CSA PROPOSAL

AVIVA INVESTORS COMMENTS

DECEMBER 2016

AVIVA
INVESTORS

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TO CSA PROPOSAL

AVIVA INVESTORS

Date:	**December 22, 2016**
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To CSA members:

British Columbia Securities Commission
Alberta Securities Commission
Financial and Consumer Affairs Authority of Saskatchewan
Manitoba Securities Commission
Ontario Securities Commission
Autorite des marches financiers
Financial and Consumers Services Commission, New Brunswick
Superintendent of Securities, Department of Justice and Public Safety, Prince Edward Island
Nova Scotia Securities Commission
Securities Commission of Newfoundland and Labrador
Registrar of Securities, Northwest Territories
Registrar of Securities, Yukon Territory
Superintendent of Securities, Nunavut

Dear:

The Secretary
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INTRODUCTION

Aviva Investors appreciates this opportunity to comment on the proposed rule amendments. Our strategy is to be a Global Leader in outcome oriented solutions, and we strongly believe that embedding risk management at the heart of the investment process is the most effective way to deliver clients the outcomes that they are seeking. As a large global asset management firm with experience operating funds across many different regulatory regimes, we offer our insights and thoughts on the proposed rule. Aviva Investors shares the CSA's view on the importance of higher standards of risk management and increased Fund supervision. Many of the proposals, have operated successfully in a number of markets and we clearly support these.

In the proposal, the CSA sought answers from industry participants. Aviva Investors ("AI") has provided its responses to those questions based on our experience and knowledge. AI believes that investors typically have one of a small number of outcomes that they want to achieve with their investments: achieving capital growth, beating inflation, meeting a defined liability and generating income. These outcomes may appear simple on the surface; nonetheless we recognize that markets do not always rise, and simplistic long only funds may not deliver on these outcomes. AI is clear that it believes investors are best served by having access to a range of well-controlled investment strategies. As a result, restrictions such as those proposed need to balance the goals of investor protection against the merits of derivative usage in the investment strategy for the purpose of risk management and efficient portfolio management. AI believes that this can be achieved through a combination of principle based regulation and more prescriptive measures. We set out our detailed thoughts in the letter below.

Question 1;

We believe that replacing the term 'commodity pool' with 'alternative fund' is appropriate as this is a more investor friendly name and should avoid confusion for those who may believe the funds only can invest in forms of physical commodities.

Question 2;
We believe that all liquid investment classes are encapsulated by the proposals and we don't believe there is an additional investor benefit from expansion of those beyond the current scope.

Question 3;
We agree with the CSA in principle that an avoidance of concentration to a single issuer, such as a bank/corporate entity, is necessary to enhance protection of investors. However, we would encourage the rules being in alignment with those of the UCITS standards of the European Union, that is to say, we believe it is possible that an investor should be able to get greater exposure to gov't/supranational securities and the like. Furthermore we would encourage the CSA to consider the concentration to include exposure to MTM of OTC derivatives. For example, an alternative fund could gain no more than 20% exposure to a financial institution through equities, bonds, cash instruments such as CD & CP and OTC MTM liabilities which are uncollaterised. We would also suggest that this should be measured not just at point of entry but also on an ongoing basis (likely to be each day when the pooled vehicle has a struck NaV).Should a vehicle exceed this restriction on a passive basis, it is expected to have a plan to reduce the exposure to below the restriction when it is in the investor's best interest, and as soon as reasonable possible given the requirement to act in the investor's best interest. Although monitoring passive breaches is currently beyond regulatory requirements and market practices, we suggest CSA considering mandating this as an additional risk management safeguard.

Question 4;
We have no comments on question 4.

Question 5;
We agree with the question that matching subscription/redemption windows to the liquidity of the underlying investments is a prudent approach in order to safeguard investors. Therefore, a fund should only contain investments which match the ability of the shareholders to retrieve their investments in an orderly manner. For alternative funds with daily liquidity we would suggest that assets should meet the generally accepted definition of liquid such as being a transferable security or a fund.

Question 6;
We have no comments on question 6.

Question 7;
We have no comments on question 7.

Question 8;
We would suggest that borrowing powers are limited depending on the investment goal/asset class, as we do not believe that investors are well served in liquid markets through persistent structural and non-negligible borrowing for the purposes of reinvestment in said liquid markets. However, we do understand that in the case of illiquid markets, such as real estate/infrastructure, the ability to borrow on a long term structural basis for the purpose of providing investment return might indeed be suitable. Therefore, we would suggest that the right to borrow be limited to 10% on an incidental/short term basis for the purposes of day-to-day fund management (as opposed to generating leverage for investment return), with exceptions being granted on a case by case basis on application in the fund perspective approval phase once the rationale for said borrowing has been demonstrated.

We agree with the CSA that it is necessary to have a single combined exposure limit applicable to the aggregate of all transactions that generate exposure, regardless whether the exposure is generated through financial commitment transaction, derivative transactions or other senior securities transactions. It appears the proposal does not specify the borrowing limit as a result of other senior securities transactions under the new rule. Our preference is a more nuanced approach to the setting of leverage restrictions and the separation of borrowing to create leverage versus the use of derivatives. Should the CSA accept our proposed refinements discussed below, we believe this could also allow for a reduction of the restrictions on borrowing to a significantly lower level.

We agree that in a limited number of investment strategies the ability to borrow on a long term structural basis for the purpose of providing investment return might well be suitable; however, it is important that the risks are clearly explained in publically available information to the underlying investors. Broadly speaking, these uses can be divided into funds with the sole aim of investing in non-liquid markets, such as real estate, illiquid assets and infrastructure.

In regards to the broader question about the source of this borrowing, from a macro prudential perspective, we would urge the CSA to consider a range of additional diverse market participants as being suitable. We believe that broadening the definition of entities from which a fund can borrow could include:

- A credit institution authorized in Canada
- A credit institution authorized in the EEA
- A credit institution authorized within a signatory state to the Basle Capital Convergence Agreement of July 1998
- A credit institution authorized in Australia or New Zealand or other G7 country

We respectfully suggest that broadening the base of competition in the market would likely lower the costs to the funds and likewise dilute any potential systemic feedback loops by spreading the counterparty risk amongst willing and able market participants.

Question 9:

While we applaud the goal of the CSA to improve investor protection from inappropriate levels of risk, we believe the exposure limit as proposed does not provide sufficient flexibility to some low risk funds, such as outcome oriented funds which use derivatives to achieve return objectives and low volatility. These are commonly referred to as liquid alternative funds. We believe using derivatives to gain exposure does not inherently increase the risk of the fund, since derivatives and physical assets display similar return and risk characteristics. With proper risk controls, using derivatives to gain exposure has certain benefits as listed below, and therefore, should not be penalized compared to those funds using derivatives as a hedging tool in a traditional sense.

1. Derivatives may allow funds to gain exposures that physical assets cannot provide. As a result, these funds may provide better diversification than traditional balanced portfolios, especially during stressed market conditions when volatility for physical assets, such as stocks and bonds, tends to go up simultaneously.

2. Derivatives may offer better liquidity than physical assets. Regulatory changes in the banking industry since the financial crisis have reduced the number and scale of market makers. Better liquidity provided by derivatives allows fund managers to increase and decrease exposure more quickly, which is critical for risk management purposes.

3. There are certain asset classes, such as FX, where the bulk of the market is OTC and derivative.

   As a result, we suggest the CSA considers extending the same flexibility to funds already using the VaR approach similar to UCITS, conditional upon meeting additional controls, such as back testing.

   We appreciate the CSA's concerns regarding leverage; however, the proposed exposure limit at 300% appears to cause issues for other liquid alternatives and fixed income funds that use derivatives to achieve a wide array of client outcomes.

   Without providing sufficient flexibility to mutual funds to deploy derivatives, there may be unintended negative impacts to investors such as the following:

   1. Force a greater concentration of mutual fund assets into long-only strategies that are increasingly susceptible to market volatility and liquidity risk, and may be more susceptible to suffering negative total returns.

   2. Drive demand for offshore funds which will continue to access derivative strategies. Although many retail investors don't have direct access to offshore vehicles, a review of shareholder information for certain large alternative funds indicates that many large shareholders of these funds are institutional vehicles with retail assets, such as pension funds. The demand for stable return and low volatility may force those pension funds to increasingly rely on offshore vehicles, such as those in Cayman Islands and British Virgin Islands, which places Canadian mutual funds at a significant competitive disadvantage for institutional clients and denies retail clients access to many suitable or indeed superior products.

3. Product innovation may lead to more opaque products that are harder to regulate.

As discussed above, we believe that the current proposed restriction of 300% leverage may prevent investors from achieving their outcomes. Instead, we believe that the approach of utilizing a VaR based restriction. Moreover, we respectfully suggest that the investment manager should disclose in their fund's disclosure documentation the maximum expected leverage. While this may not constitute a limit, it would be expected that the manager should not exceed this disclosed level in the normal course of management, and higher levels of leverage should only occur for short periods of time.

In addition, it is our view that the proposed 300% leverage limit would make CSA regulations more stringent than other regimes, such as UCTIS rule and applicable rules for 40 Act funds in the US. Under UCITS framework, the exposure limit for sophisticated funds is a self-defined threshold that's usually higher than 300% with additional risk management safeguards, such as VaR limit. Under the current SEC rules, derivatives exposure for mutual funds is managed through asset coverage instead of a hard cap on exposure. Under the proposed SEC derivatives rule (18f-4), although the default nominal exposure limit is 150% (300% if derivatives usage reduces VaR), the calculation offers more flexibility than the current CSA proposal in certain areas. For example, purchased options are excluded from the exposure calculation under 18f-4. The reasoning provided by the SEC is that potential loss for purchased options is capped at the premium paid and investors cannot lose more than what they've invested in. Therefore, the SEC suggest that it is appropriate to treat purchased options differently than other derivatives, such as sold options, futures and swaps.

Question 10;
The proposed risk-based limit heavily restricts the use of derivatives to transactions which are classically referred to as 'hedges'. Hedges are trades, typically through derivatives, which specifically reduce market risk. However, the proposals as currently crafted restrict the use of derivatives to construct significantly more robust portfolios, and, therefore, may worsen the outcomes that clients receive.

Question 11;
We agree with the CSA that the notional amount of derivatives may not be an appropriate measure of risk. Indeed, in some cases, it may well be at best unhelpful and at worst it may mislead clients as to the true level of risk they are employing in their investments.

AI does not believe that a single methodology exists at present to accurately explain fund leverage, and therefore any purely prescriptive approach will unfairly penalize some investment strategies. This does not imply that the approach presented in the proposal is without merit, but instead recognizes that there are flaws in any approach and that these should be compensated for where possible. We support the CSA in seeking to highlight to clients where and when leverage is being used, and particularly where it can magnify the risks of an investment. However, we believe that the term leverage needs to be clearly defined. Generally speaking, leverage can be achieved through the use of borrowing cash to reinvest or via the use of derivatives. In the former case, we agree with the CSA that clients should be clearly informed, or possibly better protected, by a tight restriction on borrowing. In line with this, we would suggest the CSA introduces a fund level restriction of 10% for borrowing, which should be temporary in nature to facilitate short-term cash management and fund liquidity.

