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Studies in Applied Finance

**INVESTMENT THESIS FOR
GILEAD SCIENCES, INC.
(NYSE: GILD)**

Stephen Johannesson

Johns Hopkins Institute for Applied Economics,
Global Health, and the Study of Business Enterprise



Investment Thesis for Gilead Sciences, Inc. (NYSE: GILD)

By Stephen Johannesson

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About the Series

The Studies in Applied Finance series is under the general direction of Professor Steve H. Hanke, Co-Director of the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise (hanke@jhu.edu) and Dr. Hesam Motlagh (hnekoor1@jhu.edu), a Fellow at the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise.

This working paper is one in a series on applied financial economics, which focuses on company valuations. The authors are mainly students at the Johns Hopkins University in Baltimore who have conducted their work at the Institute as undergraduate researches.

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Summary

This working paper is an in-depth analysis of Gilead Sciences, Inc. Our analysis examines the economic factors that impact Gilead's underlying business and how the firm has adapted to these ever-changing factors. This economic analysis is then combined with our proprietary, Hanke-Guttridge Discounted Cash Flow (HG-DCF) model to determine Gilead's financial position. The HG-DCF model will be presented along-side Monte-Carlo simulations to reveal the distribution of probable free cash flows, the likelihood of future earnings, and the degree to which the firm's drug pipeline is being considered by the current market valuation. In addition to these quantitative factors, we also examine the compensation plans of Gilead's executives to assess alignment with shareholders. At the conclusion of this analysis, it is our intention for readers to understand Gilead's business plan and the company's financial standing to arrive at a sound investment decision.

Acknowledgements

Many thanks to Professor Steve H. Hanke and Dr. Hesam Motlagh for their instruction and guidance over the past year. Additional thanks to Abigail Biesman for her meticulous attention to detail in the editing process.

Keywords: Financial Modeling, Gilead Sciences, Discounted Cash Flow, Free Cash Flow, Monte-Carlo Simulation, Investment Thesis, Management Compensation.

JEL codes: C63, G11



Rating – Buy – Projected Free Cash Flow per Share: \$84.34

Company Name:	Gilead Sciences, Inc.
Fiscal Year ends (current period) :	12/31/2015 (Q2)
Date:	5/14/2016
Current Price (2/20/2016):	\$ 82.70
52-week range:	81.70-123.37
Market Cap:	110.14 Billion
Enterprise Value	123.85 Billion
Total Debt	21,077 Million
Cash	6,315 Billion
Net Debt/Enterprise Value	17%
Dividend Yield:	2.27%
Diluted Shares Outstanding:	1,412 Million
P/E ratio:	7.06
2016 P/E (EPS)	6.66x (\$10.10*)
2015 P/E (EPS)	7.06x (\$11.91*)
2014 EPS	\$ 7.35
2013 EPS	\$ 1.81
2012 EPS	\$ 1.64
P/S ratio:	3.752
Price-to-book ratio:	8.44

*Consensus estimates as of the time of this writing. Source: Bloomberg Terminal

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Executive Summary:

Gilead Sciences Inc. (NYSE: GILD) is a biopharmaceutical company that specializes in treatments for the human immunodeficiency virus (HIV) and cures for the Hepatitis C virus (HCV). The market currently prices GILD at \$82.70, which lies in the lower end of the firm's 52-week range (\$81.70 - 123.37). This price is slightly below the probable free cash flow per share, \$84.34, determined by evaluating the firm with the Hanke-Guttridge Discounted Cash Flow model (HG-DCF). While GILD's newer drugs Sovaldi and Harvoni have been popular, there are two elements stunting the company's confidence: patent expiration dates for many of their drugs are near, and competition from rival HCV drugs loom. Further, Sovaldi and Harvoni's patents will expire in 2029.¹ As the current market prices appear to entirely discount the firm's drug pipeline and ability to grow through acquisition, our recommendation is to buy GILD. Under the stated assumptions about market prices, the firm's projected cash flow does not take into account any possible revenues derived from current pipeline drugs. Thus, if any of its pipeline drugs and/or future acquisitions yield viable products, the firm will generate free cash per share in excess of its current stock price. For this reason, we rate the stock a buy.

