jul. 1997	KOSPI200 options	KOSPI200 index	Equity index
Apr. 1999	KRW/USD futures	KRW/USD	Exchange rate
	KRW/USD options	KRW/USD	Exchange rate
	CD futures	Certificates of deposit	Short-term interest rate
	Gold futures	Gold	Precious metal
Sep. 1999	3-year Korea T-bond futures	3-year Korea T-bonds	Mid-term interest rate
Jan. 2001	KOSDAQ50 futures	KOSDAQ50 index	Equity index
Sep. 2001	KOSPI200 futures spread	KOSPI200 index	Equity index
Dec. 2001	KOSDAQ50 options	KOSDAQ50 index	Equity index
Jan. 2002	Options on individual equities	33 individual equities	Individual equities
May 2002	Options on the 3-year Korea T-bond futures	3-year Korea T-bonds	Mid-term interest rate
Dec. 2002	MSB futures	364-day MSB	Short-term interest rate
Aug. 2003	5-year Korea T-bond futures	5-year Korea T-bonds	Mid-term interest rate
Nov. 2005	KOSDAQ STAR futures	KOSTAR index	Equity index
May 2006	KRW/JPY futures	KRW/JPY	Exchange rate
	KRW/EUR futures	KRW/EUR	Exchange rate
Feb. 2008	10-year Korea T-bond futures	10-year Korea T-bonds	Long-term interest rate
May 2008	Futures on individual equities	25 individual equities	Individual equities
Jul. 2008	Lean hog futures	Lean hogs	Agricultural
Sep. 2010	Mini-gold futures	Gold	Precious metal

Notes: 1) The figures of underlying assets of futures and options on individual equities are as of the end of May 2011.

2) The KRX unlisted the CD futures, options on the 3-year KTB futures, the KOSDAQ50 equity index futures and options, and the 364-day MSB futures.

Source: KRX

The actively traded futures and options among the products listed at the KRX are the KOSPI200 futures and options, the 3-year KTB futures, the KRW/USD exchange rate futures, and a handful of futures on individual equities. As indicated in Table 2, the number and value of contracts traded at the KRX in 2010 reached about 15 million contracts and KRW 56.4 trillion, respectively, on a daily basis. In terms of the number of contracts, the KOSPI200 options represented 94% of the total trading volume, while the KOSPI200 futures and other futures accounted for the remaining 6%. The heavy trades for the KOSPI200 options made the KRX the top exchange in the world by trading volume over the 2009-2010 period (see Table 3). In terms of the contract value, the KOSPI200 futures comprised 70% of the total trading value at the KRX and the 3-year KTB futures, whose minimum trading unit is quite large, accounted for 22%. The proportion of the KOSPI200 options in trading value was as low as 2.2%, in contrast to its contract numbers.

Table 2. The average daily trading volume of major products at the Korea Exchange

(Units: the number of contracts, KRW billion, %)

	Number of Contracts				Value of Contracts			
	2009	2010	% Change	% Share	2009	2010	% Change	% Share
KOSPI200 futures	328,526	345,661	5.2	2.3	30,248.2	39,626.9	31.0	70.3
3-year KTB futures	79,252	110,010	38.8	0.7	8,733.7	12,341.2	41.3	21.9
KRW/USD futures	212,912	261,727	22.9	1.8	2,703.9	3,032.6	12.2	5.4
Futures on individual equities	146,132	178,159	21.9	1.2	63.5	88.1	38.7	0.2
Sub-total	769,189	895,557	16.4	6.0	41,796.4	55,088.8	31.8	97.8
KOSPI200 options	11,545,418	14,047,405	21.7	94.0	1,014.1	1,267.2	25.0	2.2
Total	12,314,607	14,942,962	21.3	100.0	42,810.5	56,356.0	31.6	100.0

Note: 1) Figures for the KOSPI200 futures and options include CME- and Eurex-linked trades, 3,840 contracts and 1,984 contracts respectively, on a daily basis.

2) Fifteen individual equity futures were initially listed at the KRX in May 2008 and 10 more were added to the list in December 2009.