The second instance where leverage can be achieved is through the use the financial instruments generally referred to as derivatives. We believe that the generation of 'leverage' through this means should be clearly disclosed to investors by the fund manager and that

suitable controls should be in place to measure, monitor and control the use of this leverage. AI believes that the establishment of the RMP (Risk Management Process) is a vital component of this process and that this document should clearly state the mechanisms through which the controls operate. A vital component of this control should be a clearly stated and explained methodology for calculating leverage. We believe the majority of the proposal is in line with other globally observed practices and shares their collective strengths and weaknesses. We would encourage the CSA to consider that 'physical' assets should carry leverage within the calculation; hence the base leverage for all funds is 100%. We propose that this is a fairer representation of the risk and also avoids the pitfall of a derivative only replication position appearing more risky than the equivalent investment in assets. Indeed, there is much supporting evidence to suggest that in the case of synthetic replication, the investment might well have better risk and return characteristics.

In answer to the question raised by the CSA as to instruments where notional was less suitable to measuring the risks involved, and assuming that the CSA does not adopt our preferred solution of aligning to the UCITS requirements, we believe that the current proposal unfairly penalizes Fixed Income and FX risk relative to Equities. For example, on the basis of the current calculation, $1million of equity notional has the same leverage as $1million of Fixed Income or FX notional irrespective of the levels of volatility and, hence, risk. In many cases, the risk of Fixed Income investments can be substantially lower than the equivalent level of Equity investments. As a result, we feel that the 'sum of the notionals' approach may unfairly generate an expectation that the level of risk is the same to the end client. We would suggest that in the case where the CSA prefers to stick with the simplicity of the proposed calculation, they permit a significantly higher level of leverage and that they pass the responsibility to the fund manager to set an appropriate level of leverage in line with the Fund's investment objective under that threshold. In order to facilitate this, we believe that fund should publish the maximum level of expected leverage to the investors in the prospectus and, during the production of required investor information, include the level of leverage as of the appropriate date in said information. Furthermore, the fund manager should ensure that it is comfortable that the investment manager is capable and skilled in the use of the derivatives deployed in pursuit of the investment objective.

As a result of the aforementioned weaknesses in the assumption of the equivalence of risk between investments, we believe a suitable alternative should be employed by the Investment Manager. This should take into account the risks of the underlying investment from a market risk perspective. The fund may use this definition if the fund manager considers it suitable, and appropriate public disclosures on the methodology have been provided to the investors.

1. Interest Rate 'sensitive' products: We suggest that swaps/futures/interest rate sensitive products (An interest rate sensitive product should primarily have 'sensitivity' to changes in the price of the underlying rate curve.) could be expressed as a 'delta' equivalent of the risk-free 10-year bond. For example, a fund buying USD swaps can equate the risk of that position through IR01 (IR01 being defined as the interest rate sensitivity to a 1bp change in the underlying 'risk-free' curve, this may be referred to as IR Delta or Delta amongst other terms in the industry.) to the equivalent amount of the 'generic/on the run' 10-year US Treasury.

2. Foreign Exchange 'sensitive' products: We suggest that FX sensitive products could be expressed as a 'delta' (FX Delta being defined as the sensitivity to a 1% change in the underlying currency.) equivalent. This is for either leg of the currency pair and should be expressed as an amount of the base currency of the fund.

3. Credit Spread 'sensitive' products: In line with the suggestion with regards to Interest Rate sensitive products, we believe an acceptable approach would be to measure the equivalence on a CS01 (CS01 being defined as the credit spread sensitivity to a 1bp change in the underlying credit curve; this may be referred to as CS Delta) basis', which could be combined with the IR Delta.

Where a product contains more than one type of risk, all relevant risks should be included in the exposure calculation. Where CS01 & IR01 are applicable, the larger of the two must be included. While we acknowledge that this approach has some shortcomings, it may represent a more accurate picture of leverage to the underlying investor.

We would also like to point that other industry groups also proposed to apply risk-based adjustments when calculating notional as it is widely acknowledged that the same notional amount for different investment instruments may provide very different risk profile. AI participated in a working group organized by Investment Company Institute which proposed that the SEC adopt a risk-based adjustment schedule based on the inherent riskiness of each instrument type when calculating the exposure. Although the SEC has not formally adopted ICI's proposal, it has commissioned an economic study to seriously evaluate the proposal. AI's response to the SEC regarding 18f-4 proposal, ICI proposal on risk-adjustment, and the SEC's economic study are attached.

Regardless of the approach taken, be it a simple 'sum of the notionals' or the approach described above, AI believes that transparency is in the client's best interest, and hence a practical example of how each instrument in the portfolio is being handled should be publicly available for investors to review. While the approach described above improves the accuracy of the calculation for the investor in the fund, we agree that this does not make it possible for funds to be compared between providers with different approaches. Therefore, if the fund chooses to utilize its own definition of leverage, a 'sum of the notionals' leverage total should be disclosed along with the level of fund VaR. In the case of VaR, it is our thought that the investor disclosure documents should also contain a 'plain English' explanation of the term VaR.

As the 'sum of the notionals' approach is clearly understood, the requirement to calculate VaR would be in place and the fund would be able to define leverage accordingly. We do not believe this approach would likely place an onerous load on the compliance and risk staff of the fund manager. However, we recognize that this 'triple-lock' approach to the disclosure requirements means that funds and their managers will have to invest in suitably skilled, trained and experienced experts, thereby increasing the level of protection that clients can reasonably expect.

Furthermore, we advise the CSA to include all instruments held within a portfolio for the purpose of leverage calculations. We believe that physical and synthetic instruments introduce the same portfolio risks and therefore should be treated equally for the purposes of leverage calculations. Some may argue that purchased options should be excluded from leverage calculation, since unlike futures and swaps, investors in purchased options would not lose more than the invested amount. In fact, purchased options were excluded from leverage calculation in SEC's derivatives proposal 18f-4. We believe that both purchased options and sold options should be included in leverage calculations. While the exclusion of purchased options would seem outwardly appealing to many, we believe this is merely because it reduces the leverage calculation as opposed to it having merit from a risk management perspective.

We can demonstrate through an example. If an investor wishes to replicate the S&P 500 index they may buy every share in the index to generate the exposure in Fund A or they could choose to buy a call and sell a put which will give them the same 'exposure' (Exposure here is defined as the financial impact from a change in the value of the S&P) in Fund B. If purchased options were excluded, only one leg of the transaction is included towards leverage, the sold put within Fund B,

because physical asset purchases are excluded, as are purchased options, which misleads the investors in Fund B and misrepresents the risk to the Fund. In our preferred methodology, Fund A reports physical assets as contributing to leverage and therefore shows a leverage number of 100%, Fund B under the 'sum of the notionals' reports 100% alongside the VaR and the fund's alternative leverage measure. Under our approach, the investor gains better insight into the risks within their investment and the results are more consistent with the risks undertaken.

In addition, AI recognizes that exclusion may contribute to undesirable outcomes. As an example, assume on day 1 there are two investors in Fund A who each invest $500 and the fund buys a 'knock-out' (In this example a knock-out call refers to an option which becomes worthless if it reaches a certain value; please see the appendices for a graphical explanation of the return of a knock out option. This option may be referred to differently by otherwise, for example as a 'one-touch' however, the principles remain the same. In this case an investor might buy a knock-out option because it is cheaper than a standard call and the investment manager does not believe the S&P will rally by more than 900 points during the life of this option.) call on the S&P 500 a thousand points above the current level.

Under the current proposal, the fund has zero leverage. Suppose at the end of day 1, the S&P has rallied 900 points and Fund A's value has risen to $2,000. At the start of day 2, one of the two investors decides to sell just as a new investor decides to enter the fund, and the existing investor gets $1,000 back. At the end of day 2, the S&P remains unchanged from its previous level and the fund is still worth $2,000. On day 3, the S&P surges again and rises 200 points therefore 'crossing the barrier'(Crossing the barrier refers to when the price of the underlying rises beyond the level of the 'barrier', at the point when it crosses the barrier the option becomes worthless.) and knocking out the option. As a result of passing the 'barrier', the option is now worthless and the investors in the fund have lost all the value of the fund despite showing a leverage of zero.

Under the current proposal, the new investor could well feel that they were not adequately protected. However, under AI's suggested approach, the leverage would have been reported as 100% for the sum of the notionals and the Fund VaR on day 2 would have displayed the level of potential risk as a result of being so close to the barrier – meaning the investors would have been better able to understand that they could lose all their investment. Furthermore, we agree that rules which might be considered too restrictive could lead to product innovations that create more opaque and complex instruments, thus creating new challenges for CSA and for risk and compliance managers. Most derivatives, such as swaps, futures and options are now well understood by the market place. Coupled with this more sophisticated knowledge is increased regulatory oversight and support which has produced better protection for investors.

Question 12;
We have no comments on question 12.

Question 13;
We have no comments on question 13.

Question 14;
We suggest the CSA considers extending the same flexibility to funds already using the VaR approach similar to UCITS, conditional upon meeting additional controls such as back testing. We understand some may have concerns regarding the reliability of using relative or absolute VaR as the only investment risk limit. However, we believe a significantly higher notional guideline with an approval on a fund-by-fund approach, coupled with an absolute VaR (limited to 20% common) or relative VaR (limited to two times a suitable benchmark) similar to UCITS funds achieves a better balance between providing flexibility regarding the use of derivatives while limiting the potential risks associated with leverage. The fund may also be asked to meet the following requirements:

1. Back testing: Monitor VaR overshootings on a daily basis. Defined as when the one-day change in the fund's value exceeds the related one-day VaR measure at 99% confidence level calculated by the VaR model. On a semi-annual basis, the fund manager informs the applicable regulator if the number of overshootings for the most recent 250 business days exceeds 4.

2. Stress testing: Run stress testing for a comprehensive range of scenarios reflecting possible market conditions relevant to the fund.

3. Independent model validation: Engage a party independent of the building of the model, or suitable skilled third parties such as public accounting firms to validate the VaR model.

4. Control Assurance: Key operational and governance controls related to the VaR model validation and counterparty risk management framework must be independently examined in an annual Type 2 SOC 1 report, or its equivalent.

Providing such flexibility will also bring the following benefits to the industry and investors:

1. Incentivizing the Canadian mutual fund industry to quickly build its risk management capability based on existing guidelines approved by European regulators and widely adopted in Europe.

2. Improving Canadian fund industry's competitive position when compared to their international peers.

   Aviva Investors – along with many large and sophisticated asset managers who manage to their client's best interests across the globe – is familiar with the UCITS structure, which has become widely recognized not just in, but also beyond the European Union. As such, we believe that the introduction of VaR based restrictions is not a significant challenge for large managers operating in the Canadian market place.

   With regards to the relative VaR restrictions, which we suggest can be up to two times the benchmarks similar to UCITS, we believe that the investment manager is best placed to choose a suitable reference benchmark which should be clearly disclosed to investors and approved by the fund manager. While in the majority of cases there is no complexity in deciding on the suitable benchmark for a relative VaR calculation, AI recognizes that in some cases the choice maybe less clear cut. However, the investment manager should be able to demonstrate that the appropriate consideration was applied to the decision and that the disclosure to the investors is fair and transparent. In the case of absolute VaR, we believe that 20% (similar to the restriction in UCITS) is an appropriate maximum level of risk. While these are the upper restrictions for a fund, we believe that the investment manager should operate with a lower guideline level of VaR which more accurately reflects the investment manager's expectations of risk. This guideline may be amended from time to time through an appropriately controlled approach. Likewise, the manager's risk management process should indicate clearly the approach when an excess occurs (passive or active breaches may have separate treatments).

