

The Rapid Growth of the Stock Options Market in Hong Kong

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Summary

1. *The stock options market in Hong Kong has grown significantly in recent years. It has surpassed Australia for the first time to become the most active stock options market in Asia.*
2. *Since 2006, stock options have overtaken HSI futures as the most actively traded derivative product in Hong Kong. Nevertheless, the size of the stock options market remains small compared to the US and European levels, suggesting that considerable potential for further growth exists.*
3. *As of the end of September 2007, 47 stocks were eligible for stock options trading. During the first nine months of 2007, the average daily trading volume was 168,392 contracts (up 129% from 2006). The rapid growth in the trading of stock options in the past two years can be attributable to:*
 - *the growth in the trading of the cash market, particularly an increase in the listing and trading of Mainland stocks in Hong Kong;*
 - *the growth in the derivative warrants market;*
 - *the narrowing of trading spreads on stocks; and*
 - *the relaxation of position limits on stock options.*
4. *Some factors that have influenced the growth of the Hong Kong stock options market are unique to Hong Kong which may help explain why the growth was so much higher than other markets. For instance, Hong Kong has a large number of Mainland enterprises listed on HKEx and the narrowing of trading spreads and the relaxation of position limits were initiatives taken in the local market.*

¹ The paper is for fact-finding and research purposes. The views expressed in this research paper do not necessarily reflect those of the Commission.

Background and Objective

5. The first exchange-traded stock options were introduced by the Chicago Board Options Exchange in April 1973. In September 1995, Hong Kong became the first market in Asia to launch stock options. As of the end of September 2007, 47 stock option classes² were available for trading, with total open interest reaching 5.4 mn contracts and total turnover for the first nine months of 2007 amounting to 30.98 mn contracts. Indeed, the growth in trading during the first nine months of 2007 was the highest among major markets, and Hong Kong is currently the most active stock options market in Asia. Nevertheless, trading remains more active in the US and Europe. In addition, relative to cash market turnover and market cap, the trading of stock options in Hong Kong remains low. For instance, the notional value of stock options³ traded during the first nine months of 2007 was 10.8% of the cash market turnover (14.2% if trading of derivative warrants is excluded) or 5.7% of market cap. Such levels were lower than those for major markets, suggesting that considerable potential for further growth exists.

Trading Volume of Stock Options on Major Markets (mn contracts)								
Region	Exchanges	2002	2003	2004	2005	2006	2007 (Jan-Sep)	% Change*
Asia	Hong Kong Exchanges and Clearing	3.72	4.22	5.61	8.77	18.13	30.98	157.8%
	Australian Securities Exchange	15.99	15.99	19.16	21.55	20.49	17.12	10.8%
	Tokyo Stock Exchange	0.30	0.30	0.17	0.20	0.19	0.12	-6.0%
US	International Securities Exchange	140.62	220.99	319.88	442.39	583.75	573.94	31.1%
	Chicago Board Options Exchange	173.19	173.03	224.32	275.65	390.66	328.33	15.2%
	American Stock Exchange	146.15	142.66	161.71	193.09	186.99	166.59	21.4%
Europe	Euronext	323.59	244.68	302.97	264.71	155.55	142.61	17.6%
	Italian Exchange	7.59	7.92	9.50	12.44	16.06	15.31	31.9%
	BME Spanish Exchanges	18.70	11.38	8.20	10.92	12.59	9.22	3.4%

Remark: *Change was based on total for the period Jan-Sep 2006.
Source: WFE

Total Notional Value of Stock Options Traded as % of Cash Market Turnover and Market Cap			
Region	Exchanges	Notional Value of Stock Options Traded as a % of Cash Market Turnover	Market Cap
Asia	Hong Kong Exchanges and Clearing	10.8%	5.7%
	Australian Securities Exchange	35.6%	24.5%
US	International Securities Exchange	Notional Value – Not Available	
	Chicago Board Options Exchange	Notional Value – Not Available	
	American Stock Exchange	13.1%	24.3%
Europe	Euronext	17.4%	17.5%

Remark: Notional value of stock options traded and cash market turnover were total for the first nine months of 2007, while market cap figures were as of end September 2007.
Source: WFE

² A stock option class refers to a collection of stock options of different option types, strike prices and maturities on the same underlying stock.