Source: KRX

Table 3. Top 10 derivatives exchanges worldwide (ranked by the number of contracts)

(Units: million contracts, %)

Rank	Exchange	2009	2010	% of change
1	Korea Exchange	3,103	3,749	20.8
2	CME Group (includes CBOT and Nymex)	2,590	3,080	19.0
3	Eurex (includes ISE)	2,647	2,642	-0.2
4	NYSE Euronext (includes US and EU markets)	1,730	2,155	24.6
5	National Stock Exchange of India	919	1,616	75.9
6	BM&FBovespa	920	1,422	54.5
7	CBOE Group (includes CFE and C2)	1,136	1,124	-1.1
8	Nasdaq OMX (includes US and Nordic markets)	816	1,099	34.8
9	Multi Commodity Exchange of India (includes MCX-SX)	385	1,082	180.7
10	Russian Trading Systems Stock Exchange	474	624	31.5

Source: US Futures Industry Association

Figures 1 and 2 show that trades on the KOSPI200 futures and options soared during the 2001-2003 period. This was possible mainly because of the high volatility in the equity market, individual traders' increasing preferences for direct investments and risk, the tremendous increase in on-line trading over the internet, and few restrictions on small amounts of investment especially in the equity index options. Other reasons include the inherent advantages of futures and options trading such as the use of high leverage, ample liquidity, the easiness in taking short positions, and availability of a wide variety of trading strategies.

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Figure 1. The average daily trading volume of KOSPI200 futures

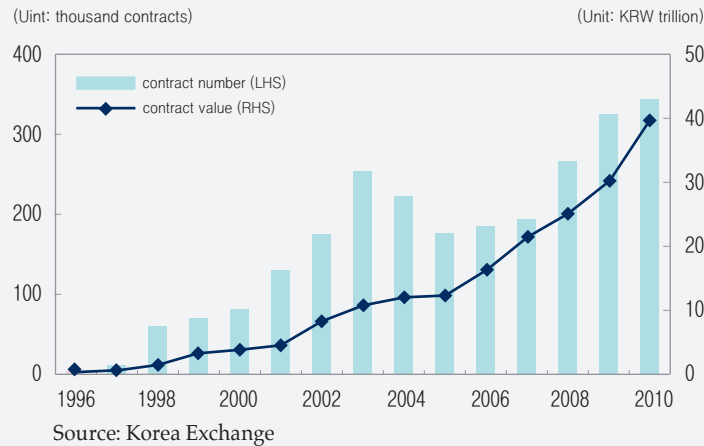


Figure 2. The average daily trading volume of KOSPI200 options

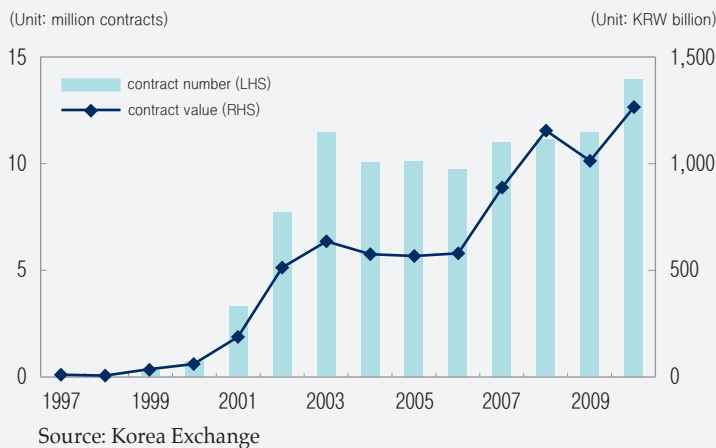


Table 4 presents the proportion of traders in the KRX derivatives contracts in terms of trading volume. In the KOSPI200 futures market, the percentages of both institutional investors and foreign investors have gradually increased, while the percentage of individual traders tends to have decreased consistently since 2008. In the KOSPI200 options market, however, individual investors still account for around 36% of overall trading volume. The percentage of foreign investors trading the equity index options has increased significantly, but institutional investors' proportion has declined

moderately. Institutional investors seemed to reduce their risk-taking activity as stock market volatility expanded in 2009 immediately after the global financial crisis. It is believed that foreign investors' increasing proportion in the KOSPI200 futures and options markets are closely associated with the increased use of algorithmic trading.