Question 15;
We have no comments on question 15.

3. **Question 16;**
   The period required to adjust to the changes will be determined by the final implemented changes, and we would encourage the CSA to allow for sufficient time to be provided to allow for this transition.

   In addition to our responses to the specific questions raised by the CSA, there are a couple of additional points that we would like to make.

If an alternative fund under the final rules will be required to have an investment objective that refers to certain asset classes or financial instruments, then existing investment funds that were established under the current regime should be grandfathered to avoid the need to obtain investor approval for a change in investment objective in order to comply with this definition. We would also suggest that these existing funds be grandfathered with respect to the new leverage limit, as otherwise their investment strategies may need to be significantly altered and they may be unable to achieve their investment objective.

AI believes that the proposal will significantly alter the landscape of alternative fund offerings in Canada. Generally speaking, AI supports the position that Canadian investors should have access in Canada to the same types of products as investors in other regulated countries, such as the U.S. and Europe. We would be happy to meet with CSA staff, either in person or by phone, to discuss our comments and suggestions in greater detail.

Compliance Department
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2016-0555_AIC_December 2016_CSA Comments

SEC PROPOSED RULE 18F-4

Aviva Investors Comments

avivainvestors.com

AVIVA INVESTORS

AVIVA INVESTORS COMMENTS

Introduction

Aviva Investors appreciates this opportunity to comment on the proposed rule 18f-4. Our strategy is to be a Global Leader in outcome oriented solutions, and **we strongly believe that embedding risk management at the heart of the investment process is the most effective way to deliver clients the outcomes that they are seeking**. As a large global asset management firm with experience operating funds across many different regulatory regimes, we offer our insights and thoughts on the proposed rule. **Aviva Investors shares the Commission's view on the importance of higher standards of risk management and increased Fund Board supervision**. Many of the proposals, such as the use of Value at Risk (VaR), and documented Risk Management Programs (RMPs) have operated successfully in a number of markets and we clearly support these.

In the proposal, the Commission sought answers from industry participants. Aviva Investors ("AI") has sought to address those questions based on our experience and knowledge. AI believes that investors typically have one of a small number of outcomes that they want to achieve with their investments: achieving capital growth, beating inflation, meeting a defined liability and generating income. These outcomes may appear simple on the surface; nonetheless we recognize that markets do not always rise, and simplistic long only funds may not deliver on these outcomes. Hence, **AI is clear that investors are best served by having access to a range of well-controlled investment strategies.** As a result, restrictions such as those proposed in 18f-4 need to balance the goals of investor protection against the merits of derivatives usage in the investment strategy undertaken on their behalf. AI believes that this can be achieved through a combination of principle based regulation and more prescriptive measures. We set out our detailed thoughts in the letter below.

Part 1: Comments on the proposed exposure calculation methodology:

SEC Question 1 (1st bullet on Page 84): Is the proposed rule's use of notional amounts as the basis for calculating a fund's exposure under a derivatives transaction appropriate? Does the notional amount of a derivatives transaction generally serve as an appropriate means of measuring a fund's exposure to the applicable reference asset or metric? Are there particular types of derivatives transactions or reference assets for which the notional amount would or would not be effective in this regard? For such derivatives, what alternative measures might be used and why would they be more appropriate? Would such alternative measures be easier for funds and compliance staff to administer?

Response by Aviva Investors: We agree with the Commission that the notional amount of derivatives may not be an appropriate measure of risk. Indeed, in some cases, it may well be *at best* unhelpful and *at worst* mislead clients as to the true level of risk they are employing in their investments[1] .

AI does not believe that a single methodology exists at present to accurately explain fund leverage, and therefore any purely prescriptive approach will unfairly penalize some investment strategies. This does not imply that the approach presented in the proposal is without merit but instead recognizes that there are flaws in any approach and that these should be compensated for where possible.

We support the Commission in seeking to highlight to clients where and when leverage is being used and particularly where it can magnify the risks of an investment. However, we believe that the term leverage needs to be clearly defined. Generally speaking, leverage can be achieved through the use of borrowing cash to reinvest or via the use of derivatives. In the former case we agree with the Commission that clients should be clearly informed, or possibly better protected, by a tight restriction on borrowing. **In line with this, we would suggest the Commission introduces a fund level restriction of 10% for borrowing which should be temporary in nature to facilitate short-term cash management and fund liquidity.**

The second instance where leverage can be achieved is through the use the financial instruments generally referred to as derivatives. We believe that the generation of 'leverage' through this means should be clearly

[1] Some simple examples of which are illustrated in the supporting documents that AI has supplied with its responses to the Commission's proposals.

disclosed to investors by the investment company and that suitable controls should be in place to measure, monitor and control the use of this leverage. AI believes that the establishment of the RMP is a vital component of this process and that this document should clearly state the mechanisms through which the controls operate. A vital component of this control should be a clearly stated and explained methodology for calculating leverage. We believe the majority of the proposal is in line with other globally observed practices and shares their collective strengths and weaknesses. **We would encourage the Commission to consider that 'physical' assets should carry leverage within the calculation; hence the base leverage for all funds is 100%**. We propose that this is a fairer representation of the risk and also avoids the pitfall of a derivative only replication position appearing more risky than the equivalent investment in assets. Indeed, there is much supporting evidence to suggest that in the case of synthetic replication the investment might well have better risk and return characteristics.

In answer to the question raised by the Commission as to instruments where notional was less suitable to measuring the risks involved, **we believe that the current proposal unfairly penalizes Fixed Income and FX risk relative to Equites.** For example, on the basis of the current calculation a $1million of equity notional has the same leverage as $1million of Fixed Income or FX notional irrespective of the levels of volatility and hence risk. This can be illustrated through the examples in the supporting appendices which demonstrate that, in many cases, the risk of Fixed Income investments can be substantially lower than the equivalent level of Equity investments. As a result, we feel that the 'sum of the notionals' approach may unfairly generate an expectation that the level of risk is the same to the end client. **We would suggest that in the case where the Commission prefers to stick with the simplicity of the proposed calculation that they grant a significantly higher level of leverage** and that they pass the responsibility to the Fund Board to set an appropriate level of leverage in line with the Fund's investment objective under that threshold. In order to facilitate this, we believe that the Investment Company should publish the maximum level of expected leverage to the investors in the prospectus and, during the production of required investor information, include the level of leverage as of the appropriate date in said information. Furthermore, the Fund Board should ensure that they are comfortable that the investment manager is capable and skilled in the use of the derivatives deployed in pursuit of the investment objective.

As a result of the aforementioned weaknesses in the assumption of the equivalence of risk between investments, **we believe a suitable alternative should be employed by the Investment Manager.** This should take into account the risks of the underlying investment from a market risk perspective. The Fund may use this definition if the Fund Board considers it suitable and appropriate public disclosures on the methodology have been provided to the investors.

1. **Interest Rate 'sensitive' products:** We suggest that swaps/futures/interest rate sensitive products[2] could be expressed as a 'delta' equivalent of the risk-free 10-year bond. For example, a fund buying USD swaps can equate the risk of that position through IR01[3] to the equivalent amount of the 'generic/on the run' 10-year US Treasury.
2. **Foreign Exchange 'sensitive' products:** We suggest that FX sensitive products could be expressed as a 'delta'[4] equivalent. This is for either leg of the currency pair and should be expressed as an amount of the base currency of the fund.
3. **Credit Spread 'sensitive' products**: In line with the suggestion with regards to Interest Rate sensitive products, we believe an acceptable approach would be to measure the equivalence on a CS01[5] basis', which could be combined with the IR Delta.

[2] An interest rate sensitive product should primarily have 'sensitivity' to changes in the price of the underlying rate curve.
[3] IR01 being defined as the interest rate sensitivity to a 1bp change in the underlying 'risk-free' curve, this may be referred to as IR Delta or Delta amongst other terms in the industry.
[4] FX Delta being defined as the sensitivity to a 1% change in the underlying currency.
[5] CS01 being defined as the credit spread sensitivity to a 1bp change in the underlying credit curve; this may be referred to as CS Delta.

Where a product contains more than one type of risk, all relevant risks should be included in the exposure calculation. Where CS01 & IR01 are applicable, the larger of the two must be included. While we acknowledge that this approach has some shortcomings, it may represent a more accurate picture of leverage to the underlying investor.

Regardless of the approach taken, be it a simple 'sum of the notionals' or the approach described above, **AI believes that transparency is in the client's best interest,** and hence a practical example of how each instrument in the portfolio is being handled should be publicly available for investors to review. While the approach described above improves the accuracy of the calculation for the investor in the fund, we agree that this does not make it possible for funds to be compared between providers with different approaches. Therefore, **if the fund chooses to utilize its own definition of leverage, a 'sum of the notionals' leverage total should be disclosed along with the level of fund VaR.** In the case of VaR, it is our thought that the investor disclosure documents should also contain a 'plain English' explanation of the term VaR[6]. As the 'sum of the notionals' approach is clearly understood, the requirement to calculate VaR would be in place and the fund would be able to define leverage accordingly. We do not believe this approach would likely place an onerous load on the compliance and risk staff of the Investment Company. However, we recognize that this 'triple-lock' approach to the disclosure requirements means that funds and their managers will have to invest in suitably skilled, trained and experienced experts, thereby increasing the level of protection that clients can reasonably expect.

SEC Question 2 (3rd bullet on Page 89): Should the calculation of exposure be broadened to include not only derivatives that involve the issuance of senior securities (because they involve a payment obligation) but also derivatives that would not generally be considered to involve senior securities, such as purchased options, structured notes, or other derivatives that provide economic leverage, given that such instruments can increase the volatility of a fund's portfolio and thus cause an investment in a fund to be more speculative than if the fund's portfolio did not include such instruments?

Response by Aviva Investors: We advise the Commission to include all instruments held within a portfolio for the purpose of leverage calculations**.** We believe that physical and synthetic instruments introduce the same portfolio risks and therefore should be treated equally for the purposes of leverage calculations**. We also believe that both purchased options and sold options should be included in leverage calculations.** While the exclusion of purchased options would seem outwardly appealing to many, we believe this is merely because it reduces the leverage calculation as opposed to it having merit from a risk management perspective.

We can demonstrate through an example. If an investor wishes to replicate the S&P 500 index they may buy every share in the index to generate the exposure in Fund A or they could choose to buy a call and sell a put which will give them the same 'exposure'[7] in Fund B. In the current proposal, only one leg of the transaction is included towards leverage, the sold put within Fund B because physical asset purchases are excluded as are purchased options which misleads the investors in Fund B and misrepresents the risk to the Fund. In our preferred methodology, Fund A reports physical assets as contributing to leverage and therefore shows a leverage number of 100%, Fund B under the 'sum of the notionals' reports 100% alongside the VaR and the fund's alternative leverage measure. Under our approach, the investor gains better insight into the risks within their investment and the results are more consistent with the risks undertaken.

Furthermore, **AI recognizes that exclusion may contribute to undesirable outcomes.** As an example, assume on day 1 there are two investors in Fund A who each invest $500 and the fund buys a 'knock-out'[8] call on the S&P

[6] We agree with the Commission's proposal for a 1mth 99% VaR using not less than 2 yrs of market data (where available or with a suitable substitute if actual market data is not available). In the case where non-linear risk is taken (such as in the case of using options) the VaR model is required to account for that such as through the use of Monte Carlo simulation or full-revaluation Historical Simulation. Parametric VaR would only be considered suitable in the case where-in the risk is 'linear' in nature, should the Investment Company wish to deploy a modified Parametric VaR approach it must demonstrate that the majority of the non-linear risk is modelled within the system.

