# Bloomberg Equity Screening (EQS) Exercise:
## Benjamin Graham Value Investing

**Timothy Falcon Crack[1]**

**May 22, 2023 (version 1.10)**

## ABSTRACT

I show you how to use the *Bloomberg Professional Service* (i.e., the "Bloomberg Terminal") to execute a Benjamin Graham value investing exercise using Bloomberg's equity screening (**EQS**) function. I used this exercise very successfully for 15 years in a final-year undergraduate *Applied Investments* course, using Crack (2022a) as the textbook. During this period, I gave this exercise to over 1,800 undergraduate students, typically working in groups of three to five students.

This hands-on Bloomberg exercise is naturally ChatGPT-proof, by construction.

The two appendices give detailed instructions on using Bloomberg's **EQS** function and avoiding common mistakes, respectively. If you want to use Bloomberg's **EQS** function for a *different* exercise (e.g., growth-oriented investing), then you can follow the detailed instructions given in the appendices, but implement your investing exercise using your own investment criteria.

I take a formula-based approach to the **EQS** function here. You can, however, take an Add Criteria–based approach, as discussed in the ESG-based Bloomberg stock (**EQS**) and bond (**SRCH**) investing exercise presented in Crack (2023c).

*We plan to revise this document often, based on changes to the Bloomberg software and feedback from readers. So, be sure to return to www.SSRN.com to get the latest version.*

**Keywords:** Bloomberg Professional Service, Bloomberg Terminal, Value investing, Benjamin Graham, Equity Screens, EQS function, BMC Certification, ChatGPT.

**JEL Classification:** G11, G12, A22, A23.

---

[1] Prof. Timothy Falcon Crack, timcrack@alum.mit.edu, 011.64.3.479.8310. I thank Dr. Muhammad A. Cheema for valuable comments and advice, but any errors are mine.

**Bloomberg Equity Screening (EQS) Exercise:**
**Benjamin Graham Value Investing**

**BRIEF ABSTRACT**

I show you how to use the *Bloomberg Professional Service* (i.e., the "Bloomberg Terminal") to execute a Benjamin Graham value investing exercise using Bloomberg's equity screening (**EQS**) function. I used this exercise very successfully for 15 years in a final-year undergraduate *Applied Investments* course, using Crack (2022a) as the textbook. During this period, I gave this exercise to over 1,800 undergraduate students, typically working in groups of three to five students.

**INTRODUCTION**

The *Bloomberg Professional Service* (commonly called "The Bloomberg Terminal") is a finance practitioner platform giving real-time access to financial data, historical data, news, and analytical tools. More than 325,000 terminals exist (Bloomberg, 2022). I have used Bloomberg terminals since 1992, and I have used them in my university teaching since 1996.

In my class, the **EQS** exercise is usually *preceded* two or three weeks earlier by an exercise where the students get to put their hands on the Bloomberg Terminal keyboard for the first time and explore some simple analysis.[2] The **EQS** exercise is usually *followed* two or three weeks later by a Bloomberg exercise were the students download data from the Bloomberg Terminal to a dynamic Excel sheet (making use of the Mnemonic codes mentioned here). These data are then analyzed (e.g., to gather summary statistics on dividend yields or payout ratios for all stocks in a broad market index). An *alternative* follow-up Bloomberg exercise can exploit the Bloomberg equity backtest platform (**EQBT**) to perform a backtest of the screening criteria used in this **EQS** exercise, comparing performance to that of the S&P500 (or some other appropriate index). I usually allow time between exercises, to address errors.

When discussing style risk and value risk, Chaput and Crack (2023) point out that value investing can underperform the market for extended periods of time. Although this **EQS** exercise uses the *Bloomberg Professional Service* to execute a Benjamin Graham *value* investing exercise, you can use the skills learned here to execute a *growth* investing exercise (or one based on ESG, or quality, etc.), just by using different screening criteria.

Other Bloomberg-related academic resources include: ESG-based stock and bond screening (Crack, 2023c); *Bloomberg Market Concepts* (BMC) and ESG certifications for students (Crack, 2023a; Crack 2023b); how to prepare an equity analyst report using Bloomberg (Lei and Li, 2012); teaching derivatives using Bloomberg (Annabi, 2019); and, using Bloomberg in an investments class (including derivatives), with lots of R code (Abdoh, 2022).

---

[2] The EQS exercise contributed to excellent teaching evaluations in my class. I discuss these and other award-winning teaching techniques in the new book *Interviews with Top University Teachers: How to Build Quality Teaching, Inspire Your Students, and Create More Time for Research* (Crack, 2022b).

# BENJAMIN GRAHAM VALUE INVESTING (SUMMARY)

Crack (2022a) summarizes Benjamin Graham's value investing approach as it pertains to this question as follows:[3]

