Analyzing Sectors and Portfolios from the Macro Perspective

Bloomberg Shape the Future Conference

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Going beyond B_m to B_i, where i = 1 to n

- Macro driving news and markets
  - Markets have become more correlated since crisis
  - Less alpha from stock picking, and more focus on beta positioning
    - Beta can be to anything (e.g., oil, inflation, consumer confidence, GDP, momentum, industry, valuation, profitability, etc.)
- Explosion of ETFs
  - Including smart beta
- There is a beta to everything
  - Ignoring beta exposure can set up a manager to underperform (or outperform) unintentionally
- Class projects
  1. Determine macro drivers (factors) for stock and custom industry
  2. Long/short ideas
  3. Analyze a portfolio's correlation to factors
  4. Analyze a portfolio's characteristics (factors exposures) and returns during scenarios

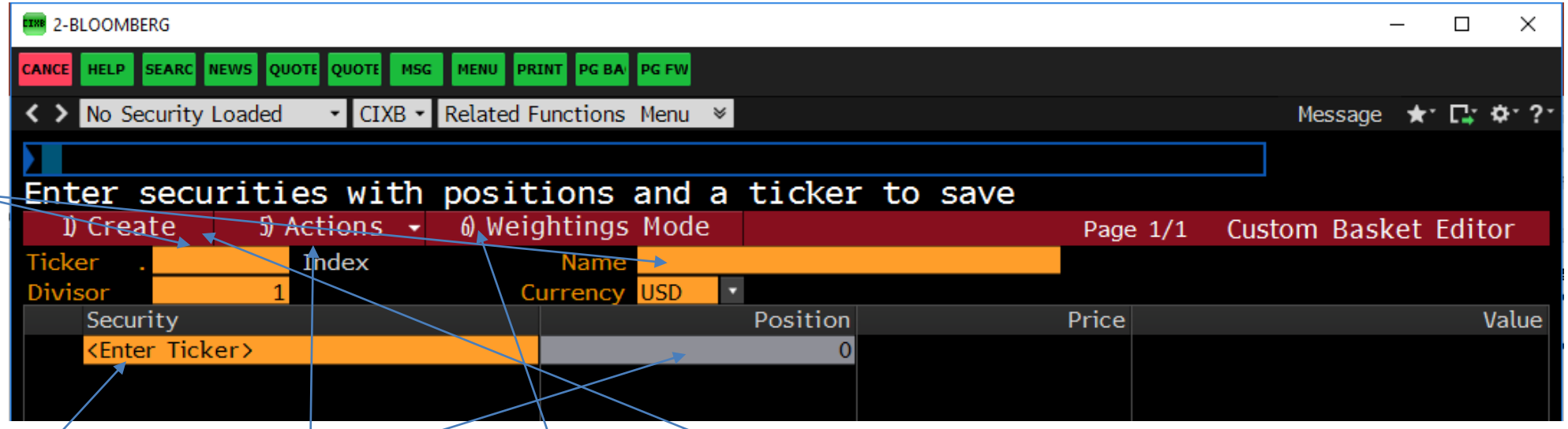
Class project 1: analyze drivers of an industry (and stock)

- The goal is for students to determine the macro variables that influence returns of the industry (and stock) they are covering
  - This is part of a greater project of writing a sell-side stock report
  - Steps
    1. Create a custom index of "comps" of the stock in Bloomberg
       - You could also use existing sector of industry indices in Bloomberg for project
    2. Look up economic variables in Bloomberg (need ticker symbol) related to the industry
    3. Download return data for stock, custom index, market index, and economic variable from Bloomberg into Excel using API
    4. Correlate the custom index (and stock) with various economic and other variables in Bloomberg
       - Determine factors that correlated with outperformance of custom index to overall market index
       - Also, determine whether stock is more or less sensitive (higher or lower beta) to the factors than custom index to help forecast whether it will outperform or underperform depending on direction of the factors

Class project 1: Step 1 – create custom index

- Each student chooses a stock to cover and appropriate comparable companies
- Create custom index of comparables in Bloomberg
  - CIXB function (Custom Basked Editor) to create an index over a date range
    - Use CIX function (Custom Index Library) to view all previously created custom indices
    - Creates a new ticker . ____ U Index

Give it a name and ticker symbol (Bloomberg converts the name to .ticker U)

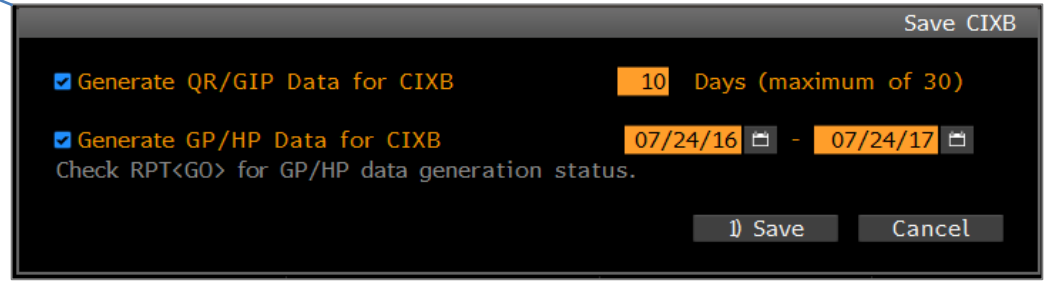


Enter tickers of comps and positions. Important note: you could enter an entire portfolio and then test the factor exposure of the portfolio in a back-test.

