Addiction to Uncertainty:

Regulatory Rush and the Exceptional Growth of Financial Derivatives Markets in South Korea

Myung-koo Kang

Baruch College, City University of New York

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The East Asia Institute
909 Sampoong B/D, Euljiro 158
Jung-gu, Seoul 100-786
Republic of Korea
Tel. 82 2 2277 1683
Fax 82 2 2277 1684

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Introduction

UNCERTAINTY IS ONE OF THE ENDEMIC FEATURES OF FINANCIAL TRANSACTIONS (MINSKY 1982; KNIGHT 2006; Arrow 1984): *"Each financial instrument is created by exchanging 'money today' for commitments to pay 'money later'."* (Minsky 1982, 19). As a result, *"underlying all financing contracts is an exchange of certainty for uncertainty. The current holder of money gives up a certain command over current income for an uncertain future stream of money"* (Minsky 1982, 20). New financial instruments introduced to the derivatives markets for the past two decades were primarily for mitigating the inherent investment risks resulting from the intertemporal uncertainty.

The global financial crisis of 2008-2010, however, clearly demonstrated that unrestrained speculative activities in financial derivatives markets can cause a systemic crisis in the entire financial system. In the wake of the crisis, the way of regulating financial derivatives markets has become one of the critical regulatory agendas in the Group 20 regulatory authorities.[1] Scholars and policy makers have commonly pointed to a regulatory failure as one of the critical underlying causes of the crisis (Financial Crisis Inquiry Commission of the U.S. Congress 2011; Roubini and Mihm 2010; Buckley and Arner 2011). Under the intellectual context, policy makers and scholars have debated concerning proper supervisory and regulatory frameworks towards financial derivatives markets (Wymeersch, Hopt, and Ferrarini 2012; Grant and Wilson 2012; Delimatsis and Herger 2011). As a result in the United States, the Dodd-Frank Wall Street Reform and

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[1] The Financial Stability Board was established in April 2009 as the successor to the Financial Stability Forum. For more details on the history and activities of the Financial Stability Board, see its website (http://www.financialstabilityboard.org).

Consumer Protection Act (July 2010) set forth enhanced regulatory and supervisory standards targeting financial derivatives.[2] In the European Union (EU), the European Market Infrastructure Regulation (EMIR), which came into effect in August 2012, required all firms entering into any form of derivatives trade to report their transactions to trade repositories.[3] Of various regulatory issues, regulating over-the-counter derivatives (OTCD) was one of the critical regulatory issues, as they are highly opaque and leveraged ones.[4]

These ongoing debates and regulatory reforms provide good policy lessons to those regulators in emerging markets in that they should not deregulate (or allow) financial derivatives in a rushed way, especially OTC derivatives, without institutionalizing safeguards against them. However, existing debates have primarily focused on regulating OTCD. They do not provide good policy references for emerging markets that need to create new financial derivatives markets from scratch. Many emerging markets do not have any OTCD markets at all, and the liquidity of derivatives traded in exchanges is often limited. An immediate concern for those regulators in emerging economies is often to enlarge the volume of derivatives traded in exchanges. In this context, the Korean experience for the past decade or so provides a great reference case for emerging markets in terms of enhancing the volume of exchange-traded derivatives (ETD).

Financial derivatives markets did not exist at all in South Korea (hereinafter Korea) until 1996. KOSPI200[5] futures were only introduced in May 1996, and a year later in July 1997, KOSPI200 options followed. But in the few years from 2001 to 2003, both trade volume and value of these two derivatives grew in a explosive way and have remained on the rise for the past decade. The volume of equity index derivatives traded on the Korea Exchange (KRX, the former Korea Stock Exchange) has been the world largest since 2002. The KRX accounted for about 70 percent of equity index derivatives traded in exchanges worldwide in 2011, primarily owing to the exceptional high trade volume of KOSPI200 options (Davydoff and Naacke May 2009). KOSPI200 options traded in the KRX were over 3.6 billion contracts in 2011, and it accounted for about 93 percent of KRX-traded derivatives for the year. More remarkably, the trade value of KOSPI200 futures and options went over 436 trillion *won* and 11,113 trillion *won*, respectively in 2011. The combined trade value of these two derivatives went over about 11 times of stock market capitalization (the total value of listed companies' shares in the KRX) and about 9.3 times of Gross Domestic Product (GDP) for the year.

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[2] For more detailed information on regulatory measures in the Dodd-Frank Act, see the website of the U.S. Commodity Futures Trading Commission (http://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm). Berson and Berson (2012)

[3] For more details on the EMIR, see the website of the EU Commission on derivatives (available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:201:0001:0059:EN:PDF).

[4] Both the Dodd-Frank Act and the EMIR included comprehensive regulatory and supervisory measures, either for establishing more centralized and standardized clearing procedures for derivative transactions or for strengthening the functions of exchanges, requiring more standardized derivatives be traded on regulated exchanges.

[5] It was introduced in 1990 and calculated based on the average stock prices of 200 big companies of the Korea Composite Stock Price Index (KOSPI), which was introduced in 1983.

Why has the market for these two equity index derivatives grown so remarkably? Concerning the root cause of the growth, some existing studies (although few) have emphasized sociocultural factors pointing to the Korean people's unusually strong appetite for trading or investment or the rapid growth of Internet in Korea that has enabled widespread electronic trading (Shamsher and Taufiq 2007). These sociocultural factors and the progress in trading technology must have contributed to the growth of derivatives markets in Korea. The Korean people may be more inclined to take risks (or avoid risks).

This study argues, however, that a more important root cause lies in a regulatory failure. It specially lies in an asymmetric and rushed deregulation at the initial stage of creating a financial derivatives market, without properly considering the differences in the institutional environment and market infrastructure that Korea inherited from its past, and from those of advanced derivatives markets. When creating a financial derivatives market, the Korean government introduced equity index derivatives first before it had built a more robust investment infrastructure for securities markets. It then applied loose rules and standards towards individual investors, who barely had incentives for arbitrage and hedging purposes for equity index derivatives, with an aim to enhance market size by increasing liquidity. Under the circumstances, individual investors surged in trading equity index derivatives primarily for speculative purposes. This produced an unexpectedly explosive growth of KOSPI options and futures trading from 2000 to 2003. This initial consequence created a locked-in situation where financial intermediaries, including the KRX, could gain large profits from the increase of derivatives trading, while attributing the responsibility of speculative investment to individual investors. This initial condition made it difficult to launch necessary regulatory reforms, not only to restrain highly leveraged and speculative trading in KOSP200 options and futures markets, but also to reduce the overgrown market sizes of these two equity index derivatives.

Indeed, concerning the economic effects of financial derivatives market in Korea, existing studies have provided mixed results. One group of studies has claimed that added liquidity, especially in KOSP200 futures and options markets, has contributed to improving the accuracy of market prices (Choi 2011; Choi and Ryu 2006). Some recent studies have pointed to the necessity of regulating overheated financial derivatives markets, for instance, by levying taxes on financial derivatives trading (Chae 2012; Hong 2008; Hong and Lee 2012; Chung 2012). Based on a comparative analysis, this study argues that added liquidity to KOSPI200 futures and options markets have not contributed to hedging against investment risks. Instead, they have contributed to enhancing uncertainty and promoting speculative activities while repressing the growth of other derivatives markets.

The study is organized in four sections. Section 2 will review existing financial regulatory models towards securities markets, comparing the strengths and weaknesses of a government-led statutory model against self-regulatory models. Section 3 will explore the distinctive features of Korean financial derivatives markets in the broader global context of exchange-traded derivatives markets. Section 4 will provide an analysis on the origins of regulatory lag that created an explosive growth of KOSPI200 futures and options trading from the Asian financial crisis of

1997-98 to 2003. Finally, Section 5 will discuss some policy lessons that the Korean case provides for emerging markets in developing financial derivatives markets.

Regulatory Models for Securities Markets

We can find four regulatory models in the world concerning securities markets in general, and exchange-trade derivative (ETD) markets in particular: (1) a government-led statutory model; (2) a limited exchange model; (3) a strong exchange model; and (4) a self-regulating organizational model. We can classify these four models based on the degree of involvement by the government's regulatory body or exchanges (including private business associations) in regulating and supervising securities markets.