- Graham is famous for following a value approach. He is often considered the "father of value investing." He argues for value investing because identifying growth stocks is too difficult (because when you think that you have identified a growth stock, there is a high risk that it will not deliver on its promised growth in EPS).
- Graham is famous for using fundamental analysis. He and his student Warren Buffett argue that (competing) technical analysis is a waste of time.
- Graham seeks stocks that satisfy two types of criteria/filters. The first criterion is about identifying value stocks and the second criterion is about controlling risk:
  - **Identifying Value Stocks:** Attractive value stocks have been beaten down in price relative to fundamentals. (Fundamentals are non-price-based accounting statement variables that we value, like assets, earnings, dividends, and cash flow.) When it comes to assets, Graham is particularly interested in *tangible* assets, because they are of higher quality than *intangible* assets.
  - **Controlling Risk:** Attractive value stocks must have solid performance (e.g., a good history of dividends, a good history of earnings, and good quality assets) and be of a large size (i.e., have a large market capitalization). This reduces the risk of a "value trap," where the stock is beaten down in price because it is a dog.
- We will see below that Graham's approach is an **active** one: He recommends that you hold 10 to 30 stocks, and this recommendation cannot be passive—because you cannot cover all industries, sectors, and countries, and be diversified within each group with only 10 to 30 stocks. That is, Graham picks stocks rather than holding the market. That is, **a value strategy is an active strategy**.
- On the other hand, Graham takes a very **conservative** approach. It is so conservative that he argues that he is not trying to beat the market, but rather to reduce the risk of underperforming the market. **This attitude is a characteristic of passive approaches**. Graham thought that outperformance of the market using a value strategy was unlikely.
- Keep in mind that the first passive index fund was invented only in about 1973, and that passive investing was not really followed by retail investors until at least 10 years later, and that Graham was born in 1894 and died in 1976. So, what Graham did was, arguably, the closest thing to passive investing in his day. **Looking back at Graham, in the context of his day, we can classify him as either an active investor or a passive investor.**
- Graham argues that we should **diversify** because a single bet on an apparently attractive stock is too risky, but 30 stocks, each of which is attractive, are unlikely to all be dogs. See Crack (2022a, Footnote 126, p. 324) for a discussion of breadth, diversification and a "margin of safety."

---

[3] If you type *Value Investing: A Look at the Benjamin Graham Approach by Maria Crawford Scott* into Google, you will find a good short article that discusses Benjamin Graham's value investing approach.

# SCREENING CRITERIA

Investors and fund managers have used screening criteria for picking stocks for at least 100 years. Graham gives three summary lists of advice/screening criteria in his book *The Intelligent Investor* (first published in 1949 but revised many times). Graham (2006) is the 1973 text, but with added commentary by Jason Zweig and an appendix by Warren Buffett.[4]

Graham's three lists of advice/screening criteria overlap to some extent and contradict each other to some extent (caused, I think, by repeated partial revisions of the text over many years and by differing degrees of advice for defensive versus enterprising investors).[5] Some of Graham's filters are about identifying value stocks, and some of his filters are about controlling risk, as mentioned above. I have used my own numbering in what follows.

Graham (2006, pp. 114–115) gives four rules for direct investment in common stocks in the portfolio of the defensive investor (paraphrased):

> **1.1** Your stock holdings should have adequate but not excessive diversification, perhaps a minimum of 10 stocks and a maximum of 30 stocks. (Not relevant for this exercise, except insofar as our shortlist will likely be about 10 stocks.)
>
> **1.2** Each company should be large, prominent, and conservatively financed.
>
> **1.3** Each company should have a long record of continuous dividend payments.
>
> **1.4** Limit the price you pay relative to recent average earnings to, say, 25 times average earnings of the last seven years and 20 times trailing 12-month earnings.

Graham (2006, pp. 337–338) gives seven "statistical requirements" for inclusion of common stocks in the portfolio of the defensive investor:

> **2.1** Adequate size. He also says that small-capitalization stocks offer possibilities, but they are not suited to a long-term defensive investor (Graham, 2006, p. 348).
>
> **2.2** A sufficiently strong financial condition. (I assume he means moderate debt and sufficient cash flow to service it.)
>
> **2.3** Continued dividends for at least the past 20 years.
>
> **2.4** No earnings deficit in the past 10 years. (That is, no losses.)

---

[4] When interviewed six months before his death (Butler, 1976), Graham recommended *The Intelligent Investor* as more valuable than his famous *Security Analysis* book (Graham and Dodd, 1934). See Crack (2022, p. 588).
[5] Graham refers to a "defensive investor" or "passive investor" as someone who emphasizes the avoidance of serious mistakes or losses and, as a secondary consideration, wishes to minimize effort and frequency of decision making (Graham, 2006, pp. 6, 22). He contrasts this with an "enterprising" or "active" or "aggressive" investor. He argues that the enterprising investor may, over many decades, expect a better return than the defensive investor, but that he has his doubts (Graham, 2006, pp. 6).

**2.5** Ten-year growth of at least one-third in EPS (i.e., comparing historical three-year average EPS at the beginning and end of the 10-year period [Graham, 2006, p. 348]).

**2.6** Stock price no more than 1.5 times net asset value (but a lower P/E ratio could justify a higher stock price, so allow that the product of the P/E ratio and the ratio of price to net asset value should not exceed 22.5 [Graham, 2006, p. 349]).

**2.7** Price no more than 15 times average earnings over the last three years. To avoid misleading P/E ratios reported as zero, you should also require that P/E be greater than zero. (See Item #5 in my Appendix II to avoid a common error of interpretation here regarding timing.)

Graham (2006, pp. 385–386) gives five "additional criteria, rather similar to those already suggested for the defensive investor, but not so severe" (paraphrased below; these are for the "enterprising investor"):

**3.1** Current assets at least 1.5 times current liabilities and debt no more than 110% of net current assets (for industrial companies). (At first, I mistakenly thought this screen would be extremely restrictive, but in fact, when used alone it removes only about two-thirds of the companies globally.)

