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Price clustering in the CAC 40 index options market

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Abstract

We examine in details the pattern and systematic tendencies of clustering in CAC 40 index option transaction prices during the period 1997 to 1999. Similar to extant studies in many financial markets, there is evidence of strong clustering at full index points and option prices are 90% more likely to end with the digit 0 (multiples of 10) than with the digit 5. While the 1999 contract downsizing led to some reduction in clustering at full index point, the basic pattern of clustering remains intact. The pattern of clustering rejects the attraction theory, but is consistent with the notion of cost recovery by market makers. We find important drivers for CAC 40 index option price clustering, namely, the level of option premium, option volume and underlying asset volatility. Higher premium level, higher asset volatility and lower volume are seen to increase option price clustering. We also observe a U-shaped pattern of clustering on an intra-day and intra-year basis. The option premium and volatility effects are consistent

with a price level effect. The volatility effect also lends support to the notion of cost recovery by market makers. The volume effect likely represents a liquidity effect and is consistent with the Price Precision Hypothesis.

Notes

[1] In fact, traders are still allowed to use 0.01 index point when they pass ‘link orders’, such as spreads.

[2] Classification by increments of 01 (1/100 of a full index point) are available on request. Although in the post-euro 1999 period the tick size is 0.10 index point, we still see some transactions continuing to take place at odd multiples of 0.05 index point and for that matter at multiples of 0.01 index point similar to the pre-euro 1997 to 1998 period.

[3] It can also be argued (Mitchell, 2001, p. 405) that the decimal system of number counting and presentation suggest a natural tendency to think in terms of 10s (or powers of 10).

[4] Ap Gwilym et al . (2005) report that move from fractional to decimal pricing in the UK Long Gilt futures led to an increase in price clustering.

[5] Indirect support for the cost recovery line of reasoning is also provided by Ap Gwilym and Alibo (2003). They find that price clustering for the FTSE 100 Futures is reduced after migrating from the open outcry system to electronic system, with the latter system being more cost efficient.

[6] There appears to be a U-shaped pattern of clustering at full index point on an intra-day and intra-year basis (available on request). The pattern is similar to but weaker than that observed by Ap Gwilym et al . (1998a) for FTSE 100 Futures and by Schwartz et al . (2004) for S&P 500 Futures. Since usually there is greater uncertainty about valuation towards the open and the close, the intra-day U-shaped pattern of clustering provide indirect support for the Precision Hypothesis of Grossman et al . (1997). Further analysis may reveal if there is a U-shaped intra-day and intra-year pattern in CAC 40 index options volume. In that case, the U-shaped pattern in clustering may also lend

some support to the Negotiation Hypothesis of Harris (1991). Intra-day patterns for the US stocks include a reverse J-shape for the spreads (McInish and Wood, 1992) and a U-shape for the return volatility (Harris, 1986).

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