You can import a list

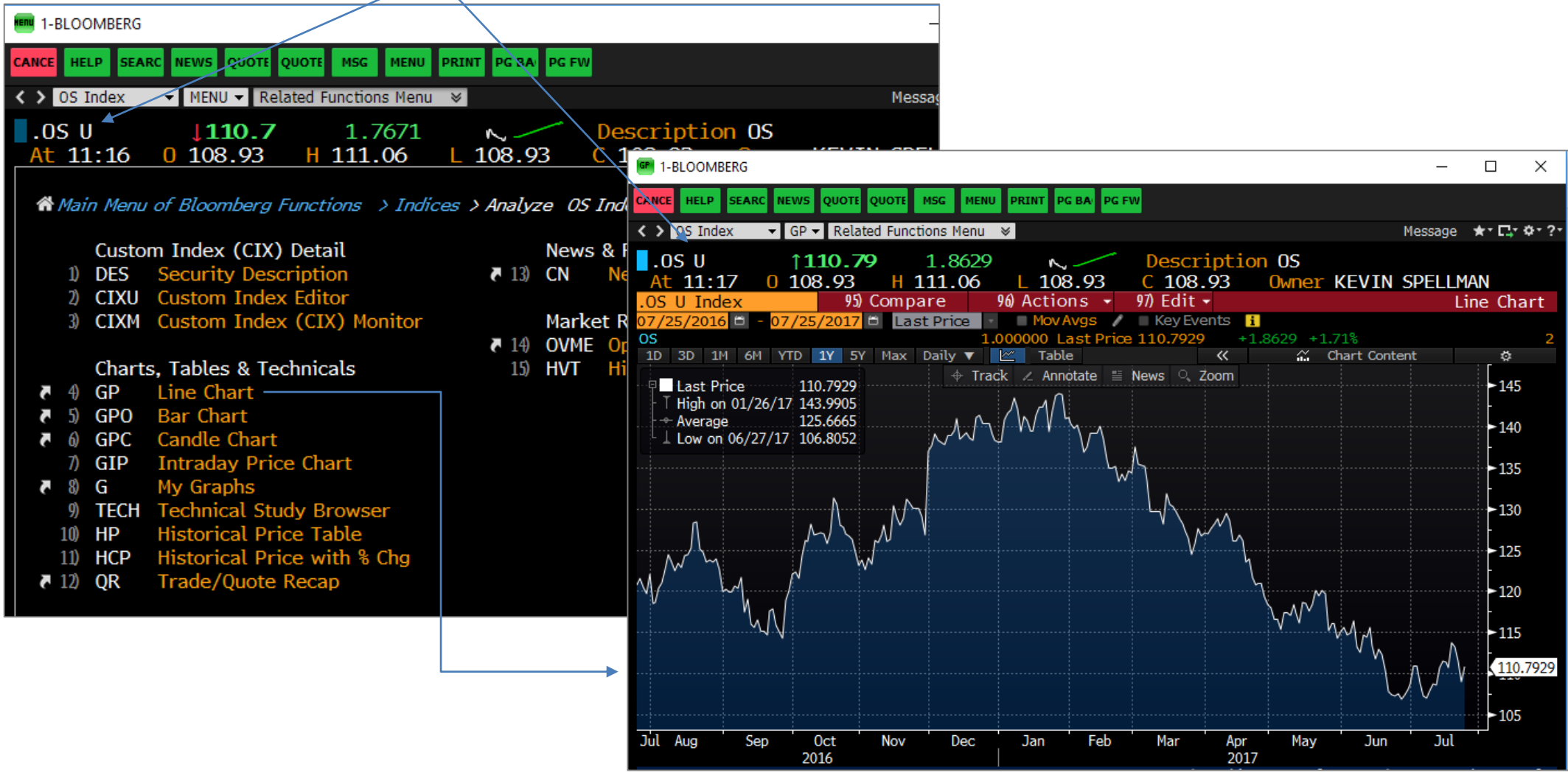
You can change the weightings to all equal-weight

Create the index over a date range



Class project 1: Step 1 – view data

- . ticker <Index> Go
  - Note that Bloomberg adds a U after the .ticker that you must remember when downloading data in Excel

