The VIEW *from* BURGUNDY

APRIL 2000

HORATIO'S ANSWER

Burgundy has never experienced performance pressures like those of early 2000. The tech bubble, a compendium of everything that was wrong with the markets of the 1990s, left Burgundy vastly behind all the index averages. We were under great pressure to own technology stocks, and faced intense criticism for not doing so, and for insisting that what was happening in tech stocks was insanity. In true contrarian style, we held our first Client Day on April 5th, 2000, just three weeks after the NASDAQ Index peaked (at more than twice its level seven years later). We were lucky in that the first major break in the NASDAQ occurred just two days before this event, so criticisms were somewhat muted.

Horatio's Answer was a response to our clients who wanted to be sure that we understood technology investments and were not being "recklessly conservative" as the usage of the day had it.

Subsequent experience and returns tended to exonerate us in their eyes.

Richard Rooney, 2007

RICHARD ROONEY, CA, CFA, THE PRESIDENT OF BURGUNDY, gave the following speech at Burgundy's Client Day on April 5, 2000.

Horatio's Answer

There is a conversation that takes place in Act I, Scene V of Shakespeare's Hamlet that has been running through my mind lately. The exchange is between Horatio, an intelligent empiricist, and Hamlet, a brooding, intuitive romantic. The two have just seen Hamlet's father's ghost. Horatio, shocked and disoriented, says: "O day and night, but this is wondrous strange!" Hamlet replies: "And therefore as a stranger give it welcome. There are more things in heaven and earth, Horatio, than are dreamed of in your philosophy."[1]

For the past six months, I have been playing the part of Horatio. The technology sector deserves an Academy Award for its portrayal of the ghost. And Hamlet's speech has been delivered by various money managers, brokers, economists and best-selling authors. Rather than asking me to believe in ghosts, these people tell me that the kinds of investments available in this sector are not dreamed of in my philosophy. They tell me that there will be huge returns available from technology investments, that we are at the beginning of a long boom, and that my methods of valuation are no longer relevant. And like Horatio after his brush with the ghost, I have felt sufficiently disoriented and shocked that I had no immediate reply.

We have done a great deal of soul-searching at Burgundy about our valuation techniques and the scope of our investment activities. This morning I would like to share with you the results of that soul-searching. First, we are going to look at the valuation methods Burgundy has been using. Then, we will look at an alternative valuation method that has been proposed for hyper-growth companies. After that, I would like to look at technology value investors, a breed many of you probably think is either extinct or

oxymoronic. Finally, I would like to give you what I call Horatio's answer: a value investor's approach to technology.

Discounted Cash Flow – The Old Reliable

Most of you know that we use Discounted Cash Flow (DCF) analysis as our primary method of valuing stocks. I want to show you a very basic example of our approach, using a familiar subject.

CANWEST GLOBAL DISCOUNTED CASH FLOW ANALYSIS			
	1999	**2004**	**Thereafter**
Cash Flow	$132.7	$266.9	Annuititized
Growth Rates			1999 – 2004 = 15% After 2004 = 0.5% per annum
Discount Rate			8.5%
Net Present Value		$3.69 billion	$25.29/share

CanWest Global is one of Canada's major broadcasters. It has grown its earnings very rapidly during the past decade. If we forecast out the earnings at a 15% rate for the next five years, annuitize them at that level for the following period, and then discount them back to the present at 8.5%, we get a value of $25.25 for the DCF stream. Since the stock is currently trading at $16, it is trading at only 63% of intrinsic value.

Now let's make some observations about this model. It uses a five-year time horizon, for two reasons. First, five years is usually considered the maximum period that a forecast has a reasonable chance of being approximately correct. Second, the discounting feature means that the near years are much more important than the out years in the valuations of most companies. And the higher the discount rate, the more that is true. The first five years of a discount stream capture 34% of a perpetuity discounted at 8.5%, and over 50% of a perpetuity discounted at 15%. So if you get the near years right, you're well on your way to a usable valuation.

We used to think that there were only two ways to be wrong about our models. One was using the wrong discount rate, which means overestimating or underestimating the volatility of the cash flows. The other was using the wrong assumed growth rate. Lately, and specifically in the case of valuation of hyper-growth companies, we are being told that there is a third way to be wrong – using too short a time horizon. A new valuation method has appeared that stretches the old discounted cash flow calculations to their limits.