³ The notional value of stock options is an approximate measure of the face value of the stock option contract. It is the market price of the underlying asset times the contract multiplier.

6. The objective of this paper is to examine the factors underpinning the growth of the stock options market in Hong Kong.

Trading of Stock Options in Hong Kong

Market Growth is Remarkable

7. In Hong Kong, stock options are currently the most actively traded derivative product, constituting 51% of the total derivatives trading during the first nine months of 2007. Prior to 2006, HSI futures accounted for a larger share of the derivatives market than stock options. During the first nine months of 2007, the average daily turnover of HSI futures grew 30% from 2006 whereas stock options soared 129%. Nevertheless, it should be noted that the growth in the trading of HSI options and HSCEI options was also remarkable.

Average Daily Turnover of Local Derivatives Market by Product Type (Contracts)							
	2002	2003	2004	2005	2006	2007 (Jan-Sep)	% Change
HSI Futures	19,602	27,588	34,824	40,205	51,491	66,713	30%
HSCEI Futures ¹	NA	3,196	7,003	8,011	19,759	40,179	103%
HSI Options	4,369	8,596	8,215	12,462	16,582	33,458	102%
HSCEI Options ²	NA	NA	566	1,044	3,070	7,586	147%
Stock Options	15,203	17,122	22,720	35,385	73,390	168,392	129%
<i>Total Futures and Options³</i>	<i>45,018</i>	<i>59,011</i>	<i>79,472</i>	<i>103,542</i>	<i>173,708</i>	<i>332,056</i>	<i>91%</i>

Remarks: ¹ Trading in HSCEI Futures commenced on 8 December 2003.
² Trading in HSCEI Options commenced on 4 June 2004.
³ Total includes other derivative products, e.g. min-HSI futures and options, FTSE/Xinhua China 25 Index futures and options, 1- and 3-month HIBOR futures, 3-Year Exchange Fund Note futures and stock futures.
Source: HKEx

Characteristics of the Stock Options Market in Hong Kong

Trading of Stock Options is Balanced by Type, but Concentrated by Underlying

8. The trading of stock options is rather balanced by option types. During the first nine months of 2007, slightly more put options (with average daily turnover of 88,045 contracts or 52% of the total) were traded than call options (80,347 contracts or 48%). This is in sharp contrast to the derivative warrants market which is also an active derivatives market on stocks. As of the end of September 2007, there were 2,521 derivative warrants issued on individual stocks. Of these, about 90% were call warrants. In September 2007, trading of call warrants accounted for some 90% of the total warrant trading (excluding index warrants). This difference can be attributed to the following:
- the stock options market is largely a professional market where arbitrage and hedging activities are the main purposes of trading (detailed discussion in paragraphs 10-11); and
 - the derivative warrants market is dominated by retail investors who tend to be more interested in call warrants in order to capture the upside potential of stocks.

9. The trading of stock options is concentrated in a few stock option classes. During the first nine months of 2007, the five most actively traded option classes – namely HSBC, China Mobile, China Life, China Construction Bank and Hutchison – accounted for 53% of the total trading. These stocks were also among the most actively traded stocks on the cash market.

The Stock Options Market is a Professionals' Market

Trading for Arbitrage and Hedging Purposes

10. HKEx's Derivatives Market Transaction Survey (DMTS) 2005/2006⁴ showed that stock options were traded mainly for the professional purposes of arbitrage and hedging. Trading for arbitrage purpose has become more common (from 21.0% in 2004/05 to 24.9% in 2005/06) and trading for arbitrage and hedging purposes have together accounted for at least 60% of the trading of stock options in the last few years.

Trading of Stock Options by Purpose (%)			
Purpose	2003/04	2004/05	2005/06
Pure Trading	35.0	36.3	39.8
Hedging	44.4	42.7	35.2
Arbitrage	20.6	21.0	24.9
Total	100.0	100.0	100.0

Source: HKEx, DMTS

11. Arbitrage and hedging activities are generally accepted as being beneficial to the development of the overall market as they add depth to the market by bringing additional liquidity, and also help improve market efficiency and price discovery.