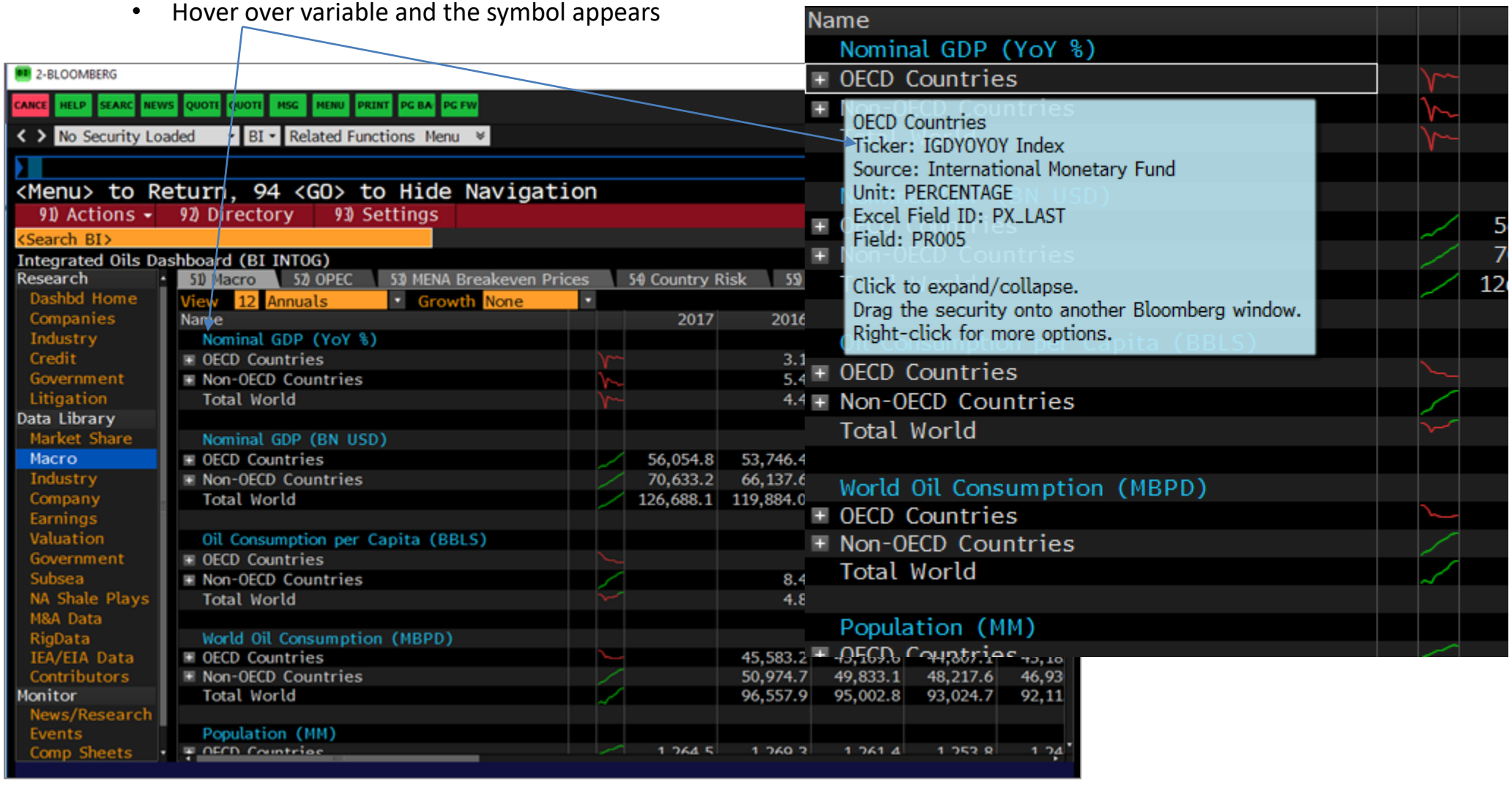


Class project 1: Step 2 – look up economic variables

- To get an idea of what Bloomberg thinks is important, use BI (Bloomberg Intelligence) function to see economic variables it considers drivers for sectors

Class project 1: Step 2 – look up economic variables

- Now we have macro variables (can be anything, not just economic) for a sector
  - We need their ticker symbols
    - Hover over variable and the symbol appears

