

**ISYS 520 VBA**  
**Fall 2015**  
**Final Project**  
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**Executive Summary**

This project implements Benjamin Graham's Value 10 investing principles and unlike the previous versions that were submitted in prior semesters. This version includes the intrinsic value calculation using Benjamin Graham's formula and compares it to the stock's current price to determine whether the stock is Over/Undervalued.

This tool is useful for non-technical inexperienced investors to get a feel into the world of portfolio management. This is a simplified stock screener that hopefully will pique the interest of the user to learn about more advanced stock analysis. This tool is a mere introduction to stock selection.

Below is the checklist of the 10 items on what Graham thinks what a good stock is.

1. P/E ratio less than 40% of the highest P/E ratio the stock had over the past 5 years
2. An earnings-to-price yield at least twice the AAA bond rate
3. Dividend yield of at least 2/3 the AAA bond yield
4. Stock price below 2/3 of tangible book value per share
5. Stock price below 2/3 of Net Current Asset Value
6. Total debt less than book value
7. Current ratio greater than 2
8. Total debt less than 2 times Net Current Asset Value
9. Earnings growth of prior 10 years at least at a 7% annual compound rate
10. Stability of growth of earnings in that no more than 2 declines of 5% or more in yearend earnings in the prior ten years are permissible.

The idea behind the rules is that the first five measure "reward" (by pinpointing a low price in relation to key operating results like earnings) and the second five "risk" (by measuring financial soundness and stability of earnings).

**Implementation**

The general implementation of this project comes in 3 steps.

The first is to gather the financial data from the internet

Second, making the appropriate calculations  
Third, is to display the calculations

To gather the data I've used 3 sites: reuters.com, Morningstar.com and yahoo.com.  
The reason why I've used 3 different websites to aggregate the stock data because each website formats its data differently. In order for me to write the simplest code, I used the site which gave me direct access to a particular data without me having to write complex string functions to extract the information of interest.

This was the most time consuming step, because there were a lot of trial and errors.  
I used the default web agent to interact with the website. This is where I've spent the most time in.

Once I was able to correctly gather the data. The rest of the project was to make the calculations.  
This is just creating the variables to store the calculations until I'm ready to display the results.

For example the procedure calcRGV() calculates the Relative Graham's Value of a stock.  
The RGV is calculated by dividing the stocks intrinsic value over current stockprice.

The intrinsic value is calculated by using the stocks trailing twelve months  $EPS * (8.5 + 2 * epsGVal) * (4.4 / twentyYrbondYld)$  :

Sample Code:

```
Sub calcRGV()  
  
    'price, ttmEPS, prevEPS, epsGVal, intrinsicValue As Double  
  
    intrinsicValue = ttmEPS * (8.5 + 2 * epsGVal) * (4.4 / twentyYrbondYld)  
  
    Cells(r, 13).Value = Round(intrinsicValue, 2)  
    Cells(r, 14).Value = Trim(price)  
  
    RGV = intrinsicValue / price  
  
    If (RGV < 1) Then  
        Cells(r, 15).Value = "Overvalued"  
        Cells(r, 15).Interior.ColorIndex = 3  
    ElseIf RGV > 1 Then  
        Cells(r, 15).Value = "Undervalued"  
        Cells(r, 15).Interior.ColorIndex = 4  
    Else  
        Cells(r, 15).Value = "Fairlyvalued"  
    End If  
  
End Sub
```

The RGV is useful to determine whether the stock is under or overvalued.  
If the RGV is less than 1 the stock is overvalued.  
But if the RGV is more than 1 then the stock is undervalued.

In finance, we buy the undervalued stock in hopes that it will appreciate in value so that we can sell it at a higher price in the future.

Finally, displaying the results wasn't too difficult.  
I just wrote out whether the stock passed or failed each test in the cell

I did not choose to use a user form because I thought I was not necessary for this assignment.  
All the user has to do is to input as many stock ticker starting on cell B3 as the user pleases.

My code has a do loop that will process the stock ticker until the loop hits an empty string.  
Sample Code:

```
Do While Cells(r, 2) <> ""
    ticker = Cells(r, 2).Value
    processTicker ticker 'Module1

    hurdle1
    hurdle2
    hurdle3
    hurdle4
    hurdle5
    hurdle6
    hurdle7
    hurdle8
    hurdle9
    hurdle10

    calcRGV

    r = r + 1
Loop
```

Finally, the output is displayed in column C through O. It will show whether that stock is under or over valued in green or red color respectively.

Sample Output: IBM; MSFT; LUV stock

Stock	#1	#2	#3	#4	Test Results						Intrinsic Value	Current Stock Price	Analysis	Clear
					#5	#6	#7	#8	#9	#10				
ibm	PASS	FAIL	PASS	N/A	FAIL	N/A	FAIL	FAIL	PASS	PASS	146.98	136.78	Undervalued	
msft	FAIL	FAIL	PASS	FAIL	FAIL	PASS	PASS	PASS	FAIL	FAIL	14.64	55.27	Overvalued	
luv	PASS	FAIL	FAIL	FAIL	FAIL	PASS	FAIL	PASS	PASS	FAIL	30.43	45.25	Overvalued	GO!

### Discussion of learning and conceptual difficulties encountered.

The learning for me was to make my code connect to the internet, doing advanced string manipulation and making my output aesthetically pleasing.

Some of the difficulties faced were making trials and errors to extract the correct data that I needed to make my calculations.

I have learned more about string manipulations this semester than last.  
I am pleased to say that it is a skill that is useful as I go to the workforce.

Further, it's interesting to learn about the interaction of the webagent module to the websites when I pulled my data. I never thought this was possible before.

**Assistance:**

I viewed my past homework and projects mine and others when I'm stuck. I then googled for any additional help that I need.