Executive Summary

Problem

I have a friend that works in the oil and gas industry, where they market natural gas and crude oil. They use hedges to protect against the volatility of the market for such commodities. One problem they have is that the market reacts so fast to different stimuli that to calculate all of the variables and make a decision to sell of hold is very difficult. Their current software is not very user friendly and is not performing as they would like. I decided to create a simple, easy-to-use VBA model that would compare certain criteria, established by the user, against current market data and give a decision. This program was to be the basis for a piece of software that I could take to market and sell to the companies in the oil and gas industry. However, when I contacted my friend to get the criteria that they use, I was told that it was proprietary and due to confidentiality reasons I would not be able to acquire what indicators they used to base their investment decisions. As I took a second look at what I wanted to create, I realized that the VBA model I wanted to build could also be used to compare stocks, bonds, ETFs, and other commodities.

Overview

Project Explanation

For my project I planned to create a VBA program that will give a decision to invest or not to invest in a stock, ETF, of commodity. The decision will be displayed in a large and color coordinated shape on the main worksheet.

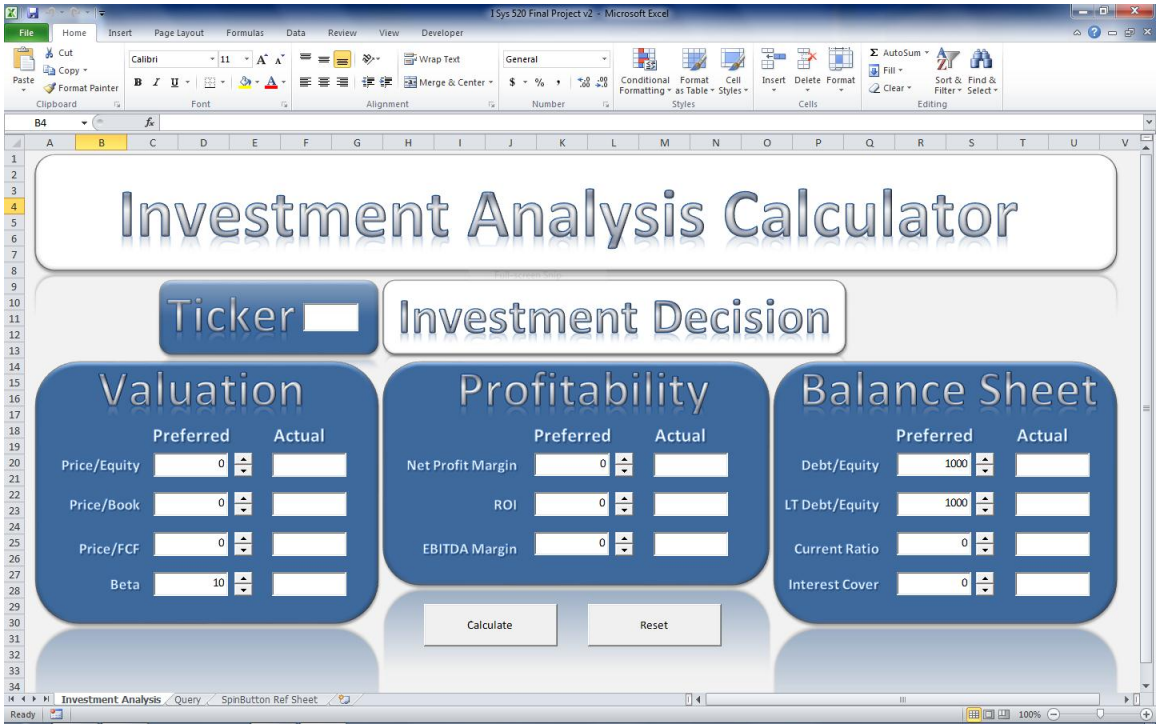

Figure 1

The criteria for determining whether to invest or not to invest will be adjusted by the user in a worksheet that will have different criteria to be compared against.

