Using Bloomberg Terminals in a Security Analysis and Portfolio Management Course

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ABSTRACT

Motivated by an obvious gap between the widespread use of Bloomberg terminals in the finance industry and the scant resources available to an instructor on how to incorporate the available information through the terminal into a finance course, we illustrate our experience using the terminal in an equity-focused security analysis and portfolio management course. Our goal is to enable students inexperienced with the terminal to prepare an analyst report. We identify the most significant challenges we face and provide the corresponding solutions. Our results are also applicable to other finance courses including financial analysis, investments, and student managed investment fund.

Introduction

Bloomberg Professional Service, i.e., the Bloomberg terminal, has been around since early 1980s. In the following decades, it gains a substantial market share in the global financial data market and becomes a major source of economic and financial information for finance professionals in various institutions such as commercial banks, investment banks, brokerage companies, and investment firms (e.g., Clifford and Creswell, 2009). It also becomes obvious that finance students being able to operate the Bloomberg terminal would be stronger candidates on today's competitive job market. Surprisingly, few resources exist to an instructor on how to incorporate the available information through the Bloomberg terminal into a finance course. In this paper we bridge this gap by showing how to use the information available through the Bloomberg terminal to prepare an analyst report in an equity-focused security analysis and portfolio management course. We identify the two most significant challenges we face: 1) to provide in-house training sessions to students inexperienced with the terminal and its functions, and 2) to illustrate the actual preparation of an analyst report using the terminal.

Our solution to the first challenge is the identification and illustration of the key functions of the Bloomberg terminal relevant to the preparation of an analyst report, in addition to the functions that may be useful for the management and evaluation of an equity portfolio. We provide the illustration in the appendix of this paper such that it can readily serve as a handout or reference for students learning to use the Bloomberg terminal. Many of the identified functions are also applicable to other finance courses including financial analysis, investments, and student managed investment fund.

Our solution to the second challenge builds on an instructor-prepared analyst report, of which we provide a step-by-step example in this paper and point out the specific Bloomberg functions and other resources we use. We illustrate the report in class and show the caveats on the preparation of an analyst report under a real-life scenario.

The rest of this paper is organized as follows: In the next section we review the background of the Bloomberg terminal and related studies. We introduce our security analysis and portfolio management course and its organization in Section 3. Section 4 shows the challenges we face on using the terminal in this course and the corresponding solutions. Section 5 addresses the assessment issues and student responses. We conclude this paper in Section 6. The appendix of this paper illustrates the Bloomberg

functions relevant to the preparation of the analyst report, in addition to those relevant to portfolio management and evaluation.

Bloomberg Terminal and Related Studies

Bloomberg Professional Service is an information service that, through subscription, provides economic and financial data and news on broad markets and individual securities in sectors such as fixed income securities, equities, commodities, and currencies. Workstations with the service installed are traditionally called Bloomberg terminals, even though a regular PC meeting the minimum system requirements can also have the service installed and become a Bloomberg terminal.[2] As of August 2010, each Bloomberg terminal (software, service, and the proprietary Bloomberg keyboard) costs $1,900 per month, but universities can obtain an academic discount by paying for three terminals and receive nine additional terminals free for a total of 12 terminals.[3] The closest competitor of the Bloomberg terminal in terms of its setup, provided content, and pricing point is the Eikon system, introduced by Thomson Reuters Corp. in September 2010 to consolidate its desktop offerings. The Eikon system, nonetheless, has about 40,000 subscribers as of February 2012, in contrast to the more than 310,000 subscribers of the Bloomberg terminal (e.g., Baker and Leske, 2012).

The widespread use of Bloomberg Professional Service in the finance industry also attracts academic attention regarding its uses in financial education in recent years. Coe (2007) provides a broad overview of the Bloomberg functions in areas including financial management, investments, international finance, derivatives, and banking. Holler (2007 and 2008) examines in detail the content of the Bloomberg Global Product Certification Program, a training program through which a user learns the basic functionality of the terminal.[4] Scott (2010) focuses on the implementation of the Certification Program in a classroom setting and the associated Bloomberg resources. Through the illustration of the use of the Bloomberg terminal in a security analysis and portfolio management course, this paper contributes to the literature by addressing the specific Bloomberg functions that are also applicable to other finance courses and the challenges that an instructor may face.

The Security Analysis and Portfolio Management Course

Our security analysis and portfolio management course serves as an upper-level elective for finance majors and requires an investments course as a perquisite. It addresses "security valuation and selection; theory and practice of portfolio management including asset allocation, diversification, and portfolio performance evaluation."[5] The objective of this course is to allow students to apply the knowledge they learn from previous courses toward security analysis and portfolio management and obtain hands-on experience. We spend approximately one-third of a semester going over concepts including asset allocation, portfolio theory, and asset pricing models, followed by a written exam in this course. The later part of the semester focuses on equity security valuation, portfolio management practices, and portfolio performance evaluation.

Students in this course are required on a team basis to manage a simulated equity portfolio (see, e.g., Jankowski and Shank, 2010) and briefly report their portfolio performance and adjustments once every week at the beginning of class. Each team turns in an investment policy statement at about one month into the semester, and presents to the entire class an analyst report on a stock of its choice and a portfolio performance evaluation report at the end of the semester. We use the Bloomberg terminal mainly for the analyst report. The equity analyst report consists of three major components: Economic analysis, industry analysis, and individual security analysis. The economic analysis addresses the macroeconomic environment and its effects on the firm under consideration. The industry analysis addresses the industry environment the firm faces and in particular its peer competition. The individual security analysis focuses on the fundamental and technical analyses of the specific security, in particular the calculation of the

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[2] The service is installed through a software download, installation, and activation process.

[3] Quarterly payments in advance are required for the Bloomberg subscription. Additional payment discounts are available if an institution is willing to make further prepayments.

[4] What used to be the Bloomberg Global Product Certification Program (2001-2009) is now the Bloomberg Essentials Online Training Program (2009-current; accessible through the Bloomberg terminal by the <BESS> function).

