

## Trading of Listed Equity Derivatives in Hong Kong, the UK and US

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### Summary

1. *Following an earlier study comparing the trading of HSI stocks and Mainland stocks in Hong Kong, the UK and US, another study has been carried out to compare the trading of listed equity derivatives on these stocks in Hong Kong and in major overseas markets and to examine the possible reasons behind.*
2. *The study found that the growth in the trading of listed equity derivatives is higher in Hong Kong and that such trading is in general more active in Hong Kong than in overseas markets.*
3. *Only one stock option class (namely stock options on HSBC) is traded in Hong Kong, the UK and US. With a market share of 62%, trading is now most active in Hong Kong. Another nine stock option classes (all on Mainland stocks) are traded in Hong Kong and the US. With a market share of 58%, seven of these are more actively traded in Hong Kong. This represents a reversal from a year ago when a majority of these stock options classes saw more active trading in overseas markets.*
4. *Trading of listed equity derivatives depends on whether the underlying stocks are also traded on the same market and if so, their trading activities. This is because an active cash market is essential for investors to price and hedge derivatives.*
5. *In addition, trading of a derivative product depends on its popularity in a certain market. For instance, trading of stock options is not popular in the UK due to competing products. This may be one reason why the trading of stock options on HSBC is less active in the UK than in Hong Kong, even though trading of the underlying stock is more active in the UK.*
6. *Finally, trading activities may also be affected by the familiarity of investors with a certain industry/sector. Trading of stock options on Mainland oil companies such as PetroChina and Sinopec was more active in the US than in Hong Kong. This may be because the share price of these companies is affected by the sentiment in the crude oil market which is a worldwide factor and shares of oil companies are widely followed by the market in the US in general.*

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<sup>1</sup> This paper is for pure fact-finding and research purposes. The views expressed in this paper do not necessarily represent those of the SFC.

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### Objective and Scope of the Study

7. Further to our previous study comparing the trading of HSI stocks and Mainland stocks (i.e. H-shares and red chips) in Hong Kong, the UK and US<sup>2</sup>, we have conducted another study comparing the trading of listed equity derivatives (which include equity futures, equity options, equity index futures and equity index options) on HSI stocks and Mainland stocks in these markets. This study focuses on the trading of listed equity derivatives. It does not cover other derivative products such as listed derivatives on bonds, interest rates, currencies, commodities and OTC derivatives<sup>3</sup>. We concentrate the analysis on HSI stocks and Mainland stocks because they account for some 70-80% of market cap and turnover of the cash market (excluding derivative warrants).

### Trading of Stock Options in Hong Kong and in Major Overseas Markets

#### Trading of stock options on HSBC is most active in Hong Kong

8. Only one stock option class (namely stock options on HSBC) is traded in three markets (i.e. Hong Kong, the UK and US). As the contract sizes in the UK and US are different from that in Hong Kong, their turnover figures (in contracts) are adjusted, so that they are comparable to the figures for Hong Kong. Based on the adjusted turnover, trading of stock options on HSBC before the second half of 2005 was most active in the UK. However, since the second half of 2005, the trading of stock options on HSBC has been most active in Hong Kong<sup>4</sup>. In fact, trading of stock options in Hong Kong has generally increased since 2004. In the first four months of 2006, 62% of the trading took place in Hong Kong. The market share was 34% for the UK and 4% for the US.

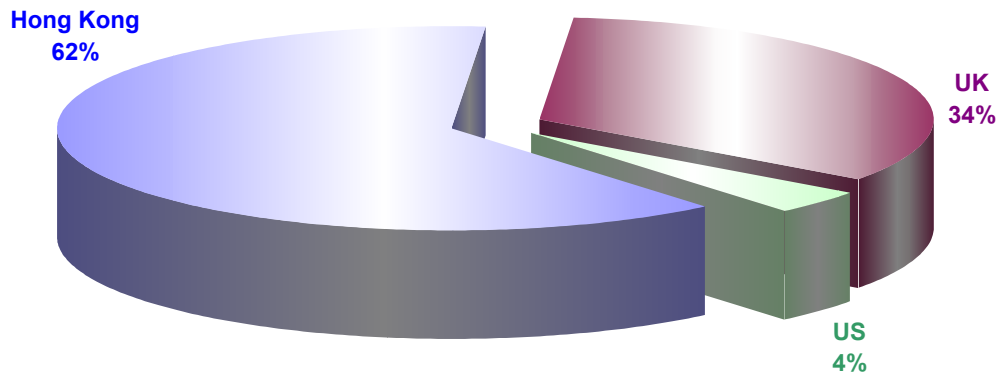
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<sup>2</sup> The previous study was published as Research Paper No. 25 in November 2005 (<http://www.sfc.hk/sfc/html/EN/research/research/research.html>).