**3.2** No earnings deficit in the last five years. (That is, no losses.)

**3.3** Some current dividends.

**3.4** Last year's earnings more than those of [five years ago].

**3.5** A price that is less than 120% of net tangible assets.

Let me also repeat a text box about Irving Kahn appearing in Crack (2022a, p. 590):

---

Story: Irving Kahn

Irving Kahn died, aged 109, in February 2015. He was the chairman of Kahn Brothers, a New York investment firm managing about $800 million (Kahn Brothers, 2014). Kahn went to work on Wall Street in 1928, and was the oldest working investment professional when he was 108 (Anon., 2014). Kahn Brothers are value investors. Typical investments include stocks selling below net working capital per share after subtracting long-term liabilities (i.e., current assets less current liabilities, less long-term debt, all divided by number of shares outstanding), stocks selling below adjusted book value (i.e., tangible assets less liabilities, all divided by number of shares outstanding), stocks with low P/E ratios, and fallen angels (i.e., strong companies suffering near-term price weakness) (Kahn Brothers, 2014).

---

# BLOOMBERG-BASED VALUE INVESTING EXERCISE USING EQS

The Bloomberg equity screen (**EQS**) function is easy to implement if you read and follow my detailed instructions. If you skip the detailed instructions and jump right into it, however, then using the **EQS** function can be a very frustrating and time-consuming experience.

I want you to work towards recommending a stock for me to buy. I want to go long, not short. Your stock must be common (or "ordinary") stock of a company, not a REIT, trust, ETF, preferred stock, or any other type of security. In other words, I just want you to recommend the common stock of a corporation for me to buy.

Your job will be to reduce the universe of roughly 100,000 primary issues of stocks available globally to a shortlist via the screening criteria suggested below, and then to pick one stock.

**QUESTION 1** [Suggested 10%]

**Read the academic honesty warning on the last page of this document.** Then, select any five of the screening criteria given by Benjamin Graham or Kahn Brothers and state your criteria clearly. I expect these criteria will differ from one group of students to another. If a criterion makes no sense for this particular exercise, then you should not choose it.

**QUESTION 2** [Suggested 60%]

Use Bloomberg's **EQS** function to prepare a shortlist of 10 or fewer stocks that satisfy your criteria. **You must read Appendix I (How to use Bloomberg's EQS function) and also read Appendix II (How to Avoid Common Bloomberg EQS Errors).** These appendices are designed to help you to avoid common frustrations and common mistakes, including common accounting mistakes.

Once all your formulas are saved and used in your screen and your screen is finished and saved, **print out the EQS screening list** (like Figure 7, below). Please also **print out your shortlist of results** (like Figure 8, below). Remember that the stocks must be common stocks of publicly traded companies and that I want to go long, not short.

**QUESTION 3** [Suggested 30%]

Click on the "See Results" link in the bottom right of the **EQS** screening list (see Figure 7). Please **pick one stock from the shortlist**. Include your stock pick's full Bloomberg ticker symbol. For example, "IBM" is no good, but "IBM US" is OK. Note that some countries (e.g., Japan) use numbers for ticker symbols instead of letters.[6]

Now use your screening criteria to give a short sharp sales pitch in 100 or fewer words. **State only facts. Give no opinions.** If you fail to exploit the screening criteria you just worked on, then you have completely missed the point of the exercise, and you will get zero. **In fact, if you give any opinions at all, you will get zero for the entire exercise**.

---

[6] Unlisted entities may also be identified using numerical ticker symbols (e.g., 30972 US <Equity> <GO> and 33527 <Equity> <GO> for Koch industries and the USA, respectively).

Check that your stock's characteristics do not conflict with anything in your list of screening criteria (e.g., it cannot have a small market capitalization if you applied a large-capitalization screening criterion). Any such contradiction indicates that you made a mistake.

For your stock pick, you must also include printouts of Bloomberg **BQ**, **GP** (last 12 months of daily data), and **DES** (just the first page) screens (see details in Appendix II). **You will get zero for the entire exercise if any one of the BQ, GP, or DES printouts is missing.** You can include other Bloomberg output if you wish, but it is not required.

## APPENDIX I: HOW TO USE BLOOMBERG'S EQS FUNCTION

Anything in angle brackets here, like **<GO>**, or **<Equity>** refers to a single colored key on the Bloomberg keyboard. For example, the **<GO>** key is green and sits where the *enter* or *return* key sits on a regular keyboard and the **<Equity>** key is yellow and sits where the *F8* key sits on a regular keyboard; when you see these, be sure to hit that single key.

Begin by logging into the Bloomberg Professional Service.

Once logged in, enter the Bloomberg command **EQS <GO>** at the command line in one window. You should get something like Figure 1, below. Your numbers may differ from those in Figure 1, because markets are ever changing.



**Figure 1: Empty EQS (Equity Screen) function window, before formulas are entered**

**Aside:** To insert screen grabs in my document, I left-clicked on the little icon on the top-right of the Bloomberg window that looks like a square with a green arrow in the corner. Then I chose *Take Window Screenshot > Save*. Then I used Word's *Insert* to put it into this Word document. See the Item #10 in Appendix II for instructions on black-and-white printing.

Now open a second Bloomberg window and enter the Bloomberg fields command **FLDS <GO>** in this second window. **FLDS** is used to find ID Codes or Mnemonic codes to enter into the **EQS** screens. In the **FLDS** window, enter the ticker symbol for a well-known large-cap U.S. stock in the uppermost gold box, for example **IBM <Equity> <GO>**. Do not worry if you get some red-font error message like "Please enter Query text to perform a search," as shown in Figure 2, below. This just means that the **FLDS** function is waiting for you to identify a specific Query (like dividends, earnings, tangible assets, etc.) after which Bloomberg will then provide you with various codes that we can enter into the **EQS** function.

