

SJO, INC. USES S-PLUS TO DEVELOP FUTURES TRADING METHODOLOGIES

Sjo, Inc. opened its doors as a futures trading advisor in 1987, coincidentally on the day the stock market crashed. Its first big success came in 1988, when its first account, a limited partnership fund, reaped returns of over 190 percent, the highest of its kind that year. Since that time a thriving business has grown from trading interest rate, currency and commodity futures. Specializing in trading non-US interest rate futures since 1991, Sjo currently manages approximately \$260,000,000 in equity.

A small company, Sjo employs 21 people, three of whom are devoted to full time research. Currently, the company focuses on developing new technical trading methods. Its goal is to combine its current trading methods with new, customized methodologies to expand the available portfolio of trading techniques for application in the financial market. S-PLUS is the tool researchers at Sjo turn to when developing these groundbreaking procedures.

Working in the UNIX environment, Han Mutlu, Quantitative Financial Analyst, uses S-PLUS for mathematical calculations, exploratory data analysis, large scale modeling, parametric/non-parametric statistical testing, as well as the development and visual presentation of complex trading systems. Taking information from Sjo's historical database, Mutlu uses S-PLUS for simulating and testing the trading methodologies.

"S-PLUS is great. Without S-PLUS we could not formulate the statistical models we use to develop alternative trading systems," says Mutlu. "Let's say that we came up with some sort of mathematical and/or statistical technique which is going to help us make money. We have to do some testing in a real environment with real data. What we do is go back and apply this methodology to historical data and actually simulate the trading, when we entered, when we exited and track the profit-loss. We can then tell whether the profit margin is such that the methodology is worth implementing. We use other programming languages, like C, but S-PLUS is at the core of everything we do."

Once a trading methodology has been tested and proven, Mutlu can take market data and use a combination of probability distributions to provide entrance signals for specific commodities, as well as exiting price values, on either the negative or positive side. The resulting information can be given to traders in hard copy form for application in market trading.

Pattern testing in bond markets is another area where S-PLUS is applied to the work done at Sjo. For example, Mutlu uses the GLM functions to do a regression on bond market data to come up with multiple correlation coefficients. He then uses these coefficients to determine if there is predictive power in the correlation.

"For example, there is a high correlation between the trading of a three year bond in Australia versus the trading of a ten year bond in the US," says Mutlu, "Because of the time differences, there is a correlation between those two commodities, the closing price of one might be an indicator of the opening price of the other. If we catch that correlation, we can do a linear regression model across any number of markets to predict the behavior of the commodities. We can do a lag regression as well, be it 10 days, 20 days or 30 days."

In another example, Mutlu uses S-PLUS to determine if patterns exist in market trends. If there is a two day pattern, for example, today's high is higher than yesterday's high and today's low is lower than yesterday's low, Mutlu wants to determine whether something consistently happens after that pattern occurs. In order to do that, he uses S-PLUS to run chi square tests, goodness of fit tests and other customized S-PLUS procedures to determine if there is indeed a significant trend.

"The most powerful part of S-PLUS is its ability to interact with other UNIX applications and languages," says Mutlu, "I can exploit the strengths of the languages while using S-PLUS as a base. It is obvious that both S-PLUS and UNIX were developed at Bell Labs by the way they work so well together. It's a natural fit."

Source: Insightful Corp., 2007