

Dear Competitors,

On behalf of the entire RETC 2012 organizing team, I would like to thank you for coming to Rome to participate in this ground-breaking event. We are delighted to have received and reviewed your feedback and will be working hard to incorporate changes in future events to improve the competition experience.

As is customary with previous events, I have prepared a brief note to discuss some aspects of the cases, feedback, and event that we feel might be helpful for participants.

### **On Competition vs. Education**

We always struggle to find the right balance of “competition vs. education” when designing the cases and the support materials that we provide. From an educational perspective, having very detailed instructions and tutorials would be very valuable- however, we believe this stifles the competitive aspect of the event. Our goal is to reward teams that spend time analyzing the cases, preparing strategies, testing them, and then executing them at the event. Providing Excel models and equations that solve the cases would drastically diminish the returns to teams expending the effort to do this.

On the other hand, we do not want the competition to be about “who knows how to use the software the best”. One thing that I admittedly overlooked was the lack of documentation available regarding the trading software. While we believe it has been designed in a rather intuitive way, I do think having some documentation/tutorials available to illustrate to students how to setup screens, shortcut trading, RTD links, etc. would have been very beneficial. With that in mind, we’ve added it to the list of future improvements.

The range of preparation of competitors appears to range from “none” to “a very significant amount”. For those who did invest significant amounts of time preparing, I believe they had a sufficient amount of information in the case package to (nearly) ‘solve’ the different optimal trading strategies available in each case. However, I’m happy to elaborate on the goals of each case and briefly describe what should have been done to generate profits in the case.

### **Sales and Trader Case**

This is the perennial favorite case and, in my opinion, is the most “trader-skill” based case. Modeling can be used to gauge the order-book depth, but good traders can typically visualize this quite well without having it in a spreadsheet. The liquidity in the case was dominated by individuals and the key was understanding whether the trading population was, in aggregate, long or short a specific stock. Understanding that individuals must continually unwind their positions (so they have room to accept future tender orders), one can anticipate short term moves in the stock and execute their trades to capture the largest bid-ask spread.

An interesting concept in this case is the idea of a 'quoted bid ask spread' versus a 'real bid ask spread'. To elaborate, one might observe that a market is quoted at 10,05 x 10,06 (bid vs ask), indicating a bid-ask spread of 1 cent. However, if the market is particularly volatile, over a short-term (say 10-15 second) period, the market may vary by 20 cents. I would say, that the real market for this security is something along the lines of 10,00 x 10,15. Being at "the top of the book" isn't always advantageous, and good traders are able to quickly identify when capturing a wider spread is beneficial over the immediacy of a more aggressively priced order. Charts are helpful for "visualize" the short-term trading range/volatility of a market and help identify where to place your limit orders.

At the same time, if the market is moving against you (due to an imbalance of buyers/sellers), market orders can be a very good tool to close out your position before others do.

### **CC&G Options Trading Case**

There were two dominant strategies in this case that one could use to generate consistent profits. Put/Call parity arbitrage, and implied versus realized volatility trading. For put/call parity, options would be occasionally mispriced with respect to other options in the series. When this would occur, you could trade a portfolio of multiple options (buying/selling the mispriced option and hedging with a properly priced option and the underlying) to capture this spread. These dislocations were designed to be temporary so that teams that caught these mispricings would be able to unwind the arbitrage with a short period of time and realize their profits.

For implied versus realized volatility, the volatility estimates were provided to give competitors a "view" (or forecast) of the volatility in the near future. If the volatility was increasing, one should be buying options as they are mispriced by being too inexpensive. If volatility was decreasing, one should be selling options as they are too expensive. The best way to identify these mispricings is to build an implied-volatility calculator in excel that will show you the current implied volatility priced into the option, and compare that to your (given) upcoming volatility estimate. As an advanced strategy, teams can use delta-hedging to help keep their risk/exposure low while extracting profits from the mispricing.

This was the most technically challenging case in the competition.

### **Enel Energy Trading Case**

This case had various arbitrage conditions available for asset users that should have been calculated ahead of time in Excel. We noticed that less than half of the teams were actively exploiting the arbitrage opportunities in the energy and refining market, despite the case document instructing them to focus on that operation.

Aside from arbitrage opportunities, teams could build “fundamental views” on the market based on the news. All fundamental paths and news related to the markets were provided to us by the sponsor, Enel, and were designed to accurately reflect moves in markets related to news events. We believe the arbitrage profits provided by assets should have provided teams with a significant amount of profits to start with, and that a speculative overlay using the news should augment those profits. From a risk management perspective, the team should carefully plan their individual vs. team trading limits and balance these closely. An over-aggressive speculator, could get a couple of ‘fundamental trades’ wrong and completely wipe-out the rest of the team’s hard-earned arbitrage profits.

Due to the different roles, different exposures, and team-based score, we believe the Enel case was the most team-work based case where a team with good synergy could generate significant risk-adjusted scores.