In the government-led statutory model, a centralized regulatory agency has primary power and responsibility in regulating and supervising financial markets with a specific set of statutory rules (Porta, Lopez-de-Silanes, and Shleifer 2006). For the past two decades, a growing number of governments have adopted an unified financial regulatory framework[6] in response to the growing consolidation of financial markets among banking, insurance, and securities businesses.[7] Many countries created a single financial regulatory agency that can regulate and supervise banking, securities, and insurance businesses (Schammo 2011; Kawai and Prasad 2011; Carson 2010). The Korean example belongs to this model. The Korea government adopted a unified financial regulatory model in 1998 (Kang Forthcoming). This model appears to have gained political support in many countries after the global financial crisis (Griffith-Jones, Ocampo, and Stiglitz 2010; Acharya 2011; Delimatsis and Herger 2011). The recent Dodd-Frank Act and the EMIR in the EU can be good examples of this trend. Those two laws specified lengthy and comprehensive statutory regulations, in addition to strengthening the power and functions of central regulatory authorities (Berson and Berson 2012; Morris and Price 2011; Schammo 2011).

Even in the government-led model, however, most exchanges retain market surveillance power over at least some of their member business organizations' market and business conduct. In some cases, the government's regulatory agency delegates more functions and powers of regulation and supervision to exchanges tied to operation of the markets. Exchanges in Hong Kong, Singapore, Sweden and some exchanges in the United States have more extended regulator powers and functions than other exchanges, given the government's regulatory constraints

[6] For instance, Norway created a unified supervisory agency in 1986. Since then, Nordic countries and other European countries followed the trend: Iceland (1988), Denmark (1988), Sweden (1991), Britain (1997), Germany (2002), Austria (2002), and Belgium (2004). In Asia, Singapore (1982), Korea (1998), Australia (1998), Japan (2001) and some other countries created a single unified financial supervisory agency. Indeed, this trend has been on the rise (Central Bank Publications 2009).

[7] Of course, the opposite way of causal interpretation is possible. In other words, government's deregulations of sectoral barriers have consolidated different financial markets.

(Carson 2010). But even in these exchanges, government remains the primary regulator, so we can call this model a limited exchange model.

The government-led statutory model, however, has inherent weaknesses in developing and broadening securities markets. As securities markets grow, complexity increases, and even well resourced regulatory authorities cannot set out all the rules and standards that can cover the wide scope of securities businesses. Regulatory authorities often lack the detailed technical capacity or expertise to deal with all the detailed and technical rules and programs required to supervise complex markets, investment products, and a wide range of financial intermediaries (Carson 2010, 24). Indeed, it is difficult for government regulatory authorities to retain those experts who have the detailed technical expertise with their smaller scales of compensation. As a result in highly developed securities markets, like the current U.S. case, it becomes more difficult for regulatory authorities to deploy thorough supervisory mechanisms that can ensure compliance across all areas of the markets, just because of the sheer scale and complexity of the securities businesses. Moreover, excessive statutory regulations can work as a suppressing mechanism of innovations in markets. Therefore for effective supervision, the government-led statutory model should be complemented with self-regulatory models.

In the strong-exchange model, exchanges often establish self-regulatory organizations or committees within the exchange separate from the government's regulatory body. We can find some examples of this strong-exchange model in Japan's Tokyo Stock Exchange, Osaka Securities Exchange, and the Chicago Mercantile Exchange (Carson 2010). These exchanges have strong powers and functions in regulating and supervising member organizations, and they have a self-regulatory organization or committee entirely composed of its board members, excluding the government's regulatory body (Japan Securities Research Institute 2009). In some cases, private business associations set standards or rules for specific securities market activities. For instance in Korea, the Korea Financial Investment Association (KOFIA), which was established in 2009 through the merger of the Korea Securities Dealers Association, the Korea Futures Association, and the Asset Management Association of Korea, conducts self-regulatory market surveillance functions toward members and oversees the licensing of investment professionals.

This self-regulating or strong exchange model has gained intellectual and political support for the past two decades, especially in the United States, with the ascent of the "self-regulating" market view (Ang and McKibbin 2007; Klein and Olivei 2008; Carson 2010). This market view holds that markets can fix their own problems. Sometimes markets fail, but markets can correct their own failures better than any kind of government intervention. According to this view, freer markets are better for allocating economic resources efficiently and less government regulations is essential for creating freer markets. In particular, the "efficient market" hypothesis, holding that adding liquidity to markets contributes to improving the accuracy of market prices, has driven deregulation of securities markets in general, and derivatives markets in particular (Ball 2009; Sewell 2011).

The self-regulating model, however, has an inherent risk of conflicts of interests. Self-regulatory organizations, including exchanges, can advocate the special interests of those member

organizations or business associations more, while sacrificing public interests for fair and transparent regulation and supervision (Carson 2010). In particular, if business organizations can gain more profits from an existing regulatory regime, they have strong incentives to block any regulatory reforms that can remove their prevailing power or profit sources (Acharya 2011; Delimatsis and Herger 2011). Indeed, one of the critical side effects of the growing reliance on self-regulating organizations is a so-called "regulatory capture" phenomenon (Baker 2010; Etzioni 2009). Regulators often represent the special interests of vested interest groups in securities businesses and those special interest groups block the necessary regulatory reforms to build more effective regulatory and supervisory capacity of the government (Boyer and Ponce 2012; Baxter 2011). Therefore, institutionalizing proper mechanisms to alleviate these conflicts of interest is essential to make the self-regulatory organization model successful (Porter, Glauber, and Healey 2011).

These different models exist across countries and various hybrid forms of regulatory models coexist in the real world. But we should distinguish the different regulatory environment regulators that advanced and emerging markets face. In particular, regulators in emerging markets are placed under strong pressures for regulatory convergence where they are pressured to follow common standards or rules already adopted and in force in advanced markets. The financial globalization over the past two decades has added increasing pressures for financial regulatory convergence, especially in handling cross-border capital flows (Barth, Lin, and Wihlborg 2012). A good example is cross-border banking. Those banks engaged in cross-border banking businesses are compelled to comply with the Basel Accords I & II, and the recent Basel Accord III.[8] Unlike cross-border banking businesses, there are no Basel Accord-like standardized rules toward securities markets, except some level of regulatory cooperation among government regulators through the International Organization of Securities Commissions, especially on cross-border securities transactions.

We should consider, however, a double-edged situation that regulators in emerging markets face. They are often placed in a situation to emulate the practices already implemented in developed markets, primarily because they need to consider foreign investors and the competitiveness of their domestic securities markets against more advanced foreign markets. But they cannot implement all relevant standards or rules in force in advanced markets to their nascent markets. As a result, they apply certain rules selectively and this selective application of rules or standards often produces very different results in the markets, due to the different institutional environments and market structures from advanced markets. In the end, regulators in emerging markets need to consider both regulatory convergence pressures and the indigenous institutional environment cautiously when they design financial regulatory models and implement emulated practices in domestic securities markets.

[8] For detailed information on the contents and the recent progress on Basel Accord III, see the website of the Basel Committee on Banking Supervision available at http://www.bis.org/bcbs/index.htm.

The Korean ETD Market in the Global Context

The Trend of Global Derivatives Markets

Financial derivatives markets have grown much faster (at an almost alarming rate) than any other segments of financial markets for the past two decades. Over-the-counter derivatives (OTCD) markets have grown tremendously. According to the Bank of International Settlements (BIS) statistics, at the end of June 1998, the notional outstanding amount of OTCD, such as forwards, swaps, and options in foreign exchange, interest rate, and equity-linked contracts, did not exceed USD $73 trillion. However by June of 2011, it went over USD $706 trillion[9], despite the setback during the peak period of the global financial crisis from 2008 to 2010. This amount was more than 10 times larger than the world's nominal GDP in 2011, which was USD $70 trillion (World Bank, *world development indicators*). In the composition of derivative instruments, such as derivatives for foreign exchange, interest rate, equity-linked, commodities, credit default swaps and others, interest rate and foreign exchange derivatives are the primary sources of OTCD trading.

Compared with OTCD markets, as Figure 1 shows, exchange-traded derivatives (ETD) markets have been much smaller, ranging from one fifth to one tenth of OTCD markets for the past decade. In particular in the 1990s, the notional outstanding amount of ETD worldwide was barely over USD 5 trillion dollars. But ETD markets grew rapidly from the early 2000s. According to the BIS statistics[10], the notional outstanding amount of ETD in 2000 was only USD $5.9 trillion, but it increased to USD $51.4 trillion in 2009. In ETD trading unlike the OTCD markets, foreign exchange or currency related derivatives are minimal in trading value, as Figure 3 shows. Instead, interest rate derivatives have been the principal instrument. Their trade value increased about 10 times from 2000 to 2009, reaching more than USD $46 trillion dollars worldwide. On average, about 90 percent of ETD are interest rate derivatives. For example in 1995, out of USD $3.2 trillion of total ETD worldwide, about USD $2.7 trillion (86%) worth of derivatives were interest rate derivatives, and this proportion has rather increased after the global financial crisis of 2008-2010.