Company Overview:

GILD is a global biopharmaceutical company, operating in over 30 countries, that focuses on the entire drug development process. GILD is part of the S&P 500 with a weight of .3021%, and is contained within 96 ETFs. GILD specializes in the human immunodeficiency virus (HIV), chronic hepatitis C virus (HCV), and chronic hepatitis B virus (HBV). The company is headquartered in Foster City, California. It splits its revenues by geography and product type. Geography components include the United States, Europe, among other countries and product type is first divided into antiviral products and "other" products. Antiviral products include but are not limited to Sovaldi, Atripla, Truvada, Harvoni, Complera/Eviplera, Stribild, and Viread. Other products include but are not limited to Letairis, Ranexa, AmBisome, and Zydelig.

In 2012, GILD acquired Pharmasset, Inc, which allowed GILD to create Sovaldi, which was approved in 2014.² In 2013, GILD acquired YM BioSciences Inc, a drug development company focused on a candidate for hematologic cancers, momelotinib. After GILD introduced its HCV drugs, Sovaldi and Harvoni, in 2013 and 2014 respectively, the company practically doubled in size. In 2014, GILD continued to improve their products by reducing drug side effects and receiving approval of other drug components such as Tybost and Vitekta. Further, in 2014, GILD secured an agreement with Medicines Patent Pool (MPP) to license a generic form of their drug to companies in India and China. Research and Development (R&D) expenses have steadily been growing from \$1.8 billion in 2012 to \$2.9 billion in 2014. More recently, in 2016, GILD announced its acquisition of Nimbus Apollo, Inc, a company that primarily leads research on developing drugs to combat non-alcoholic steatohepatitis (NASH), a serious liver disease projected to plague many Americans in the next decade. The firm's history of acquisitions demonstrates that GILD is a capital intensive business.

