Memo to: Starvine Clients
From: Steven Ko
Re: Moneyball

Moneyball: How is Baseball Related to Value Investing?

Experienced value investors know their natural impulses are not to be trusted. Stereotypes weigh so powerfully on our judgements that we often allow subjectivity to command important decisions, resulting in extreme misappraisals of people and companies. This human flaw – the tendency to allow surface impressions rather than objective reasoning to guide our decision-making – renders markets of all types to operate in a permanent state of inefficiency. And as long as the marketplace undervalues or overvalues assets, an investor has opportunities to profit.

In my opinion, no book compares to "Moneyball: The Art of Winning an Unfair Game" by Michael Lewis in capturing the essence of value investing. Even though its setting is in the universe of professional baseball, I think Moneyball should be on any investor's required reading list. The Hollywood film, released in 2011, also did an excellent job of conveying some of the investing takeaways explained below.

Moneyball tells the story of how the application of an objective approach to valuing players led to a standout level of success for the Oakland Athletics, especially in relation to their puny budget. In 2002, despite having lost three of their best players to teams with much deeper pockets, the team won 20 consecutive games during the regular season. This was the longest winning streak in Major League Baseball since 1935, or 67 years.

Billy Beane and Paul DePodista, the Oakland A's general manager and assistant general manager, respectively, shook up the sport by abandoning the reliance on scouts' conventional use of "feel" in selecting players. Instead, they analyzed players by applying a statistical school of thought known as *sabermetrics*. At the time, Beane was going against established norms by using sabermetrics, an approach that refined baseball statistics to allow for more accurate insight into players' contributions. Beane identified on-base percentage (or OBP) as the single most important predictive statistic in evaluating a player. In other words, a prospect's worth was determined mostly by his historical track record of getting on base, regardless of how it was achieved (i.e. base hits vs. walks). Traditionally, a player's batting average, which accounted for only base hits, was always viewed as "the measure of the batter." Thus players who augmented their on-base percentage by scoring lots of walks were systemically undervalued. So not only were numbers underutilized in evaluating ball players, but moreover the incorrect numbers were being tabulated.

It was truly ground breaking at the time; the Oakland A's were pioneers in their practice of buying bases as cheaply as possible, rather than buying players for their perceived growth potential. In this manner, Beane was able to line up his roster with some fantastic talent at bargain prices. He was able to accomplish this because each player had a defect (e.g. appearance, age, awkward body mechanics, or injury) that posited him as being undesirable to most teams, despite sporting a strong track record.

Likewise, value investing is predicated on buying the most earnings power or asset value possible for the least amount of money. Often times, the best opportunities are the ones that initially illicit feelings of discomfort because of an identifiable defect. There are timeless lessons from Moneyball that are directly applicable to investing. I encourage readers to carefully consider each one and reflect on whether it resonates with past experience.

Lesson #1: Get on Base

Moneyball really stressed the importance of getting on base as the all-important objective for a player. Beane and DePodista searched for players with a demonstrated discipline to swing selectively; they also discouraged popular tactics such as bunting and stealing bases that are widely perceived as essential tools to add value, yet detract from overall value statistically.

Similarly, a long-term investor needs to get on base consistently in order to accomplish the all-important mission of compounding capital. Instead of picking players for a baseball team, the investor must pick the right companies for a portfolio. If selected well, these companies will collectively march forward through time by growing their earnings power and/or become more highly appraised by the market (i.e. gain by multiple expansion). As new and better ideas come along, or existing investments turn out to be mistakes, the portfolio is churned.

"Compounding" has become a buzz-word that is thrown around in the vernacular. Compounding is so powerful because it is exponential in nature. Picture a snowball growing as it rolls down a hill: growth begets even more growth with each rotation. But in order to achieve a decent rate of compounding over a long period of time, permanent loss of capital (i.e. big positions going to zero) must be avoided through effective risk controls and policies that encourage consistency. Permanent loss of capital is akin to a big chunk of your snowball breaking off; its compounding has not only been interrupted, but taken a step backwards. This does not mean that investors should preclude their idea search process from seeking out grand slams; it simply means that all decisions should be made in the context of one's time horizon, which in my case is 40+ years. Such longevity imputes that getting on base is the ground expectation of the collective portfolio. The big caveat with compounding through stock investing is that progress is never smooth, as price fluctuations are part of the package.