[5] Prerequisite and course description in one of the authors' institutions.

security's intrinsic value. The portfolio performance evaluation report consists of two major components: Portfolio summary and risk-return analysis. The portfolio summary shows the portfolio beginning and ending values, portfolio allocation, and portfolio holdings with associated unrealized gains and losses. The risk-return analysis shows, in addition to the total holding-period return and the return standard deviation, the portfolio risk-adjusted performance measures including alpha, the Sharpe ratio, the Treynor ratio, the information ratio, and the decomposition/attribution of portfolio excess return.[6] Since most students entering into this course have no prior experience with the Bloomberg terminal, we cover the relevant Bloomberg functions over one week right after the midterm exam. We use the appendix of this paper as a handout to illustrate the functions.

Challenges on Using the Bloomberg Terminal and an Illustrating Example

The first challenge we face on incorporating the use of the Bloomberg terminal into the security analyst and portfolio management course is the inexperience of our student with the terminal and its functions. Specifically, after a user logs onto the terminal, the user can call up a function either by navigating through the menus and clicking on the specific function, or by inputting the function keyword directly to the command line. Since there are literally tens of thousands of Bloomberg functions available, it is difficult for an inexperienced user to know what the relevant functions are and what information they provide. A user can obtain function references in two ways through the Bloomberg terminal: 1. Use the Bloomberg <CHEAT> function to download the Bloomberg cheatsheets by categories, which, however, only show the function keywords and their names. 2. Use Bloomberg Help (i.e., press F1 under a function once a user logs onto the terminal) for the full function definitions, which, in many cases, are lengthy. Although Bloomberg also provides on-site training by its representative, the schedule and coverage of the training sessions do not fit our class needs appropriately. In addition, the Bloomberg Essentials Online Training Program, available to a user through the terminal for self-paced study, does not have the task-oriented focus on preparing an analyst report, which we emphasize in this course.

To deal with this challenge, we provide our own training to our students in class. Specifically, we provide the appendix of this paper to our students as a handout. We start with the setup of a Bloomberg account and then go over the key functions. Once we familiarize our students with the basic operations of the terminal and the key functions, students proceed to explore the addition features of the terminal and prepare the analyst report at their own time.

Other than illustrating the functions, the most significant challenge we face on using the Bloomberg terminal in this course is to fend off student questions on "what's next?" Specifically, we face students expecting a formula or steps such that once the inputs are obtained through the Bloomberg terminal, the "right" outputs/answers will be generated through the formula or steps automatically. Our response, unfortunately, is that there is no such formula or steps. Especially on security analysis, if such formula or steps exist to generate the "right" answers, we would not have so many financial analysts for each security in reality. Security analysis, and financial analysis in general, is largely a mix of art and science. For instance, although calculating the time value of money is science, i.e., exact, once the inputs are given, choosing the appropriate inputs and making the appropriate assumptions for the specific security is art. We emphasize that the appropriateness is not defined by a formula, but whether students can defend their choices using reasons for the specific securities under the specific scenarios.

After we emphasize the importance of making choices and being able to defend them, we proceed to show an instructor-prepared analyst report as an example. During the Fall 2011 semester, we choose the common stock of Western Digital Corporation (Ticker: WDC), a hard disk drive manufacturer, as the security to be analyzed.[7] Table 1 shows a summary of the analyst report. We point out below the specific Bloomberg functions, which are also illustrated in the appendix, and other resources we use for the report.

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[6] We also require two appendices in the portfolio performance evaluation report: 1) A transaction history that shows every transaction in the portfolio and, if a reversing trade, the associated realized gain or loss, and 2) A dividend history that shows the cash dividends received on the portfolio holdings.

[7] We choose this stock as an example simply because one of the authors was interested in the firm at that time.

## Table 1: Western Digital Corporation (WDC): Summary of Analyst Report

Western Digital Corp. (WDC)						Industry: Technology-Data Storage Devices Recommendation: Buy	
Value	**Price**	**52-Week High**	**52-Week Low**	**Beta**	**Trailing P/E**	**Cap**	**Date**
$35.37	$30.07	$41.87	$26.18	1.24	9.31	$7.01B	09/17/2011

Business Summary

Western Digital Corporation (Ticker: WDC) was founded in 1970 and headquartered in Irvine, CA. It designs, manufactures, and markets hard disk drives (HDDs) for internal and external storage in desktops and notebooks. It also provides storage solutions in networks and home entertainment equipments. In 2009 the company entered into the market of solid state drives, chip-based drives that are commonly deemed as the next generation of storage devices. The 2011 fiscal year revenue for the company is $9,526 million, of which 57.04% is from Asia, 23.05% is from Europe, the Middle East, and Africa, 16.68% from the Americas, and 3.22% from other areas.

Economic and Industry Trends

The data storage devices industry is sensitive to the macroeconomic environment, currently in the recovery phase. The overall competition among hard drive manufactures has been intense and product margins have decreased as a result of price competition. On the other hand, the industry is entering into a stage of consolidation. Over the past year WDC agreed to acquire Hitachi Global Storage Technologies, a wholly owned subsidiary of Hitachi Ltd. Seagate Technologies (Ticker: STX), another major player in the industry, entered into a definitive agreement with Samsung Electronics Co., under which Samsung will combine its hard disk drive operations into Seagate and Seagate will supply disk drives to Samsung for PCs, notebooks and consumer electronics.
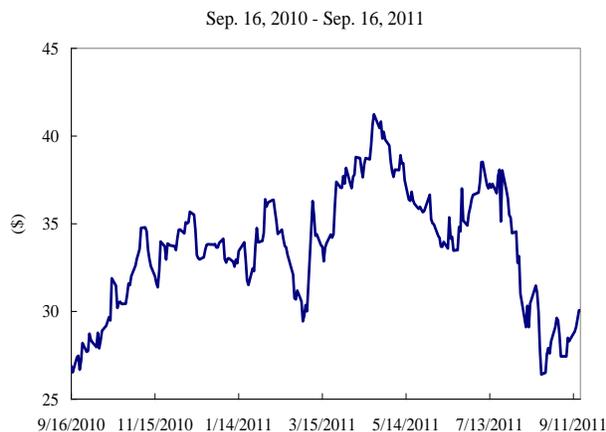
Competition

WDC faces direct competition from Seagate and Toshiba in the global HDD market. In 2010, Seagate accounts for 33% of the global market share, WDC 29%, Hitachi 17.9%, Toshiba 10.5%, and Samsung 9.6%.