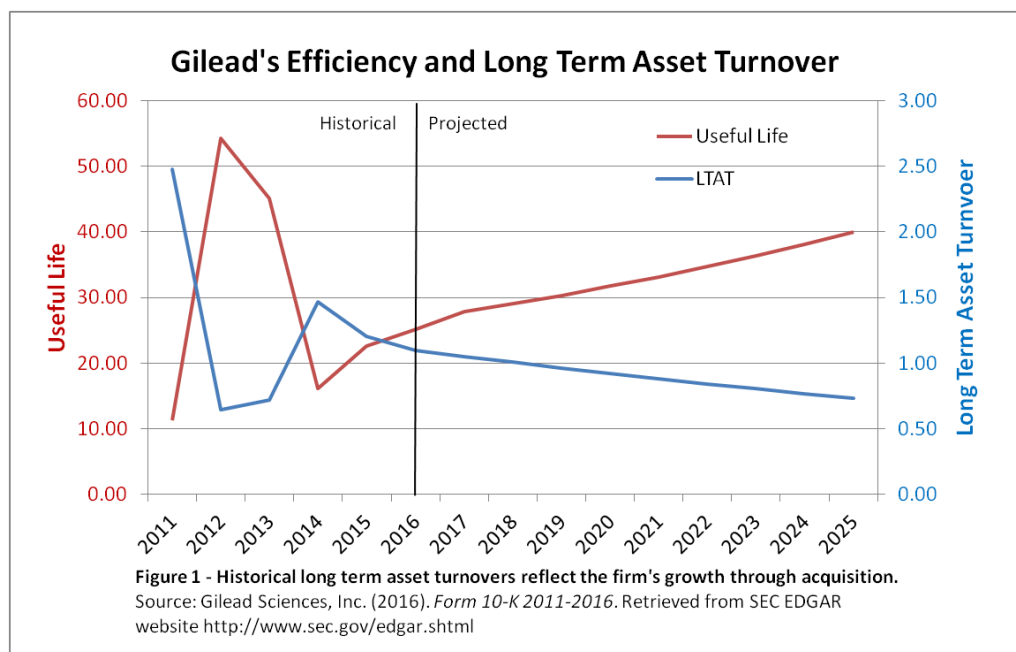
¹ 2015 GILD 10-K Filing, pp. 14

² 2015 GILD 10-K Filing, pp. 16

GILD has massively outperformed the S&P 500 for the last five years, yielding a ~400% return. Analyst recommendations are split between rating GILD a buy (18 ratings) and a hold (10 ratings), with no sell recommendations (Source: Bloomberg Terminal, function <ANR>). The target prices range from \$81 to \$135 dollars. The firm's massive stock gain from ~\$20 per share in 2011 to ~\$80 per share in 2016 has indisputably been driven by the HCV drugs Sovaldi and Harvoni. Both are approved for use across multiple genotypes of HCV, as well as some HIV cases. Sovaldi and Harvoni have captured the HCV market so well they have left little room for growth. Capturing 93% of the current HCV market, Gilead is left with the option to grow by acquisition, or by improving their current intellectual property (IP) base through organic R&D.³

GILD's control of the HCV drug market is not necessarily secure, however. Competing company Merck released an HCV drug, Zepatier, priced at \$54,600 for a 12-week program. In comparison, Harvoni's list price is \$94,600.⁴ Therefore, due to pricing power, GILD will most likely see shrinking revenues from its HCV drugs.

The losses it might suffer due to prices, though, will most likely not keep the company from being a buy. GILD's long term asset turnovers and useful life have been significantly varied over the last 5 years due to Gilead's acquisition of Pharmasset, Inc. in 2012 (Figure 1). Despite the massive drop in LTAT due to this acquisition, the \$11 billion purchase has proved worthwhile as sales of Harvoni and Sovaldi now generate nearly \$18 billion of revenue a year.



³ "Harvoni Continues To Dominate Hep C Market, Market Continues To Undervalue Gilead." *Seeking Alpha*. N.p., 2015. Web. 14 May 2016. <<http://seekingalpha.com/article/3066586-harvoni-continues-to-dominate-hep-c-market-market-continues-to-undervalue-gilead>>.

⁴ Wasserman, Emily. "UPDATED: Zepatier Beats Harvoni, Sovaldi in Hep C Clinical-data Safety Showdown: Advera Health Analytics." *Pharma News*. N.p., n.d. Web. 14 May 2016.

Since 2012, Gilead has improved asset turnovers to ~1.2 as their revenue growth has stalled and the company has matured. Going forward, large acquisitions will likely cause huge drops in asset turnovers that may take years to recover. For this reason, it was difficult to use the asset turnover ratio as a driving parameter in the HG-DCF model.

GILD's pipeline focuses primarily on the treatment of HIV and liver diseases. New formulations of existing tenofovir (TAF), emtricitabine, and other HIV regimens span Phase 1 through Marketing Application. Regarding liver diseases, sofosbuvir and velpatasvir formulations are tested for treatment of HCV, while Simtuzumab is an antibody being evaluated for the treatment of NASH, which is estimated to effect up to 2-3% of the general population.⁵ The firm also has approximately \$19 billion of current assets and \$13 billion of marketable securities with which it may choose to acquire drug companies with promising research without taking on heavy amounts of debt. Thus, it seems clear that pipeline and opportunities for growth look strong for GILD in the future, despite the short term headwinds in pricing.

Risks and Firm Specific Issues:

- Expiration of drug patents requires the firm to consistently innovate and/or grow by acquisition
- Price competition from competitors
- Prevalence of diseases treated or cured will heavily influence future demand
- Pricing power may interfere with the firm maintaining its high prices.

Model Assumptions:

The primary difficulty in modeling Gilead using a discounted cash flow analysis was projecting realistic revenue. Therefore, to remain conservative, our revenue projections assume that revenues for each drug will drop to zero after the patents on each drug expires. Though this estimate is very conservative, we cannot assume that any significant revenues will remain after a drug loses protection. If we were to forecast any upside in GILD, the company would be significantly undervalued. In addition, we have assumed that Harvoni and Sovaldi revenues will decrease 2% year over year. We have not made assumptions about the value of any of GILD's pipeline drugs. These assumptions help to secure as conservative a model as possible, so that the firm's cash flow performance will be evaluated under pessimistic circumstances.