Table 4. The proportion of each investor group by product

(Unit: %)

		Institutional Investors						Individual Investors	Foreign Investors
			Banks	ITC	BD/FC	Insurance companies	Others		
KOSPI200 Futures	2007	38.3	0.7	2.5	32.7	0.4	2.0	35.9	25.8
	2008	38.1	0.7	2.8	33.2	0.2	1.2	37.0	24.9
	2009	40.6	0.3	1.8	37.0	0.3	1.2	34.3	25.1
	2010	43.4	0.3	0.8	40.3	0.2	1.8	27.1	29.5
KOSPI200 Options	2007	28.9	0.1	0.5	27.6	0.2	0.5	36.2	34.9
	2008	23.4	0.1	0.3	22.4	-	0.6	34.0	42.6
	2009	19.7	1.0	0.4	18.7	0.1	0.4	37.0	43.3
	2010	23.3	-	0.5	21.6	0.4	0.8	36.4	40.3
3-year KTB Futures	2007	86.2	38.8	5.9	38.6	1.4	1.5	2.0	11.8
	2008	87.2	33.5	4.2	45.8	1.5	2.2	3.8	9.0
	2009	84.3	26.3	4.7	49.7	1.8	1.8	7.4	8.3
	2010	83.4	22.3	2.5	54.7	2.5	1.5	8.8	7.8
Individual Equity Futures	2008	27.1	0.2	9.9	15.4	1.4	0.2	63.4	9.5
	2009	23.6	0.1	9.4	12.1	1.2	0.8	69.1	7.3
	2010	26.5	0.4	1.4	17.9	1.0	5.8	65.0	8.5
KRW/USD Futures	2007	92.4	42.6	28.4	17.9	0.8	2.7	2.6	5.0
	2008	88.4	40.5	20.1	22.8	0.6	4.4	6.9	4.7
	2009	80.3	32.8	9.8	32.4	0.5	4.7	13.2	6.5
	2010	73	20.6	7.5	39.4	0.6	4.9	15.8	11.2

Note: ITC denotes investment trust companies, BD means brokers and dealers, and FC refers to futures companies. The figures are calculated based on the number of contracts for futures, and the value of contracts for options.

Source: KRX Market

Institutional investors have been major players in the 3-year KTB futures and the KRW/USD futures markets, and in 2010 they accounted for 83.4% and 73% of trading volume in respective markets. The percentage of institutional investors has been stagnant in the 3-year KTB futures market and largely decreased in the KRW/USD

futures market in which the percentages of individual investors and foreign investors have gradually increased because the reduced size of the minimum trading unit pushed up hedging demands. In particular, brokers and dealers increased their trades in the bond and currency derivatives markets that have been formally allowed since February 2009 under the Financial Investment Services and Capital Markets Act. It is noteworthy that the percentage of investment trust companies in the KRW/USD futures market dropped from 20.1% in 2008 to 9.8% in 2009 because they liquidated their currency hedge positions for overseas equity investments when the KRW largely depreciated over 2008-2009. Not surprisingly, individual investors accounted for 65% of the trades in the individual equity futures market in 2010, while brokers and dealers, futures companies, and foreign investors captured the rest of the trades.

2. Problems

A. Excessive Concentration on Financial Derivatives

As aforementioned, the majority (80%) of derivatives products in the KRX are based on financials (individual equities, equity indices, interest rates, and currencies). Although KRX has three commodity products, they have not obtained enough liquidity. Moreover, only five contracts among the 12 financials have been liquid.