Strengths

➢ WDC has relative less debt in its capital structure than its peers and therefore stronger financial health.
➢ The increase in personal internet usage and the popularity of user-generated content should sustain the demand on traditional HDDs.
➢ Industry consolidation should reduce price competition and increase product margins.
➢ With a retail consumer focus, WDC is expected to benefit more than its peers while the economy recovers.

Weaknesses

➢ The performance of WDC is sensitive to the macroeconomic environment due to the cyclical nature of the data storage devices industry.
➢ The demand on alternative media devices such as smart phones and tablets and may shrink the market for traditional HDDs.
➢ The prevalence of cloud computing and network storage may further reduce personal demands on traditional HDDs.

Sep. 16, 2010 - Sep. 16, 2011

Valuation

Beta	1.24
Risk-Free Rate	2.05%
Expected Market Return	11.03%
Debt/Asset for WACC	4.02%
WACC	12.68%
Growth Rate Assumption	3.5%
Total Firm Value Estimate	$8,541.61M
Total Equity Value Estimate	$8,247.61M
Shares Outstanding	233.19M
Share Intrinsic Value	**$35.37**

Business Summary

We use the Bloomberg functions <DES: Description> and <HH: Hoover's Handbook> for the company's background information. The geographic breakdown of WDC's 2011 fiscal year revenues (WDC's fiscal year ends in June) is available through the <FA: Financial Analysis> function, under "Segment Analysis" and "Geographic" in the left panel. Other common sources of background information include Yahoo! Finance, Google Finance, and company websites.

Economic and Industry Trends

For the economic trends, we look at the real GDP growth rates available through the <ECFC> function. Since this function allows a user to choose a specific region and a specific country, we focus on the United States, Asia, and EMEA (Europe, the Middle East and Africa), countries/regions from which most of WDC's revenues were generated. The function <ECOW: Economic Data Watch> provides more detailed country-specific macroeconomic information. For the industry trend, we use the <BI: Bloomberg Industries> function, with a focus on the Technology sector and the Computer Storage industry, to obtain a broad picture. We use the function <CN: All News> to perform a news search on WDC and the function <NSE: News Search> to perform a news search on the industry (through the links "Seach Categories", "Industries", "Information Technology", "Technology Hardware & Equipment", "Computers and Peripherals", and "Computer Storage & and Peripherals"). Unfortunately, all these functions lead to hard economic and industry data. They do not tell a user how the economy or the industry will perform in the future. Students eventually will have to make their own interpretations, take their positions, and justify their arguments.

Competition

For information on the competition and competitors within the industry, we rely on the function <BI: Bloomberg Industries>. The market shares of the competitors are available under "Data Library" and "Market Share" in the left panel and "Global HDD Market Share" in the right panel.

Strengths and Weaknesses

We are not aware of any Bloomberg function that would directly point out the strengths and weaknesses of a firm. A user has to summarize and interpret the available data and reach one's own conclusion. We do find, however, that through our university library's subscription to the *MarketLine* database, students are able to access the Datamonitor360 website (http://360.datamonitor.com/) and obtain PDF reports on the company profile and the industry profile. For WDC, the company profile includes a company overview, key facts, business description, history, key employees and their biographies, major products and services, revenue analysis, SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, top competitors, company view, and locations and subsidiaries. We suggest our students to use the profile as a starting point to shape their views. We also emphasize the importance of generating original arguments and avoiding the pitfall of plagiarism. In addition, we use the industry profile to supplement our analyses in the industry trend and competition.

Valuation

For the valuation and the calculation of share intrinsic value, we use the free cash flow to the firm approach (see, e.g., Pinto, Henry, Robinson, and Stowe, 2010, p. 151). Although the Bloomberg function <DDM: Dividend Discount Model> allows for the calculation of share theoretical (intrinsic) value using a three-stage dividend growth model (i.e., needs three growth rate assumptions), we are more comfortable with making fewer than more assumptions. In addition, WDC has not paid a dividend over its history (the function <DVD: Dividend/Split Summary> shows the historical dividends/splits, if any).

The formula we use to calculate the free cash flow to the firm is defined as follows:

Free Cash Flow to the Firm (FCFF) =
Pretax Income – Income Tax + Interest Expense × (1 – (Income Tax/Pretax Income))
+ Depreciation – Capital Expenditure – Investment in Net Operating Working Capital.   (1)

In eq. (1) we use (Income Tax/Pretax Income) as an approximation of the applicable tax rate. The Bloomberg function <FA CF: Cash Flow Analysis> also provides an estimate of the free cash flow to the firm, defined as (cash flow from operating activities from the statement of cash flows + after-tax interest expense – capital expenditure) that may be used directly. For our illustrating purposes, however, we employ eq. (1) and define the Investment in Net Operating Working Capital as follows:

Investment in Net Operating Working Capital =
Δ (Current Assets – Account Payables – Accruals) –Δ (Cash & Near Cash Items),   (2)
where Δ means the change in.

Eq. (2) serves as an example to show why there is no single formula that would serve all purposes on the calculation of share intrinsic value across securities and across scenarios. The usual definition for Investment in Net Operating Working Capital is Δ (Current Assets – Account Payables – Accruals). Although some have argued that the change in cash should always be excluded from such calculation, in our view whether to exclude the change in cash depends on whether the change is necessary to maintain the firm's operation. By looking over the balance sheets of WDC one would notice that in recent years WDC effectively accumulates billion dollars of cash. We also show in Figure 1 WDC's increasing balance of Cash & Near Cash Items in recent years. Since we find the increases difficult to attribute as necessary, we exclude the change in Cash & Near Cash Items from the Investment in Net Operating Working Capital. Once we make this adjustment, the inputs for the free cash flow calculation are readily available from the Bloomberg terminal using the <FA: Financial Analysis> function (through left panel "Balance Sheet" and "Income Statement").