[7] Exposure here is defined as the financial impact from a change in the value of the S&P.

[8] In this example a knock-out call refers to an option which becomes worthless if it reaches a certain value; please see the appendices for a graphical explanation of the return of a knock out option. This option may be referred to differently by otherwise, for example as a 'one-touch' however the principles

500 a thousand points above the current level. Under the current proposal, the fund has zero leverage. Suppose at the end of day 1, the S&P has rallied 900 points and Fund A's value has risen to $2,000. At the start of day 2, one of the two investors decides to sell just as a new investor decides to enter the fund, and the existing investor gets $1,000 back. At the end of day 2, the S&P remains unchanged from its previous level and the fund is still worth $2,000[9]. On day 3, the S&P surges again and rises 200 points therefore 'crossing the barrier'[10] and knocking out the option. As a result of passing the 'barrier', the option is now worthless and the investors in the fund have lost all the value of the fund despite showing a leverage of zero. **Under the current proposal, the new investor could well feel that they were not adequately protected.** However, under AI's suggested approach, the leverage would have been reported as 100% for the sum of the notionals and the Fund VaR on day 2 would have displayed the level of potential risk as a result of being so close to the barrier – meaning the investors would have been better able to understand that they could lose all their investment.

Furthermore, **we agree that rules which might be considered too restrictive could lead to product innovations that create more opaque and complex instruments**, thus creating new challenges for the Commission and for risk and compliance managers. Most derivatives, such as swaps, futures and options are now well understood by the market place. Coupled with this more sophisticated knowledge is increased regulatory oversight and support which has produced better protection for investors.

Should the Commission feel that our suggested approach is not a more suitable route, **we would like further clarification on some of the details of the proposals as whether purchased options such as swaptions should be included** in the calculation of exposure and/or a VaR test used to determine if the fund qualifies for the 300% risk-based limit. The working assumption that the market would rely on is that these instruments should be excluded from both calculations at the time of purchase, but on exercise they would convert to a standard underlying derivative transaction. Clarification by the SEC on such detail would assist the market in understanding the scope of the proposals, and as such, it would be of significant assistance.

SEC Question 3 (1st bullet on Page 90): Do commenters agree that it is appropriate to include exposure associated with a fund's financial commitment transactions and other senior securities transactions in the calculation of the fund's exposure for purposes of the 150% exposure limit in the exposure-based portfolio limit (and the 300% limit under the risk-based portfolio limit), as proposed, so that the exposure limit would include the fund's exposure from all senior securities transactions? Should we, instead, include only exposure associated with a fund's derivatives transactions but reduce the exposure limits so that a fund that would rely on the exemption provided by the proposed rule would be subject to a limit on leverage or potential leverage from all senior securities transactions? If we were to take this approach should we, for example, reduce the exposure limits to 50% in the case of the exposure-based portfolio limit and 100% in the case of the risk-based limit?

Response by Aviva Investors: We agree with the Commission that it is necessary to have a single combined exposure limit applicable to the aggregate of all transactions that generate exposure, regardless whether the exposure is generated through financial commitment transaction, derivative transactions or other senior securities transactions. It appears the proposal does not specify the borrowing limit as a result of other senior securities transactions under the new rule. As previously discussed in this response to the Commission's proposals, **our preference is a more nuanced approach to the setting of leverage restrictions and the separation of borrowing to create leverage *versus* the use of derivatives**. Should the Commission accept our proposed refinements, we believe this could also allow for a reduction of the restrictions on borrowing to a significantly lower level.

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remain the same. In this case an investor might buy a knock-out option because it is cheaper than a standard call and the investment manager does not believe the S&P will rally by more than 900 points during the life of this option.

[9] In this example the numbers are only hypothetical and do not represent the true change in value, it is merely used for the purpose of illustration.

[10] Crossing the barrier refers to when the price of the underlying rises beyond the level of the 'barrier', at the point when it crosses the barrier the option becomes worthless.

Part 2: Comments on the proposed 150% exposure limit:

SEC Question 4 (2nd bullet on Page 107): The 150% exposure limit (and the 300% exposure limit in the risk-based portfolio limit) would apply to all funds without regard to the type of fund or the fund's strategy. Are there certain types of funds for which a higher or lower exposure limit would be appropriate?

Response by Aviva Investors: While we applaud the goal of the SEC to improve investor protection from inappropriate levels of risk, **we believe the exposure limit as proposed does not provide sufficient flexibility to some low risk funds, such as outcome oriented funds which use derivatives to achieve return objectives and low volatility.** These are commonly referred to as liquid alternative funds. The proposed risk-based limit heavily restricts the use of derivatives to transactions which are classically referred to as 'hedges'. Hedges are trades, typically through derivatives, which specifically reduce market risk. However, the proposals as currently crafted restrict the use of derivatives to construct significantly more robust portfolios, and therefore, may worsen the outcomes that clients receive. **We believe using derivatives to gain exposure does not inherently increase the risk of the fund since derivatives and physical assets display similar return and risk characteristics**. See **Exhibit 3** for an example which demonstrates Treasury bonds and its swap displaying identical price movement throughout a 20-year period spanning across multiple market cycles. With proper risk controls, using derivatives to gain exposure has certain benefits as listed below, and therefore, should not be penalized compared to those funds using derivatives as a hedging tool in a traditional sense:

1. Derivatives may allow funds to gain unique exposures that physical assets cannot provide. As a result, they may provide better diversification than traditional balanced portfolios, especially during stressed market conditions when volatility for physical assets, such as stocks and bonds, tends to go up simultaneously as shown in **Exhibits 1 and 2**. Please see **Exhibit 4** for an example demonstrating how swaps can gain exposure to certain spots on the yield curve when there are no physical bonds with maturity dates between November 23 and February 22.
2. Derivatives, if deployed properly, offer better liquidity than many physical assets, especially credit-fixed income. Regulatory changes in the banking industry since the financial crisis have reduced the number and scale of market makers. Better liquidity provided by derivatives allows fund managers to increase and decrease exposure more quickly, which is critical for risk management purposes.
3. There are certain asset classes, such as FX, where the bulk of the market is OTC and derivative.

As a result**, we suggest the Commission considers extending the same flexibility to funds already using the VaR approach similar to UCITS, conditional upon meeting additional controls such as back testing.**

We appreciate the Commission's concerns regarding managed futures funds and leveraged ETFs, which pursue their strategies almost exclusively through significant derivative use and sometimes leverage. **However, the proposed exposure limit at 150% appears to cause issues for other liquid alternatives and fixed income funds that use derivatives to achieve a wide array of client outcomes.** The preliminary results from a more recent ICI survey in which we participated indicate that the proposed exposure limit only impacts alternative funds, but also taxable bond funds as classified by Morningstar. The ICI survey appears to present different results from the study conducted by DERA staff, which shows only 1% of the sample funds with exposure over 150%. One possible explanation, in our view, is the timing of the DERA study. While ICI's survey was done in early 2016, the DERA study was based on late 2014 data collected through Form N-CSR. Because the **market conditions were much more favorable in late 2014, many funds did not need to use derivatives extensively to manage volatility at the time of DERA study**; however, their derivatives usage has increased significantly as market volatility continues to rise for both bonds and stocks as shown in **Exhibits 1 and 2**. In addition, we note that many mutual funds did not use derivatives at the time of DERA study even though the prospecti of the funds indicate they are allowed to do so. For example, the white paper from DERA indicated that 77% of all funds that completed Form N-SAR for 2014 have investment policies that allow the use of equity options, but only 6% reported that they have actually used equity options during the reporting period. **We believe this itself may support the notion that derivatives usage by mutual funds will go up from the low point in late 2014 since most mutual funds retain that flexibility for good reason.**

Without providing sufficient flexibility to mutual funds to deploy derivatives, there may be unintended negative impacts to investors such as the following:

1. Force a greater concentration of mutual fund assets into long-only strategies that are increasingly susceptible to market volatility and liquidity risk, and may be more susceptible to suffering negative total returns.
2. Drive demand for offshore funds which will continue to access derivative strategies. Although many retail investors don't have direct access to offshore vehicles, a review of shareholder information for certain large alternative funds indicates that many large shareholders of these funds are institutional vehicles with retail assets such as pension funds. The demand for stable return and low volatility may force those pension funds to increasingly rely on offshore vehicles such as those in Cayman Islands and British Virgin Islands, **which places US mutual funds at a significant competitive disadvantage for institutional clients and denies retail clients access to many suitable or indeed superior products**.

Part 3: Comments on the proposed VaR test:

SEC Question 5 (1st bullet on Page 132): For the purposes of the risk-based portfolio limit, should the proposed rule use an approach such as (or similar to) the relative VaR or absolute VaR approach for UCITS funds, instead of or as an alternative to the proposed VaR test? Why or why not? Would it be more efficient to allow funds to use such an approach – e.g., because some advisers already use this approach for UCITS funds? Under a relative VaR approach, what sort of benchmarks would or would not be appropriate, and how should the benchmarks be chosen? Under an absolute VaR approach, what would be an appropriate VaR limit (e.g., 20%, as for UCITS funds, or a higher or lower limit)? Would a relative VaR or absolute VaR approach appropriately address the undue speculation concern underlying section 18? Why or why not?

Response by Aviva Investors:
We understand some of the Commission's concern regarding the reliability of using relative or absolute VaR as the only investment risk limit. However, **we do believe a significantly higher notional guideline with an approval on a fund-by-fund approach, coupled with an absolute VaR (limited to 20% common) or relative VaR (limited to two times a suitable benchmark) similar to UCITS funds achieves a better balance between providing flexibility regarding the use of derivatives while limiting the potential risks associated with leverage.** The fund may also be asked to meet the following requirements:

1. **Back testing:** Monitor VaR overshootings on a daily basis. Defined as when the one-day change in the fund's value exceeds the related one-day VaR measure at 99% confidence level calculated by the VaR model. On a semi-annual basis, the fund manager informs the Commission if the number of overshootings for the most recent 250 business days exceeds 4.
2. **Stress testing:** Run stress testing for a comprehensive range of scenarios reflecting possible market conditions relevant to the fund.
3. **Independent model validation:** Engage a party independent of the building of the model, or suitable skilled third parties such as public accounting firms to validate the VaR model.
4. **Control Assurance**: Key operational and governance controls related to the VaR model validation and counterparty risk management framework must be independently examined in an annual Type 2 SOC 1 report, or its equivalent, and the examination must be conducted by a Certified Public Accounting firm subject to regular inspection by the PCAOB.

Providing such flexibility will also bring the following benefits to the industry and investors:

1. Incentivizing the US mutual fund industry to quickly build its risk management capability based on existing guidelines approved by European regulators and widely adopted in Europe.
2. Improving US fund industry's competitive position when compared to their international peers.

