

Biotech Stock Selection Using Peer Group Analysis and Relative Valuation

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Abstract

This article highlights a number of issues relevant to making stock selection decisions in the biotechnology industry. It relates common market and finance principles to the biotechnology industry for investment decision-making purposes. Peer group analysis and relative valuation are demonstrated.

Biotechnology is a fabulously interesting industry to invest in. It is dynamic – new players continually emerge, trying to provide society with unique and potentially life-saving treatments and technologies. On the other hand, older players sometimes disappear as pharmaceutical giants purchase them, they merge with other biotech companies, or they cannot bring their drug to market. Overnight, a company may lose half of its value because of a product's failure in clinical trials or alternatively, double in value on good results. As a consequence of this dynamism, the biotech stock selection process is often as much an art as it is a science. In this article, we will present many of the issues that investment professionals consider when making a biotech stock selection decision. The process consists of idea generation, research and due diligence, forecasting, and valuation. At Sectoral Asset Management (S.A.M.), a Montreal-based investment advisor with a proven track record in managing biotech equities, we follow a process not unlike the one described herein (although this paper contains a somewhat shortened description).

During the stock selection process, investment professionals analyze a company in great detail – its products, strategies, management, and financial health – and assess how much it should be worth. This number is then compared to the company's current market value. A "Buy" would be a company whose assessed value is significantly less than its current market value. Thus, a stock selection decision should not be made on a whim, but rather after thorough analysis. The various potential candidates should be compared and contrasted to assess desirable qualities and potential risks. Finally, a judgment must be made regarding the price of each potential investment, given its benefits and risks. In this way, the process is similar to one that we might follow for any other major investment decision, such as buying a house. In house-hunting, we usually consider many options, weight their benefits and drawbacks and then, to select the "best buy", we relate these issues to the asking price. When deciding to invest in a company, we also consider a group of companies involved in rather similar lines of business (called a "peer group"), compare and contrast their relative

strengths and risks, and relate these issues to the current stock price.

An introduction to "The Market"

Every company has value. On the stock market, this value is represented by the company's market capitalization.¹ Biotech companies have quite a wide range of market values. Amgen, for instance, has five drugs on the market and posted USD 3.5b in sales in 2001. Employing over 7000 people, Amgen has a market cap of about USD60 billion. On the other hand, there are numerous small development-stage companies that have yet to bring a product to market. Avigen, for example, with about 100 employees, has a market value of about USD200m. It has one product in Phase I/II trials for the gene-therapy-based treatment of Factor-IX deficient hemophilia B. Given this early stage of development, it is likely that this treatment is still many years away from market, if it successfully completes the clinical development process.

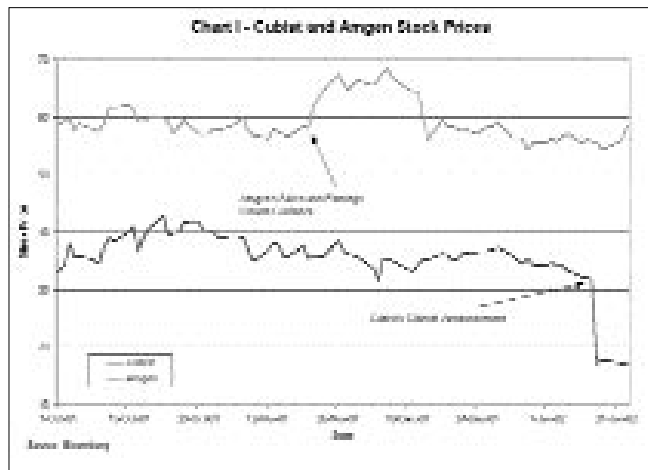
The stock market sets and resets a company's value continually every trading day. In doing so, it considers macro-economic issues in addition to company-specific ones, such as the company's products, strategies, management, and financial well being. Of these many issues that determine stock prices, four stand out: expected earnings growth (on a relative and absolute basis), dividend payout, interest rates, and risk.² We will discuss risk and expected (relative and absolute) growth in detail.

An implicit assumption of the market is that there is a positive relationship between risk and potential reward. The greater the risk that we as investors take on, the greater the reward or compensation we expect in return. So, all other things being equal, a riskier company will have a lower value than a less risky one. As risk is mitigated over time, the value of the company will rise. If the risk of the firm does not change substantially, it may either flounder at that value or even decrease. One good illustration of this is the increase in a company's stock price that typically occurs upon the successful completion of one phase of its clinical trials. This increase occurs because a significant amount of clinical risk has been overcome. On the other hand, if clinical results are bad and the risk has therefore increased, the stock price and value of the company may decrease substantially.