Figure 1: Cash & Near Cash Items of Western Digital Corporation (WDC): 2007 Q1 to 2011 Q4
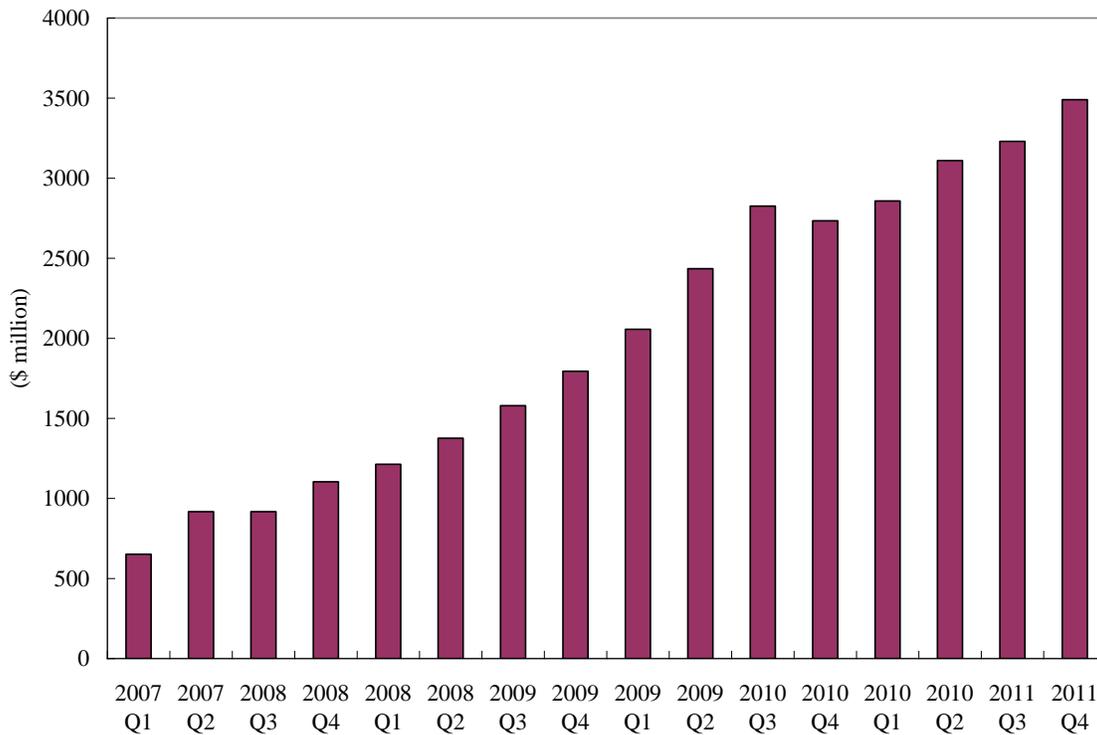
Figure 2 shows the quarterly free cash flow of WDC from 2007 Q1 to 2011 Q4. We choose this data range because it covers a seemingly complete free cash flow cycle for the firm and, more importantly, both the onset and the ending of the global financial crisis. Whether to include the first fiscal quarter of 2007 with a negative free cash flow is inevitably a judgment call. We include it in our analysis to be on the conservative side. We use the average of these 16 quarterly free cash flows ($196.03 million) as our next quarter free cash flow estimate. We impose a 3.5% annual growth rate on future free cash flows, which is the average annual growth rate in the global computer storage and peripherals industry from 2006 to 2010 from the Datamonitor industry profile. Alternatively, the growth rate may be estimated using the historical industry data through the <BI: Bloomberg Industries> function (under "Data Library" and "Industry" in the left panel).

Figure 2:
Free Cash Flow of Western Digital Corporation (WDC): 2007 Q1 to 2011 Q4
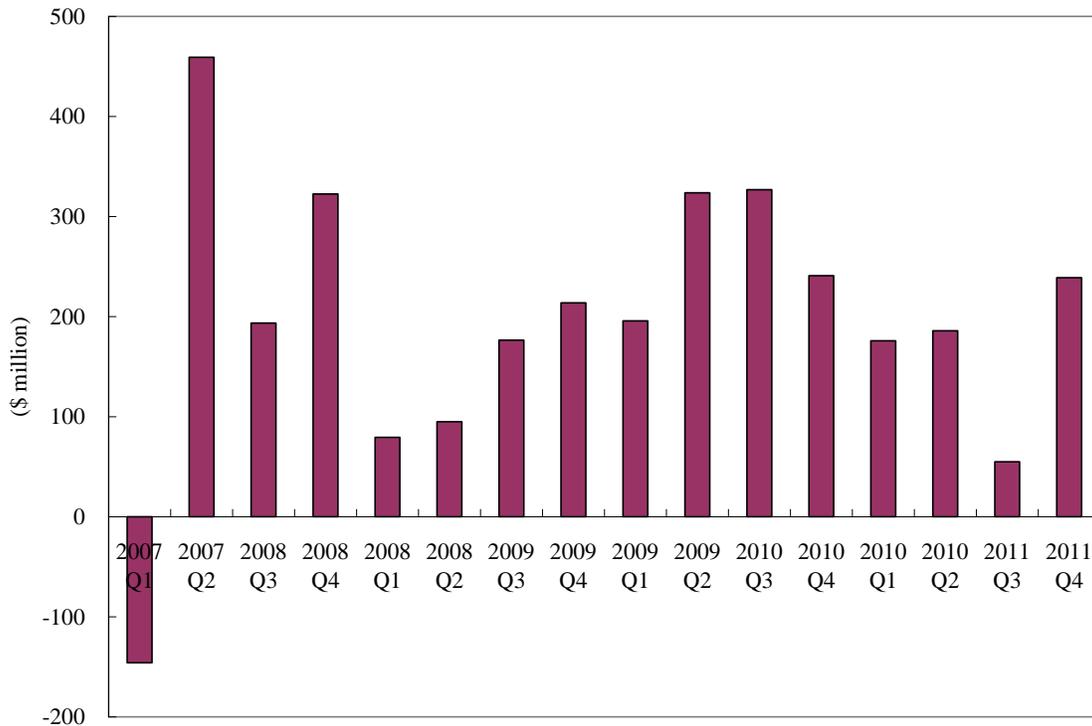
We use the <BETA: Beta Calculations> function to estimate the adjusted beta over monthly data from September 2006 to August 2011. Although we use <WACC: Weighted Average Cost of Capital> to obtain the risk-free rate (the Bloomberg default of the 10-year Treasury Note yield), the expected market return, and the after-tax cost of debt, we do our own calculation for WACC instead of using the default settings to incorporate the adjusted beta and the capital structure weights on the specific date the analyst report is prepared. We also show in class an alternative method to estimate the risk-free rate by using the average yield from the recent Treasury auction results on the Treasury Direct website (http://www.treasurydirect.gov/instit/annceresult/auctdata/auctdata.htm). Since WDC issues no preferred stock (the capital structure of a firm can be seen directly using the <WACC: Weighted Average Cost of Capital> function), the WACC of WDC has no such component. We obtain the detailed number of shares outstanding using the direct link to WDC's 2011 10-K, available through the <FA: Financial Analysis> function, left panel "Balance Sheer", right panel "Shares Outstanding", and the period-specific number (233 (million) in 2011 Q4) (e.g., from the 2011 10-K of WDC, as of August 3, 2011, WDC has