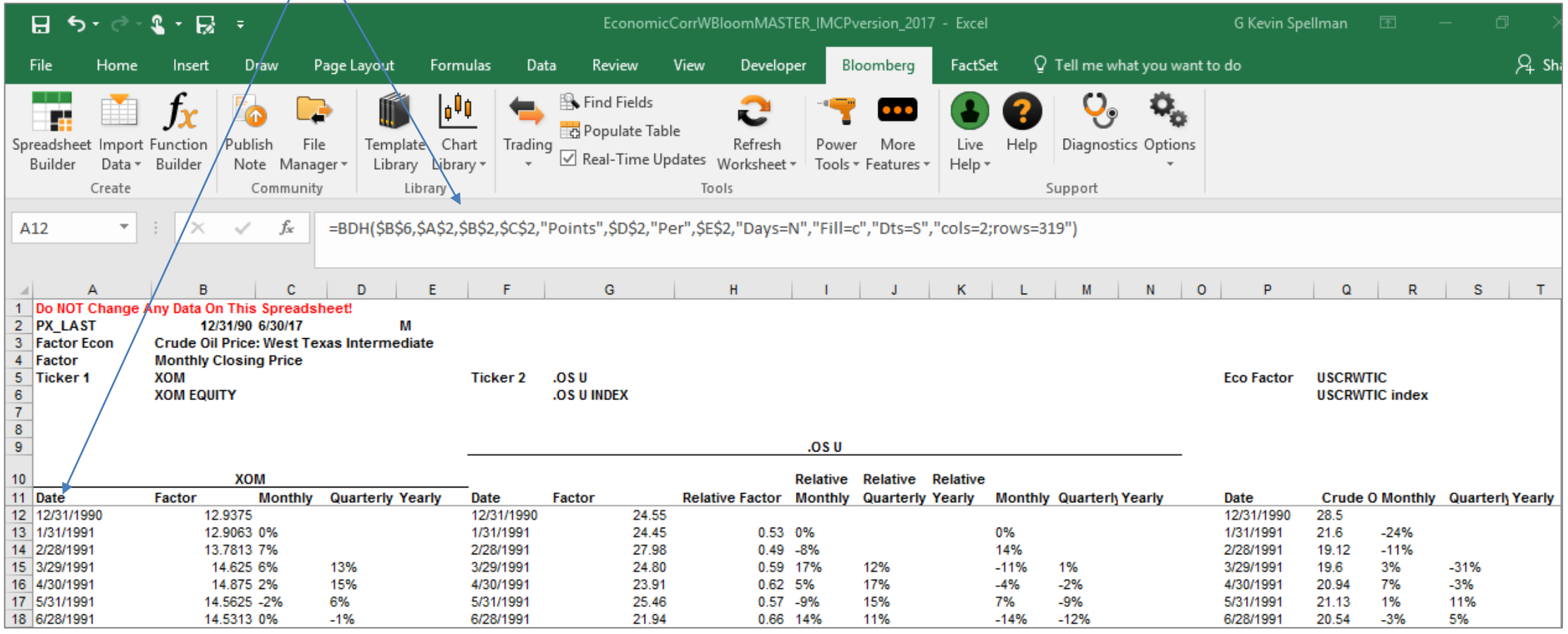


Class project 1: Step 2 – look up economic variables

- Use ECST <GO> to look up thousands of economic statistics
  - We need their ticker symbols

Class project 1: Step 3 – download data into Bloomberg

- Use Bloomberg API to download data within Excel
  - Formula in A12 references ticker symbol for stock (B6), start date (B2), and end date (C2)
  - Formulas in F12 and P12 are the same except for the custom index (ticker in G6) and the economic variable (ticker in Q6)



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Do NOT Change Any Data On This Spreadsheet!																			
2	PX_LAST		12/31/90	6/30/17	M															
3	Factor Econ	Crude Oil Price: West Texas Intermediate																		
4	Factor	Monthly Closing Price																		
5	Ticker 1	XOM				Ticker 2	.OS U									Eco Factor	USCRWTIC			
6		XOM EQUITY					.OS U INDEX										USCRWTIC index			
7																				
8																				
9							.OS U													
10		XOM							Relative	Relative	Relative									
11	Date	Factor	Monthly	Quarterly	Yearly	Date	Factor	Relative Factor	Monthly	Quarterly	Yearly	Monthly	Quarterly	Yearly		Date	Crude O Monthly	Quarterly	Yearly	
12	12/31/1990	12.9375				12/31/1990	24.55									12/31/1990	28.5			
13	1/31/1991	12.9063	0%			1/31/1991	24.45	0.53	0%			0%				1/31/1991	21.6	-24%		
14	2/28/1991	13.7813	7%			2/28/1991	27.98	0.49	-8%			14%				2/28/1991	19.12	-11%		
15	3/29/1991	14.625	6%	13%		3/29/1991	24.80	0.59	17%	12%		-11%	1%			3/29/1991	19.6	3%	-31%	
16	4/30/1991	14.875	2%	15%		4/30/1991	23.91	0.62	5%	17%		-4%	-2%			4/30/1991	20.94	7%	-3%	
17	5/31/1991	14.5625	-2%	6%		5/31/1991	25.46	0.57	-9%	15%		7%	-9%			5/31/1991	21.13	1%	11%	
18	6/28/1991	14.5313	0%	-1%		6/28/1991	21.94	0.66	14%	11%		-14%	-12%			6/28/1991	20.54	-3%	5%	