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[9] These outstanding amounts do not necessarily mean the size of derivatives truly at risk. The BIS provides data on "gross market values", which are defined "as the sums of the absolute values of all open contracts with either positive or negative replacement values evaluated at market prices prevailing on the reporting date," as an indirect indicator for OTC derivative transactions at risk. According to the BIS, gross market values of OTCD amounts ranges about four to five percent of notional amounts. But still the size of gross market value, which can cause market risk in derivatives transactions amounts to more than USD $20 trillion worldwide, as of the end of 2012 (BIS March 2013).

[10] For ETD, it seems that BIS statistics are only taking into account index options and futures, whereas World Federation of Exchange (WFE) estimates that single stock and ETD options account for about half of the total notional outstanding amounts of equity ETD worldwide.

[Figure 1 here]

In the geographic aspects of ETD, the market size of North America and Europe has been much larger than that of the Asia and Pacific region. For the past decade, the ETD markets of North America and Europe have shared about 45 to 50 percent of the total outstanding amount of global ETD markets. By contrast, the market size of Asia and Pacific exchanges has ranged from only 1 to 6 percent of the global total ETD trade value from 1995 to 2012 (BIS Quarterly Review March 2013, Table 23A). But one should note that equity index derivatives trading was from USD $338 billion in 1995 to USD $4.8 trillion 2009, although the market size was only one tenth or lower than that of interest rate derivatives trade. This increase in equity index derivatives trading owed greatly to the rise of trading in exchanges located in the Asia and Pacific region.

Indeed in terms of turnover of equity index derivatives trading, the number of shares traded for a period as a percentage of the total derivative shares, exchanges in Asian Pacific region have driven the increase in turnover. The turnover of equity index futures has greatly increased in exchanges located in the Asia and Pacific region, reaching the comparable level of exchanges in North America or Europe by 2012. But a more remarkable increase in turnover occurred in equity index options trading. As Figure 2 highlights from 2002 to 2012, equity index derivatives traded in Asia and Pacific exchanges increased at a remarkable rate, far larger than that of exchanges in North America or Europe. As will be seen in the following section, this rapid increase in turnover in the Asia and Pacific region owes greatly to the exceptionally high growth of KOSPI200 options trading in Korea.

[Figure 2 here]

How Unique is the Korean Financial Derivatives Market?

The Korean financial derivatives market demonstrates a different trend from that of the global financial derivatives markets. Like in other developing markets, OTCD markets in Korea are much smaller than ETD markets. According the report by the Financial Supervisory Service (FSS) of Korea, as of 2011, the OTCD market represents about 20 percent of the total financial derivatives markets in Korea (FSS 2011). In other words, unlike other advanced derivatives markets, the OTCD market is still much smaller than the ETD markets in Korea.

One of the most important features of the Korean ETD market, however, is that it is highly concentrated by two equity index derivatives—KOSPI200 futures and options. Table 1 shows Korea's ETD market structure in 2011, highlighting that the trade volume of KOSPI200 went over 3.6 billion contracts, and its share in the total ETD trade volume was about 93.5 percent. The trade volume of KOPSI200 futures was the second largest, at 87 million contracts, and its share was 2.2 percent of the total ETD trading volume. In total, the trade volume of these two

derivatives' trade volume reached almost 96 percent. In trade value, the market size of KOSPI200 futures was the largest, accounting for about 68.5 percent of the total trade value. The trade value of the three-year Korea Treasury Bond (KTB) was the second largest one, accounting for about 21.5 percent; that of the U.S. dollar futures, KOSpi200 options, and the 10-year KTB followed. However, we can see that KOSPI200 futures and options were predominant derivative products in the Koran ETD market.

[Table 1 here]

We notice some other key features as well. First, unlike other advanced ETD markets, commodity futures markets were almost non-existent. The trade volume and value of gold and Lean Hog futures were minimal—below 0.006 percent of the total. Considering the fact that the Korean economy heavily depends on trade (for example, the ratio of trade-to-GDP reached about 120 percent in 2012) this minimal level of commodity futures market development highlights that Korea's ETD market has been constructed in a highly skewed manner, centered on KOSPI200 futures and options. In particular, Korea imports raw materials and oil, which makes up about 60 percent of the total amount of imports. Nonetheless, the KRX has only three commodity futures contracts based only on gold and lean hogs.

Second, interest rate derivatives are still small. Three interest rate products are traded in the KRX as of the end of 2012. Three-year KTB, five-year KTB, and ten-year KTB were listed to the KRX in 1999, 2003, and 2008, respectively. The trade value of these KTBs, especially the three-year KTB, has been on the rise. Still, compared with other advanced derivatives markets, the interest rate derivative markets are much smaller. One of primary reasons for this underdevelopment lies in the difficulty finding a representative interest rate that could reflect the market conditions appropriately (Park 2011).

Third, single-stock futures and options markets have not developed at all. Options and futures on individual equities were introduced in 2002 and 2008, respectively, but the overall size of these derivatives is still minimal. In particular, one of primary reasons for the low trade volume of single stock options, with only 4 trades in 2011, is the fact that Korean individual investors have traded more Equity Linked Warrants (ELWs). ELWs are offered with a wide range of expiration dates, exempt from initial deposits, and have dozens of active liquidity providers, while demonstrating similar characteristics like individual equity options (Park 2011, 28). Indeed, as of 2011, the average price of ELWs was only KRW263.

The Market Structure of KOSPI200 Options and Futures: Hedging or Speculation?

The predominance of KOSPI200 futures and options in Korea's ETD market has been a decade-long phenomenon. As Table 2 shows, the trade volume of KOSPI200 options was only 194 million contracts in 2000, and their trading value was only KRW17 trillion, but both trade volume

and value sharply increased during the three years from 2001 to 2003. During this period, trade volume increased about 14.6 times, from 194 million contracts in 2000 to more than 2.8 billion contracts in 2003, and trade value also increased about 9.4 times, amounting to KRW 160 trillion in 2003. Since then, both trade volume and value had seen a gradual rise until 2011. From 2004 to 2011, both trade volume and value more than doubled. Meanwhile, trade value also dramatically increased during this period, from KRW 47 trillion in 2001 to KRW 436 trillion in 2011. On average, from 2000 to 2011, trade volume increased about 49 percent, and trade value 46 percent annually.

[Table 2 here]

The trade volume of KOSPI200 options is exceptionally higher than that of equity index options traded in exchanges worldwide. In particular, the trade volume of 2011, more than 3.6 billion contracts, was exceptionally higher than any other derivatives traded in the global ETD markets. By the end of 2012, no single derivative instrument saw more than a billion contracts traded in a year. Even the total volume of ETD trading in most exchanges does not exceed one billion contracts. If we compare this with other Asian markets, this trade volume of KOSPI200 options is usually high. As Figure 3 highlights, the volume of equity index options traded in the Singapore Exchange or Hong Exchanges has been almost nonexistent, compared with the Korean case. The volume traded in the Osaka Exchange has been much larger than these two exchanges, reaching about 50 million contracts in 2012. But the trade volume is still more than 300 times smaller than that of the KRX. Therefore, it is obvious that increasing trade volume of equity index options trading has not been a general trend in major exchanges in Asia; it is a unique phenomenon that has occurred only in Korea for the past decade.

[Figure 3 here]

Meanwhile, the trade volume of KOSPI200 futures has also dramatically increased. Its trade volume increased from 20 million contracts in 2000 to 86 million contracts in 2011. During this period, spread trading, which is a strategy of buying a particular contract and selling a related contract against it at the same time, increased remarkably as well. This result indicates that traders have tried to reduce simple directional risk in futures trading by hedging against futures contracts. Meanwhile, compared to KOPSI 200 options, the average size of contracts of KOSPI200 futures —measured by the ratio of notional value divided the number of contracts traded—is much larger.

However, a more remarkable aspect is the size of trade value. The trade value of KOSPI200 futures increased more remarkably, from KRW860 trillion in 2000 to KRW11,113 trillion in 2011. This trade value was more than 4 times larger than KOSPI market capitalization in 2001 —the total value of the issued shares of a publicly traded company in KRX—and then it peaked in 2008 and 2011, reaching a total about 11 times larger than the size of KOSPI market capitalization. The

trade value of KOSPI200 options has ranged from 10 to 29 percent of KOSPI market capitalization from 2001 to 2012. In total, the total trade value of KOSPI200 futures and options, as Figure 4 shows, increased by more than 9 times in 2011.