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Above all, both individual equity options and the KOSTAR equity index futures have been rarely traded. The KRX failed to boost trading in individual equity options by altering the settlement method from physical delivery to cash settlement. In contrast, equity linked

warrants (ELWs) with similar characteristics to individual equity options have actively traded under some favorable conditions. That is, ELWs are offered with a wide range of expiration dates, exempt from initial deposits and have dozens of active liquidity

providers. The KOSTAR equity index futures contract has long been disregarded by institutional investors and foreign investors due to the opaque spot market.

The interest rate futures contracts, except the 3-year KTB futures, have also been rarely traded. In the short-term interest rate futures market, the KRX has not been successful because it was difficult to find a representative interest rate that could reflect the market conditions appropriately. An encouraging fact is that in recent days the 10-year KTB futures market has gained a certain momentum with improved trading volume. As of the end of May 2011, the average daily trading volume and open interest reached the record level of 20,000 contracts and 10,000 contracts, respectively. To stimulate trading, the KRX promoted the change of the settlement method, the introduction of market makers, the provision of the secure settlement price, and the harmonization of regulations governing individual KTB futures contracts in October 2010.

Unlike the KRW/USD futures, the KRW/JPY and the KRW/EUR futures have not been actively traded. Until recently, the average daily trading volumes of both contracts had been less than 2,000 contracts. This is closely related to the fact that the import/export companies typically use US dollars as the settlement currency. According to the Korea Customs Service, Korean companies used US dollars in 85.4% of the total export payments and 80.1% of import payments in 2010. The biased usage of the US dollar delays the formation of the domestic spot markets for other currencies, and in turn this may depress the derivatives markets.

Commodity futures markets in Korea have not been sufficiently developed, even though Korea depends heavily on imports of raw materials which make up about 60% of the total amount of imports. In fact, the imports of raw materials have increased in each year as the production structure of Korea's manufacturing industries have used more raw materials as intermediary goods. Nonetheless, the KRX has only three commodity futures contracts based on gold and lean hogs. Both the gold futures and lean hog futures have low trading volumes, and the mini-gold futures' popularity has increased only slightly.

B. Immoderate Speculation and Losses of Individual Investors

In the early 2000s, trading volume of the KOSPI200 futures and options rapidly increased as individual investors actively participated in the markets. For instance, in 2002 and 2003 individual investors accounted for 53% and 55% in the KOSPI200 futures market and 66% and 55% in the KOSPI200 options market respectively. As shown in Table 4, however, the proportion of individual investors in the KOSPI200 futures and options markets fell to 27% and 36% in 2010, respectively, even though the figures are still high compared to the 10% level of the US and Japan.

The majority of individual investors trade equity index derivatives for the purpose of speculation because they rarely have incentives for hedging or arbitrage transactions. Individual investors have experienced heavy losses from their speculative trading in the equity index derivatives markets. According to a survey conducted by the Financial Supervisory Service in 2006, individual investors' accumulated loss in the KOSPI200 futures and options markets from 2002 to 2005 reached KRW 2,084.5 billion (KRW 371.4 billion from futures and KRW 1,713.1 billion from options), while domestic securities firms and foreign investors earned KRW 755.6 billion and KRW 1,328.6 trillion respectively.

Recent data on the size of loss by individual investors is not available, but it is possible to roughly estimate how large the current loss would be from a quick look at the ELW market, where the hybrid derivatives on the KOSPI200 Index account for 88% of the trading volume. ELWs have similar characteristics to KOSPI200 options but much smaller trading units. In the ELW market, individual investors recorded a loss of KRW 518.6 billion in 2009 alone and a loss of more than KRW 1 trillion during the 2006-2009 period.

III. Directions for Improvement

1. Revitalization of Products with Low Trading Volumes

Liquidity providers may play a critical role in revitalizing the individual equity options market. However, it is highly doubtful that securities firms are willing to provide bid and ask prices for the individual equity options market as they have done in the ELW market. Considering price fairness and market transparency that are controversial in the ELW market, both the KRX and the regulatory authorities should focus more on developing the individual equity options market.