Lesson #2: The Mind Plays Tricks on Itself When Relying on Visual Information

In baseball, scouts traditionally found talent by going out to games and subjectively surveying the players' athletic abilities. Billy Beane in fact was (wrongly) discovered in this manner and was a first-round draft pick right out of high school; his subsequent failure in pro baseball gave him conviction that the accepted ways of appraising players were deeply faulted. That such means of allocating millions of dollars dominated drafting decisions in the business of baseball speaks to just how wired we are to draw instant conclusions from impressions.

In the corporate realm, where even more dollars are at stake, it is easy to see that the selection of talent for top leadership roles is (on average) done no more objectively. In his book *blink,* Malcom Gladwell shared some striking findings from his poll of about half of the companies on the Fortune 500 list: 14.5 percent of men in the U.S. are six feet or taller, versus 58 percent of CEOs. Even more startling, 3.9 percent of adult men in the general U.S. population are six foot two or taller, as opposed to almost one-third in Gladwell's CEO sample. We can impute from Gladwell's numbers that men over six feet represent the CEO population by a factor of four times their actual proportion of the U.S. population. Another way to look at this is that men under six feet are being kept out of 43.5 percent of CEO positions they would otherwise be occupying if the distribution of height in the sample mirrored the U.S. population.

Capital allocation is the most important responsibility of a CEO. As per Investopedia, it is "the process of how businesses divide their financial resources and other sources of capital to different processes, people, and projects." If it is the case that society's unconscious bias towards tall men is resulting in such an imbalance in who these capital allocation responsibilities are assigned to, how interesting would it be to have an empirical

survey of the actual performance of this group over time? We could use a host of measurements, such as total shareholder return (i.e. how well the company's stock did versus the peer group during the CEO's reign), and growth in cash flow per share versus the peer group, to name a few.

As an investor, what are the implications of the above example? For one, the average investor ascribes too much value to the optics of top-line growth rather than management's record of growing value on a per-share basis. In fact, growth is only good if it accrues to you on a per-share basis. It is easy to find high growth companies, but difficult to find ones that do so without diluting value to shareholders along the way via overpaying for acquisitions, unnecessary overhead, or unthoughtful timing when issuing shares. Fads are another area where investors abandon objective valuation and instead become engrossed by the visuals of stock charts showing exponential growth. The tech boom that ended in 2000, the bubble in U.S. housing (ended 2006), and the bubble for speculative mining stocks in Canada (ended March 2011) are examples from very different industries in recent history. And we all know how those bubbles ended.

None of this sounds positive, does it? If the average person's intuitions can lead to ruin in the markets, and furthermore if a good percentage of individuals who climb to the top of corporations are chosen for the wrong reasons, how does this bold for our well-being as investors? One error (picking a stock in an over-hyped industry) can multiply against another (CEO without sense of capital allocation) to produce a disastrous result. Do not despair. All this is actually very positive for those who can train themselves to avoid making impulsive decisions and instead dig beneath the surface when valuing a company.

Lesson #3: Misfits and Defects Welcome – At the Right Price

The Oakland A's were able to acquire Chad Bradford, one of the most effective relief pitchers in Major League Baseball, for only $237,000. Clearly his performance warranted many multiples of that price, but he was chronically undervalued in the eyes of scouts due to his unorthodox, underhand pitching style ("submarining"), which was a bizarre sight to behold. Despite Bradford's impressive track record, he was kept on the Chicago White Sox's Triple-A team until Beane and DePodista came along.