[Figure 4 here]

This level is exceptionally higher than that seen in other countries. According to a report by the Korea Derivatives Association and the Korea Institute for Capital Markets, as of the end of 2011, the notional outstanding value of KOSPI200 futures and options was USD78.5 trillion, a total larger than that of the U.S., which was USD72 trillion[11] (Korea Derivatives Association and Korea Institute of Captial Markets 2012). In terms of the relative size of stock index futures and options to stock market capitalization, the ratio of KOSPI200 futures and options was much higher than that of any capital markets in the world. Moreover, in terms of stock index premiums, the total premiums of KOSPI200 futures and options was USD279 billion, which was the third largest, following USD842 billion in the U.S. and USD442 billion in German Switzerland. As of 2011, the size of Korea's stock market capitalization was only 6 percent of the that of the U.S., and the relative size of the financial industry[12] in Korea was much lower than that of the U.S.—about 17 percent of GDP in Korea and about 32 percent of GDP in the U.S. (Korea Derivatives Association and Korea Institute of Captial Markets 2012, 43-50). There is no clear standard of how big an ETD market should be optimally in relation to the size of securities markets or the economy. However, it is clear that the market size of KOSPI200 futures and options is an outlier case in the world.

The structure of KOSPI200 futures and options market also indicates that the Korean market is an outlier case. In particular, in Korea, individual investors' shares in equity index trading has been exceptionally higher than in any other country. According to the data provided by the World Federation of Exchanges (WFE), in 2012, the KRX was at the top in terms of trade volume, of course, far larger than any other exchanges. The National Stock Exchange of India followed the KRX in trade volume. But the trade volume of KOSPI 200 options still remains significantly higher than any equity index options traded in exchanges worldwide.

Table 3 shows the ratio of notional value divided by trade volume and the ratio of trade volume divided by option interest (contracts), which are not liquidated by either an offsetting trade or an exercise or assignment, in major exchanges in the world. As the table shows, the per-trade value of KOSPI200 options is significantly smaller than that of other exchanges—only

[11] This calculation is based on the data provided by the World Federation of Exchanges, and the total value of the U.S. was based only on CBOE, CME Group, NASDAP options Market, and ICE Futures U.S. Therefore, the total notional value of the U.S. may be a bit smaller than the real value.

[12] In the composing category of GDP, financial intermediation, real estate, renting, and business activities are treated as elements of the financial industry.

USD173 in 2012. This value was almost 800 times smaller than that of stock index options traded in the Chicago Board Options Exchange. It was almost 100 times smaller than the average of the world's total. As a result, despite the exceptionally high volume of trade, options premium was smaller than that of EUREX and the Chicago Board Options Exchange. This aspect highlights that individual traders' share in KOSPI200 options trading was unusually higher than any exchanges in the world.

[Table 3 here]

By contrast, the per-trade value of KOSPI200 futures was larger than that of stock index futures traded in other exchanges, except for the China Financial Futures Exchange. According to the WFE statistics, in 2012, the trade volume of KOSPI200 futures was smaller than that of equity-index futures traded in other major exchanges in the world, such as Chicago Board Options Exchange (EUREX). In 2012, the KRX ranked as the 10th exchange in terms of trade volume of stock index futures (WFW/IOMA 2013). Its notional value was the fourth largest, exceeding that of the Osaka Securities Exchange and NYSE Liffe (European markets). As a result, as Table 3 shows, the ratio of notional value divided by trade volume was only second to the China Financial Futures Exchange, amounting to USD113,500.

These figures indirectly indicate that more leveraged trading may be rampant in KOSPI200 futures trading. Unlike in options trading, in which buyers of options are not obligated to exercise their rights to buy the contract underlier before their contract expires, in futures trading, both buyers and sellers are bound to fulfill the futures contract agreement upon expiration. If the KOSPI200 index moves against investors' bets, investors lose not only premiums, like in KOSPI options trading, but also their contracted settlement cash. Therefore, highly leveraged KOSP200 futures trading can be far more dangerous than KOSPI200 options trading. Nonetheless, in the Korean case, many individual investors have participated in such a dangerous futures trading, probably because of the appeal of the zero-sum nature of KOSPI200 futures and options trading and the daily-based cash settlement.

Meanwhile, the liquidity of both KOSPI200 options and futures is very high as well.

As Table 3 highlights, the ratio of trade volume divided by the open interest of KOSPI200 options and futures is much higher than other stock index options or futures traded in other major exchanges, except for the Bombay Stock Exchange in stock index options trading. This suggests that sellers of options or futures in the KRX could find buyers easily and that the spread between bid and ask prices was smaller in both KOSPI200 options and futures trading and indicates that the real margin of per-trading was much smaller as well. Despite this relatively smaller profit margin, individual traders, who basically have no real hedging necessity against the fluctuation of the stock market, have been the principal players in the KOSPI200 futures and options market.

Indeed, one of unique features of equity index derivatives trading in Korea is the fact that individual investors, who barely have incentives for arbitrage and hedging for equity index derivatives, have engaged in KOSP200 futures and options trading. Individual traders'

participation in equity index trading in Korea has been unusually higher, compared with other exchanges worldwide, for the past decade. As Table 4 shows, from 2001 to 2012, individual investors' proportion in KOSPI200 call options trading was 41.3 percent in trade volume and 40 percent in trade value. During the same period, individual traders' shares in KOSPI200 futures trading was 39.2 percent in trade volume and 36.2 percent in trade value, which was much higher than the participation level of individual traders in the U.S. and Japan.[13]

We should note, however, that these figures present the average of the entire period of 2001 to 2012. Individual traders' shares in the total trade volume and value was much higher in the late 1990s and early 2000s; in 1998, individual traders' shares in KOSPI200 options trading were about 77 percent (The Korea Institute of Finance 2008, 12), and in 2002, the shares were 66 percent in KOSPI 200 options trade and 53 percent in KOSPI200 futures trading. Indeed, individual traders drove the explosive growth of KOSPI200 futures and options market at the initial stage of market development, especially from 2000 to 2003, and they have remained as the most important market participant. Considering the fact that individual traders have no strong incentives at all to trade index derivatives for hedging purposes, this strongly indicates that KOSPI200 futures and options trading were severely motivated by speculation.

Individual traders, however, cannot compete against securities firms or foreign financial institutions, which have better institutional capacity and better trained specialists in derivatives trading. 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 371.14 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 billion, respectively (Park 2011, 11). Recent data on the loss of individual investors are not available, but it is possible to estimate roughly how large the current loss would be based on a quick look at the ELW market, where the hybrid derivatives on the KOSPI200 Index account for 88 percent of the trading volume. 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 period of 2006-2009 (Park 2011, 12)

The Origins of the Skewed Market Structure

Regulatory Rush

As noted at the beginning of this paper, KOSPI200 futures and options came to be listed on the Korea Stock Exchange (KSE) in May of 1996 and July of 1997, respectively. These two derivative products were the first products introduced to the KSE, ahead of other derivative instruments.

[13] It is estimated that individual traders' shares in options or futures trading in the U.S. are about 10 percent (Park 2011).

This pattern is different in terms of the sequence of derivatives market growth we can find in other advanced markets.

Historically, commodity futures market was the modern precursor of the derivatives market. For instance, in Japan, even before the modern period, futures market for rice, which was essentially the same trading method we can find in modern futures trading, existed under the development of merchant coalition (Okazaki 2005). Historically, in the United States and other advanced derivatives markets, futures markets for agricultural products were created far ahead of any derivatives markets, such as interest rate or currency. Indeed, in futures trading, the use of securities such as government bonds, currency, or index, as financial underliers is a relatively very recent one. Financial futures did not come into prominence until the 1970s (Durbin 2011). Even among financial derivatives, in most advanced markets, equity index derivatives were more recent than derivatives for government bonds or currencies. For instance, S&P500 options trading was introduced in the U.S. in 1981. Moreover, in most advanced markets, derivatives were introduced or developed with the progress of securities markets.

In the Korean case, however, as we see clearly now, the government adopted a different sequence of creating derivatives markets for the past decade. First of all, debt equity markets did not develop at all when the Korean government introduced equity index derivatives in 1996 and 1997. During the period of high economic growth from the early 1960s to the early 1990s, the Korean government used its controlling power towards credit allocation by the banks as one of the primary tools to discipline the private business sector (Cho and Kim 1997). Under a long tradition of a bank-based financial system, the growth of securities markets was repressed. It was only after the Asian financial crisis in 1997-98 that the Korean government tried to expand the bond markets in order to mobilize the necessary funds for bank restructuring. For this purpose, as an initial measure, in 1999 banks were allowed to engage in Treasury bond dealing to enhance the liquidity (i.e., the convertibility into cash) of treasury bonds and to amplify the underwriting capability in the primary market and market-making ability in the secondary market. In addition, the Korea Stock Exchange began to provide information on the real-time yields on benchmark Treasury bonds to investors. To improve the credibility of the credit ratings on Treasury bonds, foreign credit-rating providers were encouraged to establish branch operations in Korea (Lee 2011). Second, the foreign exchange market was under the tight control of the government. In April 1998, the government allowed arbitrage trading between offshore nondeliverable forward (NDF) markets and home forward markets for foreign exchange. The government also allowed domestic residents to engage in NDF trading, expecting that it would accelerate the convergence between exchange rates at the relevant offshore and home forward markets.

