Big Ben or LittleLysta

How Valuable is Benlysta?

Human Genome Science (HGSI) passed a major hurdle with the approval of Benlysta. Given the forward looking nature of Wall Street, the congratulations were quickly replaced with questions about the sales potential of Benlysta. While it is unclear how many indications the company can expand the drug into and the effect of expansion into the world market, one can model the initial market dynamics to generate peak sales estimates and the current net present value (NPV) of those future sales.

Unfortunately, when analysts model these situations they tend to hide the number of assumptions that are needed to come up with the estimate. This is not to say that they are purposely obfuscating or misleading; rather, there are simply a lot of variables that need to assumed to generate sales estimates. The ultimate outcome, however, is that the point estimate for peak sales is misleading as it can change dramatically given relatively small changes in assumptions. Rather than provide a single estimate, I supply a base case and then model how changes in that base case alters the peak sales estimate and the current NPV of future revenues. It should be clear that my base case is not what I think will happen but what I believe is a reasonable set of assumptions. One should use these estimate to both judge whether HGSI is undervalued, fairly valued or overvalued. In addition, the models provide a guide as to what metric one should pay attention to in the future. For instance, as one will see, changes in market penetration assumptions can have dramatic effects on peak sales and NPV much more so than assumptions over future price increases. This implies that market uptake of Benlysta is a more important metric to follow than pricing.

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How to Estimate Net Present Value

Analysts often present investors with a current NPV of future sales or simply a peak sales number. This practice is confusing and misleading for a number of reason. First, it is not always clear how the estimates are derived. Second, these estimates involve so many assumptions that presenting any single value has little meaning. In reality, the estimate is simply a mid-point of a range. So what an investor should want to know is how these estimates are generated and what assumptions of the analysts are most important.

This report contains both a peak sales estimate for Benlysta's initial US market and the current net present value derived from those sales. The base case is presented in the table below. In general, it assumes an initial market of 200,000 (company estimate), a price of treatment of $35,000/year (company estimate), an annual 1.5% increase in price (my assumption), a peak penetration of 30% (my assumption), peak penetration is reached in 2017 (my assumption) and a yearly discount of 10% (my assumption). This model generates peak sales of $2.3 billion and a current NPV of $5.8 billion. Yet this "estimate" is replete with assumption, how do changes in those assumptions affect the peak sales and current NPV?

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Estimating the Current Net Present Value of Benlysta

Base Case								
Year	Initial US Market Size	Market Penetration	Price of Treatment	Total Revenue*	HGSI Share*	Discount	NPV of Revenues*	
2011	200000	0.005	35000.00	35	17.5	1	17.5	
2012	200000	0.05	35525.00	355.25	177.625	0.90	159.86	
2013	200000	0.10	36057.88	721.16	360.57875	0.81	292.07	
2014	200000	0.15	36598.74	1097.96	548.9811469	0.73	400.21	
2015	200000	0.20	37147.72	1485.91	742.9544854	0.66	487.45	
2016	200000	0.25	37704.94	1885.25	942.6235034	0.59	556.61	
2017	200000	0.30	38270.51	2296.23	1148.115427	0.53	610.16	
2018	200000	0.30	38844.57	2330.67	1165.337159	0.48	557.38	
2019	200000	0.30	39427.24	2365.63	1182.817216	0.43	509.16	
2020	200000	0.30	40018.65	2401.12	1200.559474	0.39	465.12	
2021	200000	0.30	40618.93	2437.14	1218.567866	0.35	424.89	
2022	200000	0.30	41228.21	2473.69	1236.846384	0.31	388.14	
2023	200000	0.30	41846.64	2510.80	1255.39908	0.28	354.56	
2024	200000	0.30	42474.34	2548.46	1274.230066	0.25	323.89	
2025	200000	0.30	43111.45	2586.69	1293.343517	0.23	295.88	
*These are in millions of US dollars.					Total NPV of Future Sales*	5842.87		

You can tweak the model in any number of ways and it is reasonable that an individual would disagree with any of the assumptions I used in my base case. What matters is not that I am right in my assumptions but that it is clear how changes in my assumptions would alter the peak revenues and current NPV. As a case in point, I can alter the base case to present a bear case and a bull case (I do not include those tables but they would look similar to the one above but with changes in the market penetration column). In the bear case, the market penetration may max out at 20% instead of 30%. Under this new assumption the sales would peak at $1.5 billion in 2017 producing a current NPV of future sales of $3.9 billion. Of course, my base case may be too conservative, so there might be a more bullish possibility where market penetration maxes out at 40% in 2017. This would generate 2017 sales of $3 billion and current NPV of $8 billion. Clearly, changes in the market penetration assumption can have dramatic effects on peak sales and current NPV. In general, a +/-1% change in 2017 market penetration assumptions would increase(decrease) 2017 sales by $80 million and current NPV by $150 million.

Changing the Market Size

The adoption of a new treatment not only affects sales in that market but the addition of a more effect drug can change the structure of the market. In other words, a treatment that decreases the mortality associated with a disease will increase the size of the market as fewer individual die (i.e. there would be the same number of new cases but fewer deaths which would translate into a higher incidence). So what happens if the adoption of Benlysta increases the size of the addressable market?

To test this I kept all of the base case assumptions but starting in 2015 I assumed that the market increased by 1% a year. Why did I choose 2015? No real reason but it seemed conservative and by this point the drug will have penetrated the market enough to change the market (assuming it will). While this new assumption will have limited effects on 2015 sales estimates, it does change the years after. In the base case, for instance, the 2025 sales were $2.6 billion but in the new case it jumps to $2.9 billion, a 10% increase. This additionally increase the current NPV from $5.8 billion to $6.1 billion, a 5% increase.

While these changes are not dramatic it does show that a relatively minor alteration in model assumptions can have a clear effect on sales estimates. Of course, one could also quibble with my view that the market would grow at 1%. If you assume a 2% increase starting in 2015, then 2025 sales jump to $3.2 billion, a 23% increase from the base case. In addition, the current NPV would now be $6.4 billion, a 10% increase.

Pricing Power

The base case assumes fairly conservative increases in the price of treatment. If one increases the assumed price changes to 2.5% a year, then the 2017 sales increase to $2.4 billion and the current NPV to $6.3 billion. Unlike changes in market size, this has a more modest effect in the early years but really accumulates over time give the increase in current NPV.

Oone could argue that given the new regulatory environment, the price would actually decrease over time. While perhaps a draconian assumption, we can model a 1.5% decrease in price. Assuming such a decreasing price, the 2017 sales are lowered to $1.9 billion and current NPV to $4.7 billion.

So pricing power matters but assumptions over pricing is really speculative given the regulatory environment. In fact, a new administration may make it easier to increase prices in a couple of years. This could also be modeled but perhaps such a complicated model should be left for another day.

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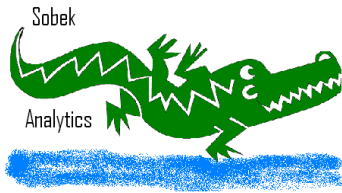
Further Edification?

As you can see, HGSI can be undervalued, fairly valued, or overvalued depending upon how one wants to view the future. As such, one has to be very careful when analysts only present a single estimate because a lot of assumptions are hidden in that value. Some assumptions, however, are more important than other but all have an effect. I used an Excel spreadsheet to create these estimates. If you would like to further change the assumptions in ways you best think represent the most likely future case, then please do. I am more than willing to send you a copy of the excel file that will allow you to use your own personal assumptions. Just send me an email at dsobek@sobekanalytics.com.

Disclaimer

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