233,191,524 shares of common stocks outstanding). We obtain the (book) value of short-term and long-term debt using the <FA: Financial Analysis> function.[8]

Given the market value of equity on September 16, 2011 ($7,012.08 million = $30.07 × 233.192 million shares), the total value of debt ($294 million = short-term debt of $144 million + long-term debt of $150 million), the risk-free rate (2.05%), the expected market return (11.03%), the adjusted beta (1.236), and the after-tax cost of debt (1.45%), we derive the weighted average cost of capital of 12.68% for WDC. Using a constant growth model with the next quarter free cash flow estimate ($196.03 million), the assumed future annual growth rate (3.50%), the WACC (12.68%), and the 233.192 million shares outstanding, we adjust the WACC and the growth rate to be on a quarterly basis and obtain the total firm value estimate of $8,541.61 million, the total equity value estimate of $8,247.61 million (= total firm value estimate − total value of debt), and the share intrinsic value of $35.37 (= total equity value estimate/number of shares outstanding).[9]

Assessment Issues

Our security analysis and portfolio management course has the following general learning goals: Upon successful completion of this course, students should: 1) Demonstrate problem solving and decision making abilities through the critical analysis, evaluation, and interpretation of business information, 2) Demonstrate a competency in speaking and writing for common business scenarios, 3) Know how to use team building and collaboration to achieve group objectives, and 4) Be able to utilize available technology for common business applications. Our course-specific learning goals include the understanding of: 1) The importance of an investment policy statement, 2) Asset allocation and portfolio diversification, 3) Single and multi-factor asset pricing models, 4) Common stock valuation and analysis, and 5) Portfolio performance evaluation. To measure student achievements on the general learning goals, we assign 60% of a student's semester grade on team-based performance (10% on the written investment policy statement, 30% on the analyst report and its presentation, and 20% on the portfolio performance evaluation report and its presentation). We use 30% of the semester grade to explicitly address the course-specific knowledge and learning goals through the midterm exam, in addition to the team-based grade components. The remaining 10% of semester grade depends on a student's classroom participation. Given that we use the Bloomberg terminal largely as a tool in this course, we do not assign an explicit grade component for students to use it (i.e., whether students can use the Bloomberg terminal for our purpose is assessed through the quality of the analyst report), but we give bonus points if a student can complete the Bloomberg Essentials Online Training Program during the semester. For instructors interested in formalizing the Bloomberg program in their courses, Scott (2010) provides an excellent illustration of its implementation.

In Fall 2010 and Fall 2011, the two most recent semesters this course is offered, our students' overall evaluation of the course is 4.62 and 4.58, respectively (5: Excellent, 4: Above Average, 3: Average, 2: Below Average, 1: Poor). Although we do receive student complaints on the amount of work required for this course and the (heavy) weights assigned to the team-based grade components, most of our students enjoy the course design and perceive its value, as shown by the above course evaluation scores and the following representing comments:

"Liked that the class was more hands on with projects and real-life situations (managing a portfolio) rather than just going over slides and having a bunch of tests. The reports were very tedious and I've never spent so much time on projects. It has been my favorite class."

"Projects were very lengthy and required far more work than expected. Very useful class. I learned more in this class than in rest of all financial classes."

"The projects used definitely give real life experience to what you learn in the class."

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[8] Ideally the market value of debt should be used. Since we do not cover fixed income securities using the Bloomberg terminal, we use the book value instead.

[9] In October 2011, WDC's production in Thailand (60% of WDC's capacity) was severely disrupted by unexpected floods. The share price closed at a low of $24.44 on October 19, 2011. Since then the share price rebounded and closed at $36.35 on January 31, 2012.

Conclusion

Motivated by an obvious gap between the widespread use of Bloomberg terminals in the finance industry and the scant resources available to an instructor on how to incorporate the available information through the terminal into a finance course, we illustrate our experience on using the terminal in an equity-focused security analysis and portfolio management course to prepare an analyst report. We identify the two most significant challenges we face: 1) to provide in-house training sessions to students inexperienced with the terminal and its functions, and 2) to illustrate the actual preparation of an analyst report using the terminal.