> "The White Sox didn't trust Chad Bradford's success. The White Sox front office didn't trust his statistics. Unwilling to trust his statistics, they fell back on more subjective evaluation. Chad didn't look like a big leaguer. Chad didn't act like a big leaguer. Chad's success seemed sort of flukey. He was a trickster that big league hitters were certain to figure out." (pg. 233)

In investing, companies with perceived defects or uncertainties can lead to "fat pitches" for investors with a longer time horizon. Sometimes an entire sector becomes out of favor, resulting in low stock prices for all companies in the industry. U.S. housing was one such group that was indiscriminately sold off during the recession. However, despite the weakness in the sector, the low valuations created opportunities in companies whose profitability and balance sheets were above average for the beaten-up group. Another situation where a defect often leads to misappraisal is when a company's overall profitability is suffering as a result of one loss-making division offsetting the profits of a healthy growing division. In such instances, valuing each division separately ("sum of parts") is likely to lead to a different answer versus the conclusion drawn by the lazy investor, who takes the consolidated profit at face value without inspecting the underlying progress of each division.

Lesson #4: Randomness Can Overwhelm Short-Term Results

The naked eye cannot be relied upon to draw conclusions from small sample sizes:

> "Pete Palmer, the sabermetrician and author of *the Hidden Game of Baseball,* once calculated that the average difference in baseball due to skill is about one run a game, while the average difference due to luck is about four runs a game. Over a long season the luck evens out, and the skill shines through. But in a series of three out of five, or even four out of seven, anything can happen. In a five game series, the worst team in baseball will beat the best about 15 percent of the time." (pg. 274)

The above finding explains why Beane, as general manager of the Oakland A's, did not watch the games, but rather listened-in from a radio in the team gym. He purposely distanced himself so as to not become emotionally engaged to any single game, the outcome of which was subjected more to luck than process. Stock investing is a parallel universe, in which we are awash in short-term randomness, both in stock price fluctuations and quarterly results. Our energies are not best used by checking stock prices excessively. Instead, investors should keep a distance and be as dispassionate as possible after conducting the research for any given company. If you approach public equities as having fractional ownership, the time required for your thesis to play out could equate to the time required for the chosen companies to grow their businesses, which may span years instead of quarters.

Lesson #5: Career Risk Renders Value Investing a Difficult Act to Follow

Concerns over job security makes it difficult to stick one's neck out and do the right thing. When Oakland was behind in the first half of the 2002 season, it caused great tension. The media had a feast on the apparent failure of the new system. Think about it: they were doing something drastically different from accepted norms (by populating a team full of cheap misfits) *and* trailing behind the competition in the American League West standings.

Value investing may have become a mainstream term, but the truth is that it is not an easy thing to pull off in a professional setting. If a fund manager sticks his/her neck out at any point in the market cycle by holding idiosyncratic, out-of-favor companies, is it worth the risk of being fired? In the majority of cases, the upside (a good annual bonus if right in the short term) from deviating far off the index is less than the downside (being dismissed and suffering from career dislocation). Conversely, if mainstream names are instead selected, the manager may generate paper losses in an absolute sense during a bear market, yet it is difficult to condemn the individual too much for following "conventional wisdom." In short, value investing sounds great in theory, but human nature poses constant challenges in its practice and execution.

Lesson #6: The Comprehension of Value Investing May Be an Innate Trait

Beane and DePodista have theorized that plate discipline, defined as a player's selectivity of swinging only at pitches in the strike zone, is something that can be taught only to a limited degree. Despite regular prodding by the front office, efforts to improve the Oakland Athletics roster's discipline was met with muted success.

In a like manner, value investing is a concept that people seem to either "get" or "don't get"; this understanding is independent of investment experience, education, or how many books on value investing have been read. Consider the following excerpt from "The Superinvestors of Graham-and-Doddsville", an essay written by Buffett in 1984:

> "It is extraordinary to me that the idea of buying dollar bills for 40 cents takes immediately with people or it doesn't take at all. It's like an inoculation. If it doesn't grab a person right away, I find that you can talk to him for years and show him records, and it doesn't make any difference. They just don't seem able to grasp the concept, simple as it is. A fellow like Rick Guerin, who had no formal education in business, understands immediately the value approach to investing and he's applying it five minutes later. I've never seen anyone who became a gradual convert over a ten-year period to this approach. It doesn't seem to be a matter of IQ or academic training. It's instant recognition, or it is nothing"

