DO YOU KNOW WHERE YOUR DERIVATIVES ARE?

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ABSTRACT

This paper is designed to assist individuals and organizations in understanding the role and risks of derivatives in two specific areas -- debt management and investing. The various risks associated with derivatives are discussed in this article. Similar to collateralized debt obligations (CDOs) and CDOs squared, derivatives also have the potential to be the next financial engineering bubble to burst. The SEC is concerned that investors do not understand the risks with more complex ETFs and abbreviated disclosures. Institutions, including Harvard University, have already lost millions on interest rate swaps. Individuals and organizations should take the time to educate themselves as to the serious potential risks involved with these instruments.

JEL: G01, CR11, G15, G24

KEYWORDS: Derivatives, Exchange-traded Funds, Leveraged, Futures Contracts, Counterparty Risk, Tracking Errors, Lack of Transparency, Swaps, Counter Party Risk

INTRODUCTION

The 2,315-page Dodd-Frank Wall Street Reform and Consumer Protection Act has been hailed as the solution for preventing future financial meltdowns such as those currently experienced in this economy. Investors should not be lulled into complacency though. This legislation creates a division within the Federal Reserve designed to protect consumers. However, while its goal is to increase the transparency of complex financial products including the oversight of swaps and other derivatives, it is certainly not a substitute for individual and organizational prudence and due diligence. Furthermore, many of the changes in this bill are not expected to be fully enacted until 2015. Boards of directors, management, CPA firms, elected officials and even financial advisors should view this legislation as a tool to eventually help protect their respective organizations and not insurance against future problems.

Derivatives have the potential for huge losses due to their complexity and lack of transparency. Investors and their financial advisors who invest in financial products such as mutual or exchange traded funds (ETFs) that utilize derivatives should view the Dodd-Frank Act only as eventually providing them with better tools to protect themselves and their clients but not insurance against future problems. Warren Buffet is noted for stating that individuals should invest only in what they understand. Hence, it is imperative that individuals and organizations understand the role of derivatives in debt management and investing. Otherwise, they may be in for some startling surprises. Harvard University learned this lesson the hard way in 2009 when they paid $497.6 million to investment banks in order to terminate an interest rate swap on $1.1 billion of debt resulting in nearly a 50 percent penalty. They also agreed to pay another $425 million over the next 30 to 40 years to offset $764 million more in swaps. The literature is typically broken down into three areas with regard to derivatives. There are numerous articles discussing Harvard's loss from swap agreements, various Securities and Exchange Documents pertaining to their increasing concern with regard to the transparency of derivative products and the potential resulting risks to investors, and the third group of articles pertains to losses or potential losses from inverse and leveraged ETFs.

This article examines and discusses both sides (debt and investment) of the derivatives issue and strives to educate potential investors. The role and risks of derivatives in debt management will be discussed below followed by the role and risks of derivatives in investments. The concerns of this author is that we have a

serious potential to see a domino meltdown pertaining to interest rate swaps, and that the risks involved with leveraged and inverse ETFs are still not understood by all financial advisors even given various articles that have been written on this subject in recent months. The notional value of derivative swaps are currently disclosed in the prospectus. However, these existing disclosures are still not transparent. It would be very difficult, if not impossible, upon reading a prospectus to obtain details pertaining to a counterparty or evaluate a collateral position.

LITERATURE REVIEW

The literature contains various articles and SEC publications which discuss interest rate swaps that either turned out to be risky or concerns with regard to transparency. McDonald, Lauerman and Wee (2009) state that Harvard locked in interest rates using swaps on $2.3 billion of bonds for future construction but never anticipated that signing contracts which essentially bet on higher interest rates in the future would be so costly when interest rates dropped unexpectedly.