⁴ The DMTS covers a rolling 12-month period ending June each year. The issue for 2006/2007 is expected to be available in the fourth quarter of 2007.

Market Makers are Key Participants in the Stock Options Market

12. HKEx's DMTS also showed that market makers have been by far the most active participants accounting for three quarters of total trading in 2005/06.

Trading of Stock Options by Investor Type (%)			
Type of Investor	2003/04	2004/05	2005/06
Market Makers	75.5	71.9	75.6
Proprietary Trading	3.1	4.8	6.2
Retail	13.0	14.3	10.3
Institutional	8.5	8.9	7.9
Total	100.0	100.0	100.0

Source: HKEx, DMTS

13. As the market is a professional and institutional market, trading of stock options as a percentage of open interest is relatively low. The ratio of average daily trading volume to open interest in the first nine months of 2007 was 3.1% for stock options (3.1% in 2006, 2.9% in 2005 and 3.5% in 2004). This compared to 11.3% for HSI options and 83.3% for Mini-HSI options. The low trading volume to open interest ratio indicates that the trading of stock options tends to be associated with relatively longer investment/trading horizons. For comparison, the 2006 ratios for Chicago Board Options Exchange and Euronext were 0.8% and 1.3%.

Factors Leading to the Rapid Growth in the Stock Options Market

Growth in Cash Market

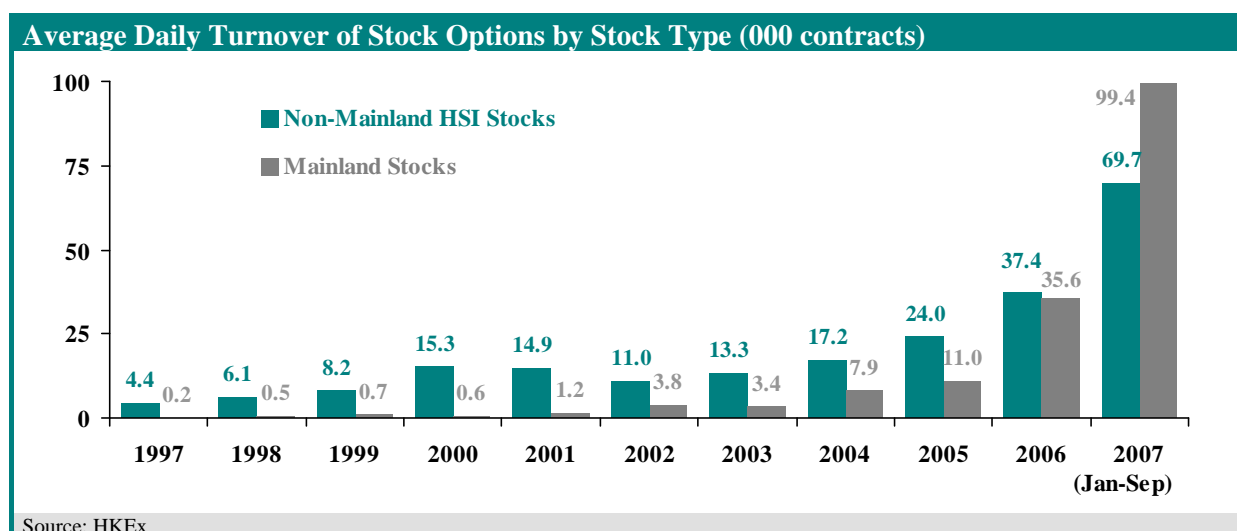
14. Among other factors, trading of derivatives depends on the trading activities on the cash market. This is because an active cash market allows investors to effectively price derivatives and requires market makers/issuers to hedge their positions.
15. The growth in trading of stock options can in part be attributable to the significant growth in the cash market since 2004. The average daily turnover in the cash market increased 113% during the first nine months of 2007 from 2006. This was on the back of an average annual growth of 52% during 2004-2006. The significant growth in trading on the cash market also helps explain the growth of other derivatives markets such as index options and HSCEI futures where trading on both markets during the first nine months of 2007 doubled from 2006.