Aviva Investors – along with many large and sophisticated asset managers who manage to their client's best interests across the globe – is familiar with the UCITS structure which has become widely recognized not just in but

beyond the European Union. As such, **we believe that the introduction of VaR based restrictions is not a significant challenge for large managers operating in the US market place.**

With regards to the relative VaR restrictions, which we suggest can be up to two times the benchmarks similar to UCITS, **we believe that the investment manager is best placed to choose a suitable reference benchmark which should be clearly disclosed to investors and approved by the Fund's board.** While in the majority of cases there is no complexity in deciding on the suitable benchmark for a relative VaR calculation, AI recognizes that in some cases the choice maybe less clear cut. However, the investment manager should be able to demonstrate that the appropriate consideration was applied to the decision and that the disclosure to the investors is fair and transparent. In the case of absolute VaR, we believe that 20% (similar to the restriction in UCITS) is an appropriate maximum level of risk. While these are the upper restrictions for a fund, we believe that the investment manager should operate with a lower guideline level of VaR which more accurately reflects the investment manager's expectations of risk. This guideline may be amended from time to time through an appropriately controlled approach. Likewise, the manager's risk management process should indicate clearly the approach when an excess occurs (passive or active breaches may have separate treatments).

As discussed above, we believe that the current proposed restriction of 150%/300% leverage may prevent investors from achieving their outcomes. Instead, we believe that the approach of utilizing a VaR based restriction as described above is more appropriate. Moreover, we respectfully suggest that the investment manager should disclose in their fund's disclosure documentation the maximum expected leverage. While this may not constitute a limit, it would be expected that the manager should not exceed this disclosed level in the normal course of management, and higher levels of leverage should only occur for short periods of time.

SEC Question 6 (1st bullet on Page 152): The proposed rule would not require a fund to terminate a derivatives transaction if the fund complied with the applicable portfolio limitation immediately after entering into the transaction, even if (for example), the fund's net assets later declined with the result that the fund's exposure at that later time exceeded the relevant exposure limit. Do commenters agree that this is appropriate? Conversely, should we instead require a maintenance test for notional amounts such that funds would be required to adjust their derivatives transactions if the exposure exceeds 150% of net assets for longer than a certain period of time, even if the fund has not entered into any senior securities transactions? If so, should we consider including a cushion amount – for example, by only requiring a fund to adjust its positions if its exposure reaches a higher level, such as 175%? Should we limit the time period (e.g., to 30 days, 60 days, or 90 days) in which an exposure could exceed 150% of net assets (or 300% under the risk-based portfolio limit) as a result of changes in the fund's net assets so that a fund cannot persistently exceed the rule's exposure limits? Would such an approach better promote investor protection? Would there be operational challenges with this requirement?

Response by Aviva Investors: We do not believe it is necessary to expand the notional amount test beyond the time of entering the derivative transactions.

Part 4: Summary of our recommendations:

In summary, we suggest the Commission considers the following five adjustments:

1. **Permitting the use of an absolute VaR limit of 20%** (or two times) an appropriate reference benchmark as an option to restrict a fund's leverage, if the fund complies with control requirements such as back testing as outlined in our response to Question 5 above.
2. **Normalizing the notional amount for derivatives by calculating them in 'delta' equivalent** of the underlying investment exposure. For example, normalizing the notional amount for all interest rate swaps and futures by calculating them in terms of the10-year bond equivalent.
3. Requiring an investment fund to supply in its public documents all appropriate data with regards to the maximum notional leverage use. **This can be greater than the 300% proposal.**
4. Restricting the amount a fund can borrow through other senior s**ecurities transactions to 10% of the fund's NAV and only permitting** such borrowing in temporary nature to facilitate short term cash management and fund liquidity.
5. Requiring the Fund Board to approve the Risk Management Process of the fund including its use of VaR, leverage and the limits for these.
6. Excluding the fund's base currency leg of the contract when calculating notional amount for FX forwards and futures.

We believe making the aforementioned adjustments will bring the following benefits to the industry and to investors:

1. Incentivizing the US mutual fund industry to quickly build its risk management capability based on existing guidelines approved by European regulators and widely adopted in Europe.
2. Improving US fund industry's competitive position when compared to their international peers.

In addition, we would like to seek clarification on whether purchased options such as swaptions should be included in the calculation of exposure and/or a VaR test used to determine if the fund qualifies for the 300% risk-based limit. The working assumption that the market would rely on is that these instruments should be excluded from both calculations at the time of purchase, however, on exercise they would convert to a standard underlying derivative transaction.

We appreciate the Commission's consideration of our recommendations. Please do not hesitate to reach out to **Sean Brumble Chief Operating Officer at Aviva Investors Americas** if you have any additional questions or would like to discuss our views further.

Sincerely,

Sean Brumble, Chief Operating Officer
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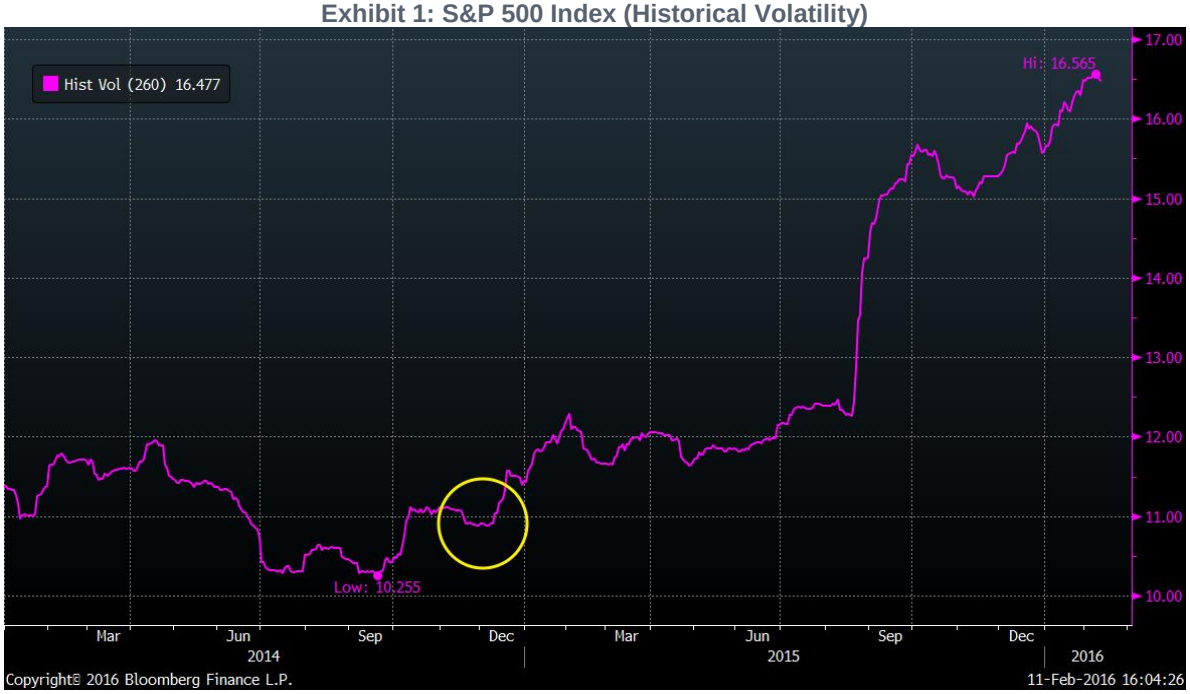
225 West Wacker Dr. Suite 1750
Chicago, IL 60606
312.873.5819
sean.brumble@avivainvestors.com

Exhibit 1: S&P 500 Index (Historical Volatility)



S&P 500 Index (Implied Volatility)

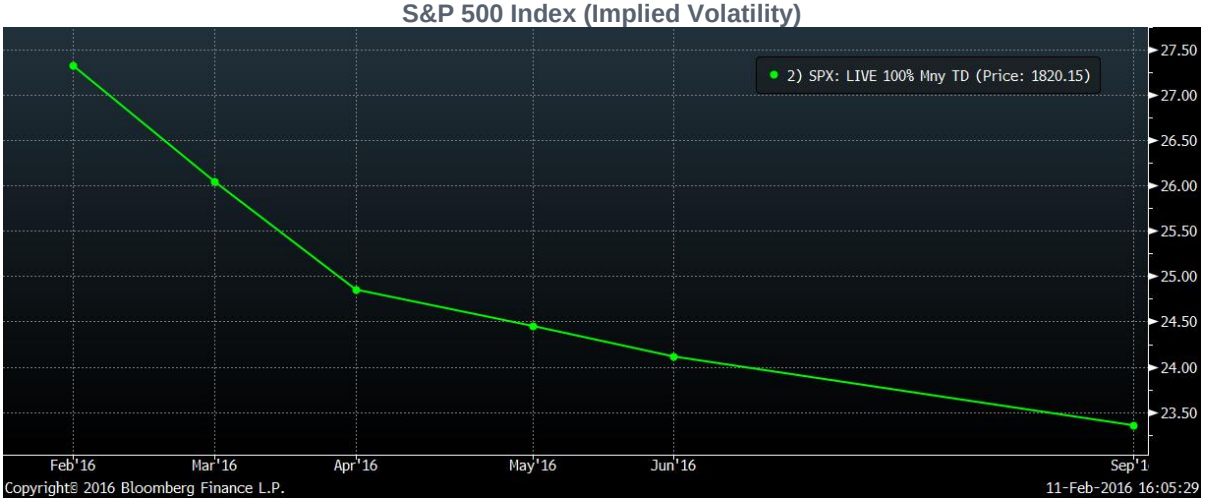


Exhibit 2: Barclays US Aggregate Bond Index (Historical Volatility)