To deal with the first challenge, we identify and illustrate the key Bloomberg functions and use the illustration, i.e., the appendix of this paper, as a handout for our students. Although our goal through the illustration is to enable students inexperienced with the terminal to prepare an analyst report, we also identify functions that may be useful for the management and evaluation of an equity portfolio. We note that many of the identified functions are applicable to other finance courses including financial analysis, investments, and student managed investment fund, and the illustration should serve as a useful reference for first-time users of the Bloomberg terminal. To deal with the second challenge, we show an instructor-prepared analyst report in class. We provide a step-by-step example in this paper and point out the specific Bloomberg functions and other resources we use for the report. Through the illustration, we emphasize the importance of making choices/assumptions and being able to defend them.

By familiarizing our students with the Bloomberg functions in the security analysis and portfolio management course, we aim to equip our students to be stronger candidates on the competitive job market. We have received favorable responses from the local business community to our use of the Bloomberg terminal in class and consequent requests for job candidate referrals. The responses of our students to this course are also overwhelmingly positive. We would certainly suggest that instructors in institutions equipped with Bloomberg terminals consider incorporating the use of the terminal into a part of their course curricula. For institutions establishing a finance/investment lab, we would also suggest the consideration of the terminal because of its practical use and popularity in the finance industry.

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APPENDIX: KEY BLOOMBERG FUNCTIONS RELATED TO THE SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT COURSE

In this appendix we illustrate the key Bloomberg functions related to the security analysis and portfolio management course. The following section focuses on the functions relevant to the preparation of an analyst report. We illustrate the functions relevant to portfolio management and evaluation in the portfolio management section

Security Analysis
Individual Security

In this section we first assume that a specific equity security is already chosen and an individual would like to gain further insight into the security using the Bloomberg terminal. For the initially selection of a security we suggest using the Bloomberg function <EQS: Equity Screening> to narrow down the choices by user-defined criteria. We then move on to the Bloomberg functions related to economic and industry analyses. Under the latest Bloomberg equity menu (i.e., the Bloomberg Next design; introduced in February 2012), there are eight major categories related to a security once the security is specified. Below we identify and illustrate under each category the functions (in alphabetic order) that we deem useful for the analysis of an individual security. Table A.1 summarizes those functions.

Table A.1: Key Individual Security Analysis Functions under the Bloomberg Equity Menu

Initial Security Selection			
EQS	Equity Screening		
1. Company Overview			
CF	Company Filings	HH	Hoover's Handbook
CRPR	Credit Profile	MGHL	Management Holdings
DES	Description	OWN	Ownership Summary
DVD	Dividend/Split Summary	RSKC	Company Risk
GPTR	Insider Transactions		
2. Company Analysis			
BETA	Beta Calculations	FA	Financial Analysis
DDM	Dividend Discount Model	WACC	Weighted Average Cost of Capital
3. Research & Estimate			
ANR	Analyst Recommendations	EE	Earnings Estimates Menu
CN	All News/Research	SURP	Surprise Analysis
4. Comparative Analysis			
COMP	Comparative Total Returns	RV	Relative Value
PC	Peer Correlation	RVR	Relative Value Ranking
5. Charting & Reporting			
GF	Fundamentals Graph	HP	Price Table w/Avg Daily Volume
GIP	Intraday Price Graph	IGPO	Intraday Bar Graph
GP	Price Graph w/Volume	TECH	Technical Study Browser
GPO	Price Bar Graph w/ Moving Avg		
6. Security Surveillance			
BQ	Bloomberg Quote	QR	Trade Recap
EVT	Event Calendar		
Others			
LITI	Company Litigation Summary		

Company Overview

CF (Company Filings): This function provides direct links to the original corporate filings.

CRPR (Credit Profile): This function shows the issuer credit ratings from Moody's and S&P's.

DES (Description): This function provides a brief description of a firm's business and a financial overview of the firm, such as management profiles, index membership, financial ratios, shareholder information, and segment information. Much of the financial information shown by this function is also available in greater detail through other functions.

DVD (Dividend/Split Summary): This function shows the dividend and split history of a firm and a one-period ahead dividend forecast.

GPTR (Insider Transactions): This function provides a graphic representation of insider buys and sells. More detailed transaction information is available by clicking on the individual transaction icon on the graph.

HH (Hoover's Handbook): This function provides a more detailed description of the firm, based on the Hoover's handbook, than the function <DES> does.

MGHL (Management Holdings): This function shows the detailed holdings of the executives and board members.

OWN (Ownership Summary): This function provides historical ownership information and its changes by institution types, fund objectives, and geographic areas. Also available are the information on changes in institutional and insider ownership.

RSKC (Company Risk): This function provides an overview of company risk including equity risk (market and unique), credit risk, corporate governance, and accounting-related risk.

Company Analysis

BETA (Beta Calculations): This function allows a user to calculate the raw and adjusted betas of a security using user-specified market index, data frequency and data range (the default settings use the S&P 500 index and weekly data over the previous year). This function also shows the regression line graphically and the corresponding statistical information in the beta calculation.

DDM (Dividend Discount Model): This function allows a user to impose various assumptions on earnings, dividend payouts, growth rates and durations, and risk premiums to obtain a theoretical price/intrinsic value of the security. The default setting employs a three-stage (growth, transition, and mature stages) dividend discount model. The default model and inputs, however, do not always provide a reasonable theoretical price, i.e., the theoretical price could be much too high or much too low relative to the current transaction price.

FA (Financial Analysis): For fundamental analysis, this function in our view is one of the most important functions provided by the Bloomberg terminal. Under this function there are several subcategories, of which each links to more detailed historical data by the frequency a user chooses. Examples of the subcategories include financial statements, valuation, ratio analysis, debt-equity analysis, segment analysis, and environmental, social, and corporate governance.

WACC (Weighted Average Cost of Capital): This function provides the weighted average cost of capital of a firm by components based on existing financial information. A user can impose different assumptions regarding the capital structure and the individual cost components to derive a different weighted average cost of capital.

Research & Estimate

ANR (Analyst Recommendations): This function provides the summary and individual recommendations, target prices, and recommendation dates from analysts.

CN (All News/Research): This function shows the relevant news for the security in consideration. Unlike data under the Current Market category, the provided news stories are real time with any Bloomberg subscription.