The KOSDAQ equity futures contract such as the KOSTAR futures was listed on the KRX at the height of the dot-com bubble. And it is widely recognized the KOSTAR futures were listed too early considering the market transparency of the KOSDAQ market of the time. The KOSDAQ equity futures market needs to attract institutional investors and foreign investors by reinforcing the spot market integrity and transparency. More specifically, the KRX and regulatory authorities must strictly control unfair trading practices and strengthen the existing disclosure and delisting standards.

Considering price fairness and market transparency that are controversial in the ELW market, both the KRX and the regulatory authorities should focus more on the individual equity options market.

As for short-term interest rate futures, it has been pointed out that interest rates on CDs, the 364-day MSB, and KORIBOR did not properly reflect market conditions. Therefore, the financial industry and the government need to develop new short-term benchmark rates that can substitute those inappropriate rates.

In order to boost the currency futures markets, policymakers need to consider allowing KRW-based FX margin trading to revitalize spot transactions, just as Japan did. FX margin transactions are more like spot transactions than futures because contracts are settled based on the retail spot prices and have no expiration dates. Also, FX margin trading may provide incentives for hedging transactions and carry

trades, and therefore, securing liquidity may be easier than in the current FX futures markets. Since FX margin trading enables hedgers such as import/export companies and investment trust companies to hold their positions without frequent rollovers (in fact, automatic daily rollovers occur), this gives an advantage to hedgers with regard to transaction costs as long as appropriate quotes are offered. The incentive for carry trades may help deter very short-term speculation, which is a chronic problem in Korea's FX margin market.

The Korean government has a plan to introduce the gold spot market in the KRX, and the policies regarding the gold futures market are expected to change. This will help supply the gold spot and futures markets with much-needed liquidity. In the same context, the KRX should consider permitting its trading memberships to large meat processors that want to actively take part in the lean hog futures market.

2. Diversification of the Product Lines

As reviewed in the previous chapter, Korea's national economy is substantially exposed to the risk of adverse price changes of raw materials. Nevertheless, it is ironic that the KRX has listed only three commodity futures contracts. China and Japan launched various commodity futures contracts whose underlying assets covered grains and softs, precious metals, non-ferrous metals, and energies, long before they started trading financial derivatives. More recently, even Hong Kong and Singapore, both of which lack natural resources, established exchanges that focus primarily on trading commodity futures.

The reason why Korea has less developed commodity futures markets is that the domestic markets for major raw materials have been oligopolistic: a small number of companies have dominated the supply chains and distribution channels for the materials, thereby exercising dominant market power. Therefore, the government should improve rules and regulations on the spot commodity markets and level the playing field. In particular, the government needs to develop policies that allow more firms, both domestic importers as well as global firms, to actively participate in those

oligopolistic industries and eventually help trigger price competition. It should be noted that the US and Japan also made unremitting efforts to remove non-competitive elements in their energy markets before they introduced energy futures markets.

3. Strengthening the Individual Investor Requirements for Market Entry

Recently, Korea's financial authority announced that from July 2011, a deposit of KRW 15 million should be made in every margin account for buying the KOSPI200 options and ELWs. This measure came as part of the financial authority's attempt to rein in individual investors' excessive speculative trading in both markets. Considering the sheer size of loss incurred by individual investors in the markets and the problem's social impact, it is a desirable policy direction to strengthen the requirements for market entry.

A more rational approach to deter excessive speculative trading by individual investors would be to impose tightened investor qualification criteria as stipulated in the current law, such as investment purposes, investment experience, and the size of assets.

However, Korea is the only nation in the world to force all investors to require such a large initial deposit. Such a measure is highly likely to backfire: it will block small investors' bona fide hedging transactions, and may give individual investors who pay the deposit the green light to speculate. As a result, imposing a large deposit to all investors may not serve the intended purpose. It is also possible that the initial deposit makes it difficult for new products to gather liquidity. Hence, a more rational approach to deter excessive speculative trading by individual investors would be to impose tighter investor qualification criteria as stipulated in the current law, such as investment purposes, investment experience, and the size of assets.

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