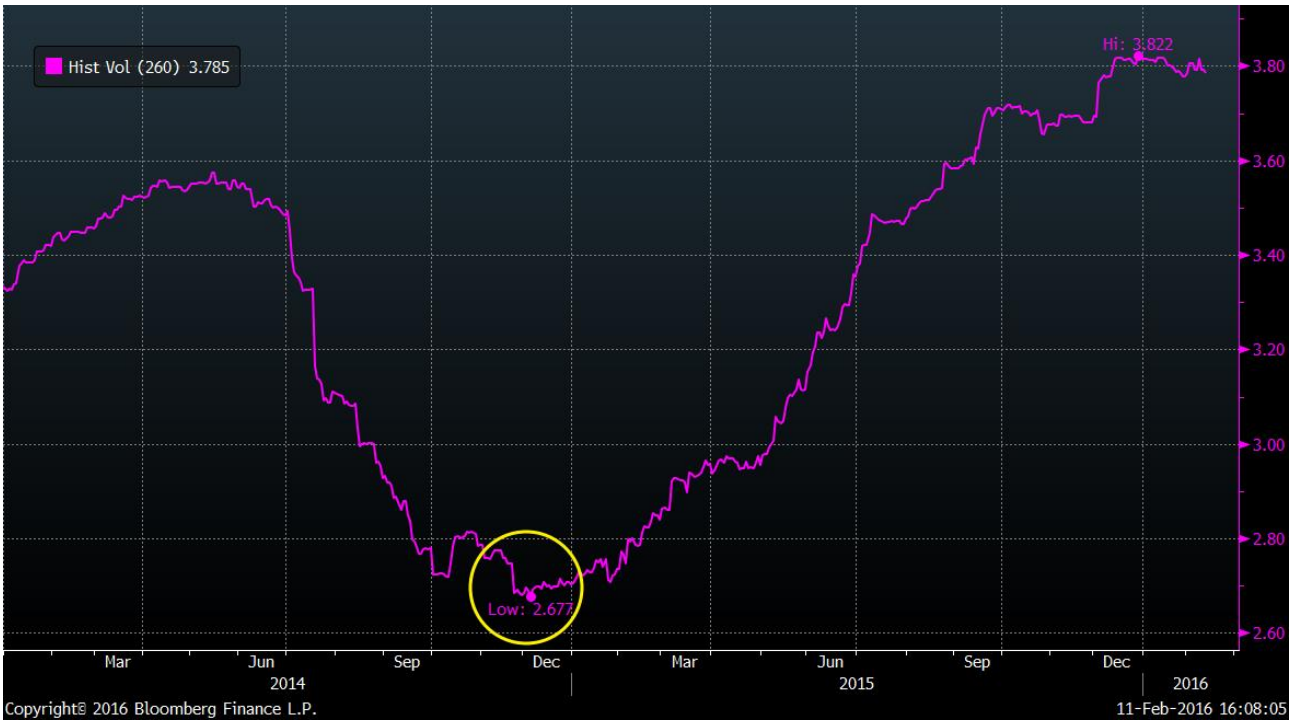


Exhibit 3: 10Y Treasury Yield vs. 10Y Swap Rate

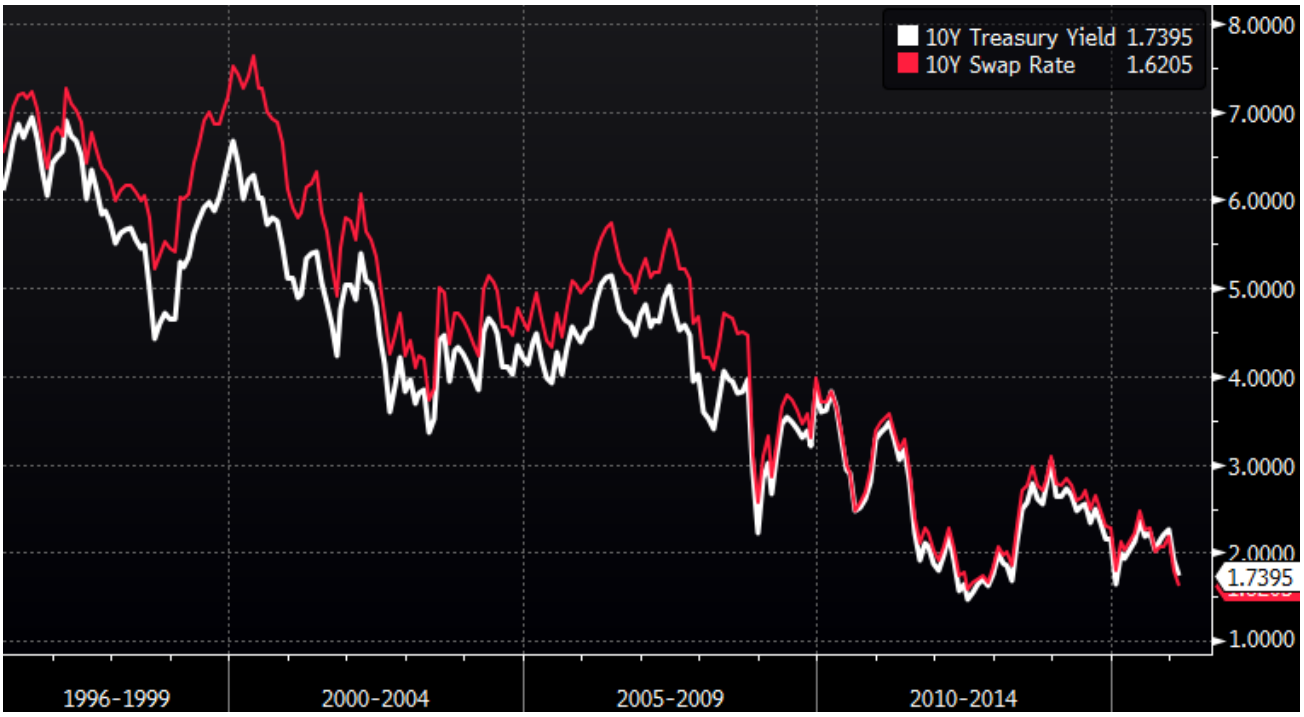
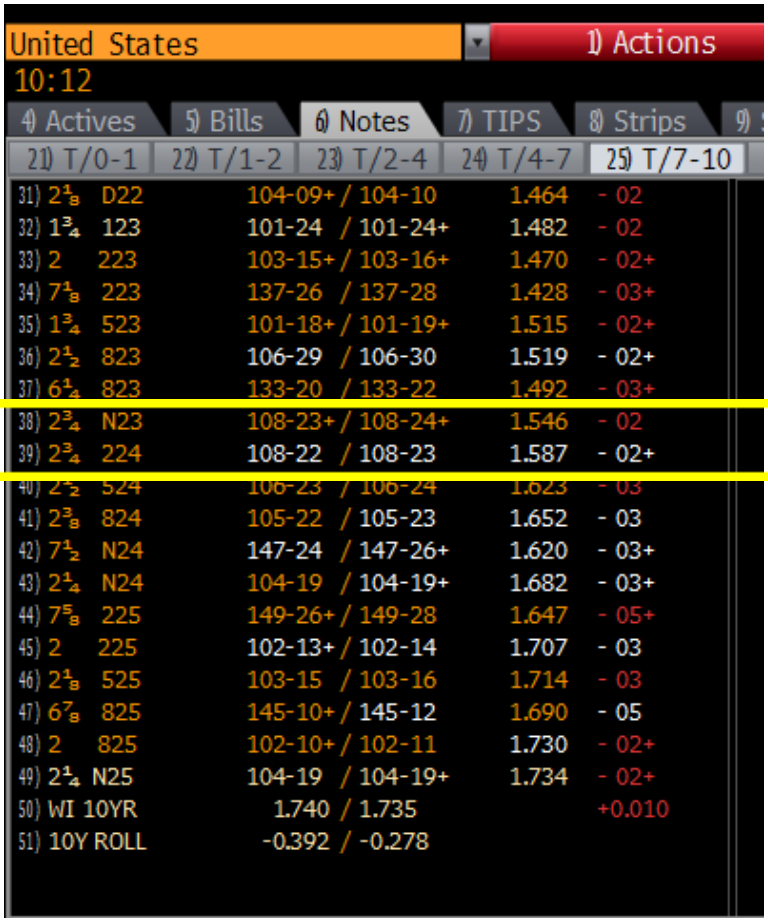
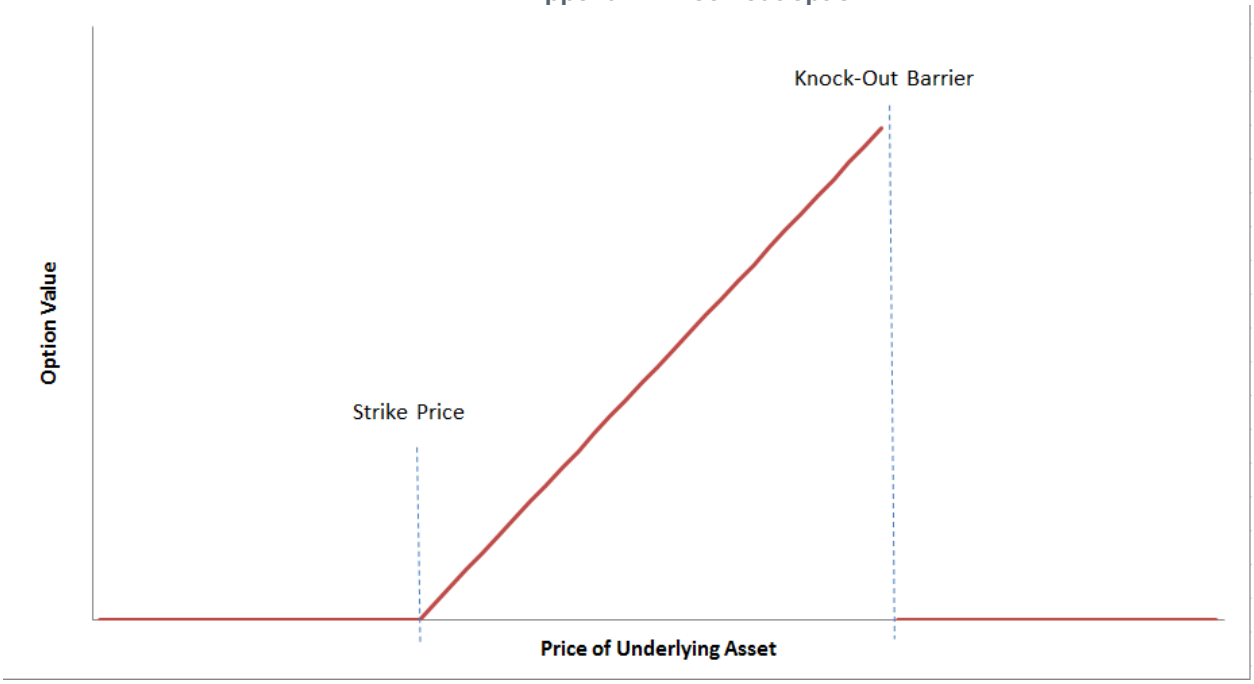


Exhibit 4: Using swaps to gain exposure on yield curve that physical bonds cannot provide



Appendix: Knock-out option



Strike	K.O.	
50	80	
30	-	
40	-	
50	-	
60	10.00	
70	20.00	
75	25.00	
79	29.00	
80		0.000001
90		0.000001
100		0.000001

AVIVA INVESTORS COMMENTS

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July 28, 2016

Mr. Brent J. Fields
Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: *Use of Derivatives by Registered Investment Companies and Business Development Companies* (File No. S7-24-15)

Dear Mr. Fields:

I am writing on behalf of the Investment Company Institute[1] and our members to provide additional comments on the Securities and Exchange Commission's proposed rule for funds' use of derivatives.[2] Specifically, we recommend that the Commission revise the proposed rule's portfolio limit tests to provide a simple and effective risk-adjustment schedule for calculating the notional amount of a derivative instrument. Figure 1 below provides the specific schedule we recommend.

Our recommended schedule takes appropriate account of the risk of different types of derivatives and is a far superior methodology than mere reliance on gross notional exposure. The schedule is based on well-founded risk determinations that prudential and other regulators have made for very similar purposes, and is easy to administer. It also should satisfy the Commission's stated goal of limiting undue speculation through funds' use of derivatives.[3]

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[1] The Investment Company Institute is a leading, global association of regulated funds, including mutual funds, exchange-traded funds ("ETFs"), closed-end funds, and unit investment trusts in the United States, and similar funds offered to investors in jurisdictions worldwide. ICI seeks to encourage adherence to high ethical standards, promote public understanding, and otherwise advance the interests of funds, their shareholders, directors, and advisers. ICI's U.S. fund members manage total assets of $17.9 trillion and serve more than 90 million U.S. shareholders.

[2] *Use of Derivatives by Registered Investment Companies and Business Development Companies*, Release No. IC-31933, 80 Fed. Reg. 80884 (Dec. 28, 2015), available at https://www.gpo.gov/fdsys/pkg/FR-2015-12-28/pdf/2015-31704.pdf.

[3] *See* proposing release at 80901 (portfolio limits are designed primarily to address undue speculations concerns).

Immediately following the schedule below, we explain briefly how we envision funds will use the schedule in connection with the recommendation in our March letter that the limits be revised to 200 percent (for the exposure-based portfolio limit) and 350 percent (for the risk-based portfolio limit).[4] We then explain why we believe the SEC should adopt the schedule.