SEC Alert (2009) pertaining to leveraged and inverse ETFs stressing that there are extra risks for buy-and-hold investors in volatile markets. It provides two real life examples of tracking errors. SEC (2010) Staff Keynote Address at the ALI-ABA Compliance Conference in Washington, DC on June 3, 2010 and SEC Staff Evaluating the Use of Derivatives by Funds, (March 2010) which discuss the SEC's concern pertaining to the complexity of derivatives. A letter from Barry Miller, Associate Director for the Office of Legal and Disclosure for the SEC written to the attorney for the Investment Company Institute on July 30, 2010 also discusses SEC concerns pertaining to derivatives-related disclosures by investment companies.

Justice (2009) issues a warning to readers that "leveraged and inverse ETFs kill portfolios". He states that he was shocked to learn how many professionals in the industry did not fully understand how ETFs work. He explains that investors would be attracted to funds that promise double returns but do not understand tracking errors. With leveraged ETFs, however, he explains that compounding arithmetic and constant leverage causes these tracking errors. Hence, Justice argues that leveraged and inverse ETFs were never meant to be held as long-term investments. He states that typically one day should be a maximum for stock-based ETFs. Ludwig (2010) discusses the SEC's decision to explore whether more protections are needed surrounding the use of derivatives such as swaps, by mutual funds and exchange traded funds (ETFs).

Gustke (2010) states that investors have put $1 trillion into exchange traded funds. She quotes John Gabriel, ETF strategist at Morningstar as to not only what comprises ETFs but also the fact that ETFs have become so efficient that they led to the May 6th "flash crash" when the market dropped 1,000 points within 15 minutes. She further quotes Tom Lydon, editor for ETF trends, who stated that 70% of the trades that were cancelled on May 6, 2010 were ETFs when stop-loss orders were hit. Lydon indicated that 45% of the exchange volume in general comes from ETFs in Gustke's article. As a result the SEC recently approved new stock-trading circuit breakers.

Van Duyn (2010) argues that derivative transparency is a key battleground. She states that on one hand regulators particularly politicians are pushing for more disclosure. Credit derivatives serve as a form of insurance on the default of a company or country. She states that the safety issue of "counterparty risks" became apparent in 2008, after the collapse of Bear Stearns and Lehman Brothers when the United States government had to bail out AIG after they nearly collapsed because of unexpected risks resulting from the derivatives they had insured. Van Duyn further states that the big derivative dealers, which include the largest Wall Street banks, feel that the requirements to publish trading volumes and prices could drain liquidity in some derivatives and result in inaccurate or misleading price information. These dealers feel

that the need to make trades public could make trading corporate bonds more difficult because rivals could determine their positions.

Madigan (2010) questions whether the SEC, Commodities Future Trading Commission (CFTC) and the Federal Reserve are equipped for their new powers under the Dodd-Frank Act and argues that they may not be. He cites Bill Isaac, former chairman of the FDIC from 1978 to 1985 and chairman of the financial services group at LEGC, a consultancy firm in Washington, DC as stating that "the Act would not have prevented the last crisis and it will not prevent the next one." McCallion (2010) states that regulators have begun discussions with market participants pertaining to derivatives reform. She further states that market participants caution regulators to leave clearing decisions to market forces.

The literature contains Eileen Rominger's October 19, 2011 testimony before the Subcommittee on Securities, Insurance, and Investment Committee on Banking, Housing and Urban Affairs of the US Senate in her role as Director of the SEC Division of Investment Management on the topic of Exchange Traded Funds. She discusses the fact that exchange traded products have become an increasingly popular vehicle with investors resulting "in a proliferation of these products in the marketplace" which give rise to new and "increasingly complex products". Her testimony explains that "most leveraged, inverse, and inverse leveraged ETFs "reset" daily, meaning that they are designed to achieve their stated objectives on a daily basis" and explains that their performance can differ significantly over longer periods of time from the benchmark or inverse of the benchmark, particularly in the case of volatile markets. Rominger also points out that price fluctuations in a holding (such as stocks) result in price fluctuations in an ETF due to linkage between an ETF and its index. The SEC observed that under disorderly market conditions such as May 6, 2010, this linkage results in heightened volatility of ETFs which led to the "flash crash". After discussing tracking errors from an index further, she stated that the Commission would defer consideration of exemptive requests for ETFs seeking to register under the 1940 Act that make significant investments in derivatives. The SEC plans to do a broader review of the use of derivatives by all funds and is currently examining the adequacy of investor disclosure, liquidity levels and transparency of underlying instruments for exchange traded products.

