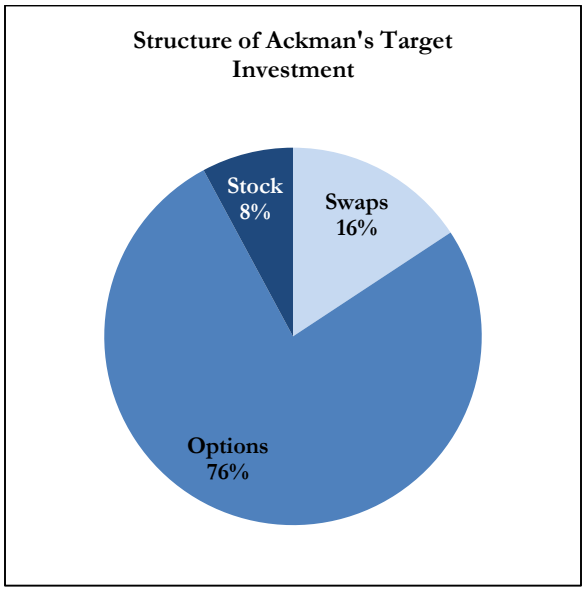
# Executive Summary

- Analyzing the structure of Pershing Square's investment in Target provides good insight into what to do and not to do when structuring a mixed stock / option investment.
- Ackman tapped the "listed look-alike" option market. This article reviews how institutional option transactions are negotiated and traded on this market.
- We find Ackman's use of In-the-Money (ITM) options to be an intelligent, measured approach and discuss why, in general ITM options should be a go-to strategy for stock investors.
- We find that a combination of overleverage and poor timing lay at the root of Ackman's losses in Target, and discuss what he might have been done better.

# Ackman's Investment

While Ackman's investment in Target investment was not successful, the example—details of which are well documented in an SEC form 13-D[1]—holds valuable lessons for intelligent option investors, especially institutional ones.

Pershing Square built up a position of just over $2 billion in Target, using a combination of stocks, options, and swaps. Here is the breakdown of this investment:[2]




Let's take a look at the $1.5 billion represented by the option leg.

[1] Form 13-D shows beneficial ownership of 5% or more of the shares of a public company.
[2] Please feel free to download this Excel file containing Ackman's position data.

From the 13-D we can see that Ackman's funds invested in the following listed look-alike[3] call options.