  - The stock is Exxon and the custom index is of two securities in the oil field services industry (HAL and SLB)
  - The economic variable is oil prices

Class project 1: Step 4 – correlate the data

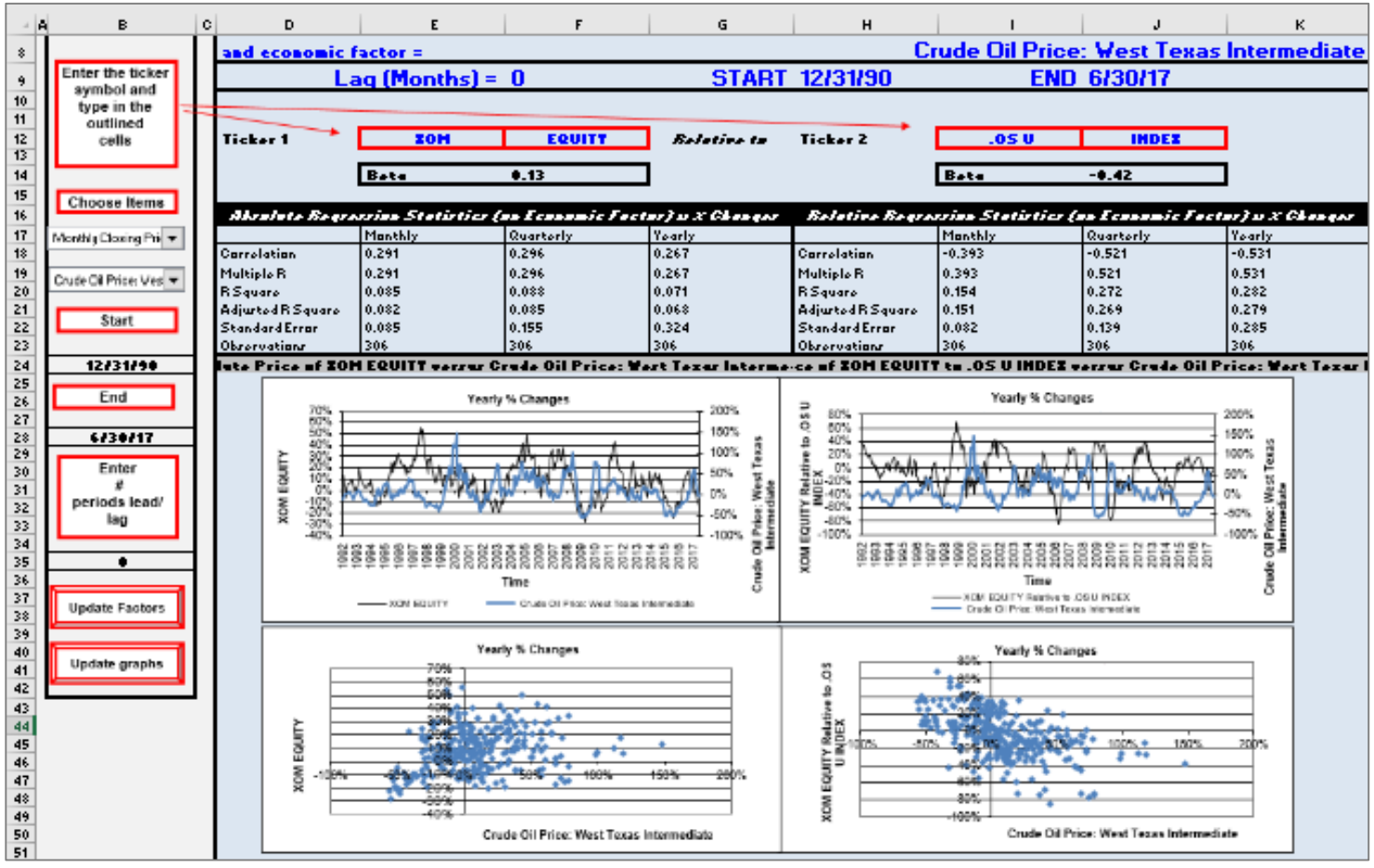
- Shown here is output of a program I created to download data for any date range with or without a lead/lag to compare an asset's absolute return to a factor (left graphs/data) or the relative return of two assets to a factor (right graphs/data)

Absolute return =

$price_{t,\ ticker\ 1} / price_{t-1,\ ticker\ 1}$

Relative return =

$[price_{t,\ ticker\ 1} / price_{t-1,\ ticker\ 1} - 1] - [price_{t,\ ticker\ 2} / price_{t-1,ticker\ 2} - 1]$