Xydias (2011) states that ETFs which use swaps to clone stock, bond or currency returns have been criticized by regulators and firms including Fidelity Investors. They say that clients risk losing money if the banks writing the derivatives should become insolvent.

Condon (July 2011) states that Massachusetts' top securities regulator is suing RBC Capital Markets LLC over the sale of leveraged and inverse exchange-traded funds, saying they sold them to clients who didn't understand the investments. He cites the Secretary of the Commonwealth of Massachusetts stating that the complaint is not that the investors lost money but rather that the investors and even the agents soliciting their investment did not understand the workings of these funds. Shari (November 2011) argues that everything is called an ETF and discusses the differences between various exchange traded products and that investors do not typically understand these differences.

Kapadia (2010) cites Matt Hougan, editor of the ETF website, IndexUniverse.com as stating "investors must closely examine what they are getting when they invest in an ETF". Hougan is cited as arguing that appearances can be quite deceiving, and two ETFs that sound alike can yield completely different results. He states that it is important to know exactly what index the ETF is tracking and weigh the pros and cons of each fund.

Although the literature has various articles published on the risks and the increasing concern for transparency in interest rate swaps by the SEC and various articles on risky inverse or leveraged ETFs, there are still many educated financial professionals who do not fully understand the complexity and overall "big picture" as to why derivatives could easily be our next financial "bubble" to burst.

DEBT MANAGEMENT POLICIES

It is important for all debt issuing organizations, whether they currently use derivatives or not, to have formal written derivatives policies in place that assure appropriate due diligence procedures be conducted and require prescribed approval protocols for the acquisition and management of all types of derivatives.

Derivatives, which include futures, options, forwards and swaps (including credit default swaps), get their name from the fact that they derive their value from an underlying asset, typically an established index or another financial instrument or security. Interest rate swaps have been around for years and are quite prevalent in the governmental and non-profit world. There are many types of swaps. "The total notional value of interest rate derivatives including swaps reached nearly $450 trillion as of June 30, 2010" according to the Bank for International Settlements' June 2010 report.

The most common types of interest rate derivatives are:

1) Interest rate swaps are used to synthetically convert variable rate debt to fixed rate and vice versa. *For example*, if a university can efficiently issue variable rate debt but would prefer not to be exposed to potential future interest rate increases, the university could enter into an interest rate swap with another group, called a counterparty, to effectively convert their variable rate debt to fixed rate debt. (Kelley, 2011)

2) Interest rate caps are used to limit exposure to interest rate volatility. *For example*, an organization with variable rate debt may be willing to tolerate interest rate increases up to a certain level or believe that interest rates will remain low. However, the organization may wish to limit its interest rate risk by purchasing an interest rate cap, which assures that the organization will not pay an interest rate exceeding the rate prescribed in the cap. (Kelley, 2011)

3) Basis swaps are used to manage or change the "basis" on which variable interest rates are calculated. These are more commonly associated with revenue bonds where an organization's income may be dependent upon a particular interest rate index; yet the debt the organization has issued is based on a different index. *For example*, if revenues are based on the prime interest rate while the interest expense that must be paid is a function of the London Interbank Offered Rate (LIBOR), and the traditional correlations between these two indices digresses; a basis swap will protect the entity from market dislocations. LIBOR is used in determining the price of many financial derivatives, including interest rate swaps. This is the average short-term deposit rate that banks participating in the London money market exchange offer each other. (Kelley, 2011)

4) Rate locks, which are based on interest rate swaps, are used to hedge "lock in" a rate for an upcoming bond issue. These are really nothing more than institutional versions of an interest rate lock fee that one might pay to lock in an interest rate when applying for a home mortgage. (Kelley, 2011)

However, there are risks associated with derivatives. There are certain fundamental risks associated with the utilization of derivatives, which should be carefully considered by organizations and addressed in their Derivative Policy statement.