Looking to the Horizon

This new valuation method evolved from work that has been done among risk managers. Risk managers and strategic planners have lately become more and more interested in how to capture extreme outlier situations in their analysis. Extreme outlier situations are occasions where actual results diverged so far from expectations that initial analysis was made to look totally ridiculous. Let me give you an example.

In 1980, IBM did a study of the potential market for personal computers that concluded that 275,000 of them would be in use by 1990. As a result, very generous contracts were signed with Intel and Microsoft to build key components for these machines. When the actual installed base of PCs reached 60 million units that year, it was apparent that the study had made some shaky assumptions. And IBM had transferred an enormous amount of wealth to two new companies that were now formidable competitors. One commentator has referred to this as the greatest business mistake in history.

The point is that if even a tiny probability had been allowed for huge upside in the PC market, it might have altered the decision so that IBM could have better protected its interests. For example, IBM may have included volume discounts, or second-supplier options, in the Intel and Microsoft contracts. Identifying potential hyper-growth upside, in other words, can be very valuable to ongoing business decision-making.

A brilliant Toronto-based risk management specialist named Ron Dembo has come up with a rigorous approach called "scenario analysis" to help in this task. Under scenario analysis, a variety of possible futures are postulated for an investment, and probabilities are assigned. Resulting expected values can then be tested for sensitivity to various assumptions. It is only natural that this tool should be adapted for use in the investment industry, especially in the analysis of hyper-growth companies, where growth is rapid but data trails are short. But I should emphasize that the basics of this approach are identical to those we have traditionally used – what is different is the use of more than one future. In other words, you don't just go with the most likely outcome, you develop several likely outcomes and then assess them against relative probabilities. It's not really that much of a stretch.

We have all heard from various sources the statement that "the old valuation methods don't work anymore." But the only new method of valuation I have seen is scenario analysis, and it is not really that much of a departure from traditional DCF analysis. What is really amazing to us is that the suggestion that the old methods don't work is then used as a rationale for buying the most expensive stocks in the market. To me, that's like claiming that the law of gravity has been superseded, and then using that as justification to jump off a cliff. One would think that a feeling that the old methods are inadequate should spark a search for new methods that do work, rather than reckless investment activity. Certainly that is how we are approaching scenario analysis.

I was fortunate to have an example of this type of analysis come across my desk a few weeks ago, and I took some time to roughly reconstruct it to assess its merits. I should stress that my version of the model is quite rough and ready, and incorporates little of the subtlety and scope of the original. But I think it's approximately right. The subject of the scenario analysis is Amazon.com. I would like to emphasize that I am using this example for illustration purposes only. You won't find Amazon.com in your portfolios anytime soon. We'd have a lot of due diligence and valuation work to do before that could happen.

AMAZON.COM INCOME STATEMENT (IN $ MILLIONS)

	1995	1996	1997	1998	1999
Sales	.51	15.8	147.8	610.0	1639.8
Cost of Goods	.41	12.3	119.0	476.2	N/A
SG & A	.41	9.4	61.4	195.6	N/A
Operating Income	-0.3	-6.0	-32.6	-61.9	-330.0

Source: "Valuing dot-coms", *The McKinsey Quarterly*, 2000, No. 1

Now Amazon is a pretty amazing company. In 1995, it sold only $510,000 worth of goods. Last year, it sold over $1.6 billion. Above is the income statement for the last five years. The growth trajectory is awe inspiring, and so are the operating losses. As you can readily imagine, attempting a valuation of Amazon.com is challenging, because the future could hold a huge variety of outcomes for the business. If, for example, it can begin to generate a margin on its burgeoning sales, it could become a real money-spinner. If the economic advantages that Amazon's business model seem to promise are realized, then the profits could be spectacular. And if profitability is indefinitely postponed, competition heats up and access to capital dries up, Amazon could find itself in real difficulty. Scenario analysis simply takes those alternative futures and tries to examine them dispassionately.

The authors of the analysis I read use four different scenarios for the future of Amazon.com. Each scenario makes different assumptions about the eventual cost

structure and growth rate of the company. Scenario A has Amazon turning into a stunning success story, with large and sustainable cost advantages over normal retailers in terms of working capital turnover and buying power. It has 15% of the U.S. book market, 18% of the music market, and sells $49 billion worth of other goods, while generating $12 billion in cash flow in 2010. The analysis further assumes that Amazon continues to grow at 12% compound for the period 2010 to 2025, and at 5.5% from 2025 to 2040. The resulting cash flow stream is discounted back to the present at a discount rate of 13.8%, or at least that is the number I derived.