I chose IBM because the larger the capitalization of the stock I use here, the more likely it is that the field codes will be accompanied by valid numerical values. This outcome matters, because, as discussed in Appendix II, students using the Bloomberg **EQS** function often mistakenly choose field codes that are on a company-wide basis, rather than on a per-share basis (or vice versa), or which are a signed cash outflow rather than a signed cash inflow (or vice versa). So, having numerical values available for a well-known company means that their sign and size serve as a simple signal of their true nature, significantly reducing the likelihood that you make a mistake when typing codes into the **EQS** formula editor.
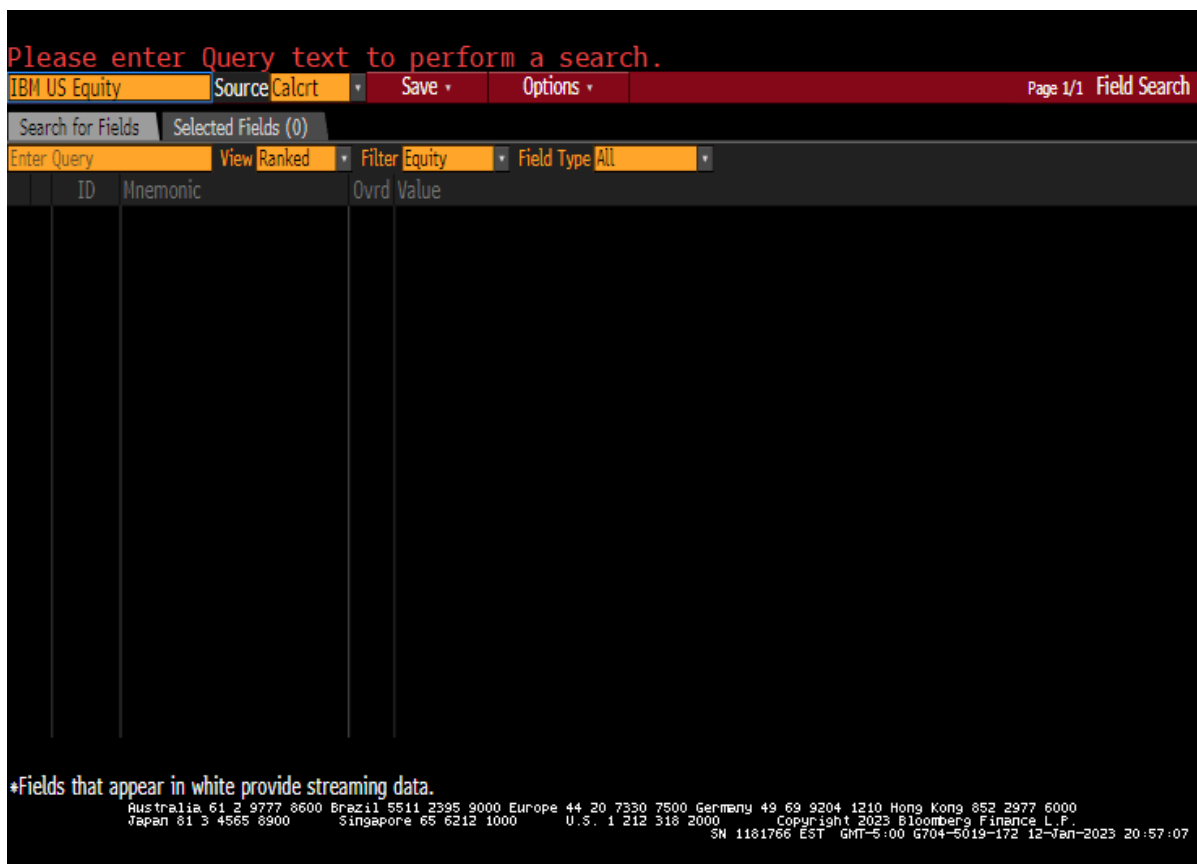


**Figure 2: Empty FLDS (Fields) function page, waiting for Query text**

**Hint:** Use the blue <Panel> button (two keys to the right of the spacebar) for toggling between windows, or for bringing Bloomberg back to the front after using Excel or other software!

**Hint:** If you make a big mistake and lose the contents of the **EQS** window, you can just type **EQS <GO>** at the command line at any time, and you are usually offered the opportunity to return to the most recently saved (or unsaved) equity screen (e.g., top-left of Figure 1). Once you have created your **EQS** screen, you will be able to name it and save it, for future recall.

Although you can add simple criteria to the **EQS** screen by using the "Add criteria" box or the "Fields" button (see Figure 1), **please do not do so directly for this assignment**. From a University instructor's grading perspective, it is easier to grade formulas. So, please create formulas using only the "Formula" link at the top left of the screen in Figure 1. Formulas provide very powerful screening criteria and they are easy for your instructor to audit.[7]

Now click on "Formula" on the top-left of the **EQS** window (Figure 1) to get started. You should get a window like that shown in Figure 3, below.



---

**Figure 3: Empty Formula editor window, waiting for you to enter formulas**

The goal is to type in your own formula, term by term in the big gold box that appears beside EXP1= (i.e., Expression 1).

**Hint:** Note the double-chevron in the lower-right corner of the EXP1= gold box. It will be useful later for doubling the size of the gold box when we create a long formulas.

Let us take a dividends-related screen as an example. Please type "dividends" (without the quotes) into the "Enter Query" gold box on the **FLDS** window (Figure 2) and hit **<GO>**. When I did this for IBM, I got the first page of 63 pages of dividend-related codes (Figure 4).