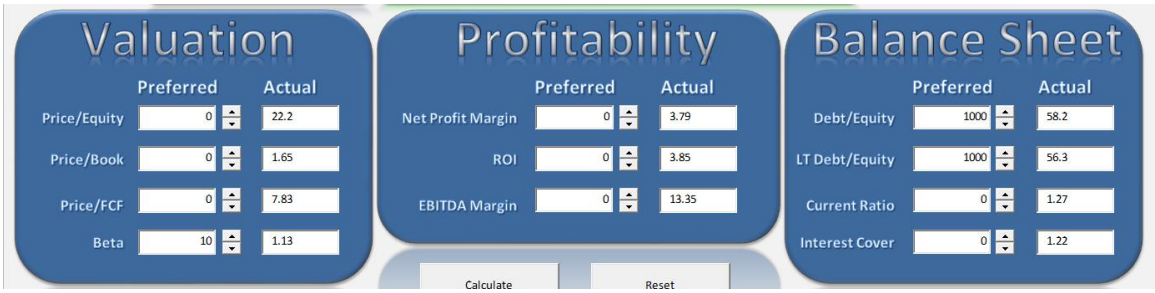

Figure 2: Decision Criteria

The comparative information will be downloaded from the Internet at the press of a button placed on the main worksheet itself. Once the information is downloaded, it will be compared against the criteria set up by the user and the decision will be displayed on the main worksheet. I used ActiveX controls, such as spin buttons, textboxes, and command buttons; for the user to interact with the program, as well as shape objects to make the worksheet esthetically pleasing.

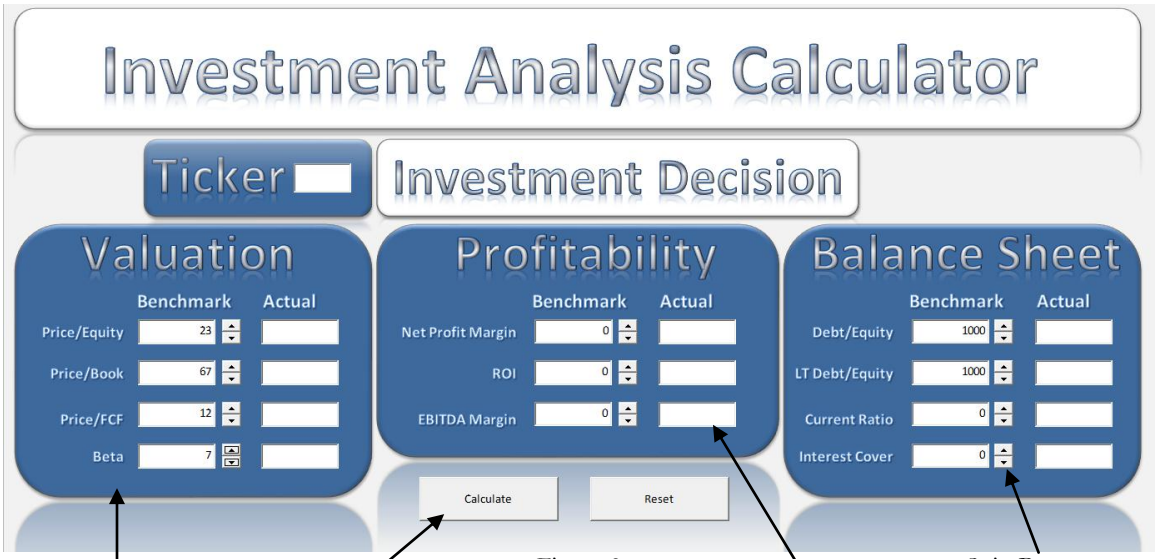

Figure 3

VBA sub procedures were used to download information from the Internet and process it against the selected benchmark from the primary worksheet. After the comparisons were made, the actual data from the stock that failed to meet the restraints set by the user would display with a red background to notify the user of what failed to meet their criteria.