Highlights of the Stock Options Market in Hong Kong (2002-September 2007)				
	Avg Daily Volume (contracts)	Open Interest (contracts, Period End)	Avg Daily Cash Market Turnover (HK\$ bn)	Market Cap (HK\$ bn)
2002	15,131	370,891	6.47	3,559.10
2003	17,138	553,896	10.26	5,477.67
2004	22,520	684,052	15.86	6,629.18
2005	35,313	1,021,193	18.21	8,113.33
2006	73,390	2,533,807	33.74	13,248.82
2007 Jan-Sep	168,392	5,435,153	71.74	19,904.02

Source: HKEx

Mainland Factor

16. The growth in stock options trading can also be attributable to the increase in the listing and trading of Mainland stocks in Hong Kong.
- Whilst the turnover of stock options on non-Mainland HSI constituent stocks has grown considerably in recent years, that of Mainland stock options increased by leaps and bounds. For example, during the first nine months of 2007, the average daily turnover of options on Mainland stocks increased 179% from 2006 after a 223% growth from the previous year. This year, trading of stock options on Mainland stocks for the first time overtook that of the non-Mainland HSI stocks.
 - This growth was again in line with the increase in the cash market. During the first nine months of 2007, the average daily cash market turnover was 114% higher than 2006. By stock type, the average daily turnover of Mainland stocks increased 136% whereas non-Mainland HSI stocks increased 51%.



Growth in the Derivative Warrants Market

17. The growth in trading of stock options can also be partly attributable to the growth in the derivative warrants market during the period. For comparison with stock options, the following analysis concentrates on derivative warrants issued on a single stock (as opposed to index warrants).

Highlights of the Derivative Warrants Market (Excluding Index Warrants, Period End)				
	2005	2006	2007 (Jan-Sep)	% Change
Number of Listed Derivative Warrants	1,082	1,655	2,521	52%
Outstanding Volume (bn warrants)	24.79	28.35	93.88	231%
Market Value (HK\$ bn)	4.45	21.68	70.06	223%
Average Daily Turnover (HK\$ bn, period average)	2.32*	3.73	13.76	269%

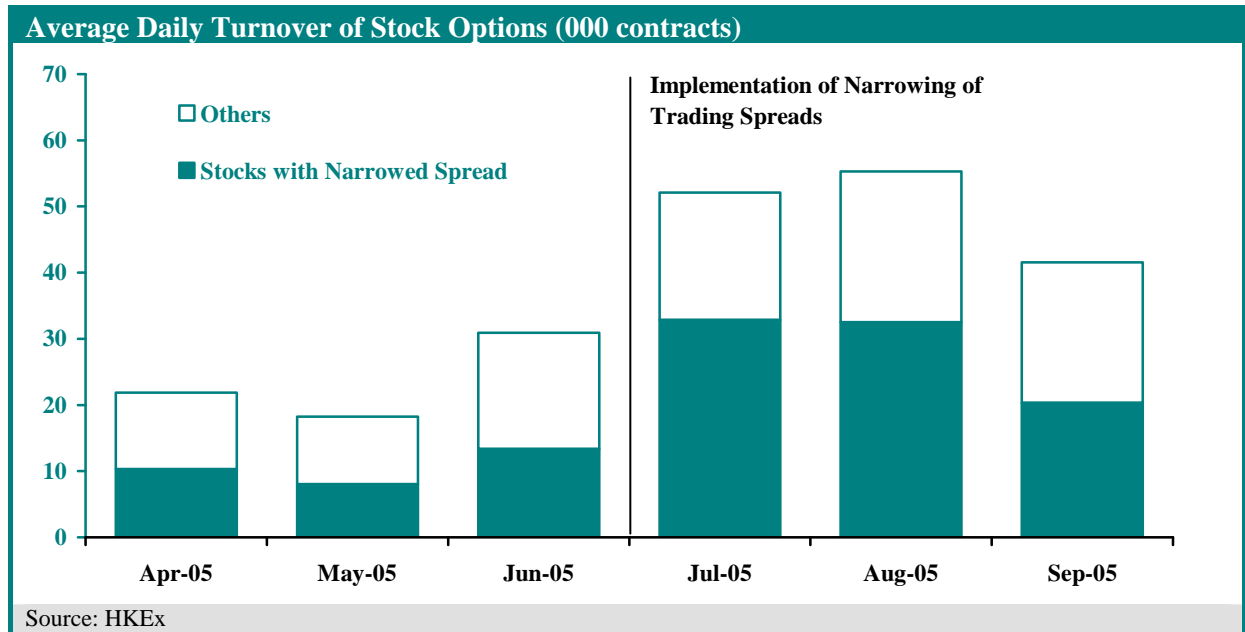
Remark: *Data on turnover only for period between July to December. Data prior to July not available.
Sources: HKEx and Bloomberg

