a quote for a composite order comprising a plurality of constituent orders. The request may be provided to a pricing module located behind the trader's firewall. The pricing module may determine a quote on behalf of a pricing entity associated with a fund. The quotes may be determined based on current market conditions and net tracking error that would result if the fund executed all of the constituent orders of the composite trading order. The trading module may provide the requesting trader with the requested quote, which may comprise a firm counter-order immediately executable against the composite trading order. The quote and the existence of the request may not be transmitted outside the trader's firewall. The trader may execute the quote, and the pricing entity may fill all the constituent trading orders of the trader's composite trading order at the quoted price(s). However, quote sizes do not depend on user's setting or account’s margin, as well as risk shades and judgment mechanism to decide whether position reducing quote works and which side to quote.

There is a need for an automatic system to supervise market data, precisely quantify these risk factors and update orders following designed process from time to time.

SUMMARY OF THE INVENTION

The present invention consists of features and a combination of parts hereinafter fully described and illustrated in the accompanying drawings, it being understood that various changes in the details may be made without departing from the scope of the invention or sacrificing any of the advantages of the present invention.

The present invention is an automated system in a computer readable medium for quoting option prices in market making options, which comprises one or more options and futures orderbooks on a processor having one or more ask orders and bid orders of a selected option contract in a financial product exchange. An updating module on the processor communicates with the options and futures orderbooks for receiving and refreshing the options and futures orderbook, a

quoting module on the processor communicates with the updating module for quoting option prices for the ask orders and the bid orders based on market prices when the orderbook is refreshed, and an ordering module on the processor communicates with the quoting module and the options and futures orderbooks for submitting or withdrawing an order on the exchange when the ask order or the bid order is filled.

The system of the present invention is characterized in that the selected option contract is selected based one or more strike prices and options expiries as determined by a user, and the quoting module is configured to withdraw unfilled orders when the updating module refreshes the options and futures orderbook, option expiries and option strike prices on a same underlying asset, wherein the order on the exchange is submitted and withdrawn at a benchmark level of margin extra fees set by the user.

Preferably, the option price is quoted based on bid and ask prices from the orderbook, and a bid-ask spread is adjusted based on market activeness or futures liquidity, transaction fee, market fluctuation, equity or margin efficiency, profit requirement or target spread of the user, and risk management consideration.

The system further comprising a risk management mechanism for reducing risks of holding option positions, having a risk analysis module which communicates with the updating module for refreshing the options and futures orderbooks, and for analyzing asset risks from holding option positions. There is a Greek system or a position reducing working control system which communicates with the risk analysis module for defining the asset risk.

Preferably, the Greek system for the asset risk is Delta risk, Gamma risk, Theta risk, Vega risk, Rega risk, Sega risk, or functional equivalent, in which their corresponding risk shades for reducing risks are Delta risk shade, Gamma risk shade, Theta risk shade, Vega risk shade, Rega risk shade, Sega risk shade, or functional equivalent.

Preferably, a risk change is done by changing the risk shade of the Greek system

prices at a certain time to keep up with the market; making order prices more conservative (higher for bid price and lower for ask price) when the market is volatile; and silencing orders for a period of time after large amounts of transactions.

According to the second part of this invention as illustrated in Figs. 1, 4 and 6, the system 100 also comprises a risk management mechanism for reducing risks of holding option positions. In the risk management mechanism is a risk analysis module 15 which communicates with the updating module 12 to refresh the options and futures orderbooks 11, and to analyse asset risks from holding option positions. Then, there is a Greek system or a position reducing working control system 501 which communicates with the risk analysis module 15 to define the asset risk. Preferably, the Greek system for the asset risk is Delta risk, Gamma risk, Theta risk, Vega risk, Rega risk, Sega risk, or functional equivalent, in which their corresponding risk shades 103 for reducing risks are Delta risk shade, Gamma risk shade, Theta risk shade, Vega risk shade, Rega risk shade, Sega risk shade, or functional equivalent, which are explained in the “Risk Shade” section below.

Risk Shade

Referring to Figs. 4–5, the risk shade 103 further comprises one or more first selections 301 and 302 for reducing risks based on option risk exposures, expiries, strikes and holding amounts, and for modifying the quoted option price and the position reduction quote 500 according to the option risk exposure. The flow of the position reduction quote 500 is described further in the following “Position Reduction Quote” section, as illustrated in Fig. 6. Besides, there is one or more second selections 401 for deciding a shade amount and an adjustment amount based on the asset risk, target risk ranges for each risk shade 103 and a risk adjustment speed according to the user’s preference.

Referring to Fig. 4 and as mentioned in Market Making Quote 100, Risk Shade 103 is used to adjust quote prices. It can also be used in another set of quote

instructions Position Reducing Quote 500, which will be described in detail later.