Under the circumstances, it was almost unrealistic to introduce derivatives for interest rates or currencies. However, KOSPI Indices were already in use in the market. Specifically, the KOSPI200 Index was already introduced in 1990, and it was widely used already in terms of predicting or understanding the trend in the stock market. Considering these factors, it seems reasonable that, if the Korean government had to introduce derivative instruments, it might have thought equity index derivatives were a better fit with the Korean market conditions.

With an aim to enhance the market size, the Korean government applied looser standards and rules than those that had already been adopted in advanced derivatives markets. For instance, the Korean government set the contract multiplier of KOSPI200 options as KRW100,000, which was almost the same level applied in the U.S. as a contract multiplier for S&P500 index options, which was USD100. However, it did not levy capital gain taxes, which were widely applied for both equity and derivatives trading in the U.S., Japan, France, Germany, Spain, and Britain. Even the Taiwanese government levied trading taxes for both equity and derivatives trading, especially on futures trading from the introduction of TAFEX futures in 1999 (Chae 2012, 12 & 14). With the aim to enhance the market size by lowering entry barriers, the Korean government did not apply any capital gain taxes or trade taxes towards derivatives trading. Moreover, it did not require any qualifications for options or futures trading, especially towards individual investors.

One of primary motivations for applying looser standards or rules was to enlarge the market size by lowering entry barriers. Moreover, Korean financial regulators considered enhancing liquidity to be a better way to create more competitive financial markets in general and derivatives markets in particular against existing financial centers in Asia. Exchanges in Hong Kong, Singapore, and Tokyo were far ahead of the KRX, both in market size and liquidity, when the Korean government introduced financial derivatives for the first time in 1996 and 1997. Under the circumstances, the Korean government applied such looser standards and rules to catch up with other competitive existing financial centers regionally and globally. Indeed, the Kim Dae-jung administration (1998-2003) launched an ambitious plan to transform Korea into a financial hub in Northeast Asia by 2012, and the succeeding Roh Moo-hyun administration attempted to achieve the goal, two years ahead of the original plan, by 2009. Under such a catch-up plan, the Korean government has endeavored to enlarge the capital market with continued deregulations.

In particular, immediately after the Asian financial crisis, the Kim Dae-Jung made strenuous efforts to attract more foreign investment. It set forth a two-stage liberalization plan for capital markets, focusing on promoting inward foreign investment. The first stage began in April 1998 and continued into 2000; the second stage occurred from 2001-2002. During the first stage, the government shifted regulations on capital account transactions from a positive system (i.e., a system of prohibition in principle with permission allowed through exceptions) into a negative one (fully permitted in principle, except for some restrictions on limited activities concerning national security and criminal conduct). The permission requirement was lifted except in the cases of transactions for which permission was stipulated by law or decree. Foreigners were allowed to make deposits and open trust accounts denominated in Korean *won* if such transactions had maturities of more than one year. In particular, the Foreign Investment Promotion Act (which went into effect in November 1998) increased tax incentives for foreign investment in high-technology businesses, while designating foreign investment zones.

During the second stage, the government further accelerated capital account liberalization, lifting the regulations on currency account transactions by both domestic individuals and foreigners. In particular, the obligation of repatriation of overseas claims was eased. In April 2002, the Korean government announced the Plan for the Development of the Korean Foreign

Exchange Market, which included full liberalization of foreign exchange regulations. As a first step, on July 2, 2002, the government eased the procedural regulations concerned with individuals' external payments, permitted securities companies and insurance companies to participate in the interbank foreign exchange market, and liberalized the export of the Korean *won* (Lee 2011).

All of these efforts produced positive effects in terms of enhancing capital markets, especially the stock market, with the surge of foreign investment. Understandably, after the Asian financial crisis, the Korean exchange rate deeply depreciated, and as a result, equity prices took a sharp downturn. This event provided great investment opportunities to foreign investors, and foreign investment surged in the Korean stock markets (Kang 2010). But there was a side effect; the Korean stock market fluctuated greatly. As Figure 5 shows, from 1998 to 2001, turnover rate in the Korean stock market skyrocketed. It was much higher than that of Hong Kong, India, Japan, and Singapore. A kind of manic trading of stock shares occurred during this period, and accordingly, the volatility of KOSPI200 sharply increased. To those individuals who had to go through the ordeal of the financial crisis during this period, stock trading and targeting volatile price moments of KOSPI indices provided a great opportunity to earn great money in a legitimate way. This was not true, as we have seen in the above section, but Korea individual investors seem at least to have projected such a desperate dream by engaging in KOSPI futures and options trading.

[Figure 5 here]

Regulatory Lag

The explosive growth of KOSPI200 futures and options market from 2000 to 2003, driven by individual traders' speculative investment, created a locked-in situation. Regulators regarded the growing derivatives market as a positive effect of the government's continued deregulations and as beneficial for deepening securities markets, thus achieving the goal of transforming Korea into a financial hub sooner. Indeed, the Roh Moo-Hyun administration established a plan in 2003 to shorten the ambitious plan of transforming Korea into a financial hub for Northeast Asia by 2009, two years ahead of Kim Dae-Jung's plan. It set up the Financial Hub Promotion Committee in 2006 under the Ministry of Finance and Economy (later moved to the Financial Services Commission in 2008), chaired by the deputy prime minister. Moreover, regulators could easily attribute the responsibility resulting from derivatives trading to market participants, as derivative trading was basically a zero-sum game among investors—if one investor loses, the other investor gains. Meanwhile, securities associations and companies, including the KRX, could accumulate huge profits from increasing derivative transactions by collecting transaction fees. Both regulators and securities business organizations could justify the increasing trade volume based on a market efficiency hypothesis or self-regulating market views, believing that added liquidity to the

derivatives market is good for improving a price mechanism in the securities markets and efficient allocation of financial resources.

This locked-in situation, created from 1998 to 2003, enabled the Korean government to delay regulatory reforms to restrain speculative trading by individual traders. Instead, the Korean government tried to enhance liquidity further. For instance, as of 2008, Korea's transaction fees in derivatives trading were much lower than those of other countries. The fee for KOSPI200 options trading was only USD0.02 per contract, while it was USD2.28 for trading S&P500 options and USD1.30 for HangSang index options trading. Likewise, the fee for trading KOSPI200 futures was USD0.30 per contract in 2008, while it was USD2.28 for trading S&P500 futures and USD1.30 for HangSang index futures (Chae 2012, 13). Nonetheless, the Korean government has made continued efforts to lower the fees for derivatives trading.

The Korean government also delayed deregulations concerning establishing investment funds until recently, primarily because the Korean government wanted to prevent the growing influence of *cheabols* in the financial sector as well. In advanced capital markets, various kinds of investment funds channel private investment towards capital markets and other various sectors. In the Korean case, however, establishing financial investment companies (FICs) was allowed for a long time. As a result, the role of investment funds has been minimal in mediating investment. As Table 5 highlights, the trading value mediated by investment funds in the KRX has been much smaller than in other Asian exchanges. It was only USD8.7 million in 2012, while it went over USD5.1 billion in the Shenzhen Stock Exchange and USD3.7 billion in the Tokyo Stock Exchange. Only in 2009 did the Korean government allow the establishment of FICs by law, when the Capital Market Consolidation Act (CMCA) came into effect, which consolidated seven separate capital market laws—the Securities & Exchange Act, Asset Management Act, Futures Trading Act, Stock & Futures Exchange Act, Trust Business Act, Corporate Restructuring Investment Company Act, and Other Financial Investment Act. In other words, underdeveloped investment funds have limited the channels of individual investors.