Figure 1 – ICI's Recommended Derivatives Risk-Adjustment Schedule[5]

Underlying Asset Category	Risk Adjustment to Notional Amount
Equity	x 100%
Commodity	x 100%
Foreign Exchange / Currency	x 40%
Cross Currency	
0–2 year duration	x 6.7%
2–5 year duration	x 13.3%
5+ year duration	x 26.7%
Interest Rate	
0–1 year duration (adjusted to a 12-month period)*	x 6.7%
1–2 year duration	x 6.7%
2–5 year duration	x 13.3%
5+ year duration	x 26.7%
Credit / Debt	
0–2 year duration	x 13.3%
2–5 year duration	x 33.3%
5+ year duration	x 66.7%
All Other	x 100%

* Funds would adjust interest rate derivatives with less than a one-year maturity to a 12-month period prior to applying the risk-adjustment multiplier. For example, a fund would divide the notional amount of a 90-day instrument by four before multiplying it by the 6.7 percent risk-adjustment multiplier.

[4] This letter supplements comments we submitted to the SEC in March. *See* Letter from David W. Blass, General Counsel, Investment Company Institute, to Brent J. Fields, Secretary, Securities and Exchange Commission, dated March 28, 2016, available at https://www.sec.gov/comments/s7-24-15/s72415-114.pdf. We continue to urge the SEC to adopt the recommendations in our March letter. We recommended a risk-adjusted 200 percent exposure-based limit (in place of the proposed 150 percent limit) and 350 percent risk-based limit (in place of the 300 percent limit). We also continue to recommend excluding financial commitment transactions from the portfolio limits and excluding from the portfolio limits the following types of direct hedging transactions: 1) currency derivatives that provide short exposure to a currency in which a security held by the fund is denominated, and the short exposure does not exceed the value of the security; 2) written call options on securities held in the fund's portfolio; and 3) a purchased single-name credit default swap that provides credit protection on the issuer of a security held by the fund with gross notional exposure that does not exceed the principal amount of the security.

[5] Appendix A provides an annotated version of the schedule, including examples of instruments that fit within each asset category. Appendix B provides a chart showing how the risk-adjustment factor for each category was determined.

1. How Funds Will Use ICI's Recommended Schedule

Funds will use the schedule to adjust the notional amount of a derivative instrument that would count towards the exposure-based and risk-based portfolio limits (subject to the increases we recommended in our March letter). Funds will use a three-step process for this adjustment:

First, a fund will determine a derivative instrument's risk adjustment under the schedule first by looking to the category of the underlying reference asset and characteristics (left-hand column of the schedule). The schedule includes categories of certain derivatives that are classified by both asset class and a broad duration grouping (*i.e.*, "Foreign Exchange/Currency," "Interest Rate," and "Credit/Debt," which, in the case of "Interest Rate" and "Credit/Debt," are further categorized into 0-1 year, 0-2 year, 1-2 year, 2-5 year, and/or 5+ year groupings). For those categories, the duration of the underlying reference asset typically determines the duration of the category. When a derivative instrument does not have a reference asset with a duration (*e.g.*, credit default swaps on single-name issuers), the fund will use the maturity of the derivative instrument itself to determine the duration of the category.

Second, the fund will multiply the derivative instrument's gross notional exposure by the fixed risk-adjustment multiplier (right-hand column of the schedule) assigned to that category. The product of a derivative instrument's gross notional exposure and its risk-adjustment multiplier would be the derivative instrument's risk-adjusted notional amount.[6]

Third, the fund will aggregate the risk-adjusted notional amounts of all the derivatives in the fund's portfolio to determine whether the fund complies with our recommended 200 percent exposure-based limit or 350 percent risk-based limit.

2. Our Rationale for Recommending the Schedule

The adjustment schedule is designed to take into account the expected riskiness of the derivative instrument's reference asset. Derivatives that typically are more risky receive a smaller adjustment (or even no adjustment) than those that are less risky. Funds, for example, would multiply the gross notional exposure for equity-based derivatives by 100 percent but multiply the gross notional exposure of 10-year interest rate derivatives by 26.7 percent.

As we expressed in our March letter, portfolio limits based on gross notional exposures are not the proper yardstick for determining whether a fund is unduly speculative. As the Commission fully recognizes, gross notional exposure could vastly overstate a fund's obligation under, and the economic

[6] As explained in the "General Notes" to the annotated schedule in Appendix A, there are some exceptions to the calculation methodology described above. The risk-adjusted notional amount for complex derivatives, for example, would equal the aggregate risk-adjusted notional amounts of derivatives, excluding other complex derivatives, reasonably estimated to offset substantially all of the market risk of the complex derivative instrument.

risks and leverage associated with, a derivatives transaction.[7] Since we submitted our letter, other regulators have voiced similar concerns with gross notional exposure. For example, in evaluating whether current methods for measuring leverage effectively assess financial stability risk, the Financial Stability Oversight Council observed that a gross notional exposure measure "does not capture differences in risk exposures across different classes of derivatives."[8] Similarly, the Chairman of the Commodity Futures Trading Commission remarked that gross notional exposure "includes derivatives, but not in a manner that accurately measures risk . . . . [and] does not take into account a variety of factors that affect risk, such as product type [or] offsetting positions. . . . ."[9]

Restricting derivatives usage based on gross notional exposures, therefore, does not meet the Commission's intent of properly distinguishing funds that are "unduly speculative" from other funds and would expose many funds to unnecessary restrictions that could inhibit a fund's ability to mitigate risks in its portfolio, achieve its investment goals and efficiencies, enhance liquidity, and lower costs in the best interest of shareholders. Our March letter discussed the results of an ICI study showing that the proposed rule's portfolio limits would have a restrictive impact on a substantial number of funds in general, and on "plain vanilla" taxable bond funds and alternative funds in particular. The proposed rule would affect these funds because the portfolio limits would count exposure, for example, to interest rate derivatives the same as exposure to more economically risky or volatile derivatives.

Our recommended schedule addresses some of the shortcomings with gross notional exposure and the adverse and unintended consequences for large numbers of funds. The schedule applies the limits in a more sensible manner that considers the economic risk and volatility of a derivative instrument and addresses concerns regarding undue speculation in a more rational and tailored fashion.[10] We continue to believe strongly that, if the Commission adopts portfolio limits restricting a fund's use of derivatives, the Commission should not base those portfolio limits on gross notional exposures but on risk-adjusted notional amounts to limit undue speculation more appropriately and

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[7] The Commission noted that a test based on gross notional amounts "could be viewed as a relatively blunt measurement in that different derivatives transactions having the same notional amount but different underlying reference assets . . . may expose a fund to very different potential investment risks and potential payment obligations." *See* proposing release at 80903.

[8] *See* Financial Stability Oversight Council, Update on Review of Asset Management Products and Activities (April 18, 2016) at 16, available at https://www.treasury.gov/initiatives/fsoc/news/Documents/FSOC%20Update%20on%20Review%20of%20Asset%20Management%20Products%20and%20Activities.pdf. The FSOC also noted that, "aggregating notional derivative amounts to measure synthetic leverage [leverage from derivatives] is likely to overstate leverage." *Id.*

[9] *See* CFTC, Statement of Chairman Timothy Massad on the Financial Stability Oversight Council's Update on its Review of Asset Management Products and Activities (April 18, 2016), available at http://www.cftc.gov/PressRoom/SpeechesTestimony/massadstatement041816.

[10] This proposed schedule is intended to be used to apply the SEC's proposed portfolio limits in a more sensible manner but is not intended to measure a fund's overall "leverage."

preserve the benefits derivatives provide to investors. We recognize, however, that the schedule will not resolve all of the concerns with the portfolio limits for funds, and certain funds may need to change substantially their investment strategies or de-register as funds registered under the Investment Company Act of 1940.[11]

We based our schedule on the prudential regulators' and CFTC's "Initial Margin Schedule" for uncleared swaps.[12] The Initial Margin Schedule already reflects industry input through the review and comment process under both the prudential regulators and CFTC proposals. That schedule also provides a realistic view of the relative risks of different asset classes and sets out appropriate risk adjustments. As described below, we made one refinement to the schedule that is consistent with the approach of the SEC's Division of Economic and Risk Analysis for short-term interest rate instruments.

Other approaches to a risk-adjustment schedule exist. We pointed out in our March letter, for example, that the SEC has adopted a "Swap Registration Schedule" that itself is risk adjusted for purposes of the security-based swap dealer registration rule.[13] That schedule serves as a SEC precedent for a risk-adjustment approach, but we believe the Initial Margin Schedule provides a better model for purposes of the current proposal.[14] First, the Initial Margin Schedule is more conservative in how it assigns the riskiness of an instrument generally (under the Swap Registration Schedule, for example, interest rate derivatives with less than one-year maturity would have a 0 percent adjustment factor). Second, the Initial Margin Schedule is used in rules that serve a similar purpose as that of the proposed derivatives rule – limiting risk. The Swap Registration Schedule, in contrast, was designed to measure a

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[11] Several funds, for example, invest in derivatives whose reference assets are based on an equity or commodity index. Those derivatives would receive no risk-adjustment to their gross notional exposure and would continue to apply their full gross notional exposure toward the portfolio limits. To the extent such a fund exceeds its portfolio limits, the fund may need to significantly change its investment portfolio to comply with the limits or de-register. In this regard, the SEC requested comment on whether funds that currently exceed the portfolio limits or that have received exemptive relief to operate leveraged or inverse ETFs should be "grandfathered" from the proposed rule's requirements. This approach may warrant further consideration and analysis, and we stand ready to assist the SEC in these efforts.

[12] *See Margin and Capital Requirements for Covered Swap Entities*, 80 Fed. Reg. 74839 (Nov. 30, 2015) (final rule) at Appendix A, available at https://www.gpo.gov/fdsys/pkg/FR-2015-11-30/pdf/2015-28671.pdf; *Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants*, 81 Fed. Reg. 636 (Jan. 2, 2016) (final rule) at Section 23.154(c), available at https://www.gpo.gov/fdsys/pkg/FR-2016-01-06/pdf/2015-32320.pdf. That schedule is reproduced in Appendix C. The Initial Margin Schedule specifies the minimum amount of initial margin that will need to be posted and received for uncleared swaps, if the parties to the swap do not elect to determine the initial margin under a model approved by the relevant regulator.

[13] *See Further Definition of "Swap Dealer," "Security-Based Swap Dealer," "Major Swap Participant," "Major Security-Based Swap Participant" and Eligible Contract Participant,"* 77 Fed. Reg. 30596 (May 23, 2012), available at https://www.gpo.gov/fdsys/pkg/FR-2012-05-23/pdf/2012-10562.pdf.

[14] We also recommended in our March letter that the SEC use the Initial Margin Schedule as a basis for expanding the types of "qualifying coverage assets" eligible for segregation under the proposal.

level of derivatives activity by a market participant that would warrant such entity being required to register with the SEC (or the CFTC).

We and our members also considered whether to recommend an entirely new schedule rather than one based on the Initial Margin Schedule. A new schedule potentially could finely tailor adjustments specifically for the purposes of proposed rule 18f-4. On balance, however, we believe that the Initial Margin Schedule is the superior model. It is based on observations of market activity regarding the relative riskiness of those instruments and incorporates significant input from market participants. Any new schedule would largely reflect the judgments inherent in the Initial Margin Schedule. Further, market participants already familiar with the Initial Margin Schedule may achieve operational efficiencies through the use of a common schedule.