Cost of goods sold (CoGS), Selling general & administrative (SG&A), and R&D (as % of sales) dropped substantially between 2013 and 2014 due to the massive increase in revenues associated with the firm's HCV drugs. Based on our models, these expenses will stay relatively close to their most recent three-year values (10%, 11%, and 10.5% respectively). GILD's effective tax rate was approximately 18% last quarter, and even lower in 2014 and 2015. Thus, we estimated 18% to be a reasonable tax rate for the projection period. We also chose to forgo the standard assumption of a 1.5% terminal period revenue growth rate. As we assumed the firm would simply be generating cash from its existing IP until the terminal year, Capex was assumed to be 1.5% of revenue. Lastly, we have a decreasing long-term asset turnover metric for our model, as

⁵ Bellentani, Stefano, et al. "Epidemiology of non-alcoholic fatty liver disease." *Digestive diseases* 28.1 (2010): 155-161.

shown in Figure 1. This implies that the firm will become less efficient at generating revenue from its non-current assets over time. By assuming this range of pessimistic parameters, the HG-DCF will provide us with a relatively poor outlook for the firm. If the free cash flow over the projection period still looks desirable despite the headwinds we place on it, then the stock is likely to be a good investment.

Results and Discussion of Model:

The probable free cash flow per share calculated using the HG-DCF model was \$84.33 versus a market price of \$82.70 (Figure 2). The current price falls in about the 30th percentile for the distribution. The model assumptions and GILD’s low deviations in its value drivers, however, make the distribution narrow. We see, then, that in the absence of any acquisitions or large developments in the pipeline, GILD is likely to produce free cash in excess of its stock price. This is dependent on the assumption that GILD will not lose more than 5.5% of their revenue (year over year) for the next 10 years. We see this as a reasonable estimate considering that this would imply that management will do nothing to remedy hypothetical hemorrhaging revenue for up to 10 years.

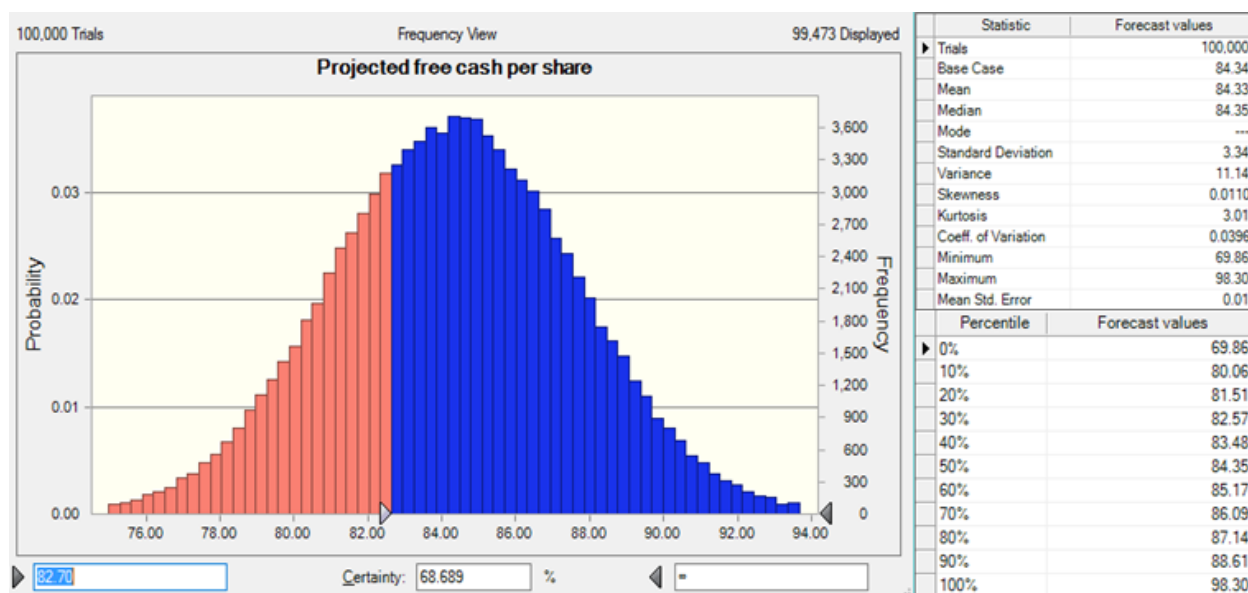


Figure 2 – Results from the Monte-Carlo simulation show the probable free cash per share on the x-axis and the frequency with which each value was obtained during the simulation. The current stock price falls in the ~30th percentile of the distribution.

