

## 5. Conclusions

This paper provides a comprehensive insight into the impact of the introduction of Taiwan Top 50 Tracker Fund on the market liquidity of the underlying Taiwan 50 Index stocks. We adopt ten liquidity proxies and decompose the spread to compare the changing pattern of liquidity in the pre-TTT and post-TTT periods. This paper presents the multi-facet of liquidity. In the preliminary analysis, we find that trading volume, trade frequency and trade size of the underlying stocks increase in the post-introduction period. However, after we take the market-wide factor into consideration, our analysis presents a decrease in standardized trading volume after TTT trading and it implies that the liquidity of underlying stock seems deteriorated. Furthermore, the significant increase in volatility of daily return also suggests deterioration in liquidity of the underlying securities.

We then investigate into changes in spreads. Five types of spreads are analyzed and show inconsistent results when different factors are considered. Both the quoted and effective spread increase significantly while the percentage quoted and effective spread experience a small decline. However, we find no significant change in the spread in terms of the number of ticks. These inconsistent results suggest the poor efficiency and efficacy of spreads in representing the market liquidity of Taiwan stock market. It leads to the skepticism about the applicability of spreads in Taiwan security market where the ask price and the bid price do not actually exist. Chan and Hu (2001) conclude that spreads are not suitable proxies to assess the market liquidity because the market structures and trading mechanism of Taiwan stock market are different from those of quote-driven markets where the ask price and bid price exist and spreads can be formed.

In the analysis of spread components, we follow Lin et al. (1995) to decompose the effective spread. We find a significant increase in the adverse selection component in contrast to a slight decline in the order processing component. Since the percentage increment in the adverse selection cost is larger than that in the order processing cost, the overall transaction cost for the underlying Taiwan 50 Index stocks is higher following the introduction of TTT. Hence, the widening effective spread primarily results from a significant increase in the adverse selection cost for the Taiwan 50 Index stocks. It suggests that the market liquidity of the Taiwan 50 underlying stocks deteriorates because of a greater portion of informed trading. Overall, our finding does not support the arbitrage theories. On the contrary, it is consistent with the prediction of Subrahmanyam (1991) where the migration of liquidity traders to the basket securities tends to increase the adverse selection risk and reduce the market liquidity of the component stocks.

Exchanged-traded funds have been popular and important vehicles since its first launch in 1990. The creation of the innovative products has significant implications on financial markets. This paper is the first attempt to empirically evaluate the impact of TTT listing on stock market liquidity. This issue can be extended into further discussion. For instance, we may examine if the liquidity improvement or deterioration differs among stocks with different weights in the basket security. In addition, TSEC Taiwan Mid-Cap 100 Index has been introduced to markets and the related basket security will be launched to markets in the upcoming year. It is of great significance to examine whether the liquidity of basket securities increases as the number of underlying stocks increases.

We use price-based and volume-based liquidity estimators in this paper which may not be sufficient. Chan and Hu (2001) review widely used liquidity measures and mainly classify them into three categories, price-based, volume-based, and time-based

estimators. Lesmond (2005) examines the efficacy of different estimators in measuring market liquidity of emerging markets. Future research can adopt some other liquidity proxies such as price impact to study the multi-dimension of liquidity measures and obtain insightful results on the market liquidity effects of basket securities in Taiwan stock market.