| Trade Date | Quantity | Strike Price (K) | Exp. Date | Price Paid | Entity | Stock Price (S) | K / S Ratio | Days to Exp. | Intrinsic Value | Time Value | Time Value % Price |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/27/2007 | 39,493 | 48.6012 | 10/17/2008 | 670,972 | PSII | 60.77 | 0.7998 | 539 | 480,582 | 190,390 | 28% |
| 5/11/2007 | 37,052 | 46.5988 | 1/16/2009 | 637,539 | PSII | 58.25 | 0.8000 | 616 | 431,700 | 205,839 | 32% |
| 5/16/2007 | 33,535 | 46.1146 | 1/16/2009 | 571,688 | PSII | 57.31 | 0.8047 | 611 | 375,438 | 196,250 | 34% |
| 4/27/2007 | 3,484,289 | 48.6012 | 10/17/2008 | 59,196,837 | PSInt | 60.77 | 0.7998 | 539 | 42,399,616 | 16,797,221 | 28% |
| 5/11/2007 | 3,272,126 | 46.5988 | 1/16/2009 | 56,302,163 | PSInt | 58.25 | 0.8000 | 616 | 38,124,194 | 18,177,969 | 32% |
| 5/16/2007 | 2,958,275 | 46.1146 | 1/16/2009 | 50,431,193 | PSInt | 57.31 | 0.8047 | 611 | 33,119,072 | 17,312,121 | 34% |
| 6/8/2007 | 5,000,000 | 50.6606 | 1/16/2009 | 95,495,000 | PSIV | 63.37 | 0.7994 | 588 | 63,547,000 | 31,948,000 | 33% |
| 6/13/2007 | 5,000,000 | 34.6290 | 12/14/2007 | 146,550,000 | PSIV | 63.47 | 0.5456 | 184 | 144,205,000 | 2,345,000 | 2% |
| 6/20/2007 | 13,700,000 | 51.0669 | 12/19/2008 | 263,314,000 | PSIV | 64.25 | 0.7948 | 548 | 180,608,470 | 82,705,530 | 31% |
| 7/5/2007 | 14,500,000 | 51.0847 | 10/2/2008 | 264,301,650 | PSIV | 64.21 | 0.7956 | 455 | 190,316,850 | 73,984,800 | 28% |
| 7/5/2007 | 14,500,000 | 51.0847 | 4/2/2009 | 290,504,600 | PSIV | 64.21 | 0.7956 | 637 | 190,316,850 | 100,187,750 | 34% |
| 7/9/2007 | 4,681,359 | 53.1178 | 10/6/2008 | 88,711,753 | PSIV | 66.72 | 0.7961 | 455 | 63,676,781 | 25,034,972 | 28% |
| 7/9/2007 | 4,681,359 | 53.1178 | 4/6/2009 | 97,512,708 | PSIV | 66.72 | 0.7961 | 637 | 63,676,781 | 33,835,927 | 35% |
| 4/27/2007 | 2,626,851 | 48.6012 | 10/17/2008 | 44,629,268 | PS | 60.77 | 0.7998 | 539 | 31,965,624 | 12,663,644 | 28% |
| 5/11/2007 | 2,468,227 | 46.5988 | 1/16/2009 | 42,469,795 | PS | 58.25 | 0.8000 | 616 | 28,757,806 | 13,711,989 | 32% |
| 5/16/2007 | 2,230,785 | 46.1146 | 1/16/2009 | 38,029,307 | PS | 57.31 | 0.8047 | 611 | 24,974,530 | 13,054,777 | 34% |

Entity Names: PS = Pershing Square, PSII = Pershing Square II, PSIV = Pershing Square IV (vehicle established to invest only in TGT), PSInt = Pershing Square International

Let's concentrate on a few of these columns in particular—Quantity, Strike Price, and K/S Ratio—to better understand how a sophisticated institutional investor uses options. Then, we will look at what went wrong and what, if anything, could have been done to make this investment successful.

## Quantity

The first thing to note is that the quantities are not necessarily in multiples of one hundred.[4] This is an example of the great flexibility of listed look-alike options available to institutional investors. Because the contracts are negotiated between the broker and the investor, the investor never has to worry about over- or under-exposure to a given stock.[5]

As long as an institutional investor is using the listed look-alike market, he or she can decide exactly the quantity of shares on which they want to transact options. This advantage is offset by the fact that an institutional investor transacting in the listed look-alike market does not have the protection of a regulated central counterparty taking the other side of his or her trade. In other words, the investor has counterparty risk with the institution (or institutions) that takes the other side of the trade.

## Strike Price

For those used to seeing strike prices listed only in whole dollar amounts, the oddly irregular strike prices in the table above (e.g., 53.1178) might seem unnatural. For institutional investors trading in the listed look-alike

[3] See our blog posting on Ackman's Herbalife investment for a definition and explanation of listed look-alike contracts.

[4] Most listed options are traded in indivisible contracts representing 100 options each.

[5] For example, let's say that as an individual investor, you have a $100,000 portfolio and want to take exactly a 5% position in Amazon (AMZN)—trading for $324 / share. Because the market price of the shares is so high, buying a 5% position would mean buying only 15 shares. Given these constraints, it would be impossible to take the same notional position (i.e., controlling the same number of shares of Amazon) using options. One listed option contract would give you notional exposure to 100 shares—over six times your target exposure.

market, however, the regularity of the listed market is unnaturally constrictive. When a listed look-alike trade is negotiated, it is in fact usually the Strike / Stock ratio (K/S) that is specified up front rather than the strike price.