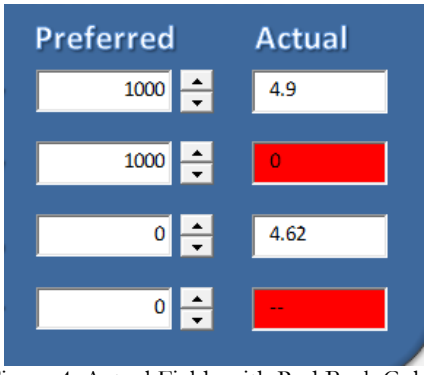

Figure 4: Actual Fields with Red Back Color

This VBA code also was directed to recognize these changes and then make a decision based on the restraints set by the user and display the appropriate indicators on the worksheet.

Figure 5: Decision Indicators

User Guide

To begin using the program the user must insert their benchmarks for the criteria in which to compare against and then insert a ticker symbol of a stock in the textbox.

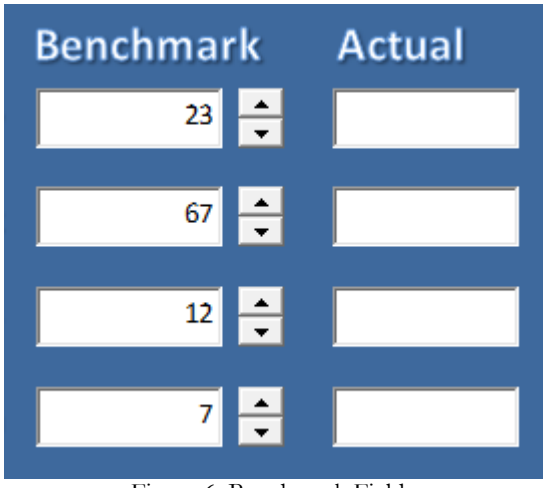

Figure 6: Benchmark Fields

Figure 7: Ticker Input

These benchmarks can be adjusted in units of 1 by using the ActiveX spin buttons located to the right of the textboxes. Each spin button also has restraints on the maximum and minimum values allowed to be selected.

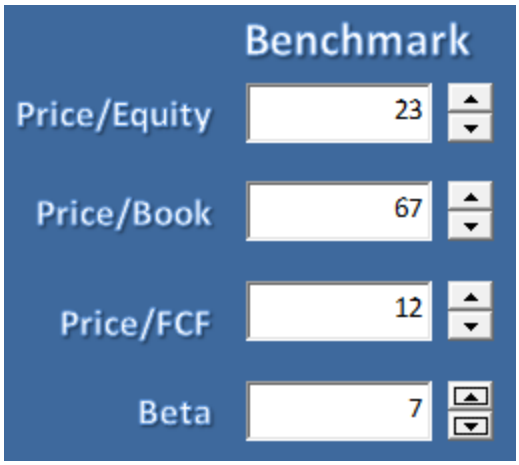

Figure 8: Spin Buttons

Once that is completed the user can click the 'Calculate' button to begin the screening.

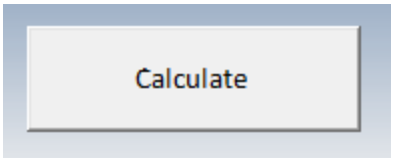

Figure 9

If the user had failed to insert a ticker symbol, upon click of the 'Calculate' button, a message box would appear to prompt the user insert a ticker.

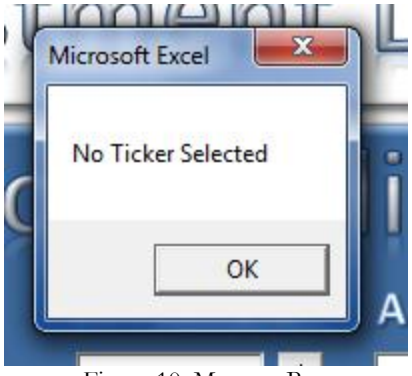

Figure 10: Message Box

Once the program begins to run, the ticker textbox is referenced in the worksheet "Query" and the new data query begins.