I have found the above to be shockingly true among my peers, both inside and outside the investment industry. Keep in mind though that value investing is merely a principle, a concept. Plainly, it is the practice of buying something for less than its value (i.e. what you can sell it for today or in the future) as determinable by sound facts. Sound simple? Yes, the basic premise is exceedingly simple, albeit success with this strategy over the long term may not be. Beyond the basic principle of buying stocks at a discount to their fair value, value investing is very much an art rather than a science. Much is left to interpretation, most of all how a company should be valued. Regardless, I find that the concept does not register or resonate with most people. Since the stock markets are simply auctions where fractional interests are traded, it is therefore logical to assume that opportunities will always surface in a world where a lot of the market participants do not compare the price paid against the value being obtained.

What are the main takeaways from all this discussion? If I had to select one lesson and forget the others, I would emphasize the importance of **getting on base** (Lesson #1). In seeking players with a high on-base percentage, Beane and DePodista strove to construct a portfolio that was best positioned to maximize the number of wins with limited resources. In your own portfolio, getting on base can be achieved by minimizing big errors and investing in companies that offer a compelling combination of low valuation and above average quality. In my experience, the biggest errors are rooted not in valuing a company, but in psychological missteps as introduced in Lesson #2. Of course, avoiding mistakes is easier said than done. But if you stay the course and realize that some home runs will happen while focusing squarely on getting on base (i.e. not being too aggressive), a satisfactory level of long-term compounding should be the result. If $1.00 compounds at an annual rate of 10 percent, it will become $6.73 over 20 years, $17.45 over 30 years, and $45.26 over 40 years. These may seem like lofty goals in today's low interest rate environment, but I believe they are conceivable with some skill, diligence and loads of patience.

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Comparison: Moneyball and Value Investing

Characteristic	Moneyball	Value Investing
Removing short termism; ignoring the crowd	Beane listens to games from a distance; distances himself from players	Checking prices during the trading day should be minimized; investors should not "fall in love" with companies.
Rational purchase decision system	Price vs. on-base percentage (OBP)	Can vary: low price-to-earnings, best combo of EV/EBITDA and ROIC
Minimizing low percentage tactics	Beane discouraged stealing and bunts	Investors should avoid over-paying for growth. Starvine prohibits participation in IPOs (initial public offerings) and speculative mining exploration companies.
Unorthodoxy as a by-product	The prioritization of getting on base led to less swings and thus more walks.	The focus on value translates into idiosyncratic selections completely off-kilter from mainstream names.
Track record vs. impressions	How often does the player get on base?	What is the firm's return on invested capital? Does the management team have a verifiable history of success?
Reason for undervaluation	Player's defect (e.g. age, weight, throws funny)	Company in out-of-favor industry, general market panic, hidden assets, forced selling due to corporate event, negative media attention from short-term issue.
Randomness	A meaningful sample size is needed; over a small number of games, luck can dominate over skill.	There is a random element to short-term stock prices and to some extent a company's quarterly financial performance. Day-to-day or even quarter-to-quarter prices and earnings often do not reflect fundamental progress.
Patience	Beane's strategy would not have succeeded had the club owners not endured through the initial losses	Clients must be able and willing to endure price fluctuations to get results from a value approach.
Career risk	Had Beane succumbed to the anxiety of potentially getting fired and abandoned his statistical approach, he would have produced average results.	When portfolio managers buy in-vogue stocks for fear of looking wrong rather than for true merit, they become 'closet indexers'; the desire for job security thus supersedes the goal of producing alpha.
Capitalize on Motivated/Forced Selling	Bargains tended to be created in the second half of the season; opposing teams would sell players they had given up on to shore up finances for the next season.	Stock prices may be driven down unnaturally during certain times of the year (e.g. tax loss harvesting in December) or corporate events like spin-offs that result in a change in the shareholder base.