[Table 5 here]

Meanwhile, securities associations and firms, including the KRX, have gained more power and influence with growing securities markets and resisted any attempts to restrict speculative activities in derivatives trading. For instance, before the legislative election in April 2012, both the ruling party—the Saenuri Party—and opposition parties promised to introduce taxes in derivatives trading to restrain speculative derivatives trading, especially by individual traders. The Lee Myung-bak administration announced in August 2012 that the government would begin to levy taxes on derivatives trading from 2016—0.001 percent for KOSPI200 options and 0.01 percent for KOSPI200 futures trading. However, the KRX and other securities associations and firms have lobbied towards politicians during the election campaign for the presidential election in December 2012, and the government's plan to levy trading taxes on derivative transactions was annulled by an agreement between the ruling party and opposition party on December 21, 2012

(*Moneytoday* Dec. 22, 2012). It is yet to be seen whether trading taxes on derivative transactions would be implemented as planned, but it appears that it will be a long process to muddle through due to the growing influence of securities associations and firms as well as political groups that have gained profits from the existing arrangement.

Conclusion

Regulatory failures were at the heart of the exceptional growth of the equity index derivatives market in Korea. When creating a domestic financial derivatives market, regulators in Korea emulated the most recent standards, and also allowed derivative instruments that had already been adopted in advanced markets. The instruments were applied selectively and in a rushed way. It was the case, however, that Korea's institutional environment and market infrastructure were different from advanced markets. This discrepancy created a misfit between the financial regulatory regime and capital market structure. Such a misfit situation produced a balloon effect that did not occur in advanced markets where similar standards were in force regarding equity index derivatives. The KOSPI200 futures and options markets grew exceptionally high at the initial stage of market creation, and repressed the channels of investment towards other derivatives and investment areas. One of the primary reasons that this produced such an unintended balloon effect lies in the different institutional endowment of Korea, which was comprised of past inherited Korean capital markets and a weak investment infrastructure. This initial condition created a locked-in situation that delayed necessary regulatory reforms at later stages of market development.

Compared with other country cases, individual trader market participation and their unrestrained speculative trading in the KOSPI200 futures and options market were exceptionally high. Korean society may have a unique sociocultural gene that prefers risk-taking. Indeed, in the comparative context, the Korean society is very homogeneous, in terms of both ethnic and cultural aspects. As a result, cultural and social assimilation pressures may be much higher than multi-ethnic or multi-cultural societies. We cannot dismiss various features originating from this unique sociocultural dimension in understanding the pattern of investment behaviors in Korea society. If such sociocultural factors do exist, regulators should more seriously take into account this unique institutional endowment when emulating foreign practices and applying them to the indigenous institutional setting.

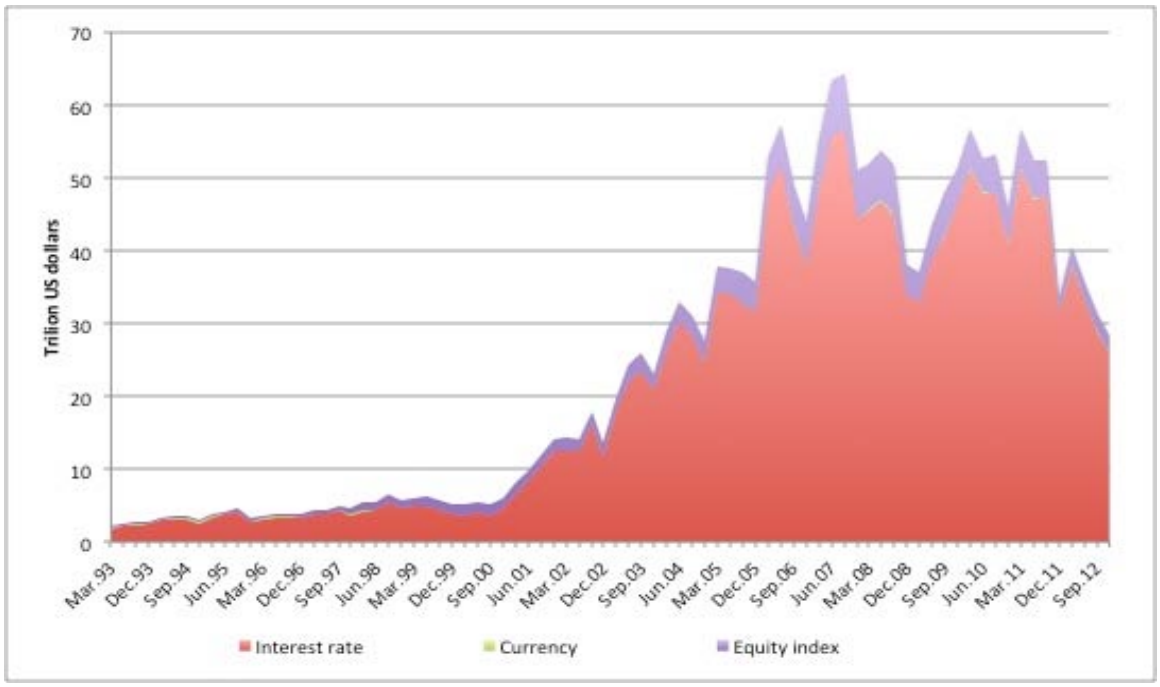
The Korean case we explored above provides some policy lessons for regulators in emerging markets when they are attempting to create a new financial derivatives market. First, developing capital markets should be a priority, over a focus on developing a derivatives market. In the Korean case, the government attempted to develop both capital markets and a derivatives market at the same time. But, as we have seen, the derivatives market grew much faster than the securities markets and quickly became overgrown relative to the size of capital markets and the economy.

An overgrown derivatives market can be more harmful than beneficial to the economy in general, and especially to the stability of capital markets in particular.

Second, financial derivatives should not be a priority in building derivatives markets. In the Korean case, the government first introduced equity index derivatives and the derivatives market has been constructed around financial derivatives—KOSPI200 futures and options—since its initial inception. It is the case, however, that financial derivatives can promote highly speculative activities, rather than promoting hedging activities, thus distorting the overall investment flow in the capital markets and the derivatives market structure. Therefore, in introducing new derivative instruments, regulators should consider the long-term market effects of derivative instruments. There may not be an optimal combination of derivative instruments in the market, but in emerging markets, derivatives for commodity and interest rates—such as commodity futures or government bond futures—may be more beneficial to the economy.

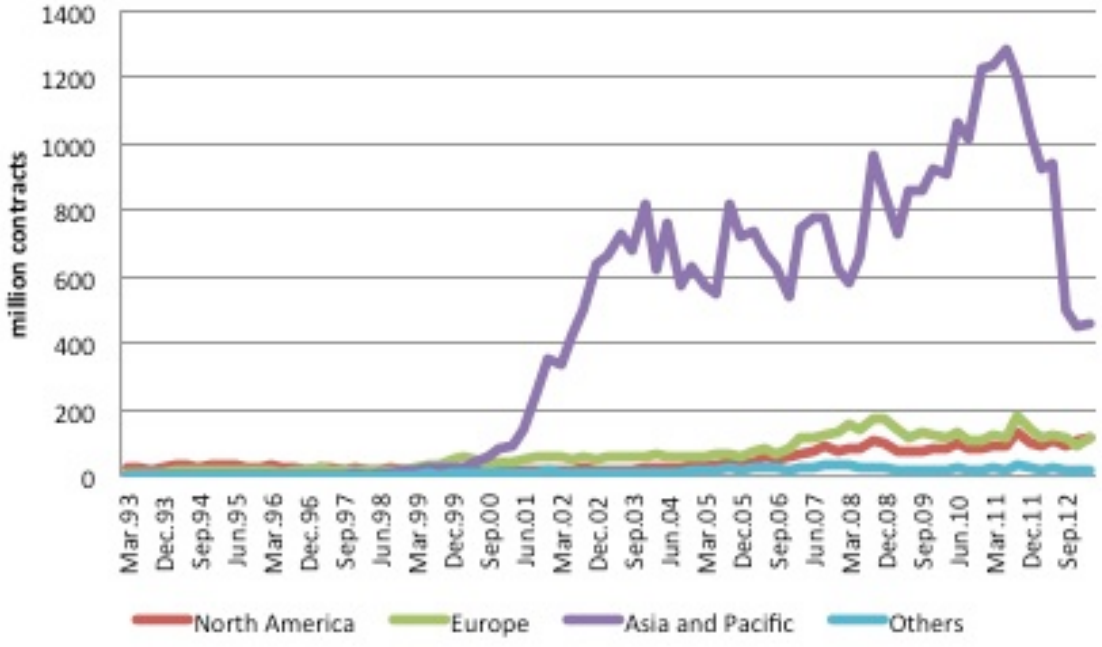
Third, it may be more reasonable to maintain a higher level of restrictions towards individual traders at the initial stage of market creation. In the Korean case, the government applied similar standards for individual trader qualifications regarding who can engage in derivatives trading, similar to standards already in force in advanced markets. Due to the differences in market infrastructure, however, these similar standards produced an explosive growth in individual trader market participation, which was primarily motivated by speculation. Thus, when a government introduces financial derivatives, it may be better to apply stricter regulations towards individual trader market participation, because in most cases, individual traders have no real hedging necessities. ■