18. As the derivative warrants market grows, derivative warrant issuers have a greater need to hedge their positions. According to stock options market makers, one of the most common hedging tools used by derivative warrant issuers is stock options. Indeed, for derivative warrants with large market value, the open interest of the stock option classes of the same underlying was also higher. This is another indicator that warrant issuers use stock options to hedge their exposure in warrants.

Narrowing of Trading Spreads

19. The narrowing of trading spreads took place in two phases. Phase One, when trading spreads for stocks priced above HK\$30 were narrowed, was carried out in July 2005 and Phase Two, for stocks priced between HK\$2 and HK\$20, in July 2006.
- Because stock options market makers are required by the exchange to provide quotes based on the trading spread of the underlying stock, a narrower spread for stocks will lead to a reduction in bid-ask spread for options. This will in turn facilitate the matching of orders due to lower costs and risks involved. For instance, the narrowing of HSBC's trading spread in July 2005 led to a 60% reduction of the bid-ask spread in HSBC stock options. Subsequently, the average daily turnover of HSBC stock options increased; up by 84% during the second half of 2005, compared to a 37% increase in turnover for stock options whose underlying did not undergo any narrowing of trading spreads.
 - A narrower spread for stocks also reduces the cost when market makers use those underlying stocks for hedging.

20. In Phase One, 29 stocks had their trading spreads narrowed. Among them 10 stocks have stock options for trading. The average daily turnover of these 10 stock option classes soared by 168% during 2005 Q3, compared with an increase of 61% for the other stock options.



21. In Phase Two, the narrowing of trading spreads affected 25 underlying stocks. Again, trading for these stock option classes increased significantly by 50% in the three months following the implementation when compared to the preceding three months, whilst the trading of the other stock options decreased 11%.

Relaxation of Position Limits

22. Position limits on stock options were relaxed to 50,000 contracts in any market direction for all expiry months combined effective from 10 February 2006.
- The previous position limits of up to 25,000 contracts per expiry month⁵ had been in place since the launch of the stock options market in 1995. As the then limits could not cope with the growth of the market in recent years, some market participants are assumed to have shifted part of their positions from the HKEx market to the OTC market or other overseas markets.
 - It is believed that some trading from the OTC markets may have returned to the exchange following the relaxation. Trading of stock options continued to grow rapidly. The average daily turnover during the three months after the relaxation was about 48,100 contracts, up 41% from about 67,800 contracts during the three months before the relaxation of position limits, whilst the open interest increased to around 2.0 mn contracts from around 1.5 mn contracts.

Conclusion

23. Some factors that have influenced the growth of the Hong Kong stock options market are unique to Hong Kong which may help explain why the growth was so much higher than other markets. For instance, Hong Kong has a large number of Mainland enterprises listed on HKEx and the narrowing of trading spreads and relaxing position limits were initiatives taken in the local market.
24. The stock options market in Hong Kong is largely a professional and institutional market. As a large part of the trading in the stock options market is related to arbitrage and hedging activities, its development benefits other related markets by adding liquidity and enhancing market efficiency. These will boost overall trading and help strengthen Hong Kong as an international financial centre. The measures introduced in recent years to facilitate growth of the market would appear to have been successful and suggest that we should continue to explore further measures to enhance our markets.

⁵ The actual position limits were based on a two-tier system and the actual level varied for market makers and non-market makers.