Our model predicts that long term asset turnovers will decrease to 0.78 by year 10, a relatively pessimistic assumption considering they only reached those lows during the doldrums in 2012 when their purchase of Pharmasset, Inc. had yet to generate revenues. We suspend our concerns about this idiosyncrasy because it is derived from a combination of the way in which long-term asset turnovers are calculated and the specifics of the pharmaceutical business. Long-term asset turnovers are calculated with a quotient of revenues and noncurrent assets. One of the largest noncurrent assets for any pharmaceutical company is its intellectual property. Unlike a business that relies on its physical assets to help generate revenue, a pharmaceutical company relies

entirely on its IP, and the drugs derived from it, for its revenue. As mentioned earlier, GILD has the option of growing organically or by acquisition. Acquisitions show up as capital expenditures, because noncurrent assets increase dramatically. Organic growth is not likely to show up on a capital expenditure calculation because those assets are paid for via R&D expenses. This is why we have estimated capital expenditures to be low over the coming years. We cannot predict when or what effect acquisitions will have, nor can we predict the results of the funds spent on R&D. Therefore, we are unable to accurately determine what the long term asset turnover of GILD will be in the future.

Proxy Report:

To ensure that management compensation is aligned with the creation of shareholder wealth, we analyzed the Securities and Exchange Commission's proxy statement for GILD (SEC EDGAR: Form DEF-14A).

Management Compensation:

Base salary: Fixed annual compensation. The base salaries of GILD named executive officers (NEO) in 2015 lay between \$865,000 and \$1.7 million.

Annual incentives: Consists of cash and stock options based on performance. Payment criteria for annual cash bonuses are based 75% on corporate performance and 25% on individual performance. The CEO's bonus, however, is solely based on corporate performance. The graph below depicts how this amount is calculated (Figure 3).



Figure 3 – Computation of annual bonus award for GILD Named Executive Officers

Source: Gilead Sciences, Inc. (2016). *Schedule 14A (2016)*. Retrieved from SEC EDGAR website <http://www.sec.gov/edgar.shtml>

Long-Term Incentive Plan: The long term incentive plan is weighted equally (50%) between performance equity rewards and stock options. Performance based equity rewards are given to executives based upon an equal weighting of relative total shareholder return (TSR) and absolute product revenue as performance metrics. The firm's TSR is compared to a subset of the S&P Healthcare Sub-Index, as detailed below, and the absolute revenue targets established by the compensation committee (Figure 4). Additionally, a portion of the equity compensation is awarded in the form of stock options. The amounts of these stock options are determined by the compensation committee and vest over a four-year period, with a minimum of one year until 25% of the award may vest. Said options then vest quarterly for the remaining three years.

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Performance Share Awards: Relative TSR Tranche	Threshold 20 th percentile	Target 50 th percentile	Maximum >80 th percentile	Actual Performance 84 th percentile	Percentage Earned 200%
Net Product Revenue Tranche:					
2013 Net Product Revenue	\$ 9.6B	\$ 10.0B	\$ 10.4B	\$ 10.8B	200%
2014 Net Product Revenue ⁽¹⁾	\$ 13.2B	\$ 14.7B	\$ 15.5B	\$ 24.5B	200%
2015 Net Product Revenue ⁽²⁾	\$ 24.6B	\$ 27.3B	\$ 28.7B	\$ 32.2B	200%
Overall Payout					200%

Figure 4 – Net revenue and TSR tranches which dictate the long term incentive compensation of the firm’s named executive officers.