Looking at the "K/S Ratio" column in the table above, it is apparent that—with one exception—Pershing Square specified that the ratio was to be 80% (i.e., calls that were 20% ITM).

The exact strike prices are determined in a process related to the broker counterparty's delta hedging of the options (the full explanation is a bit long-winded, so I have included it below in the notes[6]). As such, when Pershing Square's traders began placing orders for these options transactions, they specified that they wanted to buy "80 calls" on Target, which means calls that have a K/S ratio of 80%. A more highly levered Out-of-the-Money (OTM) investment would have been in the 110 calls (OTM by 10%).

This observation leads naturally to a discussion of the K/S Ratio and an explanation of Ackman's use of ITM calls.

## K/S Ratio

Looking at the table above, many people would likely be surprised to see that Pershing Square's entire option investment was made using ITM calls. I was happy to see that though and it showed me that Ackman had done a lot of thinking about crafting his option strategy.

I believe a strategy of buying ITM call options should be a standby for stock investors as it has many benefits…

1. It uses less capital than an equivalent notional investment in stocks.
2. It takes away some of the urgency associated with options expiration.

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[6] Once the K/S ratio is specified, the broker goes into the market and "trades the hedge" referring to the broker's delta hedge.

"Delta" is a mathematical relationship specified by option pricing models that among other things, gives the statistical likelihood that a stock will be at or above (in the case of a call) a certain price at the expiration of the option.

Let's say that the call options Ackman selected had a delta of 0.75. In this example, the delta signifies that, according to the mathematical model used to price the option, there is a 75% chance that Target's stock will close above the strike price at the option's expiration. Ackman's fund bought long calls, so the broker counterparty is obligated to deliver shares to Ackman if requested.

In order for the broker to be able to deliver this (very large) amount of shares, its traders purchase a quantity of stock equivalent to 75% of the nominal value of the option transaction (i.e., The broker buys 75 shares for every 100 shares Pershing Square controlled through the option contracts).

While the sell-side brokers were trading the hedge, Ackman's traders were directing the broker to transact the hedge in the same way they might direct the purchase of a large block of shares (e.g., "Stay under x% of average daily volume, buy at as close to VWAP [Volume Weighted Average Price] as you can, and don't move the market."). The strike price is determined as a percentage equal to the K/S Ratio of the average price of this initial hedging transaction.

So, in the case of the first row of the table above, the average price of the hedging transaction turned out to be $67.11, so the strike price was specified as 80% of that figure.

3. It uses less capital on unrecoverable time value (versus OTM ones—where the entire amount of premium is time value by definition).
4. It offers a lower *percentage* return than an OTM option strategy, but for the same notional value it offers a much higher *dollar* return.

Each of these strengths is intricately related to two important characteristics of most option strategies: leverage and a finite economic life. I discuss these topics in detail in The Intelligent Option Investor, so I won't rehash them here.

Suffice it to say that in my opinion, the Pershing Square strategy of buying the underlying stock, then layering on ITM options is a sound investment strategy that not only can be used, but should be used by fundamentally-oriented investors.

So, if this is such a great strategy, why did Ackman's investment end in failure? We turn to that question in the next section.

## Root Causes of Ackman's Failed Investment

There are two main reasons why this investment did not work out for Ackman and his investors: overleverage and bad timing.

### Overleverage

Researching Target for a valuation report[7] I authored convinced me that the retailer does indeed have some deep problems related to its culture and management style. Ackman, as an activist investor, invests in companies that have value-destructive faults, so it is no wonder that he was drawn to Target.

The position of an activist investor is sort of like that of a house flipper, except in the latter case, the house is not actively attempting to thwart the owner's attempts at rehabbing it!

Knowing that Target was a "fixer-upper" I question whether a levered strategy was appropriate at all. Buffett also uses leverage in his portfolios, but he buys companies that have little "valuation risk"—assets that have a good track record of performance and for which he has a reasonable expectation that the track record will continue.