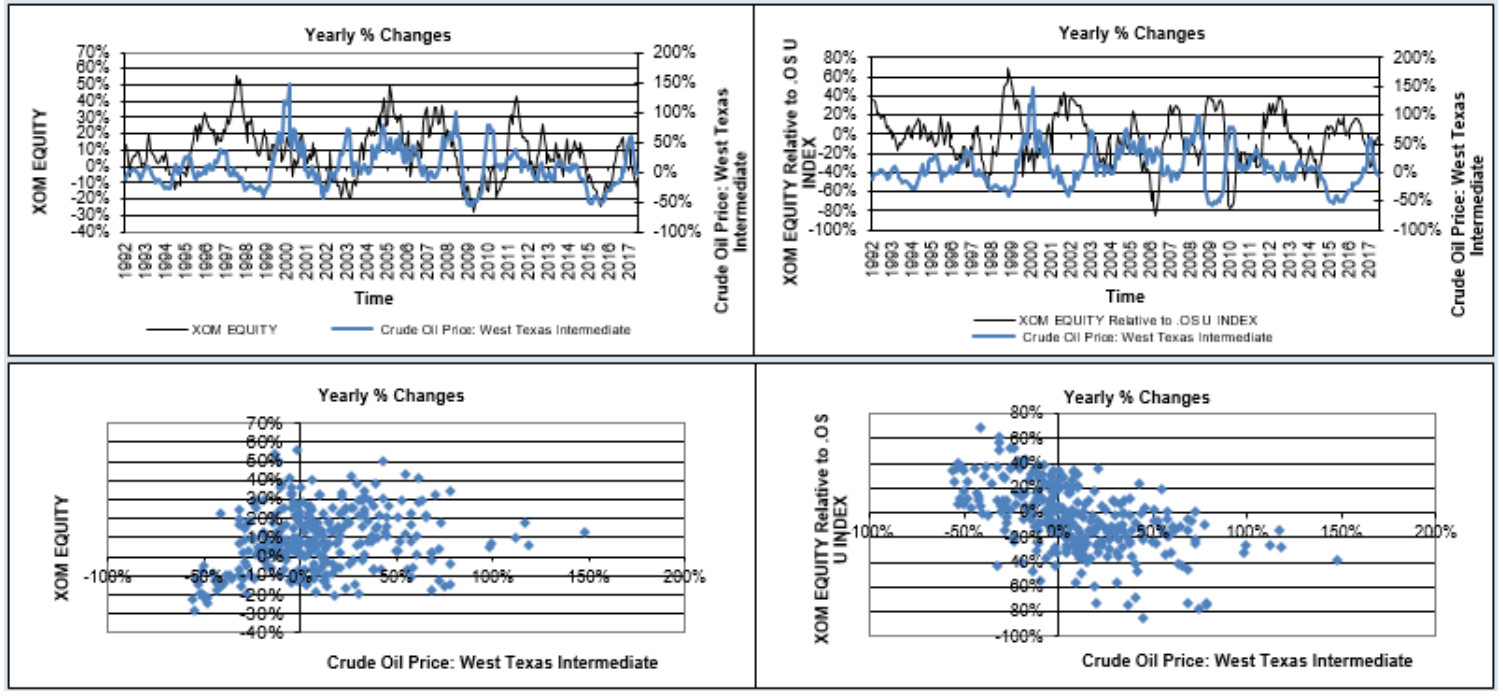


Class project 1: Step 4 – what is most important, absolute or relative returns?

- You want the best stocks, right?
- You want to outperform, right?
- Then you want to look at the relative return graphs
  - Most students and professional managers spend too much time on the absolute graphs
  - Most stocks share positive or negative correlation to factors, but to different degrees
  - So just looking at absolute correlations does not help them pick the best stocks

Exxon rises with oil prices

But Exxon underperforms other oil services stocks (HAL and SLB) when oil prices rise



Class project 2: create a long-short strategy

- Same project as the first one, but we seek factors that correlate positively with one asset and negatively with another (or less positively)
  - Economic long-shorts
    - Intra-sector: WTI and XOM versus oil field services (HAL and SLB)
    - Inter-sector: Inflation factor and consumer discretionary industry versus market
      - Prefer for beta of two sectors to be the same to overall market factor and other factors to isolate the impact of inflation
  - Other long-shorts based on
    - Merger arbitrage
    - Company specific
      - Great product launch helps one firm and hurts another
    - Valuation
      - Long cheap stock and short rich in same industry (to neutralize other beta effects)
    - Intermarket
      - Dollar rises buy dollar and short oil (or emerging markets)
    - Convertible arbitrage

Class project 3: analyze a portfolio's correlation to factors

- Same project as the first one, but we create a custom index out of an existing portfolio
  - Keep in mind that
    - The index assumes positions entered exist historically
    - What if names do not have historical data?