Source: Gilead Sciences, Inc. (2016). *Schedule 14A (2016)*. Retrieved from SEC EDGAR website <http://www.sec.gov/edgar.shtml>

Stock-ownership guidelines for executive officers: Executive officers of GILD are required to maintain stock ownership levels which are determined by multiples of their base salary. The CEO is required to hold five times his/her base salary in equity, the President and COO are required to hold three times their respective base salaries, and all other named executive officers are required to hold two times their annual base salary.

Companies in Peer Group:

AbbVie, Inc.	Celgene Corporation
Allergan, Inc.	Eli Lilly and Company
Amgen, Inc.	Merck & Co., Inc.
Baxter International Inc.	Pfizer Inc.
Biogen Idec, Inc.	Vertex Pharmaceuticals, Inc.
Bristol-Myers Squibb Company	

Figure 5 – Gilead Sciences’ list of comparable companies.

Source: Gilead Sciences, Inc. (2016). *Schedule 14A (2016)*. Retrieved from SEC EDGAR website <http://www.sec.gov/edgar.shtml>

Dividend and Share Buyback History:

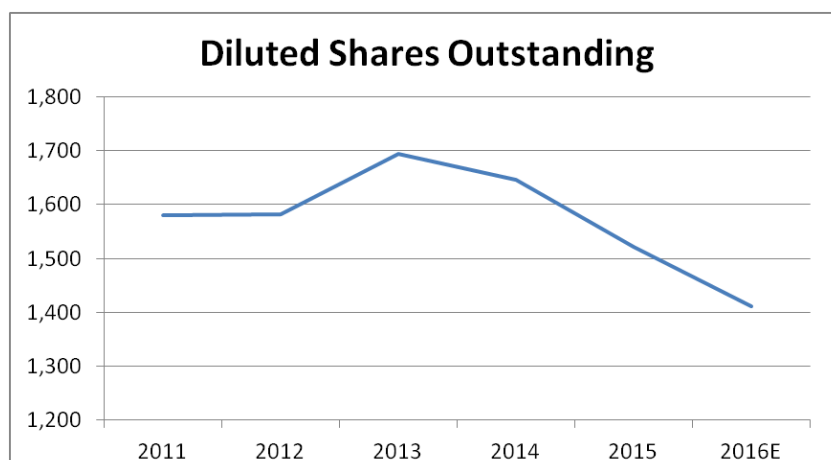


Figure 6 - Gilead has repurchased shares over the last three years, indicating they believe their shares are undervalued

Source: Gilead Sciences, Inc. (2016). *Form 10-K 2011-2016*. Retrieved from SEC EDGAR website <http://www.sec.gov/edgar.shtml>

GILD announced its first dividend in 2015, paying out \$1.29 per share in the fiscal year (FY). In the first quarter of FY 2016, they announced a \$0.43 dividend per share, which, if extended over the course of FY 2016 will generate \$1.72 per share for shareholders. This firm is likely to maintain its dividends going forward as its executives are compensated on a relative TSR metric and the firm has more than enough cash and earnings per share to maintain it.

In February 2016, the board of directors authorized a \$12 billion repurchase program that remains untapped as of March 31, 2016. In 2015, the firm executed \$8 billion in share repurchases (Figure 6). This can be interpreted as an attitude among the executive members of the firm that the stock is undervalued. No guidance appears to have been given regarding future buyback policies.

Management Guidance:

GILD's management offers no guidance as on future capital expenditures as capital expenditures are a function of the firm's merger and acquisition activity. However, their 2016 guidance indicates that they expect the firm's 2016 revenue to be \$30-\$31 billion, values less than the annualized 2015 revenues in the model.⁶ This indicates that they expect the revenues of their largest revenue contributors to fall in the future.

⁶ Washington, Robin. "Q4 2015 Earnings Results." Annual Shareholder Presentation. Online. 2 February 2016. Full Year 2016 Guidance

Multiples Analysis:

Gilead has an average price-to-earnings (P/E) ratio of 17.30 over the last 5 years (see Figure 7). Multiplying the average P/E by their trailing twelve months EPS of \$10.10 yields an estimated share price of \$174.73, more than double the company’s current stock price. This method of analysis is skewed towards a higher valuation than is appropriate, though, because Gilead’s earnings have increased nearly 300% in three years. Implying that an investor should be willing to pay \$17.30 per \$1 of earnings at this point in the company’s life span does not seem reasonable because there is little to justify such a premium on their earnings. Evidence of this is found in the firm’s current P/E multiple of 7.58, less than half of the 5-year average P/E ratio.