The other attractive quality to the market is a firm's ability to gen-

erate above-average growth, in earnings, for example.³ Although the market admires positive earnings more than negative ones, it has a love affair with high positive earnings growth on a substantial base. Thus, 20% growth on 1 billion in annual sales is more attractive than 20% growth on 100 million in sales. However, how does this relate to biotech companies, which generally do not have positive earnings? In the case of biotech companies, the market will gladly attach a bit of “premium” for the *expectation* of high future earnings and high growth.

Amgen and Cubist Pharmaceuticals illustrate how changes in earning growth and risk affect the values of biotech companies. In November 2001, Amgen announced that it expected sales and earnings to grow at a compound annual rate of at least 20% until 2005. Until that point, the market had largely believed that it would grow at a slightly slower rate. As a result of the announcement, Amgen’s stock increased 7% the next day and by about 15% over the following days. (Amgen later fell back to pre-announcement levels when it announced its intention to buy Immunex for USD16 billion.) In early January, Cubist Pharmaceutical’s stock price was cut by almost half after an announcement that Cidecin, its antibiotic for the treatment of a severe form of pneumonia, had not met its endpoints in a clinical trial. This was Cubist’s most clinically advanced product, and the announcement questioned its ability to commercialize Cidecin in the timetable expected and at the revenue levels anticipated. Chart I shows Amgen’s and Cubist’s stock price between October 2001 and January 2002.



The Biotech Stock Selection Process

These two issues – risk and expected growth – strongly influence biotech stock prices. As such, they should be kept in mind when walking through a biotech stock selection process: idea generation, research and due diligence, forecasting and, finally, valuation. The first step is the simplest, because potential investment ideas abound: in conversations at work, in class, from journal articles, or in the newspaper.

Once we have an idea that a particular company may be attractive, the research and due diligence stage begins. At this point, we consider many of the issues regarding the risks and the growth potential associated with the company. During due diligence, many dif-

ferent issues are analyzed: the science underpinning the product and/or technology, the strength of the firm’s intellectual property, its market, its competition, and its management. It is important at this stage to create a peer group. Peer groups can be constructed in any logical way: along therapeutic category, similar technology, stage of development, or company size. It is important to select truly comparable firms. Good peer group construction will allow for accurate analysis. Table I illustrates typical biotech peer groups.

How we are analyzing this company....	...then these companies could be "peered"....	...as they all conduct this type of work.
Protein Design Labs	Plyvius Medarex Cambridge Antibody	Novartis human or humanized monoclonal antibodies from mouse antibodies.
Biogen	Decipher Genentech Amgen	Large market, capitalization biotech company with numerous marketed products, sales force, and development pipeline.
Cubist Technologies	Merck Research Novartis Eli Lilly	Develops "top class" molecules which contain complex preparation technology with traditional regulatory analysis and some flexibility in regulatory design.

Once a reasonable peer group has been constructed, the analysis of risk and growth should take place. Some key questions should be addressed.

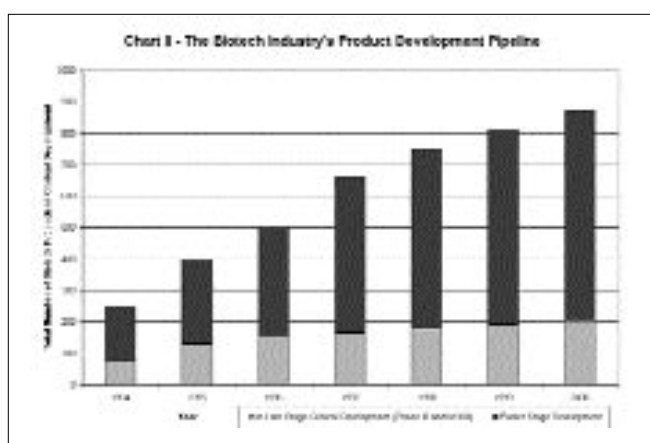
1) How many years away from generating earnings are the key products: one, three, five, more than five? The key risks in the biotech industry are development-related and regulatory – the risk that a product candidate may fail on the way to the market. Companies that have progressed farther along the development process should be less risky (and more valuable) than companies with their products earlier in development. Roughly, time-to-market can be related to the clinical stage of development – Phase I, Phase II, or Phase III. Different information is obtained at each of these three stages: safety and toxicity is evaluated in Phase I, dosage and efficacy in Phase II, and effectiveness in Phase III.⁴ Each step along this path represents significant clinical risk, as only 20% of drugs currently in Phase I will make it to market, 30% of those in Phase II and 67% of those in Phase III. Typically, Phase I trials last 1.5 years, Phase II trials last 2 years, and Phase III trials can last up to 3.5 years. Following these trials, it can take a year and a half for a regulatory body (such as the US Food and Drug Administration) to finally approve the product for market. Thus, it takes up to about 8 years and USD500 million to take a drug from the lab bench to the pharmacy shelf. As can be seen in Chart II, the biotech industry currently has about 800 potential drug candidates in clinical trials, over 200 of which are in the latter and most crucial stages of clinical development (Phase II and II/III).