Figure 1. Exchange-Traded Derivative Instruments and Notional Outstanding Amount, 1993-2012



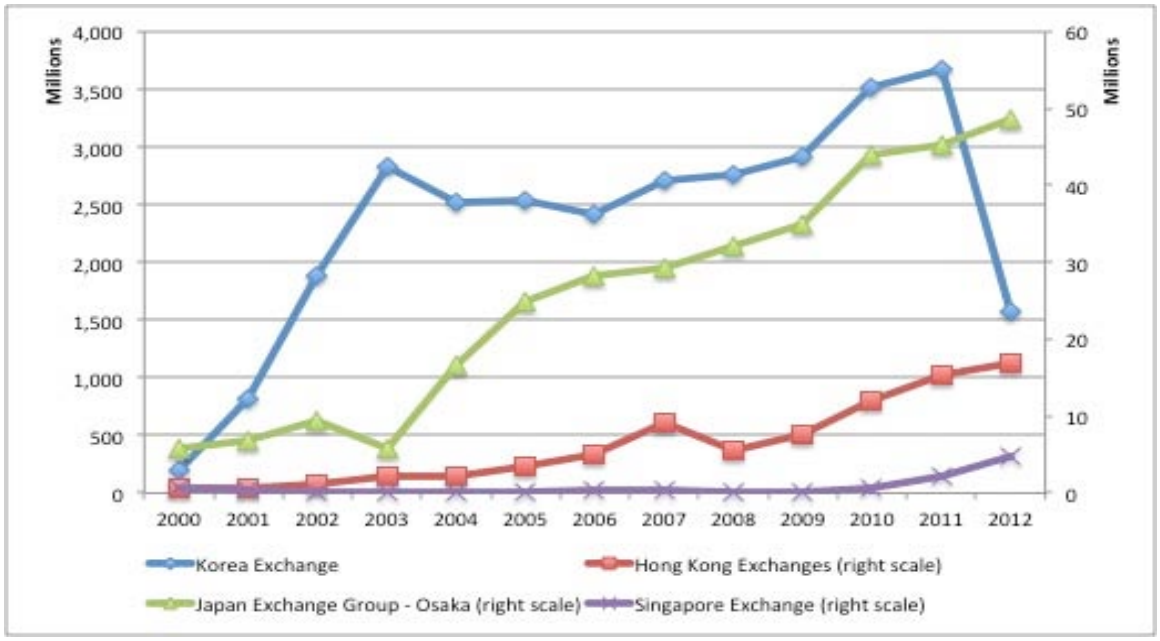
■ Source: BIS, Statistics portal for derivatives

Figure 2. Turnover of Equity Index Options in Exchanges Worldwide, 1993-2012



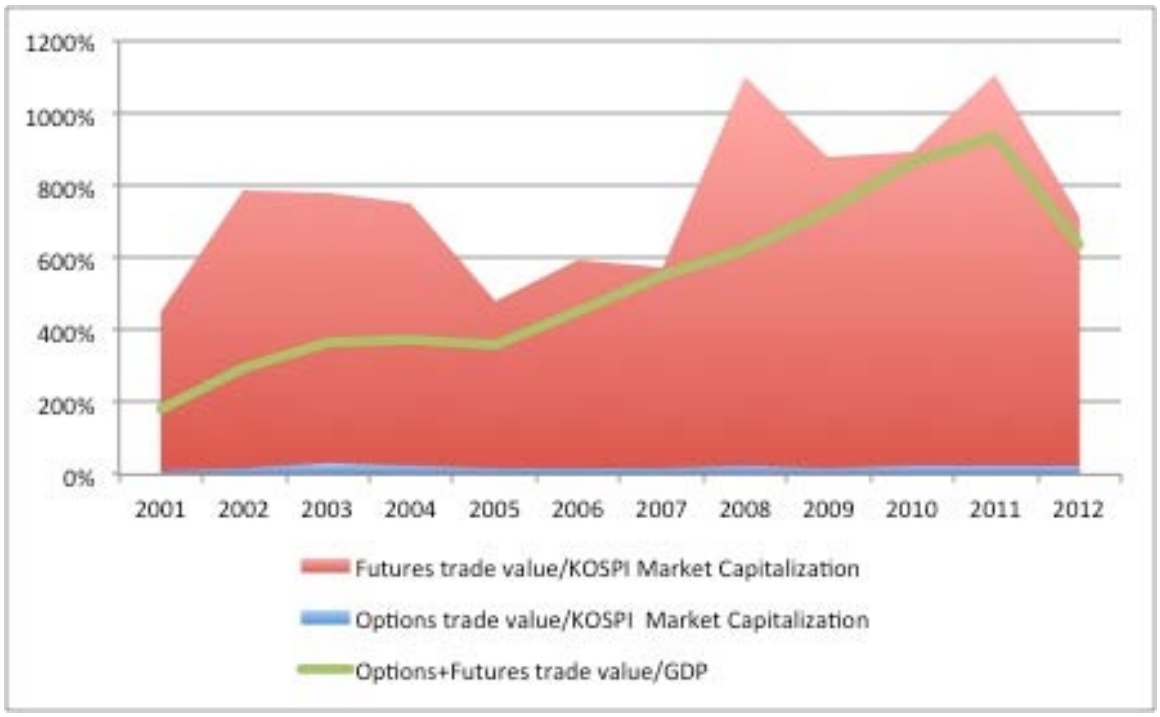
■ Source: BIS, Statistics portal for derivatives

Figure 3. Trade Volume of Equity Index Options in selected Exchanges in Asia



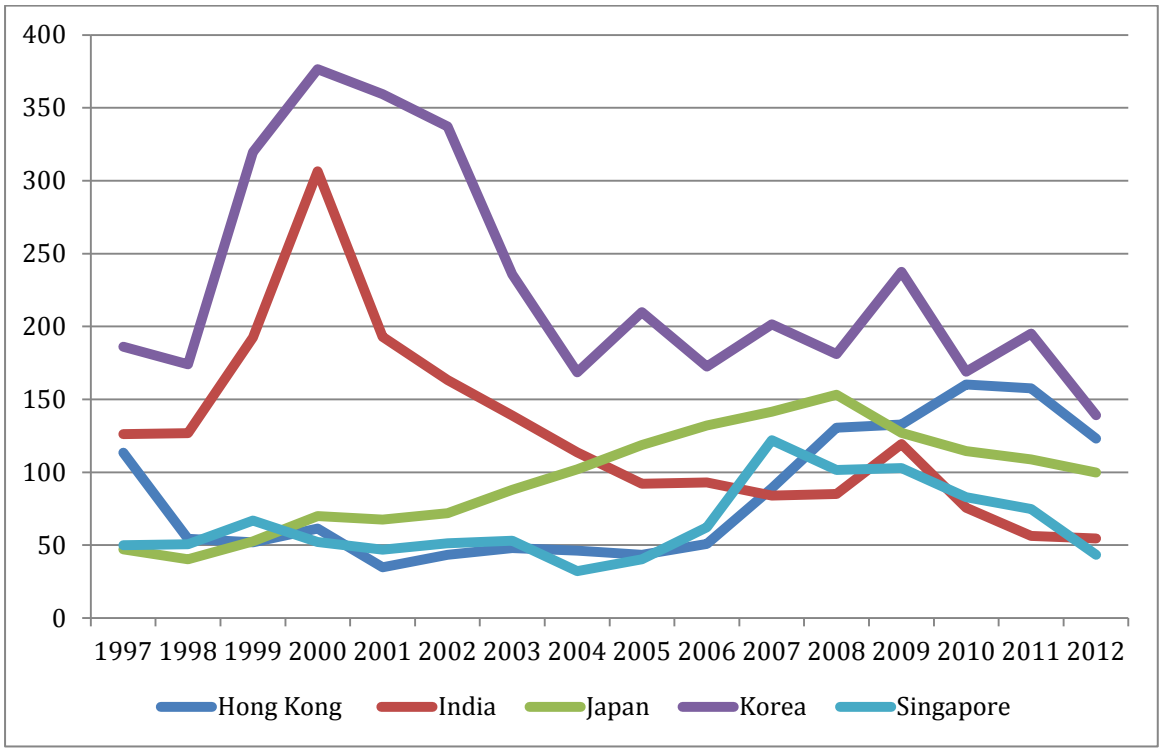
■ Source: World Federation of Exchanges (WFE), Statistics portal