Insider Transaction Information:

Holder Name	Portfolio Name	Source	Opt	Position	% Out	Latest Chg	File Dt
1 BLACKROCK	--	ULT-AGG	Y	84,863,585	6.37	-6,499,191	03/31/16
2 VANGUARD GROUP	--	ULT-AGG		84,602,753	6.35	-1,815,115	03/31/16
3 FMR LLC	--	ULT-AGG		74,142,787	5.57	-7,939,582	12/31/15
4 CAPITAL GROUP COMPANIES INC	Multiple Portfolios	13F		70,055,376	5.26	-17,535,225	12/31/15
5 STATE STREET CORP	STATE STREET CORPORAT	13F		57,920,194	4.35	-451,805	12/31/15
6 T ROWE PRICE ASSOCIATES	T ROWE PRICE ASSOCIATE	13F		39,227,288	2.95	217,362	12/31/15
7 JPMORGAN CHASE & CO	--	ULT-AGG	Y	30,514,071	2.29	4,542,540	03/31/16
8 BNY MELLON	--	ULT-AGG		25,690,597	1.93	-827,929	03/31/16
9 INVESCO LTD	--	ULT-AGG		20,098,974	1.51	-960,918	03/31/16
10 NORTHERN TRUST CORPORATIO	NORTHERN TRUST CORPO	13F		18,285,906	1.37	-575,166	03/31/16
11 FRANKLIN RESOURCES	--	ULT-AGG		17,850,941	1.34	957,653	03/31/16
12 UBS	--	ULT-AGG	Y	15,929,246	1.20	-1,128,677	03/31/16
13 TIAA-CREF	--	ULT-AGG		14,852,930	1.12	-598,698	03/31/16
14 NORGES BANK	NORGES BANK	13F		12,928,294	0.97	12,928,294	12/31/15
15 WELLS FARGO & COMPANY	--	ULT-AGG	Y	12,839,230	0.96	-2,066,621	12/31/15
16 TEMASEK HOLDINGS PRIVATE L	TEMASEK HOLDINGS (PRIV	13F		12,794,924	0.96	1,372,977	12/31/15
17 GEODE CAPITAL MANAGEMENT L	GEODE CAPITAL MANAGEM	13F		12,410,846	0.93	161,505	03/31/16
18 DEUTSCHE BANK AG	--	ULT-AGG	Y	11,594,983	0.87	2,412,177	05/13/16
19 ALLIANCE BERNSTEIN	--	ULT-AGG		11,407,676	0.86	-564,427	03/31/16

Figure 8 – Table of major shareholders of Gilead, showing purchases and sales of shares over the last 5 months. Source: Security Ownership function – Bloomberg Terminal. Accessed 5/16/16 .

Gilead has been a topic of disagreement among major investors over the last 5 months with more sales than buys occurring (Figure 8). This is likely tied to concerns regarding Gilead’s market share in the HCV market, and its future ability to maintain such high earnings.