<sup>3</sup> It is understood that the OTC derivatives market is much bigger than the exchange market. However, the information on OTC transactions is not available.

<sup>4</sup> Trading data in the UK is sourced from LIFFE, whilst US stock options data is collected from the Options Clearing Corporation (OCC). The OCC's participant exchanges include: the American Stock Exchange (AMEX), Boston Options Exchange (BOX), Chicago Board Options Exchange (CBOE), the International Securities Exchange (ISE), the Pacific Exchange (PCX) and the Philadelphia Stock Exchange (PHLX).

**Market Share of Stock Options on HSBC Traded in Hong Kong, the UK and the US (Jan – Apr 2006, %)**



Sources: HKEx, LIFFE and OCC

**Trading Summary of Stock Options on HSBC in Hong Kong, the UK and the US (Contracts)**

	Hong Kong		UK		US		Total	
	Turnover	% of row total	Turnover	% of row total	Turnover	% of row total	Turnover	% of row total
2004 H1	743,556	38.60%	1,057,543	54.90%	125,266	6.50%	1,926,365	100.00%
2004 H2	580,247	37.46%	613,590	39.61%	355,294	22.94%	1,549,131	100.00%
2005 H1	530,749	32.47%	658,238	40.27%	445,771	27.27%	1,634,758	100.00%
2005 H2	1,015,793	57.24%	564,015	31.78%	194,920	10.98%	1,774,728	100.00%
2006 Jan-Apr	574,019	62.40%	310,800	33.79%	35,096	3.82%	919,915	100.00%

Remark: Adjustments in contract size were made for stock options on HSBC traded in the UK and US. The contract size in HK was 400 shares per option contract, whilst UK was 1,000 shares per option contract and 100 shares per option contract in the US.

Sources: HKEx, LIFFE and OCC

*The popularity of trading stock options in Hong Kong and overseas markets*

9. The popularity of trading stock options differs in Hong Kong, the UK and US.
  - Trading of stock options in the US has been very popular. There has been a dramatic growth in the stock options market since the listing of the first contract in 1973. Total turnover of stock options in the US totalled 1.2 billion contracts in 2005.
  - In the UK however, trading of stock options has been less popular due to competing products. For example, the growth of the stock options market in the UK has been restricted by the established OTC market for contracts for differences<sup>5</sup>. And in terms of listed derivative products, investors in the UK have been more interested in trading interest rate futures and interest rate options.
  - In Hong Kong, stock options have been the second most actively traded derivative product (after HSI futures). In 2005, 8.7 million stock options contracts were traded, constituting about one-third of the total derivatives trading in Hong Kong. It should also be noted that

<sup>5</sup> A contract for difference (CFD) is a margin traded product to exchange the difference between the opening value and the closing value of an instrument.

the stock options market in Hong Kong is very much dominated by institutional trading. The latest Derivatives Market Transaction Survey 2004/05 conducted by HKEx shows that market makers accounted for 72% of the total trading during the 12 months ending June 2005.

### *Trading activities in the underlying stocks*

10. By and large, the prices of derivative products vary with the price of their underlying. Without the presence of an active underlying market that trades at the same time as the derivatives, investors may not be able to fairly price the derivatives, and as a result trading activities in derivatives may be affected. An active cash market is also essential for investors to hedge their positions in the derivatives market.
11. The above may explain why, despite the popularity of stock options in the US, trading in HSBC stock options was not very active. Only 3% of the trading in HSBC was conducted in the US during the second half of 2005, as compared to 74% in the UK and 23% in Hong Kong. As to why trading in stock options was more active in Hong Kong than even the UK during this period, this may be attributable to several reasons.
12. First, the Hong Kong market had the added advantage of stock options being a relatively popular product among institutional investors.
13. Secondly, the turnover of HSBC stock options on the Hong Kong market increased 84% during the second half of 2005. This strong growth could have been attributable in part to the narrowing of HSBC's trading spreads from HK\$0.5 to HK\$0.1 since July 2005. In comparison, the average daily turnover of stock options whose underlying did not undergo any narrowing of trading spreads increased only 37%.
14. The narrowing of HSBC's trading spread led to a reduction of the bid-ask spread in HSBC stock options as stock options market makers are required by the exchange to provide quotes based on the trading spread of the underlying stock. Our study found that the bid-ask spread of the stock options on HSBC reduced by some 60%, whilst that of the underlying stock reduced by some 80%.
15. Thirdly, it is worth highlighting that during the first four months of 2006, the trading of HSBC stock options in Hong Kong grew from about 57% to about 62%. Among other factors, this could have been due to the relaxation of position limits for the stock options contracts in Hong Kong effective 10 February 2006.