**Figure 4: FLDS (Fields) function for Query text "dividends" for IBM <Equity>**

Note where it says "Page 1/63" in Figure 4. My 63 pages contained 1,054 supposedly dividend-related field codes for IBM. Bloomberg ranks the search results by relevance. So, whatever you want is usually in the first or second page. After about 20 pages, the fields I looked at seem to have little to do with dividends at all.

For our **EQS** exercise, we will be using the **five-digit ID Codes** in the first gold-text column (e.g., **IS052** at item #6 in Figure 4). Note, however, that when you build Excel spreadsheets that import live data (i.e., a different exercise from this one), the Mnemonic codes in the second gold-text column will be used (e.g., **IS_TOT_CASH_COM_DVD**).

9

**Aside:** Bloomberg often uses BS..., IS..., CF...  as prefixes on ID Codes and Mnemonic codes to denote items from the balance sheet, income statement, and cash flow statement, respectively. They use RR for ratio and RT for return, etc. See if you can guess what some of the other leading two-letter abbreviations stand for in Figure 4.

Some dividend numbers are negative (e.g., **CF026** in Figure 4, which is a cash outflow), and some are positive (e.g., **IS052** which is total cash paid out for common dividends). Can you see those two, and the signed numbers beside them on *your* first page? I rolled the mouse wheel down one notch and saw "dividends per share" (**IS151**) on the second page—as a small positive number; its Mnemonic code is **IS_DIV_PER_SHR**.

Suppose that we want our **EQS** screen to include only shares that paid dividends for the last five years. Let us use **IS151** (dividend per share) as our ID Code.

Return to the Formula editor window (see Figure 3) and type **$IS151:Y** into the big gold EXP1= box. Hit enter and it should be translated into English at the bottom of the screen as "Latest FY Dividend Per Share." Note that I prefixed the code with a dollar sign and suffixed it with ":Y". The dollar sign signals to Bloomberg that what follows is an ID Code; the ":Y" indicates the most recent year.

After hitting **<GO>**, Bloomberg thinks you are done with Expression 1, and is offering you the chance to enter Expression 2 (EXP2), but we are not done yet. Click on "EXP1" to return your formula to the gold box. Now edit EXP1 to read **$IS151:Y**>0 and hit **<GO>**. The English translation below should say "Latest FY Dividend Per Share>0". I usually use yearly data (and lagged yearly data), but other options exist. Now click on "EXP1" again to return it to the gold box. Now edit it to read **$IS151:Y**>0 and **$IS151:Y-1**>0 and hit **<GO>** to see if it translates correctly. The English translation should say "Latest FY Dividend Per Share>0 and FY Dividend Per Share 1 year ago>0."

**Hint:** When using the Formula editor, I usually just copy and paste and add the "-1" to the date rather than retyping ID Codes.

Now click on "EXP1" to return your formula to the gold box again, and edit it to include five years of positive dividends (the last will be **$IS151:Y-4**). My formula looked like this:

**$IS151:Y**>0 and **$IS151:Y-1**>0 and **$IS151:Y-2**>0 and **$IS151:Y-3**>0 and **$IS151:Y-4**>0

If you make a mistake, Bloomberg will turn your gold box red and give you a warning message. In that case, look for typographical errors or syntax errors. Your Formula window should look like Figure 5, below.

**Aside:** Note that Bloomberg's abbreviations "LF" means latest filing, "FY" means fiscal/financial year, and "TTM" or "T12M" mean trailing 12 months.

**Aside:** Even though Bloomberg has functions for taking sums, or averages, etc. of variables, like dividends or earnings, these pre-canned routines obscure what you are doing and make it

very difficult to audit. So, for the purposes of this exercise, please type these formulas out from first principles, even if it means copying and pasting 20 terms.

**Aside:** Do not use them for this assignment, but note that my U.S. broker offers similar screening tools to Bloomberg's **EQS** function, and *Yahoo! Finance* also offers a relatively poor screening tool for free (https://finance.yahoo.com/screener/).



**Figure 5: Formula window using ID Codes for five years of dividends**

**Hint:** If a complex formula is not translated into English, add a space before and after all algebraic operators (plus, minus, divide, times). That usually produces an English translation. Bloomberg might not retain the spaces when you save, but the formula still works fine.

*Aside (**Throwaway Exercise for Demonstration Purposes Only**): This is a good time to point out that Bloomberg very recently revised its formula editor. They have not quite finished making the transition, and the editor can sometimes produce odd and inconsistent results. For example, let us try using the Formula editor window slightly differently to enter a command EXP2 (equivalent to command EXP1) to see some differences. This is just to demonstrate different approaches, and we will delete EXP2 when we are done.*

*Type "Dividend Per Share" into the "Function (Optional)" gold box. (It says "Optional" because it is. My instructions will not be using this route again because the **FLDS** command is more powerful.) Without even hitting **<GO>**, Bloomberg will offer you some choices. You can click on the first item on the list ("Dividend Per Share"), or just ignore the prompt. The*

*next box to the right of the "Function (Optional)" gold box is about frequency and timing. The drop-down menu offers six pre-set options and a customizable choice. Click on "4 Latest Year" and choose LCL (for local currency) in the third box. That currency is local to the stock you pick, not to the country you are sitting in. Hit <GO>.*