EE (Earnings Estimates Menu): This function provides the links to the consensus and specific earnings estimates, including historical earnings surprises (see also function <SUPR> below).

SURP (Surprise Analysis): This function provides historical data on earnings surprises and corresponding share price changes.

Comparative Analysis

COMP (Comparative Total Returns): This function allows a user to compare the total return of a security to up to two indexes or individual securities over a user-defined period of time.

PC (Peer Correlation): This function provides the return correlation matrix between a firm's security and those of its peer companies. As in the functions <RV> and <RVR>, the peer companies can be a predefined Bloomberg peer group, an industry, or a user-defined group.

RV (Relative Value): This function provides a comparison of a firm to its peer companies on various accounting and valuation variables. The comparison can be made through a predefined Bloomberg peer group, an industry, or a user-defined group.

RVR (Relative Value Ranking): This function provides a comparison of a firm to its peer group averages on various accounting and valuation variables. The comparison can also be made through a predefined Bloomberg peer group, an industry, or a user-defined group.

Charting & Reporting

GF (Fundamentals Graph): This function allows a user to graph many of the variables shown under the function <FA> and perform a graphic comparison with a user-defined benchmark.

GIP (Intraday Price Graph): This function provides the price graph based on intraday prices.

GP (Price Graph with Volume): This function allows a user to graph the historical price and trading volume over a user-defined period. Moving average prices can also be specified.

GPO (Price Bar Graph with Moving Average): This function is similar to the function <GP>, but it provides predefined moving average prices together with historical prices.

HP (Price Table with Average Daily Volume): This function provides historical price and trading volume information in a tabular format.

IGPO (Intraday Bar Graph): This function is similar to the function <GPO>, but it provides the graph and moving averages based on intraday prices in 10-minute intervals.

TECH (Technical Study Browser): This function shows a menu of various technical indicators, such as the relative strength index <RSI> and the candle chart <GPO CNDL>, that a user can choose from.

Security Surveillance

BQ (Bloomberg Quote): This function provides an intraday snapshot of the security's transactions, including transaction time, size, price, and exchange. Also shown are bid, ask, high, and low prices and other brief financial information and peer firms' price changes. However, unless an institution also subscribes to the real time data through the Bloomberg Professional Service, which increases the subscription cost significantly, the information is shown with delay and inappropriate for intraday trading purposes.

EVT (Event Calendar): This function shows a calendar indicating major historical and future corporate events such as earnings announcements and announcements on mergers and acquisitions.

QR (Trade Recap): This function shows all the trades of a security during a day, including the time, size, price, exchange, and trade condition. Similar to other functions under the Current Market category, the information is displayed with a time lag without the real time data subscription.

Trade Analytics

The functions under this category are related to the execution of orders (e.g., the Bloomberg Professional Service can incorporate a user's trading system and allows the user to trade directly through the Bloomberg terminal). Since we are not aware of any academic institutions doing actual transactions this way in a classroom setting, we skip those functions.

Derivatives

Functions in this category provide information such as quotes, volatilities, and valuation on options with the specified security as the underlying asset. Since our focus is on equity securities, we skip those functions on derivatives.

Others

LITI (Company Litigation Summary): This function shows the number and types of federal litigation a firm is involved in over the previous years. The information by quarter is also available through this function. In contrast to other functions that are provided under the Bloomberg Equity sector, this function is provided under the Bloomberg Law sector.

Economic Analysis

The identified Bloomberg functions below for economic and industry analyses are not specific to a security. A user can perform those functions once the user logs onto a Bloomberg terminal. Table A.2 summarizes those functions.

Table A.2:
Key Economic and Industry Analysis Functions

Economic Analysis Functions			
ECFC	Economic Forecasts	ECST	World Economic Statistics
ECO	World Economic Calendar	FED	Federal Reserve Portal
ECOF	Economic Data Finder	FOMC	FOMC Activities
ECOW	Economic Data Watch		

Industry Analysis Functions			
BI	Bloomberg Industries	NSE	News Search
GICS	Global Industry Classification		

ECFC (Economic Forecasts): This function shows the historical data and forecasts on macroeconomic variables such as real GDP, CPI, unemployment rate, and interest rates. A user can choose the data for a specific region, e.g., North America or Asia Pacific, or a specific country, e.g., United States or Japan.

ECO (World Economic Calendar): This function shows the dates of forthcoming economic announcements. A user can choose the data for a specific region, e.g., North America or Asia Pacific, or a specific country, e.g., United States or Japan.

ECOF (Economic Data Finder): This function provides a link to a broad menu of macroeconomic variables by category. A user can choose a specific variable for a graphic representation of the historical data.

ECOW (Economic Data Watch): This function shows monthly and quarterly historical data over the previous year on macroeconomic variables, e.g., national accounts, consumer and producer prices, and other indicators, selectable by country in either a tabular or a graphic format.

ECST (World Economic Statistics): This function allows a user to choose a specific country and provides the links to the definitions and data of macroeconomic variables.

FED (Federal Reserve Portal): This portal function provides the links to other functions for information related to the Federal Reserve.

FOMC (FOMC Activities): This function shows the Federal Open Market Committee schedule of meetings and the federal funds target rates.

Industry Analysis

BI (Bloomberg Industries): This function shows the comparison information of firms by categories, such as equity valuation and operating statistics under the comparison sheets, and short interests and holdings under the ownership category, on industry peers defined by Bloomberg LP. This function is useful on indentifying a peer group for industry analysis.

GICS (Global Industry Classification): This function provides the industry classification of a firm, including sector, industry group, industry, and sub-industry.

NSE (News Search): This function allows a user to search news stories by category, e.g., industry, or by keywords.

Portfolio Management

In this section we identify and group the key Bloomberg functions related to portfolio management and evaluation into five categories by the order that a user typically uses them: 1) Overview, 2) Portfolio Construction, 3) Ongoing Management, 4) Performance Reporting, and 5) Performance Evaluation. Within each category, we illustrate the functions in alphabetic order. Table A.3 summaries those functions.