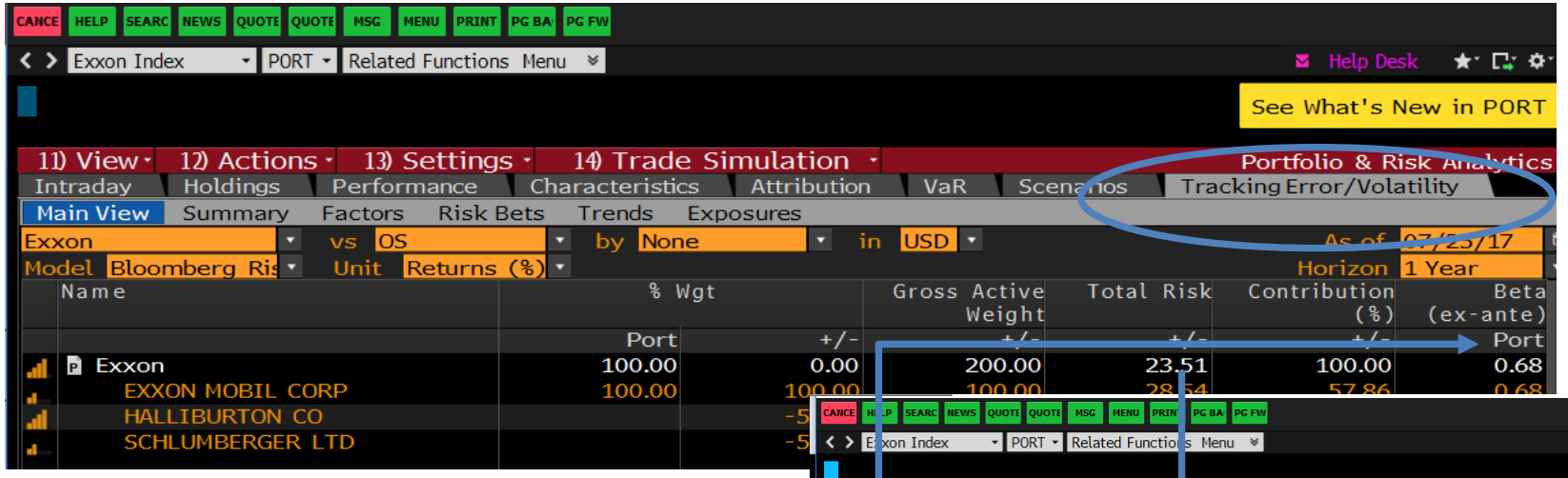
Class project 4: analyze portfolio's characteristics and returns during scenarios

- Bloomberg allows one to compare a portfolio (or a custom index of one stock) to a benchmark to analyse
  - Tracking error
  - Factor exposures (characteristics)
  - Performance during scenarios
- Using PORT <GO> (Portfolio Risk and Analytics)

Enter portfolios (note I created a custom index called Exxon that just includes XOM and the custom index OS is just of HAL and SLB)

Class project 4: Exxon's tracking error versus benchmark is very high

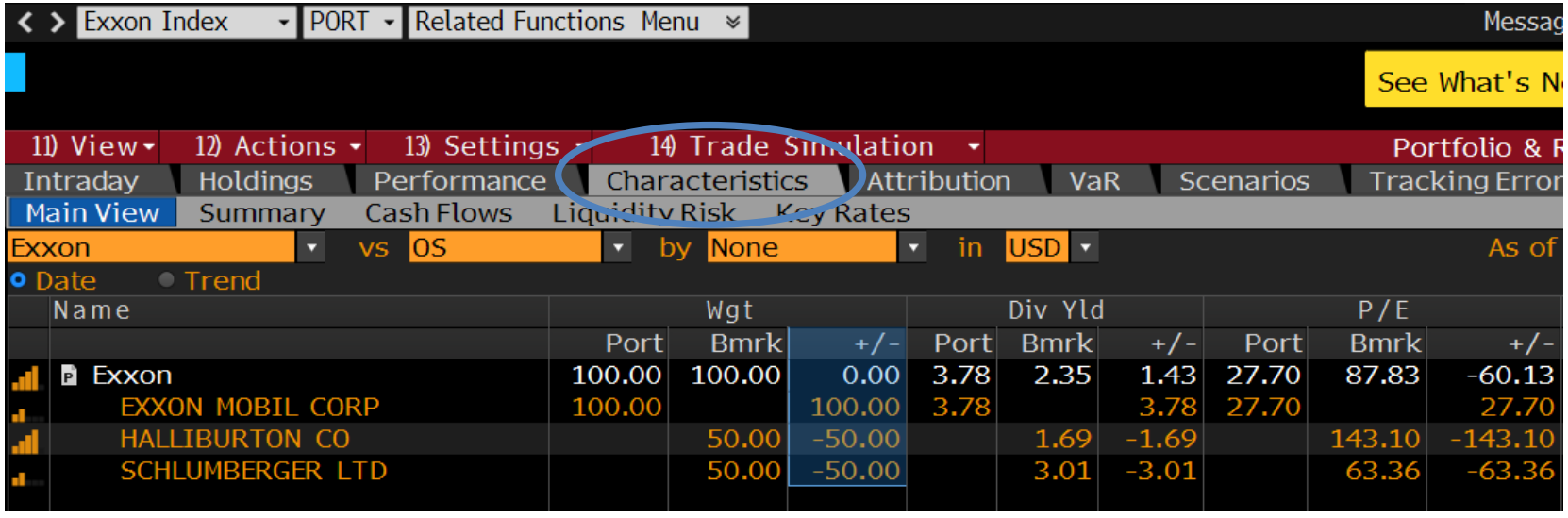
- Even though XOM and comparables are in the same sector, their tracking error is very high
  - Total risk measures the standard deviation of % return or profit/loss