1) Counterparty/credit risk is that the entity on the other side of the transaction might not be able to fulfill their obligation. There is also a risk here to the financial system of a domino effect. For example, if an entity synthetically converted their variable rate debt to fixed rate debt and the counterparty defaulted, this could lead to further defaults. The buyer of the original entity's

interest rate swap may have also at least partially purchased an interest rate swap to protect itself. Thus, one default can easily lead to another default.

2) Basis risk is that the interest rate that an organization is trying to hedge does not track exactly with the derivative. Hence, the organization may not get the full benefit that they are anticipating from the derivative.

3) Termination risk is the circumstances under which either the buyer or seller of the swap can terminate as well as how are the termination costs calculated.

4) Credit downgrade risks are the consequences of a credit downgrade or default of either party.

There is another risk associated with interest rate swaps. While this risk is not strictly a financial risk, it has the potential to be a career risk and that is the mark to market of derivatives. Embedded in swap agreements may be the provision that if the swap liability owed to the counterparty exceeds a certain level, then your organization may have to "post collateral" to protect the counterparty against your organization's nonperformance. Management professionals should be, but unfortunately are not always, aware of this risk before signing agreements. It is very possible that an unfortunate CFO might have to report to his Board or Chairman that organizational assets must be unexpectedly placed with a third party trustee because of a derivative agreement. This would happen if the agreement had a typical clause stating that if the settlement amount exceeds a certain level then the parties may have to post collateral.

INVESTMENTS WITH EMBEDDED DERIVATIVES

Derivatives are not only used in debt management but can also be incorporated into investments which may not be as readily apparent. Many organizations believe that they are not exposed to derivatives in their investments because they do not directly purchase derivative contracts. Derivatives, however, are being incorporated into many investment products which are not being fully disclosed or understood by even many experienced financial advisors. Few people are aware that some mutual funds and many exchange traded funds (ETFs) use derivatives to hedge risk or to magnify market or security movements. Many of these ETFs have labels such as Short, Ultra, 2X, Double Long, or Inverse among others.

Derivatives are actually used in a number of ways in our economy, and for the most part they can be beneficial. Airlines often hedge the price of the fuel they are using for their jets by using futures contracts, a type of derivative. Hence, if fuel prices increase significantly, your favorite airline will not be at risk of losing money on passenger tickets that were sold months ago. Basically, they are locking in a price for their fuel cost using derivatives.

ETFs are not mutual funds. They trade on stock exchanges similar to stocks and may hold physical assets such as stocks, commodities or bonds. However, unlike mutual funds, ETFs typically range between two categories. The first category owns at least some of the physical assets they seek to track. The second category known as synthetic ETFs, are funds that earn a return by investing in derivatives. These derivatives are typically asset swap agreements with a counterparty which strive to replicate the performance of the index or asset it tracks. There are now more than 1,000 ETFs that track major indices such as the S&P 500, industry sectors, commodities and currencies. "Not everything is (a) suitable (investment for all people)," according to John Gabriel, Morningstar ETF analyst. "You need to understand what you own. People let research end with the name of the fund. That can get you into lots of trouble." For example, some ETFs are leveraged, meaning they invest with borrowed money, which makes them more risky. "Fund performance can be the opposite of what investors expect," Gabriel further stated. (Guste, 2010).

The SEC is also concerned that investors do not understand the risks associated with more complex ETFs and the "abbreviated" disclosures that provide a false sense of security to investors pertaining to the scope of a fund's reliance on derivatives. "… some funds employing this type of disclosure, in fact, appear to invest significantly in derivatives," wrote Barry Miller, an associate director in the SEC's division of investment management. According to Paul Justice, CFA, an ETF strategist, he commented in his January 22, 2009 Morningstar article after returning from an 'inside ETF conference', that he was "shocked to learn how many people have a misconception as to how these funds work. And this sampling was not of novice day traders –these are professionals and financial advisors."