Table A.3:
Key Portfolio Management Functions

1. Overview			
ALPM	Alpha Menu/Portfolio and Risk Analytics Functions Menu		

2. Portfolio Construction			
PBEN	Portfolio Benchmarks	PLST	Portfolio List
PDIS	Portfolio Distribution/Share Portfolios	PRTU	Creating and Updating Portfolios
		PTT	Portfolio Trade Ticket
PFST	Portfolio Update		

3. Ongoing Management			
EVTS	Event Calendar	PDSP	Portfolio Display
NPH	Portfolio News and Research Headlines	PRT	Equity Portfolio Real Time Monitor

4. Performance Reporting			
PDVD	Portfolio Dividend/Split Report	PSD	Portfolio Slice and Dice
PREP	Portfolio Distribution Reports	PVAR	Portfolio Value at Risk
PRPT	Custom Report Writer	RPT	Retrieve and Monitor Reports
PRTS	Portfolio Summary Report		

5. Performance Evaluation			
BBAC/ BBAT	Bloomberg Portfolio/ Performance Attribution	HPA	Historical Portfolio Analysis
		LRSK	Liquidity Risk
BRSK	Bloomberg Market Risk Platform	RSKF	Portfolio Risk based on Factor Model
FSTA	Fund Style Analysis		
HFA	Historical Fund Analysis		

Overview

ALPM (Alpha Menu/Portfolio and Risk Analytics Functions Menu): This function shows a menu of portfolio-related functions, many of which are illustrated below.

Portfolio Construction

PBEN (Portfolio Benchmarks): This function provides a direct link for a user to specify portfolio benchmarks.

PDIS (Portfolio Distribution/Share Portfolios): This function provides a direct link for a user to distribute and share portfolios among Bloomberg users.

PFST (Portfolio Update): This function allows a user to update the default portfolio without the need to choose the portfolio from a list of available portfolios.

PLST (Portfolio List): This function shows a list of portfolios that are available to a user either by user construction or through sharing.

PRTU (Creating and Updating Portfolios): This function allows a user to create, modify, remove, and share portfolios. The user can also specify portfolio benchmarks such the S&P 500 index and the Dow Jones Industrial Average under this function.

PTT (Portfolio Trade Ticket): This function creates a trade ticket for the portfolio transaction record and updates the holdings of the portfolio simultaneously.

Ongoing Management

EVTS (Event Calendar): This function allows a user to choose a portfolio as the data source and shows the forthcoming events for the securities in the portfolio.

NPH (Portfolio News and Research Headlines): This function allows a user to choose a portfolio as the data source and shows the news headlines for the securities in the portfolio.

PDSP (Portfolio Display): This function shows the summary information of a portfolio, including positions, costs, current prices, market values, and gains and losses on the individual securities in the portfolio.

PRT (Equity Portfolio Real Time Monitor): This function allows a user to monitor the intraday performance of the securities in a portfolio, either by individual securities or by industry groups. The information is displayed with a time lag without the real time data subscription.

Performance Reporting

The identified functions below can generate reports related to a portfolio, but the portfolio in general needs to have a holding history of some length to have sufficient data for meaningful reports.

PDVD (Portfolio Dividend/Split Report): This function allows a user to generate a report on cash dividends and stock splits in a portfolio.

PREP (Portfolio Distribution Reports): This function allows a user to generate reports on a portfolio relative to a user-specified benchmark, showing the distribution or breakdown based on criteria such as asset class, equity beta, market capitalization, P/E, exchange, and industry and sector classifications.

PRPT (Custom Report Writer): This function allows a user to choose from existing templates to generate customized portfolio reports. Examples of available templates include industry/sector/country distributions and holdings ranked by sales/revenues or RSI.

PRTS (Portfolio Summary Report): This function allows a user to generate a summary report on a portfolio, showing the market value changes and the corresponding return of the portfolio. The user can also set a frequency to generate the scheduled report automatically.

PSD (Portfolio Slice and Dice): This function allows a user to generate a report showing the industry allocation information and financial ratios such as debt/equity and P/E of a portfolio relative to a user-specified benchmark.

PVAR (Portfolio Value at Risk): This function allows a user to generate a report on the portfolio Value at Risk.

RPT (Retrieve and Monitor Reports): This function allows a user to retrieve the reports that have been generated.

Performance Evaluation

The identified functions below can evaluate portfolio risk and return performance, but the portfolio in general needs to have a holding history of some length to have sufficient data for meaningful analyses.

BBAC/BBAT (Bloomberg Portfolio/Performance Attribution): This function allows a user to attribute the portfolio return into benchmark and active returns, with the latter further decomposed into allocation, selection, interaction, and currency components. Additional options under this function allow various tabular and graphic representations of the results.

BRSK (Bloomberg Market Risk Platform): This function provides the risk overview of a portfolio and links to other risk-related functions including VaR <VAR>, stress test <WRST>, risk delta, tracking error <TRK>, and VaR distribution.

FSTA (Fund Style Analysis): The function allows a user to perform a style analysis on a portfolio relative to a user-defined benchmark. Examples of the styles include firm size and growth-value classifications. Additional options under this function allow the time-series changes in the styles and the time-series factor correlations to be shown in graphs.

HFA (Historical Fund Analysis): This function shows the historical risk/return behavior of a fund/portfolio relative to a user-defined benchmark. Examples of available options include breakdowns of absolute and relative performance and seasonality of the returns.

HPA (Historical Portfolio Analysis): This function shows the allocation, risk and return statistics, and sector breakdowns of a portfolio relative to a user-defined benchmark. Also available under this function is the breakdowns of portfolio historical holdings and its changes by sectors.

LRSK (Liquidity Risk): This function allows a user to determine the time horizon needed to liquidate the securities in a portfolio based on their historical trading volume.

RSKF (Portfolio Risk based on Factor Model): The function allows a user to decompose the risk of a portfolio by factors such as market, style, and industry. Additional options under this function allow the user to obtain more detailed analyses on the portfolio's factor exposures.