2) What are the characteristics of the market in which the biotech company’s key drug candidate will likely be selling? This will give us the potential growth in sales and earnings that we can expect from the marketed product. Currently, there are about 140 biotechnology-derived products that have been approved by the FDA. As Table 2 illustrates, not all product markets are equal. The absolute level of sales and the rate of growth towards it can vary substantially.

Table 2
A Selection of Currently Marketed Biotechnology-Derived Products

Drug	Company	Indication	Year Approved	2001 Sales (USD)	2003 Est Sales (USD)
Avonex	Biogen	Multiple Sclerosis	1996	\$972m	\$1190m
Rituxan	IDEC / Genentech	Lymphoma	1997	\$819m	\$1300m
Synagis	Medimmune	RSV infection (pediatric)	1998	\$516m	\$744m
Integrillin	Millenium	Heart attack and angioplasty	1998	\$231m	\$350m
Cerezyme	Genzyme	Gaucher's Disease	1998	\$570m	\$620m

Sources: Robbins-Roth From Alchemy to IPO, Broker Reports, SAM



Product sales growth, a function of how much can ultimately be sold ("peak sales") and how fast this level can be achieved, is determined by a number of factors. The first relates to the size of the market the drug will be addressing. This will be determined by issues such as the number of patients eligible for treatment, the treatment frequency, what price can be charged, and how likely it is that the drug will be reimbursed. Other relevant issues include whether the market is expanding or contracting. The potential drug's competitive landscape will also influence both the absolute level of sales attainable and the rate of growth towards it. If there are many drugs already approved for this indication, rapid growth will likely be hampered at the outset. On the other hand, the launch of competing drugs a few years after initial rollout will assist early entrenchment. Biotech companies themselves, analysts, and others often forecast the likely attainable peak sales for particular drug candidates. Putting these sales estimates in the context of the biotech company's current size will help gauge the product's likely contribution to the firm's growth.

3) Other issues to consider

1. How much experience does management have in bringing drugs to market?
2. How "validated" is the science underpinning their product or technology? Is their drug candidate modulating a known target,

or is it novel? In addition to scientific literature reviews, third party validation (by pharmaceutical companies, for example) is often considered attractive in this regard. If a pharmaceutical company is willing to partner with a biotech company to help develop a particular product (on rather attractive upfront terms, especially) the market considers this a significant product validation. However, such validation may be regarded more skeptically now as a result of Imclone's recent debacle with the anti-cancer drug Erbitux (for which Bristol-Meyers Squibb signed a license agreement worth USD2 billion, with USD1 billion in upfront payments).

3. To mitigate the risk of product failure, many companies try to develop broad pipelines with many potential drug candidates so that if one should fail they can rely on others in the pipeline. Thus, considering the quality and breadth of a company's pipeline is also important.
4. How much cash does the company have to fund further development (look at the balance sheet for "cash and equivalents" and "short-term and long-term investments")? Compare this amount with how much money they spend annually. This provides an estimate of how many years they can continue without having to raise more money to complete clinical trials.
5. Do they have a strong patent position for the drug candidates and/or technologies?

The Stock Selection Decision

With the preceding fundamental analysis, we get an idea of the risks and potential return characteristics of the biotech companies in our peer group. The task that lies ahead is to relate these ideas to the current price of the firm. Returning to the house-hunting analogy, we now try to relate what we are expecting to get with the price that we are being asked for it. Given our judgment about the growth potential of the biotech company and its risk profile, we must decide whether the firm is overvalued, undervalued, or fairly valued. Companies that we feel are undervalued given their current price and our judgments about risk and growth become our picks.