16. In sum, it is remarkable that Hong Kong has the lead in trading HSBC stock options in view of the fact that about three quarters of the underlying stock are traded in the UK. However, different factors appear to have contributed to this including the popularity of stock options among institutional investors in Hong Kong, the narrowing of trading spreads and the relaxation of position limits on stock options.

### Trading of stock options on Mainland stocks in Hong Kong is more active

17. In addition to stock options on HSBC, there are nine stock option classes traded in Hong Kong and the US. It is interesting to note that all nine underlying stocks are Mainland stocks. The turnover in respect of five of these stock option classes was higher in Hong Kong than in the US during the second half of 2005. No stock option classes on Mainland stocks are traded in both Hong Kong and the UK.

Trading of Stock Options in Hong Kong and the US (2005 H2, Contracts)							
Underlying Stock Code	Underlying Stock Name	Hong Kong		US		Total	
		Turnover	% of row total	Turnover	% of row total	Turnover	% of row total
386	Sinopec	133,327	27.49%	351,695	72.51%	485,022	100.00%
728	China Telecom	74,383	59.41%	50,825	40.59%	125,208	100.00%
762	China Unicom	22,200	91.78%	1,987	8.22%	24,187	100.00%
857	PetroChina	232,799	8.81%	2,408,505	91.19%	2,641,304	100.00%
883	CNOOC	85,712	35.28%	157,260	64.72%	242,972	100.00%
902	Huaneng Power	39,639	57.64%	29,132	42.36%	68,771	100.00%
906*	China Netcom	4,098	27.41%	10,852	72.59%	14,950	100.00%
941	China Mobile	665,664	92.76%	51,957	7.24%	717,621	100.00%
2628	China Life Insurance	244,925	83.66%	47,824	16.34%	292,749	100.00%
<b>Total (9 stock option classes)</b>		<b>1,502,747</b>	<b>32.58%</b>	<b>3,110,037</b>	<b>67.42%</b>	<b>4,612,784</b>	<b>100.00%</b>

Remark: \* Trading in stock options on China Netcom was commenced on 7 November 2005.  
Sources: HKEx and OCC

18. The total turnover of the nine stock option classes in Hong Kong was lower than that in the US in the second half of 2005. However, the high trading volume in the US was largely attributable to the surge in trading of stock options on PetroChina in September 2005 as a result of a placing activity during the month.
19. On 1 September 2005, PetroChina placed shares worth HK\$19 bn. Trading of stock options on PetroChina in the US in September 2005 was 1,454,635 contracts. Stripping out the turnover for September 2005<sup>6</sup>, the total trading of stock options on PetroChina in the US was 953,870 contracts during the second half of 2005 (or an average monthly turnover of 190,774 contracts).
20. There was not a corresponding surge in the trading of PetroChina's listed stock options in Hong Kong. This was probably because the position

<sup>6</sup> Data is only available on a monthly basis.

limit on PetroChina stock options was too small at that time to accommodate activities related to the placement. Therefore, the most significant impact went to the cash market where the average daily turnover increased by almost 30% during the three days after the placing activity.

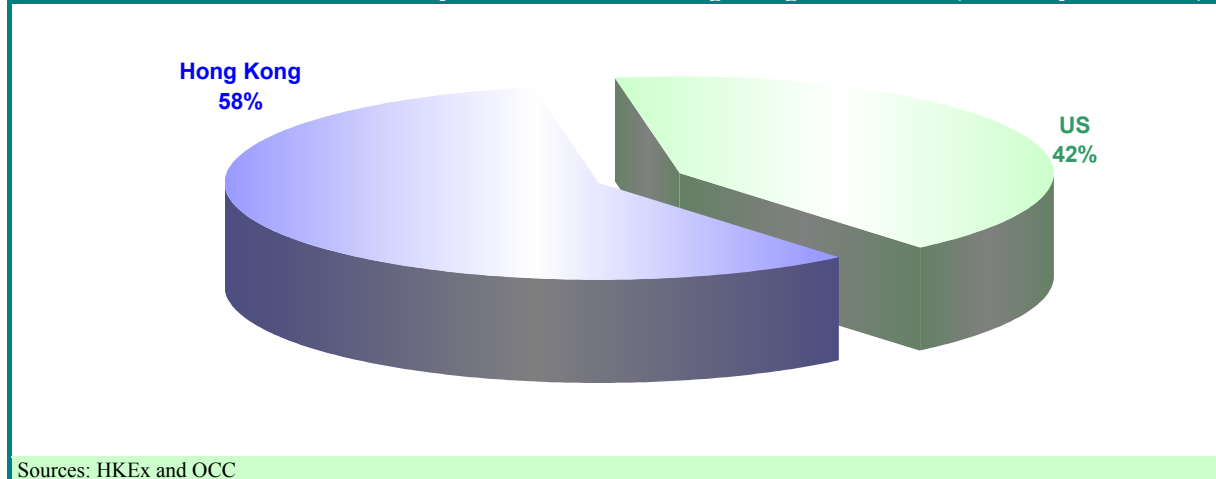
21. Even excluding the placement of PetroChina in September 2005, trading of its stock options in the US was still higher than in Hong Kong. A similar phenomenon was observed for the trading of stock options on Sinopec and CNOOC. One reason for this may be that the share price of these stocks is affected by the sentiment in the crude oil market which is a worldwide factor, and shares of oil companies are widely followed by the market in the US in general. Therefore, it is not surprising to see more active trading in these stock options in the US. In general, since the first half of 2004, trading was more active in the US. It is only from 2006 that trading has moved back to Hong Kong.
  