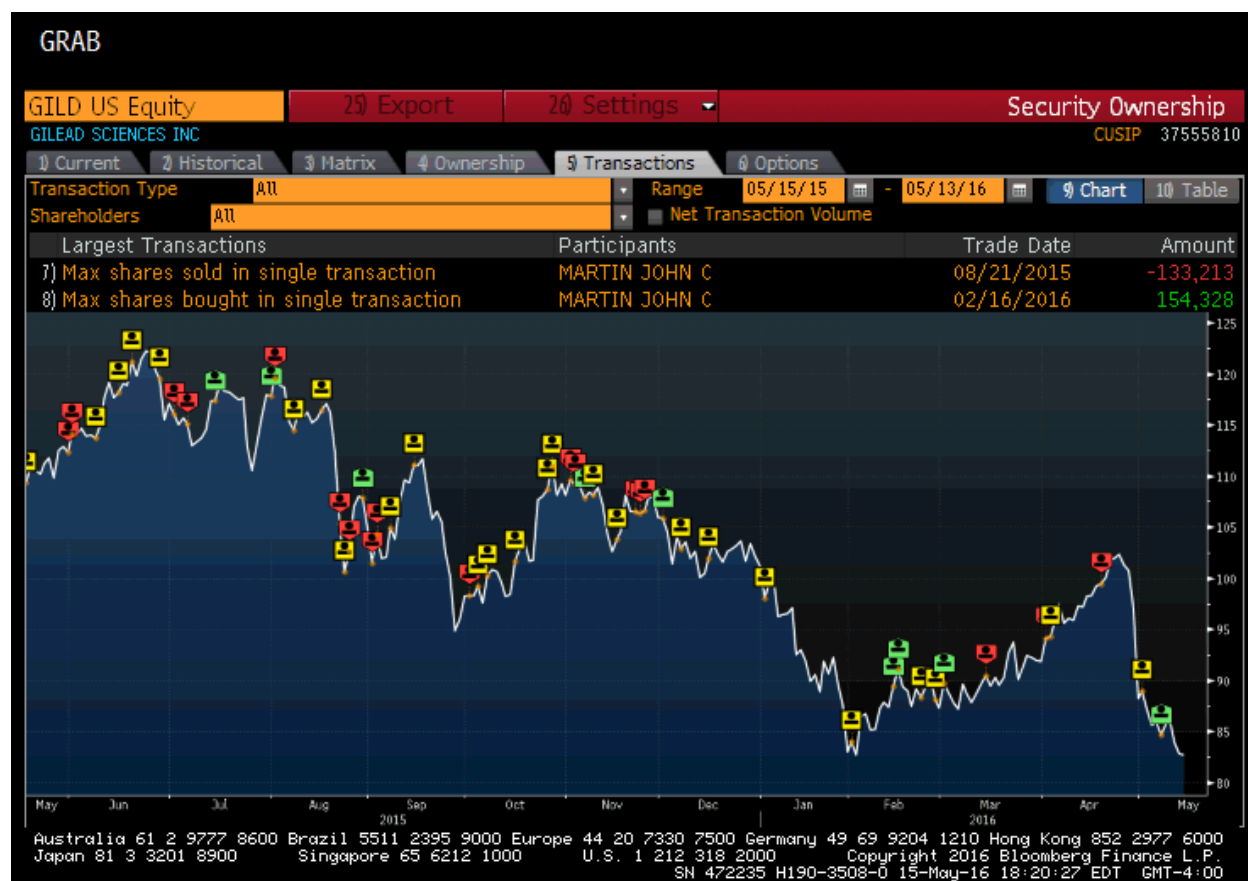


Figure 9 – Graph of purchases, sales, and exercised options by firm insiders over the past two years, showing favoritism for sales in 2015 and a relatively neutral position in 2016.

Source: Security Ownership function – Bloomberg Terminal. Accessed 5/16/16 .

Firm insiders have had a relatively negative outlook on the firm over the past two years, coming to a rather neutral or even positive looking position in the last 5 months. Given lowered earnings expectations, it appears that the firm’s insiders have a more bullish outlook on the stock price now than in 2015.

Conclusions:

The firm’s projected free cash flow per share is equal to its stock price when we assume that all revenues will drop to zero after IP expiration occurs, indicating that the market is most likely assuming such behavior will take place. GILD will either have to organically develop or purchase other IP that will be able to improve its current \$30 billion revenue well past 2030 (when Harvoni and Sovaldi expire). Given that the firm’s current valuation appears to solely consider the firm’s current drug arsenal, any innovations or acquisitions that generate positive cash flow will improve the valuation of GILD. With its current high profits, GILD can evaluate acquisition opportunities rigorously and pursue organic drug development concurrently.

Management is incentivized to improve overall revenues while focusing equally on the shareholder benefits. The value thesis of GILD resides on our belief in the firm to use its vast resources to make any intelligent improvements to the firm at all. Therefore we rate the stock a buy.