This is such a huge potential problem that the SEC on October 19, 2011, has deferred consideration of new requests for ETFs that utilize significant investments in derivatives. Mary Schapiro, the current SEC Chairman, stated in an SEC press release dated March 25, 2010, that "It's appropriate to engage in a more thorough review of the use of derivatives by ETFs and mutual funds given the questions surrounding the risks associated with the derivative instruments underlying many funds". Existing ETFs and mutual funds that use derivatives are so far unaffected. While the SEC is studying the use of derivatives as of April 1, 2010, there were 151 US listed inverse and leveraged ETFs with assets of $29.9 billion according to investment bank Morgan Stanley. ETFs in the United States have grown to account for approximately $1 trillion in assets, or approximately 10 percent of the long-term U.S. open-end investment company industry, with U.S.-domiciled ETFs making up approximately two-thirds of global offerings. (Rominger, 2011).

One popular use of derivatives is to create *leveraged* or inverse ETFs. Inverse funds utilize a variety of strategies to achieve their investment objectives including short selling, trading derivatives such as futures contracts, and other leveraged investment techniques. Leveraged ETFs are marketed as a way of doubling or tripling returns on the movement of underlying indexes and benchmarks such as the S&P 500. Hence, if the S&P were to increase by 10%, one would expect a 2x leveraged ETF to increase 20%. Inverse ETFs supposedly provide investors with a vehicle to get a leveraged benefit if the targeted index declines.

Most investors understand that borrowing money creates leverage, which can be used to magnify returns, which is how they *think* a leveraged ETF operates. However, the 1940 Investment Company Act placed restrictions on how much investment funds could borrow. ETFs, consequently, obtain their leverage with the use of derivatives. The Investment Company Act could not have contemplated the use of these complex types of investments. **"…** the Act, while in fact being 70 years old, is being challenged and stretched in ways that were inconceivable when it was enacted, but which we in the Division of Investment Management are dealing with today" stated Andrew J. Donohue, Director of the SEC's Division of Investment Management in June 3, 2010 SEC Staff Keynote Address at the ALI-ABA Compliance Conference. It could be argued that leveraged ETFs are circumventing the intent of the Investment Company Act by using derivatives to achieve leverage that would otherwise be prohibited.

The popularity and complexity of these new ETF investment vehicles requires that investment policy statements be updated to specifically address their unique characteristics and their associated risks similar to the debt management example above.

RISKS OF EXCHANGE TRADED FUNDS

There are two primary risks associated with ETFs that utilize derivatives such as interest rate swaps or futures. The first major risk is reliance on a counter party to make good on their commitment. For a derivative to function there is reliance on the performance of the entity on the other side of the transaction. If that entity does not perform because of credit problems, legal issues or outright fraud, then the derivative and most likely the investment will suffer a loss. In this worldwide economy, it is easy to

imagine situations where systemic risk could cause such large losses that the counterparty no longer has the liquidity to pay. This counterparty risk also became painfully obvious with the collapse of Lehman Brothers and the AIG bailout. One way of mitigating much of this risk is for the derivative to be collateralized. However, it is not practical for an individual investor in an ETF to monitor the liquidity and market value of the collateral. "ETFs that use swaps to clone stock, bond or currency returns have been criticized by regulators and firms including Fidelity Investors, which say clients risk losing money should the banks writing the derivatives become insolvent." (Xydias, 2011)

The original prospectus of an ETF may state that the fund may use derivatives to carry out its investment objectives. To know if an ETF utilizes derivatives, and to what extent, it is important to go directly to the particular fund's website and click on the link for their daily holdings. Most funds will indicate if their holdings include swaps or other derivatives and the notational value of these derivatives.