AMAZON.COM
SCENARIO A (IN $ BILLIONS)

	1999	2010	2025	2040
Revenues	1.639	85.0	647.9	1371.0
Operating Income	-0.330	12.0	91.5	193.6
Growth Rates		1999 – 2010 = 43.2% 2010 – 2025 = 12.0% 2025 – 2040 = 5.5%		
Discount Rate		= 13.8%		
Net Present Value	$79 billion		$241.78/share	

Scenario B has the company with superior, but not awesome economics, generating $7 billion of cash flow on $60 billion of sales in 2010.

AMAZON.COM
SCENARIO B (IN $ BILLIONS)

	1999	2010	2025	2040
Revenues	1.639	60.0	328.4	695.0
Operating Income	-0.330	7.0	38.3	81.1
Growth Rates		1999 – 2010 = 38.7% 2010 – 2025 = 12.0% 2025 – 2040 = 5.5%		
Discount Rate		= 13.8%		
Net Present Value	$37 billion		$113.24/share	

Scenario C has Amazon growing to a mere $41 billion of sales in 2010, while taking 10% market share in books and 8% in music, and generating $3.3 billion in cash flow.

AMAZON.COM
SCENARIO C (IN $ BILLIONS)

	1999	2010	2025	2040
Revenues	1.639	41.0	171.3	362.4
Operating Income	-0.330	3.3	13.8	29.2
Growth Rates		1999 – 2010 = 34.0% 2010 – 2025 = 12.0% 2025 – 2040 = 5.5%		
Discount Rate		= 13.8%		
Net Present Value	$15 billion		$45.90/share	

Scenario D has Amazon growing to only $17 billion in 2010 sales, with traditional retailer economics.

AMAZON.COM
SCENARIO D (IN $ BILLIONS)

	1999	2010	2025	2040
Revenues	1.639	17.0	93.1	207.8
Operating Income	-0.330	1.2	6.6	14.7
Growth Rates		1999 – 2010 = 23.7% 2010 – 2025 = 12.0% 2025 – 2040 = 5.5%		
Discount Rate		= 13.8%		
Net Present Value	$3 billion		$9.18/share	

Using these scenarios, probabilities can be assigned to each, and a variety of possible valuations arrived at. It is a way to assess the market's current expectations of the future of Amazon.com. We can draw our own conclusions about how reasonable those expectations are.

Now compare this analysis to the DCF analysis of CanWest Global. First, the Amazon model is very back-end loaded. The assumption of rapid growth far into the future gives very large numbers in the out years, which overwhelms the usual effect of discounting. The CanWest model, by contrast, accrues a good part of its value in the first five years. In the Amazon model, under all scenarios, the value of the DCF stream is nominal or negative over the first five years, and still modest after 10 years. The key assumption from a valuation standpoint is the high rate of growth after 2010.

There are a couple of things about this analysis that are troubling to us. One is the long time horizon. Ten

years is the extreme outside limit of anybody's forecasting capabilities, and the room for error is huge. If you had asked anyone to forecast what the economy would look like at the end of any decade of the past century, they would have been very lucky to be anywhere close. I would submit that the radical changes of the past 10 years have made that forecast even harder to make.

Another problem is the absence of a failure scenario in the analysis. The worst case envisaged for Amazon is that it ends up looking like a traditional retailer. While that fate is grim indeed, it is not the worst that can happen to a business. Amazon has not as yet shown any ability to generate accounting profits or even positive cash flows, and is reliant on the capital markets for its growth capital. A future bankruptcy is surely not completely out of the question.

But that doesn't mean we can't learn from this analysis. I think that there is much to recommend Mr. Dembo's scenario analysis, and we will be experimenting with it. I see no harm in extending time horizons as part of the normal sensitivity analysis, and we are currently looking at the impact of doing that. This kind of analysis can help us to track the trajectory of some of these hyper-growth situations, and give us some idea of valuation over the long term. It seems to us that this kind of analysis is more familiar than strange.

Following Fisher

So there is nothing in the valuation area that is overly new to us. Can we look to a prominent investor for guidance in this area? Burgundy likes to follow the methods of successful long-term investors. As all of you know, value investing is a pretty big tent. Basically, though, most people feel that there are two kinds of value investors: Ben Graham value investors, who look for a margin of safety in the balance sheet, and Warren Buffett investors, who look for a margin of safety in the economic characteristics of the businesses that they buy. But there is another strand of value investing that has attracted little attention in recent years. That is the Phil Fisher style.

