I. Introduction

Market makers are dealers in the derivatives market when trade in exchanges with their own accounts and are responsible for maintaining an orderly and fair market. Market makers have to make the market in their market-making contracts to facilitate the liquidity of the derivatives. Furthermore, market makers have the responsibility to quote the bid and ask prices—firm with at least ten contracts—in order to promote price discovery and stabilize the market price. There are at least three important aspects of market making for the derivative market. The first aspect is market liquidity. The market makers should respond to the inquiries of quotation from the market and offer two-way quotes. Besides, the bid-ask spreads the market maker provided should be limited within a specific range and the performance of market making will be evaluated by the market-making volume in order to effectively promote the liquidity of contracts. The second aspect is price stability. In order to prevent the abnormal quotations from the market makers, the exchanges would require the market makers either to maintain the spreads within a specific range or make quotations around the latest transaction price. This regulation can ensure the stability and continuity of the market prices. The third aspect is price discovery. Because the market makers have the obligation on the performance of the market making products, members of the exchange will only make the market for the financial products they are familiar with. Also, some exchanges would offer order information for market makers to observe the direction of order inflow. Based on the information of order flow, the market makers could provide the quotations that help reveal the true price of the market.

There are a lot of extensive work has been done previously on the stock spreads, however, only fewer researches pay attention on the variation of spreads for options. In our study, we are interested in the intraday behavior of index options. Chan, Chung,
and Johnson (1995) indicate that different market making structure (competing market makers vs. specialist) are important for understanding the intraday behavior of spreads. George and Longstaff (1993) examine the cross-sectional distribution of bid-ask spreads and trading activities in the S&P 100 index options market. Their coefficient estimations suggest that bid-ask spreads are positively related to the time to maturity of option and its price, and negatively related to its delta and the level of trading activity. Vijh (1990) documents that the multiplicity of dealers on the CBOE leads to greater market depth because prices do not change unless all dealers have skewed inventories. However, substantial costs are incurred by the CBOE dealers because multiplicity of dealers also leads to higher fixed costs (opportunity cost of dealers’ time) and variable costs (reduced ability to balance inventory). Ho and Macris (1984) find that much of the transaction prices variation may be explained by the specialist’s optimal determination of their bid and ask quotes on some American Stock Exchange options. They also show that the dealer’s inventory level may affect their quotes and thus transaction prices and order arrivals. Klock (1999) shows that the number of market makers has a negative and highly significant impact on Nasdaq spreads. Huang (2002) compares the quality of quotes submitted by electronic communication networks (ECN) and by traditional market makers to the Nasdaq quote montage. Their empirical results show that the quotations posted by ECN is not only more informative but also quicker by comparing with market makers and are more often inside the spread. Besides, ECN quoted spreads are smaller than dealer quoted spreads. Corwin (1999) examines whether measures of performance are different across specialist firms. They find that spreads and depth differ across specialist firms. From the above literature reviews, we know that these studies focus on: (i) how different market making structures affect the intraday behavior of stock option spreads (ii) index option spreads will be the function of time to maturity,
price, trading activities…etc. (iii) comparing the quality of quotes submitted by electronic communication networks (ECNs) and by traditional market makers (iv) using different measures of performance to evaluate the effect across specialist firms.

In this thesis, we examine whether the market makers always provide best quotations in the order book. We compare the best quotation in the order book with the quotations offered by the market makers. Since, there are two different ways of quotation or orders market makers can use to provide quotation, we divide the orders market makers use into two categories. One is R-order and another is Q-order. R-order is so-called limit order. When market makers use R-orders to offer quotation in the order book, there is no restriction on time for price quotation. Unlike R-orders, Q-orders from market makers have 20 seconds restriction on time for price quotation in the order book. Market makers use Q-order to attain the monthly ratio of response to price quotation request. In particular, we examine whether different kind of orders will affect the quotation from market makers.

Although there are many market participants in index option market, we only focus our analysis on the actively trading market participants including foreign institutional investors (QFIIs), natural persons (public investors), futures proprietary merchants and market makers. We are particularly interested in the cost of execution among these traders and use some performance measurement methods to evaluate the effects on these market participants in TAIEX options market. The percentage of effective spreads and the percentage of price-improved trades are two methods we are going to apply in our study.

The quality of quotation offered by market makers and the different execution cost to be born by the different traders in TAIEX option market are analyzed in this study. We also present the mechanism of market making in Taiwan. The remainder of this paper is organized as follows. Section two discusses the market structure of
TAIEX options and market-making rules faced by market makers. Section three presents the empirical results and discusses the implication. Section four summarizes and concludes the study.