The second primary risk of ETFs that use derivatives is commonly associated with leveraged ETFs, which are mainly managed by firms like Direxion, Rydex and ProShares. A popular example of a leveraged ETF is an *inverse* ETF which is engineered to deliver a positive return that is a multiple of any declines in the designated benchmark. The risk is a function of the daily compounding calculations of leveraged funds caused by the mark-to-market of derivatives on a daily basis. For example, one would expect a triple inverse ETF on the S&P 500 to increase 30% if over time the market declined by 10%. The unexpected reality in a volatile market might be that this ETF actually declines rather than increases. It should be pointed out that leveraged inverse ETFs should only be considered for very short-term daily investment purposes since the mathematical impact of *daily* compounding in a volatile market could result in the opposite of what an investor hopes to achieve. Over longer periods of time, such as weeks or months, results could be significantly different from what an investor is expecting particularly in volatile markets. "It pays to look beyond the cover," says Matt Hougan, editor of ETF Web site IndexUniverse.com. In August 2009 the SEC and the Financial Industry Regulatory Authority (FINRA) issued an Alert warning investors about extra risks involved with leveraged and inverse ETFs. Two "real-life" examples were provided in the August 2009 SEC Alert. Index "A" gained 2 percent between December 1, 2008, and April 30, 2009. However, a leveraged ETF seeking to deliver twice the daily return of "Index "A" fell by 6 percent. A different inverse ETF seeking to deliver twice the daily return of Index "A" fell by 25 percent.

Index "B" during that same period gained approximately 8 percent. However, an ETF seeking to deliver three times the daily return of Index "B" fell 53 percent. A different inverse ETF seeking to deliver three times the daily return of Index "B" declined by 90 percent over that same period.

There are a wide variety of ETF choices with different index compositions and methodologies. Not only do leveraged ETFs depend on the use of derivatives but certain types of commodity ETFs also rely on leverage to meet their investment objectives. On October 19, 2011 Eileen Rominger, director of the Securities and Exchange Commission's Division of Investment Management testified before a Senate subcommittee that a certain small group of so-called "inverse, leveraged ETFs" are made up of derivatives and other securities and can have an effect that that can be magnified in volatile markets. She further stated that leveraged, inverse, and inverse leveraged ETFs approximated $48 billion in assets.

With the future of the US economy in question, those investors seeking to purchase investments that move in the opposite direction of the market (inverse ETFs) or to hedge their existing investments should be cautious. Figure 1 provides an example of a 2x Inverse ETF that did not track its index. The actual index it was tracking started and finished at $100. The 2x Inverse ETF, however, due to daily compounding with volatility incurred a loss. As Figure 1 illustrates inverse ETFs may not necessarily deliver the results anticipated by investors. The problem is that many retail investors as well as many professionals do not understand that these leveraged and inverse ETFs compound daily and can produce

these skewed results. Leveraged ETFs should typically be held for less than one day and definitely not treated as index funds. This is because of the effects of compounding (sometimes called "beta slippage"). This issue has attracted much public attention now that these ETFs have been increasingly used by less experienced investors.

The Securities and Exchange Commission and FINRA had issued a warning on the leveraged and inverse ETFs. (2009). The SEC is seeking comments currently on ETFs that invest in derivative products to provide input as it evaluates the acceptable level of risks for investors. (2011) Figure 2 illustrates what would have happened if an investor had purchased ProShares ETF 2x Dow Jones U.S. Real Estate Index (SRS) in February 2007 and held it until August 2010. The investor would have expected an 88% gain based on the fact that the Dow Jones Real Estate Index decreased 44%. However, an unpleasant surprise would have been the realization that the ETF 2x would have instead actually decreased by 92% due to daily compounding in volatile markets. As an illustration, assume that an investor deposited $10,000 on March 1, 2007 into ProShares ETF 2x, which inversely tracks the Dow Jones Real Estate Index. There was a 44% decline in the Dow Jones Real Estate Index from February 2007 until August 2010. Given that his investment was a 2x inverse, this investor expected his ETF to INCREASE 88%. Inverse ETFs embed derivatives that are marked to market and are thus compounded daily. Therefore, mathematically, the 88% increase does not happen in actuality. This investor actually experienced a 92% *DECLINE*, resulting in his $10,000 investment *now only being worth $800* as of August, 2010. Hence, policies and guidelines must be in place for investors who invest in these products. They should also not be purchased by small individual day traders due to the risk involved. To illustrate how this mathematical compounding with volatility becomes a tracking error, consider the following example (Table 1):