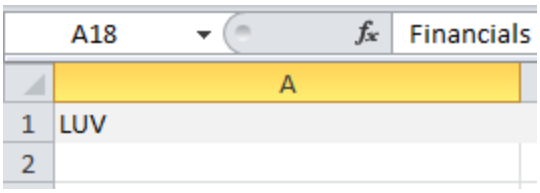

Figure 11: Referenced Cell

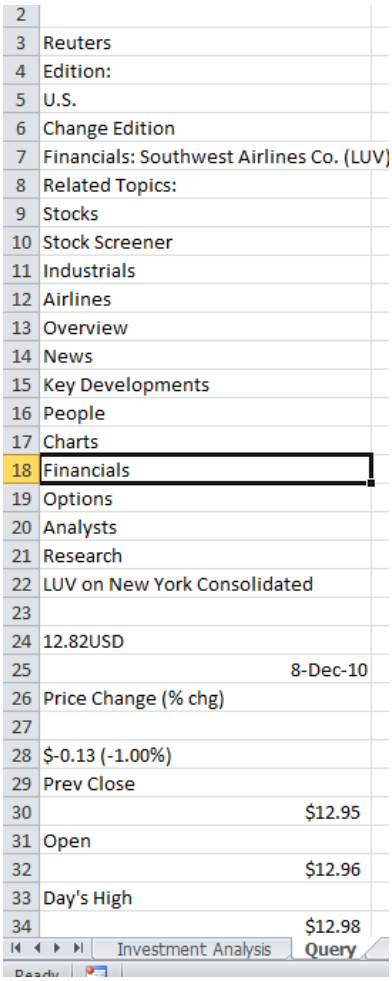

Figure 12: Data Query

The program then gets the external data from the web and populates the new query in a selected range. Once the information is retrieved, the Active X textboxes under the heading 'Actual' on the primary worksheet reference the appropriate information and compare that against the benchmark set by the user. If it fails to meets the benchmark, then the background of the actual information is changed to red warning the user and giving

indication to research that item further in order to determine whether to accept or reject the decision made by the program.

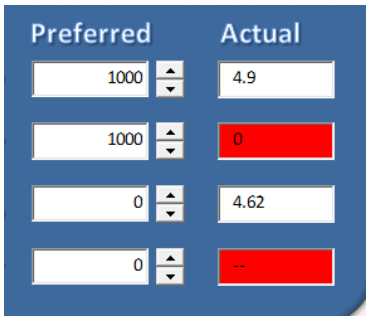

Figure 13: Data to Research

The 'Investment Decision' shape will also have its back color filled as a visual indicator to display the decision a, green for pass, red for fail.

Figure 14: Decision Indicator Shapes

After the decision is made, the user can then rerun the program with a new ticker, adjusted benchmarks, and repeat the process of screening.

I have also inserted a 'Reset" button to allow the user to clear the data in the 'Actual' fields and the previous ticker.

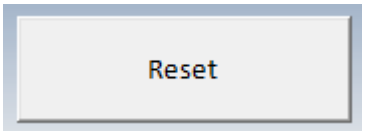

Figure 15: Rest Command Button

Project Review

This project was originally designed to be a potential business idea, which became a secondary result, but in-turn taught me more about VBA and coding than I had anticipated. With the assistance of Dr. Allen and his teaching assistant, Brent Taylor, I was able to finally understand the concepts taught during this course in solving this problem. I discovered that ActiveX controls could be used within a worksheet to reference and control other objects within a workbook. This gave me more freedom for design possibilities without the use of user forms. I also gained knowledge in how to manipulate the properties of these controls to add minimum and maximum range restraints and how to link cells to these controls. There was much difficulty in creating the decision matrix and changing the back color of the shape object to reflect the decision results. However, I was successful and accomplished my goal.

Conclusion

From this point, I am going to continue developing this program and adding more scope. Some ideas are:

- Giving the user the ability to add, delete, or edit the benchmark criteria in order to customize the screening capability
- Reducing the amount of time used in gathering the information, calculating the decision, and displaying the results
- Convert these matrices to those used by the oil and gas industry in order to determine their decision

My ultimate goal is to begin to market this to the oil and gas industry and create a business centered on technology solutions. The exposure to VBA through this course and project has given me the ability to have a potential product that customers would buy.