*I think Bloomberg will insert the Mnemonic **IS_DIV_PER_SHR(CRNCY=LCL, FUND_PER=Y)** into the big gold EXP2= box. If you hit <GO> now, the ID Code will be repeated below and it will not be translated into English. Click on EXP2 to return it to the editing box, and copy, paste, and edit until you get the following (all displayed contiguously in your case, not on separate lines as shown by MSWord, below):*

*IS_DIV_PER_SHR(CRNCY=LCL,FUND_PER=Y)>0 and*
*IS_DIV_PER_SHR(CRNCY=LCL,FUND_PER=Y-1)>0 and*
*IS_DIV_PER_SHR(CRNCY=LCL,FUND_PER=Y-2)>0 and*
*IS_DIV_PER_SHR(CRNCY=LCL,FUND_PER=Y-3)>0 and*
*IS_DIV_PER_SHR(CRNCY=LCL,FUND_PER=Y-4)>0*

*This above Expression is identical to EXP1. Note that the Mnemonic is the same as the Mnemonic sitting beside the ID Code for **IS151** that you can see on the **FLDS** window. One advantage of the ID Code over the Mnemonic code is that you get a clear English translation. Another advantage of the ID Code is that the **FLDS** command is very powerful, offering us many more code choices than the "Function (Optional)" gold box route. One advantage of the Mnemonic code over the ID Code is that you do not need to leave the Formula editor window or use the **FLDS** window to get it, making formula construction self contained.*

*Please now delete the EXP2 expression by clicking on the red circle with the cross in it ⊗ that is at the end of the EXP2 line.*

After deleting EXP2, your Formula window should look like Figure 5 again.

Now click on "Save & Use in **EQS**," as visible in the top left of Figure 5. Enter your group leader's surname and an abbreviation of the screen name, for example, SMITH-DPS5, as the name. Hit **<GO>** and then click on "1) Save & Use". Note than Bloomberg will assign a UF (i.e., User Formula) Mnemonic code for your formula.

Bloomberg should have returned you to the **EQS** screen window. It should display SMITH-DPS5 highlighted in the "Add Criteria" box and it should say "Use In Screen" in the drop-down window below that. (This is the only way in which we use the Add Criteria box in this exercise.) If it says "No Condition Display Only" then click on that and select "Use in Screen" and hit **<GO>**. It should say "Loading" briefly before adding your formula to the list of screening criteria. You should see a drop in the count of stocks, from something like 95,000 to something like 15,000, as shown in Figure 6, below.

**Aside:** Bloomberg has a **Rename** option under Actions when in the formula editor, but as of February 2023, this was still failing to work after the recent formula editor transition. So, if you need to rename your formula then click on Formula in the **EQS** window, then click on Formula Library, then click on your poorly-named formula. Then click on Edit (near the

Electronic copy available at: https://ssrn.com/abstract=4344559

bottom of the window) and then Actions>Save As and choose a new name for your formula. Alternatively, click on "Duplicate" near the bottom of the Formula Library window. Then click on "Save & Use in **EQS**" and enter the correct name. Then hit **<GO>** to Use In Screen. Either way, you can click on Formula>Formula Library and click on and delete the poorly named one, if you wish (the delete symbol is the red circle with the cross in it ⊗ near the bottom of the Formula Library page).



**Figure 6: EQS function with one screen for five years of positive dividends**

**Aside:** To edit the formula that you already entered into your **EQS** screen, just click on its name, and then click on "6) Edit". When you are done editing, click Save. Then hit the Menu key (green button above *F12*) (or click on "<Back>" if it is offered to you onscreen) to return to the **EQS** window. (Note: "Menu" = "Back" in most cases on Bloomberg.)

You may wish to restrict your **EQS** screen to only U.S. stocks or only Japanese stocks, or only New Zealand stocks. If so, click on "31) Exchanges" (middle-top in Figure 1 and Figure 6) and restrict your attention to your choice of countries' exchanges. I chose North America>United States, and Asia Pacific (Developed) Australia, and New Zealand (as visible in Figure 7). You can also restrict attention to membership of major indices. I chose S&P 500, S&P/NZX 50, and S&P/ASX 200 (visible in Figure 7). I also revised SMITH-DPS5 to SMITH-DPS20, by requiring 15 mores years of dividends.

It is time to save your entire **EQS** screen, even though we are not finished. Choose Actions>Save (or Save As) and use your group leader's name, and maybe the course number

13

or year. For example, SMITH-2023. You may be asked to Update (i.e., overwrite) if you have already saved the entire screen before now.

**Aside:** Anything you save (e.g., an individual formula or your screen containing all your formulas) can be retrieved to work on again later. Anything saved can be subsequently edited/revised/changed. So, if you run out of time, you can come back to it as long as it is saved. Sometimes when you edit your existing formula and save it, Bloomberg will update the old formula and save a copy too. So, you may accidentally end up with two formulas in an **EQS** screen that are identical (and the count of screened stocks beside them will be identical). In that case, just delete one of them from your **EQS** screen by clicking on the red circle with the cross in it ⊗ at the far right of the **EQS** screening list (see Figure 7).

Keep adding screening criteria until you have five of them (not counting country or exchange restrictions). Then use Actions>Save>Update to save your entire screen. I entered only four criteria as an example in Figure 7, because my country and exchange restrictions (mostly for demonstration purposes) reduced my list. Be patient while Bloomberg screens the data. It usually takes 1–15 seconds to add the formula to your screen and to return the count, but it can take longer if the server is busy.

One of the assignment questions asks for a printout of your entire **EQS** screen. It should look something like Figure 7. Another Question asks for a printout of your shortlist, obtained by clicking "1) See Results". It should look something like Figure 8, though your shortlist of names will likely be completely different.