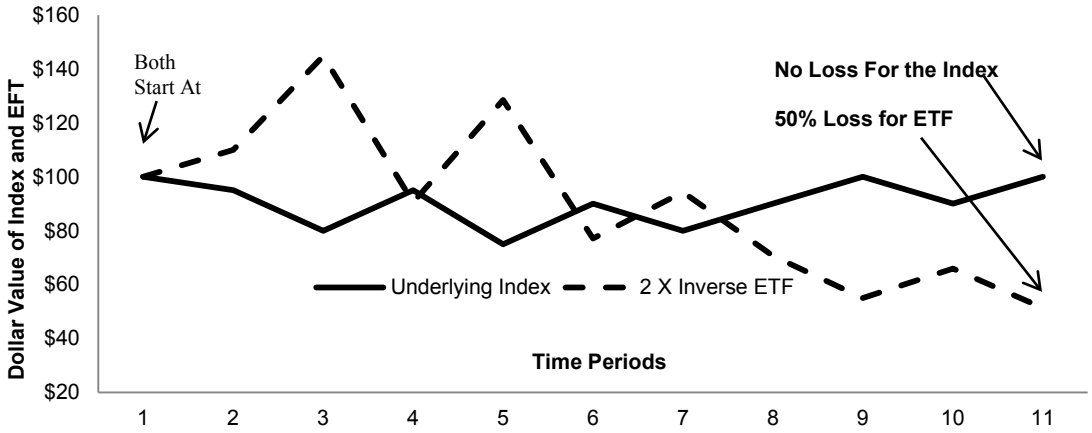
Table 1: Illustration

Leveraged ETFs are subject to daily compounding, which means every day is a new day. **Assume a 2x inverse index is purchased. Also assume that the index it is tracking starts at 100.**	
Day 1	Day 1: If the index goes up 10% to 110, then the 2x inverse ETF goes down 20% to 80.
Day 2	Day 2: The index goes back down to 100 (10/100 = a 9% decrease); then the 2x inverse goes up 18%, but an 18% increase (9% x 2) from 80 results in 94.4 (thus ETF losing money)
Day 3	Day 3: The index declines 10% to 90, then the 2x inverse goes up 20% to (94.4 x 1.20%) to 113.28
Day 4	Day 4: The index goes back to 100 (10/90 = an 11% increase), then the 2x inverse goes down 22% (113.28 x 22% = 24.92 decrease). At the end of Day 4, the 2x inverse ETF is 88.36 (113.28-24.92)
After the mathematical daily compounding, the index is back at a 100, but the 2x inverse ETF is 88.36	

A random internet search of lev7eraged and inverse ETFs will still show individuals touting leveraged ETFs as a way to bet against the market. Investors should be wary and educate themselves as to the risks of these leveraged and inverse ETFs. There are now lawsuits from misinformed investors. RBC Capital is being sued by Massachusetts for selling leveraged and inverse exchange-traded funds to clients who did not understand what they were buying and subsequently suffered losses. (Condon, 2011) Other law firms have received publicity for investigating FINRA brokerage firms who had advised customers to purchase leveraged and inverse ETFs including those issued by Direxion, ProFunds (ProShares) and Rydex. (De Veire, 2011)