22. Excluding the trading of stock options on PetroChina, the total trading of the remaining eight stock option classes in Hong Kong was higher than that in the US during the second half of 2005. It appears that trading of stock options concentrated in the market where the underlying stocks were listed and traded more actively. During the second half of 2005, 82% of the total trading value of these eight underlying stocks took place in Hong Kong.

Trading Summary of Stock Options in Hong Kong and the US (Contracts)							
	Number of stock option classes traded in HK and the US excluding HSBC	Hong Kong		US		Total	
		Turnover	% of row total	Turnover	% of row total	Turnover	% of row total
2004 H1	7	997,767	37.53%	1,661,039	62.47%	2,658,806	100.00%
2004 H2	8	866,591	41.40%	1,226,432	58.60%	2,093,023	100.00%
2005 H1	8	995,456	41.24%	1,418,586	58.76%	2,414,042	100.00%
2005 H2	9	1,502,747	32.58%	3,110,037	67.42%	4,612,784	100.00%
2006 Jan-Apr	9	1,011,768	58.31%	723,367	41.69%	1,735,135	100.00%

Sources: HKEx and OCC

23. As with trading in HSBC stock options, the trading in the nine stock option classes was more active in Hong Kong relative to the US during the first four months of 2006. The market share of Hong Kong rose to 58%. Of the nine stock option classes, seven of them were more actively traded in Hong Kong. It seems that the relaxation of position limits has stimulated trading in stock options in Hong Kong.

Market Share of the Nine Stock Options Traded in Hong Kong and the US (Jan – Apr 2006, %)



### Trading of Other Equity Derivatives in Hong Kong and in Major Overseas Markets

24. Only one stock futures contract (namely stock futures on HSBC) is traded in Hong Kong and the UK. As the contract size in the UK is different from that in Hong Kong, the UK turnover figures (in contracts) have been adjusted, so that they are comparable to the Hong Kong figures. Trading concentrated in the UK in 2004 and 2005.

Trading Summary of Stock Futures on HSBC in Hong Kong and the UK (Contracts)

	Hong Kong		UK		Total	
	Turnover	% of row total	Turnover	% of row total	Turnover	% of row total
2004 H1	1,511	14.21%	9,120	85.79%	10,631	100.00%
2004 H2	2,467	10.40%	21,258	89.60%	23,725	100.00%
2005 H1	1,564	6.10%	24,055	93.90%	25,619	100.00%
2005 H2	2,603	15.07%	14,670	84.93%	17,273	100.00%

Remark: Adjustment in contract size was made for stock futures on HSBC traded in the UK. The contract size in UK was 1,000 shares per futures contract.  
Sources: HKEx, LIFFE and Bloomberg

25. It should be noted however that the trading of stock futures has generally not been very active in Hong Kong. During the second half of 2005, the total number of stock futures contracts traded in Hong Kong was only 8,277, or a mere 0.06% of the total number of derivative contracts traded. In addition, compared to the UK, trading of the underlying stock (i.e. HSBC) was less active in Hong Kong. These may be the reasons why trading of stock futures on HSBC was more active in the UK than in Hong Kong.

26. No stock futures are traded in both Hong Kong and the US. Similarly, no stock index futures and options on the same underlying are traded in Hong Kong and the UK and / or US.

## Conclusion

27. The growth of the trading of the listed equity derivatives is higher in Hong Kong. As such trading depends very much on the trading of the underlying stocks, it follows that in order to maintain active trading in listed equity derivatives, it is important for Hong Kong to promote active trading of the underlying stocks in Hong Kong. It also appears that new measures to improve the efficient functioning of our markets (i.e. narrowing of trading spread and relaxation of position limits) may have contributed to the increase in the trading of stock options in the first four months of this year.