Figure 4. Trade Value of KOPSI200 Futures and Options to KOSPI and GDP



■ Source: KRX & Bank of Korea

Figure 5. Stock Traded, Turnover in selected Asian markets, 1997-2012



■ Source: World Bank, World Development Indicator

Table 1. Derivatives Instruments Traded in the KRX, 2011

	Instruments	Products	Trade Volume		Trade Value	
			No. of contracts	Share (%)	KRW 100 Mil.	Share (%)
Futures	Stock index	KOSPI200	87,274,461	2.2	112,599,330	68.5
		KOSTAR Index	39	0.0	6	0.0
	Interest rate	3-year KTB	34,140,210	0.9	35,364,735	21.5
		10-year KTB	3,503,677	0.1	3,785,347	2.3
	Currency	U.S. Dollar	70,212,467	1.8	7,800,731	4.7
		Yen	803,734	0.0	112,564	0.1
		Euro	205,395	0.0	31,565	0.0
	Commodity	Lean Hog	5,981	0.0	382	0.0
		Gold	181,244	0.0	9,787	0.0
	Single stock		59,966,166	1.5	353,023	0.2
Options	Stock index	KOSPI200	3,671,662,258	93.5	4,363,264	2.7
	Single stock		4	0.0	658	0.0
Total			3,927,955,636	100.0	164,421,391	100.0

■ KTB: Korea Treasury Bond

■ Source: KRX, Derivatives statistics (www.krx.co.kr)

Table 2. Trade Volume and Value of KOSPI 200 Options and Futures, 2000-2012

Year	KOSPI200 Index	Trade Volume (million of contracts)						Trade Value (Trillion KRW)						Value/Volume	
		Options			Futures			Options			Futures			options	futures
		Call option	Put option	**Subtotal (a)**	Futures	Futures spread	**Subtotal (b)**	Call option	Put option	**Subtotal (c)**	Futures	Futures spread	**Subtotal (d)**	(c)/(a) ('000 KRW)	(d)/ (b) (mil. KRW)
2000	63	112	82	**194**	20	n.a.	**20**	9	8	**17**	860	n.1.	**860**	86	44
2001	87	461	363	**823**	31	0.1	**31**	28	19	**47**	1,124	5	**1,129**	58	36
2002	80	1,054	836	**1,890**	42	0.2	**43**	71	55	**125**	1,980	19	**1,999**	66	47
2003	105	1,482	1,356	**2,838**	62	0.3	**62**	86	74	**160**	2,649	29	**2,678**	56	43
2004	115	1,315	1,206	**2,522**	55	0.4	**55**	74	71	**145**	2,936	43	**2,979**	57	54
2005	177	1,310	1,225	**2,535**	43	0.4	**43**	76	65	**141**	2,987	59	**3,046**	56	70
2006	185	1,208	1,206	**2,414**	46	0.5	**46**	70	74	**145**	3,986	86	**4,072**	60	88
2007	241	1,461	1,249	**2,710**	47	0.4	**47**	113	105	**218**	5,174	99	**5,273**	81	111
2008	146	1,565	1,202	**2,766**	65	0.6	**66**	133	154	**287**	6,129	109	**6,237**	104	95
2009	222	1,466	1,455	**2,921**	82	0.6	**83**	126	130	**257**	7,548	105	**7,653**	88	93
2010	271	1,769	1,756	**3,526**	86	0.5	**86**	155	163	**318**	9,837	110	**9,946**	90	115
2011	238	1,968	1,704	**3,672**	86	0.6	**87**	204	233	**436**	11,113	147	**11,260**	119	130
2012	264	825	751	**1,575**	61	0.6	**62**	154	151	**305**	7,795	149	**7,944**	193	128

■Source: KRX website (accessed on May 25, 2013).

Table 3. Comparison of Stock Index Options and Futures in Major Exchanges, 2012

	Notional Value/ Volume ('000 USD)		Volume/ Open Interest (No. of contracts)	
	Index options	Index futures	Index options	Index futures
Korea Exchange	0.2	113.5	2,376	553
Australia Exchange	47.2	109.1	19	37
China Financial Futures Exchange	n.a.	114.6	n.a.	475
Hong Kong Exchange	100.2	86.8	19	140
National Stock Exchange of India	5	4.7	408	276
Bombay Stock Exchange	5	4.8	6,540	284
Osaka Securities Exchange	n.a.	24.8	15	140
TAIFEX (Taiwan)	12.7	35.4	125	455
Chicago Board Options Exchange	138.3	n.a.	19	n.a.
CME group (U.S.)	104	69.3	27	165
Eurex	34.2	49.1	12	108
London Stock Exchange Group	45.2	64.4	16	81
World Total	16.6	46.6	59	144

■ Source: WFE/IOMA, *Derivatives Market Survey 2012* (2013).

Table 4. Composition of Investors in KOSPI200 Call Option and Futures Trade[1)]

Sector	KOSPI200 Call Option				KOSPI200 Futures[2)]			
	Trade volume		Trade value		Trade volume		Trade value	
	Million contracts	Percent	Trillion KRW	Percent	Million contracts	Percent	Trillion KRW	Percent
Securities firms	11,261	35.5	625	24.3	439	30.7	40,948	31.9
Insurance	100	0.3	3	0.1	4	0.3	360	0.3
Invest Trusts	207	0.7	13	0.5	34	2.4	2,535	2.0
Banks	47	0.2	3	0.1	9	0.6	704	0.6
Other financial firms	7	0.02	0.5	0.02	1	0.1	73	0.1
Pension funds, Government, etc	54	0.2	1	0.04	5	0.3	465	0.4
Others	217	0.7	20	0.8	22	1.5	1,843	1.4
Individuals	13,129	41.3	1,030	40.0	561	39.2	46,453	36.2
Foreigners	6,747	21.2	88	34.2	357	25.0	35,050	27.3
Total	31,770	100.0	2,578	100.0	1433	100.0	128431	100.0

1) Figures are the total of the period from 2001 to 2012.

2) Figures include futures spread trade, based on bid prices.

■ Source: KRX, Derivatives statistics portal

Table 5. Total Trading Value of Investment Funds in selected Asian Exchanges

(Unit: 100 thousand USD)

Exchanges	2008	2009	2010	2011	2012
Bursa Malaysia	217	264	595	639	1,286
Hong Kong Exchanges	6,883	5,691	5,741	7,213	8,703
Japan Exchange Group - Tokyo	43,886	24,086	32,853	37,255	37,256
Korea Exchange	111	75	49	59	87
National Stock Exchange India	59	2	13	12	1
Shanghai SE	14,087	11,576	8,648	3,214	2,320
Shenzhen SE	29,834	37,670	29,982	30,986	51,319
Taiwan SE Corp.	27	16	8	17	13
The Stock Exchange of Thailand	21	12	16	15	18

■ Source: WFE.

Author's Biography

Myung-koo Kang
Baruch College, City University of New York

Myung-koo Kang (MA, PhD, University of California, Berkeley) specializes in international and comparative political economy, especially focusing on financial crises and government's macroeconomic policy responses, and financial regulatory reforms, both cross-national and Asia-specific context. He has published articles on financial and fiscal crises and reforms in Japan and Korea. He has published articles in *Comparative Political Studies, Asian Politics and Policy, Asian Survey*, and others. He is currently finishing up a book manuscript that explores the historical origins, development, and transformation of the Korean financial system in response to financial globalization, comparing with the Japanese case. His next research agenda is to conduct research on global financial imbalances and government policy options, focusing on U.S.-Asia economic relations. Before joining Baruch College, he taught 4 years at Claremont McKenna College; held a post-doctoral fellowship from the Asia Pacific Research Center at Stanford University in 2006-08; was affiliated to the Ministry of Finance of Japan as a visiting scholar in 2003-04 and to the Institute for Advanced Study as a visitor from January to August of 2010.

Publications include:

- "Creating A Capable Bureaucracy with Loyalists: The Internal Dynamics of the Korean Developmental State, 1948-1979," (with Y. H. Ha) *Comparative Political Studies*, 44(1): 78-108.
- "Is Japan Facing a Public Debt Crisis? Debt Financing and the Development of the JGB Market," *Asian Politics and Policy* 2(4): 557-582.
- "Global Financial Crisis and Systemic Risks in the Korean Banking Sector," *Korea Economic Institute Academic Paper Series* 4(5) (Reproduced in *Korea Economic Institute Academic Paper Series*, Vol. 3, 2010, pp.23-48)
- "Too Fast To Adjust: The Sequence and Consequences of Bank Restructuring in South Korea, 1998-2006," *Asian Survey* 49(2): 243-267.

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- Young-Hwan Shin, the Executive Director of EAI Fellows Program
  Tel. 82 2 2277 1683 (ext. 112) fellowships@eai.or.kr

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