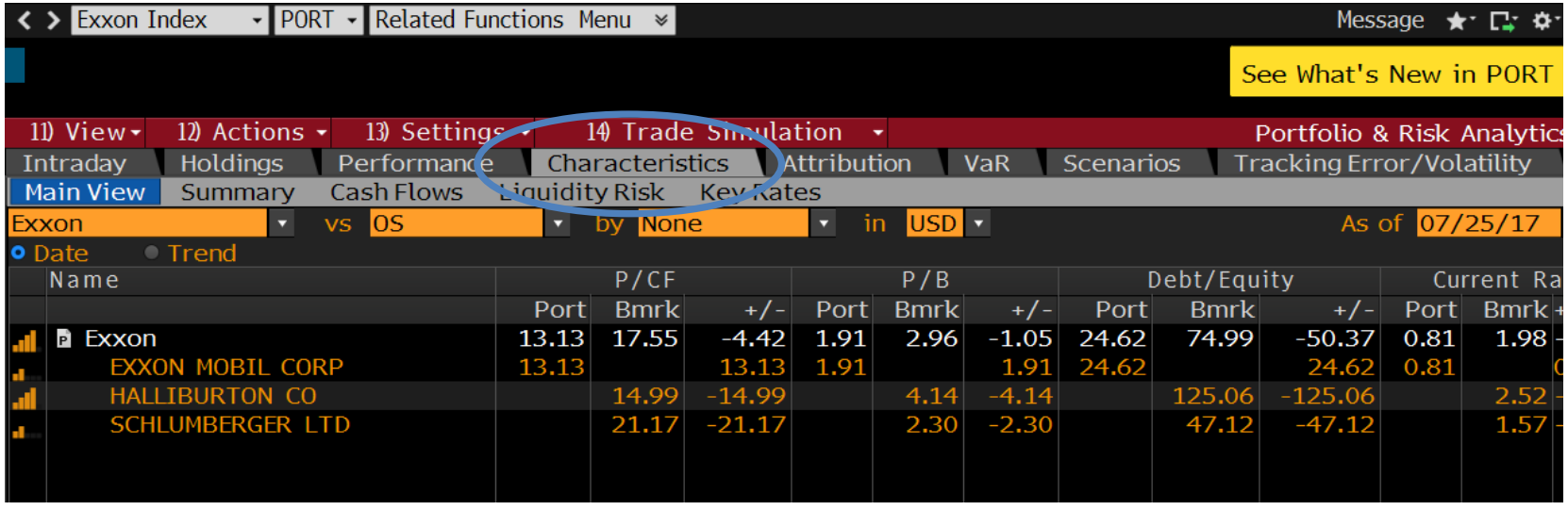


  - Beta is 0.68

Class project 4: Exxon's characteristics differ from custom index

- May help explain why performance varies, or help to determine which is most attractive





Class project 4: As expected, XOM lags (leads) in good (bad) times

- The macro scenario drives relative performance

Scenario	P&L (+/-)	P&L % (+/-)	Stress MV (+/-)
Equities up 10%	-2	-1.92	-2
Greece Financial Crisis - 2015	-1	-1.17	-1
Japan Earthquake in Mar 2011	0	-.33	0
EUR down 10% vs. USD	0	-.25	0
EUR up 10% vs. USD	0	.25	0
Libya Oil Shock - Feb 2011	1	1.51	1
Equities down 10%	2	1.92	2
Oil prices Drop - May 2010	4	4.54	4
Debt Ceiling Crisis & Downgrade in 2011	4	5.42	4
Lehman Default - 2008	7	9.06	7
Russian Financial Crisis - 2008	25	31.46	25

Summary

- Beta goes beyond exposure to the market factor
- Factor analysis is quite important for explaining a fund's performance
  - And even for securities in the same sector
- Factor analysis is made easy with Bloomberg