### **Quantitative Outcry Trading Case**

We analyzed some of the trading data and what baffled us was that some of the teams with the best analysts (in terms of prediction accuracy) also exhibited some of the least-profitable (and losing) traders. Although not specifically stated in the case document, it was expected that analysts and traders regularly communicate and discuss their views on the market and setup their book/positions based on their expectations. We always find the Quant outcry case a frustrating case to build, as we have literally no control over how the trading crowd behaves. Interestingly enough, for RITC years 1-5, the trading market did not properly reflect the spot market, yet over years 6-9, it closely tracked it. It’s my speculation that it simply takes some time for the trading crowd to trust the analysis and spot-charts and be willing to take larger positions even if there are many market-makers quoting 990x1010.

In terms of scoring, I was not satisfied with the “profit modifiers (1-5% bonus)” used to reward the analyst and risk management teams. The problem with this system is that it means that teams with negative profits get zero bonus, regardless of how good the analysts are. We considered using absolute value multipliers, but then it didn’t make sense to give a team with -100,000 profits a larger bonus vs a team with -10,000 profits (at 5%, that would be 5000 bonus vs 500 bonus). Fixed values (+5000 for first, +4500 for second, etc.) also didn’t really make sense since profitability in the case is highly variable depending on the trading scores. We’ll think about this more and see what kind of changes we want to make in the future.

In any event, an effective way to reward good analyst and risk management strategies is to have the team’s traders listen to their analyst’s forecasts and risk manager’s position recommendations and trade accordingly.

## **Bloomberg M&A Trading Case**

This case was designed to be “deceptively simple” but “very difficult”. On the surface (and as reported in some feedback), the trading of the case seems random, leading to random ‘luck-based’ results. I assure you this was not intended, and based on the consistency of the final scores, was not a reality.

In the world of M&A Trading (also known as risk-arbitrage or merger-arbitrage), hedge funds and traders are constantly evaluating the probability-weighted outcomes of different M&A deals and deciding whether the price (and probabilities implied by the market) are worth being long or short.

Every single stock in the simulation used the exact same probability-decision tree to determine what would happen to the company in a specific case. These probabilities were fixed, (i.e. each company had a 15% chance of a friendly takeover deal happening, a 5% chance of a hostile, and 80% of nothing happening. Friendly deals then had an 75% chance of being successful, but there was a 15% chance the antitrust regulations would block it even if the deal was agreed to, etc.\*). Whenever news was released, the underlying stock would jump (gap) up/down based on a uniformly distributed price range (i.e. up 40-70%). This meant that sometimes the market would underprice the news, and other times it would over-price the news.

What teams needed to do to prepare for this case was to trade this case many times ahead of time and either statistically (or intuitively) understand/rebuild the entire decision tree, and assign probabilities to each event occurring. There were certain events that were always underpriced/overpriced and I believe some teams noticed this and yelled at each other ‘everyone buy/sell XYZ stock’), and they guessed at other (less obvious) announcements.

I saw one team with a full (and very colourful) decision-tree drawn on paper that looked like it accurately depicted all of the possible outcomes. There were also a handful of Excel models, but without looking at them closely I wasn’t sure how accurate they were. Overall, we were happy with the trading and the results in this case and believe we’ll be using variations of the case in the future.

\*Note: probabilities are not accurately reflecting the actual case, they’re simply examples.

## **Scoring**

We have worked extremely hard over the past 9 years to come up with a simple scoring system that rewards consistency over gambling, and believe our current system is extremely robust. I think it takes a while for schools/teams to ‘believe’ that the scoring system will reward them as it says they will. Behaviorally, it’s very hard to be satisfied with your “150k profit” when the team behind you is boasting about their “\$2.2M profit”.

I strongly suggest teams that plan to compete in future competitions review the scoring portal details and identify how teams earning first-place finishes in individual heats rarely win overall. The risk required to possibly come 'first' typically means significant downside risk, and the risk-reward strongly favors getting a 'safe' 6<sup>th</sup> place versus gambling to jump up to first, and if you get it wrong, falling to 26<sup>th</sup>.

PS- If you forgot your password you can review <http://ritc.rotman.utoronto.ca/scoring> with the login/password of "display/display".

This is entirely consistent with the real-world of trading where individuals with highly variable profits/losses quickly find themselves unemployed.

### **Event Logistics**

Some students commented that they were not provided with enough "socializing time". We believe that the social events that we organize every night, plus the group breakfasts and lunches, are considerable. The social outcry "ice breaker" is also designed to help get people more comfortable with one another. I think the 'competitive' nature of the event makes socializing a difficult subject because teams want to do well, and that often involves not sharing information with each other (we were asked on at least one occasion to sit elsewhere and not interrupt a 'team meeting').

Rome in August is a double-edged sword- since it's a beautiful (but warm) time to visit, and generally works well with student's (and the school's) schedule. If we hosted it earlier in the summer, many students are in the middle of summer internships that can't be interrupted. If we hosted it during the school year, it's very tricky to reserve sufficient classroom/canteen/school space to host 125+ people for three days. We'll evaluate future schedules and look at the possibility of other dates, but we currently think the end of August is one of the optimal windows in a very complicated calendar.

### **In Closing**

One last time, we thank you for participating and hope that you will be considering competing in future Rotman competitions. We are always striving to improve the events and welcome any/all constructive comments and feedback.

From Rome,

Kevin Mak