Finding a company with little valuation risk and designing a levered strategy to invest in it is a great idea. Finding a company that has a material valuation risk and using leverage to invest in it opens the investor to the possibility of large losses.[8]

In my book, I talk about intelligent option investing as being a meal; the main course should usually be the underlying asset; ITM options are side dishes that enhance the enjoyment of the main course; OTM options are spices you sprinkle on for zest, or a savory snack between meals.

[7] YCharts Focus Report on Target

[8] Along with the possibility of severe losses, it also opens the investor to the possibility of spectacular gains. The most dangerous investor in the world is the one who experiences—in his or her first time using a levered strategy on an asset whose value is highly uncertain—a success. Confusing the wonderful results of that success as skill, rather than luck, encourages the investor to make a similar, though usually even more levered, investment in the future. This eventually ends very badly.

Looking back at the first graph in this article, it's clear that Ackman had not prepared a very balanced meal for himself and his investors. Most of his meal was made up of side dishes rather than entrée (like a kid at the Chinese buffet who comes back with five egg rolls and only a single ladleful of chicken and broccoli). Considering the cultural / operational issues at Target, and the uncertainty this might have on the stock price, this meal seems especially unbalanced.

Also, from a public relations perspective, the fact that over four-fifths of the investment was in derivative instruments made it very easy for management to argue that Ackman was not a long-term shareholder, but rather a speculator. And of course, no one likes speculators—including shareholders voting in a proxy fight.

## Timing

As for the bad timing side of things, Ackman not only chose to invest in this company that has a fairly large valuation uncertainty, but had the bad fortune of doing so just before the mortgage crisis and financial panic of 2008.

It's evident from his short investment in MBIA that Ackman understood the house of cards that was the pre-crash CDO market. However, he—and a lot of others—failed to recognize just how many secondary and tertiary effects from the collapse of the mortgage market would bring about. Target's stock price fall was one of those.

The way Ackman structured his option investment, it would take a 20% drop in Target's stock by expiration before Ackman would suffer a 100% loss of value on his options.[9] While such a large decline is not unheard of for small cap stocks or stocks that are in some special situation (i.e., experimental drug company waiting for FDA approval, a company fighting for a bridge loan to stay in business, etc.), it is rare for a large retailer with as strong of a brand and market position as Target.

The mortgage crisis, however, made "rare" occurrences commonplace and Ackman had to watch the ground suddenly disappear from beneath his feet as Target followed the market down.

In addition, with the exception of the $147 million worth of 45% ITM options, almost Ackman's entire position was made up of options on which he paid a significant amount of time value. As I discuss in The Intelligent Option Investor, money spent on time value should be thought of as a realized loss. That loss may ultimately be partially or wholly offset by investment profits, but the money spent on time value wastes away with the passage of time.

Target's large drop in price coupled with the foreseeable expiration of Ackman's options, shifted the power in the battle away from Pershing Square and toward Target's board and management. Target's board understood that if they could keep stalling, Ackman would suffer more and more financial pain as the options neared expiration. Indeed, after an expensive and ultimately futile proxy battle, Ackman did throw in the towel.

In short, the overuse of leverage in a stock with high uncertainty, coupled with a market drop that had a more serious and widespread impact than most people (even bearish ones) had expected, ended up sinking this investment.

[9] This is true for most of the position, but he did allocate about $147 million of his investment in the Pershing Square IV fund to calls struck 45% ITM. These options certainly held their value better even during the darkest days of this position, simply because they were less levered.

## Better Options

Hindsight is 20/20, so it's easy to look back at Ackman's failed investment and scoff at his choices, but in fact, at the time, the investment, while aggressive, was sensible.

However, a few things do jump out as areas in which intelligent investors could learn from.

1. Take a proportionally larger stake in the underlying stock up front.
2. Choose less levered, further ITM options.
3. Use short put strategies during large market drops.

Taken in total, these steps would have drastically lessened the leverage (points 1 and 2), removed a good bit of the time pressure (points 1 and 2), allowed for less money to be spent on wasting time value (point 2), and allowed widespread investor fear (i.e., high implied volatility) to be one's friend rather than one's foe (point 3).