**Figure 7: EQS window with four criteria, and Exchanges and Indices restrictions**

**Aside:** Note the word "Backtest" appearing at the top left of Figure 7. You can backtest your **EQS** screen directly from here, or from the **EQBT** function in an empty window. I suggest loosening the criteria to give 10–30 stocks, in line with Graham's original intent, because breadth matters in a portfolio setting (Crack, 2022a, pp. 306, 324). Save that for another day because it can take 15–20 minutes to run; you get an email from Bloomberg when it is done.

One of the assignment questions asks you for **DES** (i.e., description), **BQ** (i.e., Bloomberg Quotation), and **GP** (Graph of Prices) pages. You get these by going to a blank Bloomberg window and entering the ticker symbol of the stock (e.g., "FBU NZ") and then hitting the yellow **<Equity>** key (i.e., the *F8* key), then entering, say, "**DES**" and hitting the green **<GO>** key. That is, for example: **FBU NZ <Equity> DES <GO>**. Note that the **BQ** command also has a dedicated green **Quote** function key above the *F8* key.

If only a very few stocks satisfy your criteria, as in my example in Figure 7, above, that is fine. If, however, you apply five criteria and you get more than 10 stocks, then tighten the constraints by adding another restriction. If more than 50 stocks satisfy the criteria, then consider restricting to specific exchanges or index memberships only, as in Figure 7.



**Figure 8: EQS Shortlist of Screened Stocks**

Note finally that if you miss out any P/E ratio criteria, then your stock picks will likely tend to be more "enterprising" than "defensive" (using Benjamin Graham's terms).

**APPENDIX II: HOW TO AVOID COMMON BLOOMBERG EQS ERRORS**

1.  I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they were using some quantity like earnings **$IS061:Y-1** thinking it was the most recent filing. In fact, they needed **$IS061:Y**, which is the most recent one.

2.  I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they were using Dividends Paid **$CF026** greater than 0 from Y to Y-19, but that no stocks satisfied that criterion. The definition of this Cash Flow item "dividends paid" means it is always *negative* (because it is a cash *outflow* from the firm's cash flow perspective). So, the students reversed the signs, and everything was fine. **Hint:** Look at the numbers beside your ID Code in the **FLDS** function to see their sign and size. For example, you can see in Figure 4 that **CF026** is negative.

3.  I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they were using EBITDA in place of earnings. EBITDA is not earnings. EBITDA is obtained by unwinding the effects of interest, taxes, depreciation, and amortization by walking up the income statement from the bottom-line earnings number. Calculating EBITDA is a step in the direction of converting earnings into operating cash flows (OCF), but EBITDA is before taxes and OCF is after taxes. (We can use EBITDA in the construction of the enterprise multiple, where we compare enterprise value to EBITDA, rather than comparing price to earnings [Crack, 2022a, Section 2.3.9], but Benjamin Graham's equity screens/filters use price and the bottom-line earnings numbers.)

4.  I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that their stock pick had a P/E ratio bigger than 40. I asked if they used a P/E screen, and they showed me one that compared price today with earnings last year. But price was about \$13 per share and earnings were about \$800,000,000 for the company as a whole. This comparison makes no sense. The comparison has to be price per share with earnings per share, otherwise you are comparing tiny numbers to massive numbers, and either all stocks will pass (i.e., your formula has no impact), or no stocks will pass (i.e., your formula has apocalyptic impact). **Hint:** Look at the numbers beside your ID Code in the **FLDS** function to see their sign and size.

5.  I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they were looking at P/E ratio calculated now, P/E ratio calculated one year ago, P/E ratio calculated two years ago, and P/E ratio calculated three years ago. This makes no logical sense, and it is not what the question asks. We compare price to earnings to see whether today's price is attractive or not relative to earnings. A P/E ratio calculated three years ago uses price from three years ago. We cannot get that stale price today, so comparing it with earnings (or any fundamental variable) is not sensible. That is, a historical P/E ratio is worthless here. We can, however, sensibly compare price today

16

with the average of earnings over the last three years. Benjamin Graham (and we) use this average because earnings vary over time and we are trying to smooth those variations out.

6. I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they were comparing price to net tangible assets. Note, however, that price is per share (e.g., $20), and net tangible assets is for the company as a whole (e.g., $200 million). Your comparisons have to be like with like. I recommend that you do everything on a per share basis. **Hint:** Look at the numbers beside your ID Code in the **FLDS** function to see their sign and size.

7. I was looking over some students' shoulders at their Bloomberg Terminal today. They were comparing price to revenue to implement a P/E-based Benjamin Graham screen. Revenue, however, is the top-line number in the income statement, and earnings (also known as net income) is the bottom line number, after taxes. So, revenue ≠ earnings. Usually, P/E is calculated using price per share and earnings per share (per annum).

8. I was looking over some students' shoulders at their Bloomberg Terminal today and I saw that they had arrived at a long list of stocks that were almost all Japanese or Korean. They had used a criterion filtering on market capitalization, not realizing that by quoting a fixed number, say, "market capitalization more than 200b," this was applied in USD to US firms, GBP to UK firms, NZD to NZ firms, etc. Given the low unit value of the KRW and the JPY, the great majority of stocks that pass this filter are from Japan and Korea. Watch out for that if you want to filter on market capitalization. It would be better to restrict country or exchange first, to fix the currency.