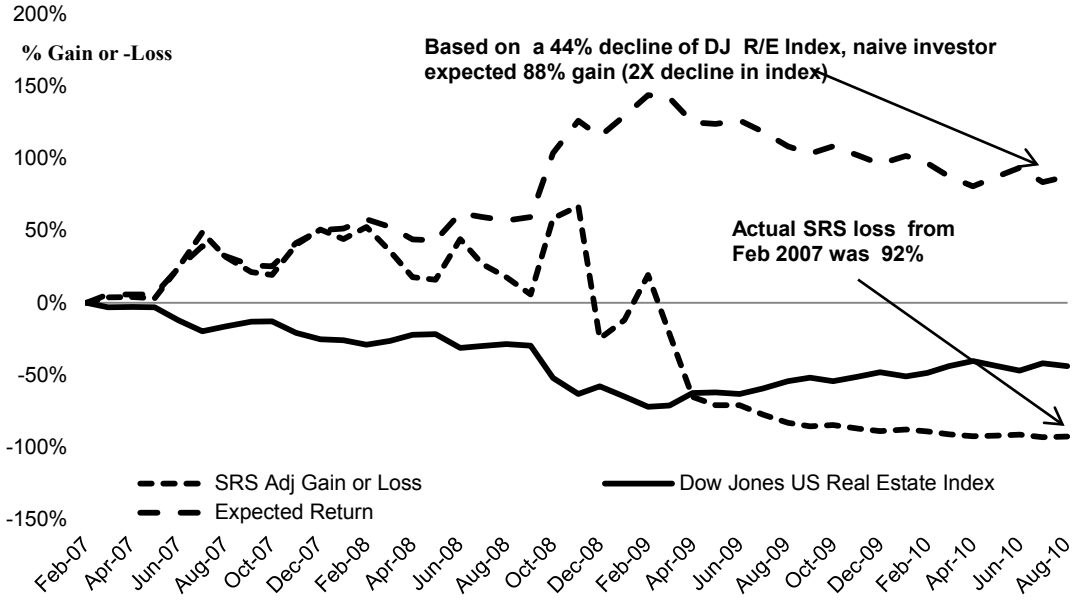
Because of the inherent risks associated with ETFs that use derivatives, an organization's investment policy should state that every effort should be made to determine the extent of derivative use and its associated risks before investing in ETFs. Furthermore, if the organization does invest in ETFs, these ETFs should be constantly monitored to see if they are in fact actually performing as anticipated in relation to their benchmark. For leveraged or inverse ETFs, this monitoring should be done daily. Tracking errors for a variety of reasons are a significant risk for ETFs.

Figure 1: Example of a 2x Inverse ETF Not Tracking Its Index



This is an example of an Index which starts and finishes at $100 and is being compared to a 2x Inverse ETF, which was designed to track the underlying index. Note that due to daily compounding with volatility, the 2x inverse ETF did not track the original index.

Figure 2: ProShares ETF 2x Inverse of Dow Jones US Real Estate Index (SRS) vs the Actual Index Being tracked between February 2007 and August 2010



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CONCLUDING COMMENTS

The goal of this paper is to educate individuals and organizations about the role and risks of derivatives in both debt management and investments. Derivatives can be useful tools whether they are interest rate swaps or components of investments. However, they are products of complex financial engineering and borrowers and investors should fully understand how these financial instruments work before entering into agreements. Investors in complex instruments created from subprime mortgages like collateralized debt obligations (CDOs) and CDOs-squared found that they had some startling surprises. Derivatives

likewise could easily be the next financial bubble to burst. "Education, obviously, is always the key to being a successful investor," says Kevin Quigg, head of the ETF strategy and consulting group of State Street Global Advisors. "Investors need to ask questions and read carefully about the exact structure of any prospective exchange-traded product purchase." (Shari, 2011)

A limitation that borrowers and investors will face when they do attempt to educate themselves is the transparency of the products themselves. When looking at an investment, it is difficult, if not impossible, to tell what the collateral is and if a product is collateralized at all due to abbreviated disclosures for ETFs. The provider of swaps, the counterparty, to a fund is important information that cannot be easily obtained from reading a prospectus and even then how does a manager evaluate the strength of a given counterparty. One would have assumed that a 160-year-old firm like Lehman Brothers would be a safe counterparty. It will be interesting to see if the SEC and regulators do require more transparency in the future and what the market implications will be.

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