Although there are many different techniques for valuing a company, we will consider one – Relative Valuation. With this tech-

Table III - Biotech Valuation Table

Company	Recent Price (USD)	Market Cap (USD m)	Earnings per Share		Price / Earnings		Growth Rate	PEG
			2002 Est (USD)	2003 Est (USD)	2002	2003	EPS CAGR (01-04)	PE 02 / EPS CAGR
Amgen	\$54	\$56,802	\$1.40	\$1.70	38.7	32.0	23%	1.7
Biogen	\$53	\$7,899	\$1.96	\$2.32	27.2	23.1	20%	1.4
Genentech	\$48	\$25,216	\$1.09	\$1.10	43.9	43.6	25%	1.8
Serono	\$848	\$13,610	\$22.74	\$26.17	37.3	30.1	25%	1.5

Source: Bloomberg, Broker Reports, SAM.

nique, we compare the current market values of our peer group with the assistance of different ratios (or “multiples”). One popular valuation ratio is the Price / Earning multiple, which compares the firm’s current stock price to its expected earnings per share (for 2002 or 2003, for example). Finance theory dictates that the current stock price represents the present value of all of the company’s future earnings potential. Because the market can be more forward-looking than the next few years’ expected earnings (and it can factor expected growth beyond this into the stock price), the P/E multiple can be “standardized” by dividing it by the expected growth rate. This multiple – called the PEG ratio – is obtained by dividing the P/E for 2002 by the expected growth rate (for 2001 to 2004, for example). On the other hand, because many biotech companies do not have positive earnings (a requirement for using the P/E multiple), the Enterprise Value / Sales (EV/S) multiple is also popular. Enterprise Value is obtained by adding the company’s debt and subtracting its cash and investments from the firm’s market cap.

Returning to our large market capitalization biotech peer group, we can construct a valuation table such as the one in Table III.

The current stock price and expected earnings can be obtained from company web sites or finance websites. The task ahead is to relate the conclusions from our preceding fundamental analysis to the valuations obtained in our table. By looking at the P/E multiples in the above table, it is evident that Biogen’s shares are trading at a low multiple of earnings (“a discount”) relative to its peers. It may be trading at this discount because of concerns that it is likely to lose its orphan drug status for its lead drug Avonex (for multiple sclerosis, 2001 sales of about USD1 billion). This is because Swiss biotech firm Serono has filed for US marketing approval for its multiple sclerosis drug Rebif (which currently sells in numerous European countries). Once a competing drug becomes available, market share will be taken away from Biogen, hence reducing the company’s earnings. Another reason for Biogen’s discount may be related to concerns regarding the timeline for approvability of its second compound, Amevive. Delays would push earnings further into the future. Thus, the discount could be related to the fact that the market has factored in these expectations of potentially decreased earnings and uncertain risk. Additionally, looking only at

their respective P/E multiples, Serono appears to be more expensive than Biogen. If these P/E’s are adjusted for differences in expected earnings growth (with the PEG ratio), this discrepancy vanishes.

Conclusion

In this paper we have considered one valuation technique - relative valuation. Although it is a very useful and common technique, it suffers from the fact that it looks at company value from a relative, not an absolute, perspective. Thus, unfortunately, it could still return an undervalued stock pick in a sector or peer group that on an absolute basis is highly overvalued. Other valuation techniques (such as discounted cash flow, real option, and intrinsic value) provide insights into a company’s inherent, not relative, value.

After relating our fundamental analysis of risk and expected growth to current valuations, our selection should be the company that presents the best price for the risk and growth we are comfortable with. An investment decision would then depend on broader portfolio-related issues such as desired risk exposure, allocation issues, and the contribution of our pick to the portfolio. As we can see from this process, stock selection, especially as it pertains to the biotech industry, is as much an art as it is a science. Where one person may see a gem, another person may not. In fact, it is for this reason that so much trading takes place in the market everyday. When one investor decides that a company is attractively valued and wants to buy it at the current price, the only reason that he/she is able to do so is because someone else is willing to sell it at that price. Presumably, this person is willing to sell it because they believe the company to be overvalued or unattractive.

References / Notes

1. “Market cap” for short, which is the current share price multiplied by the number of shares the company has outstanding.
2. Malkiel BG. (1999). *A Random Walk Down Wall Street*. Norton & Company: New York.
3. “Earnings” is what is left after the company has paid all of its expenses - salaries, office, marketing, sales, research and development, and of course, taxes.
4. Stewart JJ, Allison PN, and Johnson RS. (2001). Putting a Price on Biotechnology. *Nat Biotechnol* 19:813-817.
5. Robbins-Roth C. (2000). *From Alchemy to IPO: The Business of Biotech*. Perseus Publishing: Cambridge.
6. “Present Value” reflects the fact that a dollar received today is worth more than a dollar received a year from now because it can be invested at – at least – the current interest rate.