9. I was looking over some students' shoulders at their Bloomberg Terminal today. Their formula was not resolving when they hit enter, and instead it was just yielding an error message in red. I asked them to put a gap either side of a minus sign and hit enter, and then it worked fine. See also the algebra/space hint given immediately after Figure 5.

10. Finally, your instructor wants to write comments on your printouts. So, it would be a mistake to print them in color (like those here). To generate a pdf file that has black-and-white output on a white background (also saving printer ink!), open a new Bloomberg window and type **PSET <GO>**. An interactive pop-up window of **p**rinter **set**tings should appear. Choose *Printer Specific Options > Select Printer >* then double-click on your pdf printer (or your physical printer, if you do not want a pdf file) > *Print B/W*. Deselect *Print on Black* and *Print Screen in… …colors*. Under *Preferences*, I chose *landscape*, which I think looks best. Go to the window you want to print. Hit the green <mark><Print></mark> button beside the F12 key (or, if you want more options, left-click on the square with a green arrow icon on the top-right of the Bloomberg window and choose *Print Window*), and choose where to save the file (if you chose pdf). Acrobat Pro can convert pdf to jpeg if need be.

## STUDENT CHECKLIST

☐ Answers to all questions (approx. 6–10 pages).

☐ Printouts of our screening list (looks like Figure 7) and our shortlist (looks like Figure 8).

☐ Printouts of the Bloomberg functions **BQ**, **GP** (12 months), and **DES** (first page only).

☐ We read the *Academic Honesty Warning* on the last page.

## REFERENCES

**Abdoh**, Hussein, 2022, "Putting Bloomberg into Action for an Investment Class," (January 7), Available at SSRN: https://ssrn.com/abstract=4003753 (69pp).

**Annabi**, Amira, 2019, "Teaching Derivatives Using Bloomberg: An Experiential Learning Approach," (December 10), Available at: https://ssrn.com/abstract=3501259 (29pp).

**Anon.**, 2014, Biography of Irving Kahn, Available at: http://en.wikipedia.org/wiki/Irving_Kahn (downloaded January 2014).

**Bloomberg**, 2022, "The Bloomberg Terminal: An Evolving Icon," Bloomberg Professional Services, (August 19), Available at: https://www.bloomberg.com/professional/blog/the-bloomberg-terminal-an-evolving-icon/.

**Butler**, Hartman L. Jr., 1976, "An Hour with Mr. Graham," A transcription of a recorded interview with Benjamin Graham, recorded March 6, 1976 in La Jolla, California.

**Chaput**, J. Scott and Timothy Falcon **Crack**, 2023, "150 Risks in Finance: An Alphabetical List of Definitions and Examples, Accompanied by 75 Exercises for University Instructors to Assign to their Students," (May 10), Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4357458 (62pp).

**Crack**, Timothy Falcon, 2022a, *Foundations for Scientific Investing: Capital Markets Intuition and Critical Thinking Skills* (12th Ed.). Dunedin, New Zealand: Timothy Falcon Crack, 730p. See www.amazon.com.

**Crack**, Timothy Falcon, 2022b, *Interviews with Top University Teachers: How to Build Quality Teaching, Inspire Your Students, and Create More Time for Research*, Dunedin, New Zealand. Available at: www.amazon.com.

**Crack**, Timothy Falcon, 2023a, "Bloomberg Market Concepts (BMC): Certification for Students (and Their Professors)," (May 22), Available at: https://ssrn.com/abstract=4410208 (10pp).

**Crack**, Timothy Falcon, 2023b, Bloomberg Environmental Social Governance (ESG): Certification for Students (and Their Professors) (May 22). Available at SSRN: https://ssrn.com/abstract=4422855 (10pp).

18

**Crack**, Timothy Falcon, 2023c, "Bloomberg Equity Screening (EQS) Exercise: Environmental Social Governance (ESG) Investing," (May 19), Available at: https://ssrn.comabstract=4452854 (32 pp).

**Graham**, Benjamin, 2006, *The Intelligent Investor: A Book of Practical Counsel*, Revised Edition, Harper Collins: New York, NY. (Originally published in 1949, this is Graham's 1973 text, but annotated by Jason Zweig and with an appendix by Warren Buffett.)

**Graham**, Benjamin and David **Dodd**, 1934, *Security Analysis: The Classic 1934 Edition*, McGraw-Hill: New York, NY.

**Kahn Brothers**, 2014, Investment Personnel and Typical Investments, downloaded from http://www.kahnbros.com in January 2014, but no longer visible online.

**Lei**, Adam Y.C. and Huihua **Li**, 2012, "Using Bloomberg Terminals in a Security Analysis and Portfolio Management Course," *Journal of Economics and Finance Education*, Vol. 11 No. 1, (Spring), pp. 72–92. Available at SSRN: https://ssrn.com/abstract=1999066.

## ACADEMIC HONESTY

Students must not use any formulas that already exist that were created and saved on the Terminal by other users or by Bloomberg staff. Doing so after reading this warning is **intentional plagiarism, which is a form of academic misconduct**. Also, do not use the "append" function if you see it anywhere. Instead, you are creating your own formulas from scratch, typing them in term by term, one formula at a time. You have to be able to say "**this is all our own work**," and this statement requires that you type the formulas in term by term. Other users (from your class and beyond) may have saved some formulas on the Terminal already, but be wary of them. Based on previous years' examples, many formulas saved on the Bloomberg Terminal contain errors! So, feel free to use those formulas (cautiously) for hints on correct syntax of formulas, but do not copy them; you must create your own formulas from scratch.

**END**