W209-Portfolio Optimization

Usability Test

Alex Nocella

Task List

1. **Create a custom portfolio and use the tool to optimize the allocations**
   a. Compare the original allocations with the optimized allocations
   b. Compare the performance indicators of the original allocations to those of the optimized allocations
2. **Create a custom portfolio and use the tool to run an asset correlation analysis**
   a. Name some examples of asset pairs that are:
      i. Highly correlated
      ii. Negatively correlated
      iii. Not correlated
3. **Create a custom portfolio and use the tool to run a performance analysis**
   a. Compare the Growth and Drawdown with the selected benchmark
   b. Compare the Volatility and Sharpe Ratio with the selected benchmark

Debriefing Questions

1. Is the website easy to navigate? Is it easy to find and use the tools?
2. Is it easy to input data (dates, portfolio weights, etc.)?
3. Are the interactions responsive or slow?
4. Is the presentation of the data and charts intuitive? Do you have difficulty interpreting the results?
5. What do you think can be improved?

Test Participants

1. 4/12/2017 12:30 pm, Michael Snow
2. 4/12/2017 4:00 pm, Kelley Allen

Test Notes: Michael Snow

Michael could complete all of the tasks without guidance. He understood the menus and the page layout. Michael needed some coaching on the finer details of the site, such as the meaning behind specific elements of the visualizations. I feel this demonstrates a promising user engagement, and Michael interacted with me throughout the test to ask questions about our motivations and provide his opinion.

Across the pages, Michael would have liked text explaining the output. He immediately understood how to interpret the circles in the correlation matrix when the dimensions were defined (e.g., size = magnitude of correlation), but he did not come to that conclusion quickly on his own. On the other pages, he would have liked some definitions of terms and explanations of methodology (e.g., stating that we use daily data).

Michael shared some ideas for the process flow of the site, and without guidance explained how he thought an investment advisor could walk through each page with a client and build upon the insights from the previous page. He expressed that he could see the tool being very useful and appeared excited about its prospects.

Debriefing Questions: Michael Snow

- Is the website easy to navigate? Is it easy to find and use the tools?
    - Yes. Michael had no trouble here.
- Is it easy to input data (dates, portfolio weights, etc.)?
    - Michael could use the text boxes for date inputs but expected to see the calendar date picker he has seen on other websites.
    - Michael suggested adding a fourth page just for portfolio weight inputs so that the performance and optimization pages could read from that input data.
- Are the interactions responsive or slow?
    - Michael thought the correlation matrix and optimization page were very responsive, but the performance page took too long to load given that there is no indication that the server is thinking.
- Is the presentation of the data and charts intuitive? Do you have difficulty interpreting the results?
    - Michael did not like seeing the empty data charted as a line at 0 for the first 12 months of the rolling volatility and Sharpe ratio charts. He would rather see no data charted there.
    - Legends would be helpful, particularly for the correlation matrix.
- What do you think can be improved?
    - Michael suggested a clearer workflow would tie all of the pages together more seamlessly. He recommended stepping from Correlation Matrix to a new page for portfolio weight inputs, then Performance, then Optimization. He also suggested redrawing some of the charts from the Performance page using the new optimized portfolio as the comparison automatically on the Optimization page.
    - Michael did not think a date was necessary for Optimization but suggested options like “use data from the last X years.”

Test Notes: Kelley Allen

Kelley did not have any trouble with the tasks that were asked of her. She could navigate the site and interact with the pages naturally. Kelley is a somewhat advanced user and has worked with similar tools in the past, so she had pre-existing ideas of what to expect in terms of charts, layouts, interactivity, and response times. Kelley did not find anything on the pages to be out of the ordinary.

Kelley made general observations about the need for more information clarity in the charts. For instance, she can understand how to interpret the chart data, but as a sophisticated user asked questions like how she could know that we use daily data to compute our results without simply inferring it. She was tripped up when she first saw the drawdown chart, and she initially made a comment about the chart missing data above the 0% line because she mixed up portfolio return and portfolio drawdown.

Kelley saw the Optimization page as fairly rough and suggested that the user input portfolio weights be done toward the beginning of the entire website experience. She recommended optimizing immediately and then displaying the Performance charts afterward with the optimized portfolio included.

Debriefing Questions: Kelley Allen

- Is the website easy to navigate? Is it easy to find and use the tools?
  - Yes. Kelley had no trouble here.
- Is it easy to input data (dates, portfolio weights, etc.)?
  - Kelley acknowledged that, in her experience working with others, people tend to prefer the calendar date pickers on modern pages. She personally likes the ability to also enter dates manually in the textbox, and liked that we specify the date format explicitly next to the box.
- Are the interactions responsive or slow?
  - Kelley was happy with the speed of the correlation matrix. She was not put off by the load time of the performance charts, but thought that it was long enough that some kind of loading indicator would be helpful so she knows the page is responding to her input.
- Is the presentation of the data and charts intuitive? Do you have difficulty interpreting the results?
  - Kelley could interpret things appropriately, but recommended accelerating the transition in the correlation matrix color scale on the blue-green spectrum because relatively large changes in correlation did not appear to change color as drastically.
- What do you think can be improved?
  - Kelley thought it would be useful to add tooltips when possible, especially for the correlation matrix to avoid lining up the labels when focusing on one value.
  - Kelley would like to see a scatterplot of asset returns vs. asset volatility below the correlation matrix chart.
  - The export to image/pdf functionality should be hidden on the performance charts because they are not functional.
  - The date labels on the performance charts need work -- they only show year and the number of ticks per year is not consistent.
  - There should be a button to add a new row in the Optimization page so an arbitrary number of assets can be selected.
  - Caching requests could improve load times for the Performance page.

Prioritization List

- ★ Must
  - Add clarifying texts, legends, tooltips throughout
  - Clean up axis labels
- ★ Should
  - Improve Performance page load times
    - Otherwise, make it clear the request is being processed
  - Provide a story to the user guiding them through the pages sequentially
  - Hide unsupported features like chart exports
  - Avoid drawing empty data
- ★ Could
  - Store user inputs in a session cookie so they persist across pages
  - Add calendar date pickers
  - Modify correlation color scale
  - Add dedicated page for accepting portfolio weights first
- ★ Won't
  - Create a caching mechanism to repeat prior requests quickly