Phil Fisher is a legendary investor based in San Francisco, where he has been managing money since 1931. He evolved a system of assessing companies, and a style of holding very concentrated portfolios for the very long term. His basic approach is to insist on an outstanding management with strong technological leadership.

Buffett acknowledges his debt to Fisher, since Fisher was arguably the investor who discovered the power of holding great companies forever. But Buffett dislikes technology investing because of the complexity factor, where Fisher embraced technology early in his career, and has held Texas Instruments and Motorola for over 40 years without selling. In his book *Common Stocks and Uncommon Profits*, Fisher has a 15-point agenda for what to look for in an equity investment. Interestingly, his first point talks about prospects for large increases in sales, his second point questions the company's determination and ability to develop products or processes so that growth can be sustained, and his third point asks about the size and efficacy of research and development efforts at the company. So to Phil Fisher, technology was a mainstream sector for value investing. He seems to view research and new product development as a part of a company's "moat," to use Buffett's parlance.

Fisher's modern heir would appear to be Bill Miller, manager of the Legg Mason Value Trust, and owner of a tremendous long-term record of performance. Mr. Miller has made a lot of money investing in technology stocks, and he recently wrote a thought-provoking essay entitled "Amazon and the Ethics of Belief." In it, he challenges value investors with the following words: "Many value investors have chosen to ignore technology companies or maintain minimal exposure to them, despite long data trails and compelling evidence that this sector has the ability to create substantial, long-lasting

shareholder wealth. The reasons given are that technology is difficult to understand, that it changes rapidly, and that the stocks are usually too expensive according to standard valuation methods."[2]

Mr. Miller believes, like Ben Graham, that reward in the stock market should be related to the amount of work one is willing to do. In one of his more striking statements, he says: "Investors who rule out the largest sector of the stock market, and the most important driver of economic growth, because it takes work to figure it out, have little to cavil about when others get the rewards."[3]

Well, that strikes close to home. We have used some of that type of reasoning at Burgundy for not investing more in technology. Given that we work pretty hard at understanding the companies we invest in, it seems a bit rough to be accused of intellectual laziness, but clearly, Miller is on to something. We have already seen, I think, that the methods of valuation being used on even the most challenging technology situations are not very much different from those we use anyway. So obviously, the main difficulties value managers have with technology investing are qualitative, not quantitative. And it is precisely in the qualitative assessment of businesses that Burgundy excels. So, I conclude, what is there to keep us from being successful technology investors? Nothing, it would seem, but hard work, something we have never been averse to at Burgundy. After all, companies like First Data, Intel, Gennum and Equifax have very substantial technological elements, and we have made a lot of money in them, so we even have a pretty good, though limited, track record.

Our young analysts are very keen to tackle this area. They have already started, and are identifying niches for Burgundy to compete in. Sanjay Sen will be the wheel horse of this effort. Sanjay has an inquisitive mind, and strong valuation skills. Craig Pho will be part of the group too, while keeping his main attention on Japan. Craig brings some knowledge of Japanese technology to the table, as well as his large reserves of common sense and discipline. When Curtis Gazdewich joins us in May, he will join this team. Curtis has an intuitive feel for technology, which I think will give us another dimension in our analysis. This is not a defensive move for Burgundy. We are too young a firm to play defence. We are out to build another competitive advantage in our company in technology investing, and another way for our clients to make money.

So that is Horatio's answer. Any investment worthy of the name is dreamt of in our philosophy. Our valuation techniques may require fine tuning, but there is no radical alternative valuation method that has been proposed. Discounted Cash Flow analysis is still the way to go, albeit a DCF analysis with some differences. The major barrier we have to surmount is simply the background that we must develop in the industry. And we have already started to aggressively develop that background. It will take some time, and we are not willing to compromise our views on valuation, but we will do the work, and reap the rewards. We are confident that we can remain our rational, empirical selves, and invest successfully in technology companies. So don't worry, Horatio is not about to become Hamlet.

Because after all, at the end of the play, Hamlet is dead, along with his mother Gertrude, his uncle Claudius, his fiancée Ophelia, his best friend Laertes and the old councillor Polonius. And those are just the ones who died onstage. Horatio, by contrast, is last seen being treated with honour and consideration by the new King of Denmark, and, no doubt, lives on to a ripe and prosperous old age. The moral of the story, I think, is obvious.

Endnotes

1. Shakespeare, William. Hamlet. Edited by Russell Fraser. New York: Signet, 1963.

2, 3. Miller, Bill. "Amazon and the Ethics of Belief."

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