We now discuss the rationale for specific elements of ICI's recommended derivatives risk-adjustment schedule.

a. Risk-Adjustment Multipliers

We determined the risk-adjustment multipliers based on the initial margin amounts required under the Initial Margin Schedule. To avoid complications, we largely retained the categories that the prudential regulators and CFTC created for various uncleared swaps.[15] The categories with the highest initial margin requirements under this schedule ("Equity," "Commodity," and "Other"), each of which has an initial margin requirement of 15 percent of gross notional exposure, were assigned a risk-adjustment multiplier of 100 percent. This categorization means that derivatives that fall into the "Equity," "Commodity," and "Other" categories would apply their full gross notional exposure towards the portfolio limits. Risk-adjustment multipliers for all other categories were determined relative to the "Equity," "Commodity," and "Other" categories by multiplying their respective gross initial margin requirement by a conversion factor of 6 2/3. The conversion factor reflects a scaling of risk to the "Equity," "Commodity," and "Other" categories and is simply the inverse of the gross initial margin (1/0.15 = 6 2/3) of these categories.[16] For example, with respect to derivatives in the category "Foreign Exchange/Currency," which pursuant to the Initial Margin Schedule require initial margin of 6 percent of the gross notional exposure of the instrument, funds would multiply the gross notional exposure of such instruments by 40 percent (*i.e.*, initial margin amount (6 percent) x conversion factor (6 2/3)) to compute their risk-adjusted notional amounts. Therefore, the proposed schedule retains the relative

[15] The categories in the prudential regulators' and CFTC's margin schedule are: Credit: 0-2 year duration; Credit: 2-5 year duration; Credit: 5+ year duration; Commodity; Equity; Foreign Exchange/Currency; Cross Currency Swaps: 0-2 year duration; Cross-Currency Swaps: 2-5 year duration; Cross-Currency Swaps: 5+ year duration; Interest Rate: 0-2 year duration; Interest Rate: 2-5 year duration; Interest Rate: 5+ year duration; and Other. *See* Appendix C.

[16] Appendix B sets out a chart showing how the risk-adjustment factor for each category was determined.

treatment of the various instruments under the Initial Margin Schedule, consistent with regulators' view of risk.

We considered a hybrid approach that would have combined the risk-adjustment multipliers derived from the Initial Margin Schedule with a duration adjustment for derivatives in the "Interest Rate" category. A duration adjustment would have scaled the risk-adjustment multipliers for interest rate derivatives based on a specified bond equivalent.[17] If the schedule used a 20-year bond equivalent, for example, an interest rate derivative instrument with a reference asset having a 20-year duration would have counted 100 percent of its gross notional exposure toward the limit and derivatives with shorter durations would have been scaled off of those amounts. We decided against this approach. The Initial Margin Schedule already includes an adjustment for duration because the initial margin requirements for interest rate derivatives with a 0-2 year duration (1 percent) are lower than the initial margin requirements for interest rate derivatives with a 2-5 year duration (2 percent) and a 5+ year duration (4 percent). Although scaling duration to a reference asset having a specific bond equivalent would have created finer distinctions among different fixed-income instruments, we concluded that the additional complexity of such an adjustment was not warranted. On balance, we were of the view that maintaining consistency with the Initial Margin Schedule on this point would ease operational burdens on funds and provide a more workable and uniform approach.

We generally retained the categories that the CFTC and prudential regulators derived for the Initial Margin Schedule, although we split "Interest Rate: 0-2 year duration" into "Interest Rate: 0-1 year duration" and "Interest Rate: 1-2 year duration." For derivatives in the "Interest Rate: 0-1 year duration" category, we propose dividing the notional amount of such derivatives by the appropriate 12-month time adjustment (*e.g.*, the notional amount of 90-day instruments would be divided by 4 because the duration of such instruments is ¼ of one year), then multiplying that amount by the risk-adjustment multiplier of 6.7 percent – the same multiplier for "Interest Rate: 1-2 year duration" derivatives. This treatment, adjusting for duration for such short-term instruments, is consistent with the treatment of short-term futures contracts in the DERA white paper that accompanied the proposing release.[18] We support this slight change to address the concern identified by DERA that the magnitude of a fund's investment exposure in short-term interest rate derivatives (*i.e.*, one year or less) is overstated, which unintentionally could impair the use of these low-risk derivatives.

b. Asset Class Categories and Classifications

We considered refining the Initial Margin Schedule even further to account for more granular distinctions in the various asset classes. We analyzed, for example, whether derivatives in the category "Credit/Debt" should be further classified into "High Yield" and "Investment Grade" to reflect the

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[17] ICI members considered using both a 10-year bond equivalent and a 20-year bond equivalent.

[18] *See* Daniel Deli, Paul Hanouna, Christof Stahel, Yue Tang & William Yost, *Use of Derivatives by Registered Investment Companies,* Division of Economic and Risk Analysis (2015), available at https://www.sec.gov/dera/staff-papers/white-papers/derivatives12-2015.pdf. *See also,* proposing release at 80908.

differing characteristics of those assets. Ultimately, we determined to recommend a more straightforward and streamlined bucketing approach for ease of use that is largely consistent with the Initial Margin Schedule. We are of the view that consistency with the Initial Margin Schedule would allow funds entering into derivatives with counterparties using the Initial Margin Schedule to classify their derivatives in the same manner as they would for determining initial margin. This would ease burdens on funds and potentially allow for a uniform classification of derivatives to develop. A less granular approach also keeps the categorizations simple, robust and unambiguous, while reducing the need for continuous updating.

ICI's recommended annotated version of the schedule lists several examples of instruments under each of the seven main asset classes to illustrate the proper categorization and to assist with the consistent application of the portfolio limits. The examples are not intended to cover all types of derivatives and are not intended to be codified into the rule. Instead, funds can use them as an effective guide for classifying many common types of derivatives.[19] Funds and their derivatives risk managers should be equipped to classify newly developed types of derivatives into the seven broad categories, including the category "Other," which pursuant to the proposed schedule would require funds to count 100 percent of their gross notional exposure toward the limit.[20]

[19] The Commission, for example, could discuss the categorization in its adopting release to provide funds guidance on how they would classify different instruments.

[20] Although the relative riskiness of various derivatives could vary over time, we believe that the conservative nature of the ICI's recommended schedule would provide the Commission with a sufficient amount of "cushion" before necessitating any change to the amounts in the schedule.

* * * * *

We appreciate the opportunity to provide further recommendations on the proposal. If you have any questions regarding ICI's recommended derivatives risk-adjustment schedule or would like any additional information, please feel free to contact me at (202) 326-5815; Dorothy Donohue, Deputy General Counsel at (202) 218-3563; Jennifer S. Choi, Associate General Counsel at (202) 326-5876; or Kenneth C. Fang, Assistant General Counsel at (202) 371-5430.

Sincerely,

/s/ David W. Blass

David W. Blass
General Counsel

cc: The Honorable Mary Jo White, Chair
The Honorable Kara M. Stein
The Honorable Michael S. Piwowar

David W. Grim, Director
Diane C. Blizzard, Associate Director
Division of Investment Management

APPENDIX A

Annotated Version of ICI's Recommended Derivatives Risk-Adjustment Schedule

Asset Class	Risk-Adjustment Multiplier	Examples of Instruments Covered
Equity	Notional x 100%	Futures on a single-name equity security, equity index, ETF, or convertible bond
		Total return swap on a single-name equity security, equity index, convertible bond, portfolio of equity securities, or portfolio of convertible bonds
		Written options on a single equity security, single name equity future, equity index, equity index future, ETF, ETF future, or convertible bond[1]
Commodity	Notional x 100%	Futures on a single commodity, commodity index, or commodity index excess return
		Commodity index options[1]
		Commodity index swaps
		Commodity index forward swaps
		Options on commodity futures[1]
Foreign Exchange/Currency	Notional x 40%	FX/currency forwards (including non-deliverable forwards)[2]
		FX/currency futures
		Currency options[1]
Cross-Currency	For cross-currency swaps and cross-currency basis swaps, the maturity of the derivative instrument determines the duration category	
	0-2 years: Notional x 6.7% 2-5 years: Notional x 13.3% 5+ years: Notional x 26.7%	Cross-currency swaps
		Cross-currency basis swaps
Interest Rate	For futures and total return swaps, the duration of the underlying reference asset determines the duration category	
	For swaptions, the maturity of the underlying swap determines the duration category	
	For interest rate swaps, caps, floors, collars, swaps on CPI, swaps on an index, and forward rate agreements, the maturity of the derivative instrument determines the duration category	

Asset Class	Risk-Adjustment Multiplier	Examples of Instruments Covered
	0-1 year: (Notional ÷ Appropriate Calendar Adjustment)[3] x 6.7% 1-2 years: Notional x 6.7% 2-5 years: Notional x 13.3% 5+ years: Notional x 26.7%	Interest rate futures (*e.g.*, Eurodollar, Fed funds futures)
		Interest rate caps, floors and collars
		Investment grade government bond futures (*e.g.*, U.S. Treasury, UK Gilts, Euro-Bund)
		Interest rate swaps
		Swaps on investment grade government bonds, investment grade government bond indexes, or investment grade government bond ETFs
		Forward rate agreements
		Swaps on CPI
		Options on interest rate futures[1]
		Swaptions[4]
Credit/Debt	For futures and total return swaps on covered instruments, the duration of the underlying reference asset determines the duration category	
	For credit default swaps and swaps on an index, the maturity of the swap determines the duration category	
	0-2 years: Notional x 13.3% 2-5 years: Notional x 33.3% 5+ years: Notional x 66.7%	Corporate bond and non-investment grade government bond futures
		Credit spread futures
		Swaps on corporate bonds and non-investment grade government bonds; corporate bond and non-investment grade government indexes; and corporate bond and non-investment grade government bond ETFs
		Credit spread swaps
		Credit default swaps on single name or index[5]
		Total return swap on a single fixed-income security or portfolio of fixed-income securities
Other	Notional x 100%	Complex derivatives (*e.g.*, volatility instruments, variance swaps, non-standard options)[6]

General Notes:

1. Funds would treat written options on these underlying asset classes on a delta-adjusted basis. For example, exposure on a written FX option will be notional x 40 percent x option delta. Purchased options are excluded.

2. We note that the Initial Margin Schedule will exclude foreign exchange swaps and forwards from any initial margin requirements. These instruments generally are not regulated as "swaps" under Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the Commodity Exchange Act. *See Determination of Foreign Exchange Swaps and Foreign Exchange Forwards Under the Commodity Exchange Act*, 77 Fed. Reg. 69604 (Nov. 20, 2012), available at https://www.gpo.gov/fdsys/pkg/FR-2012-11-20/pdf/2012-28319.pdf. Consistent with this approach, the Commission could choose to exclude foreign exchange swaps and forwards from counting toward any portfolio limit requirements.

3. Funds would adjust interest rate derivatives with less than a one-year maturity to a 12-month period prior to applying the risk-adjustment multiplier. For example, a fund would divide the notional amount of a 90-day instrument by four before multiplying it by the 6.7 percent risk-adjustment multiplier.

4. Funds would risk adjust swaptions based on the maturity of the underlying swap, then treat them on a delta-adjusted basis.

5. "Sold" CDS protection only. For purchased CDS protection, the sum of future premium payments would apply to the Commission's proposed portfolio limits.

6. The risk-adjusted notional amount for complex derivatives would be an amount equal to the aggregate risk-adjusted notional amounts of derivatives, excluding other complex derivatives, reasonably estimated to offset substantially all of the market risk of the complex derivative instrument.

APPENDIX B

Computation of Risk-Adjustment Multipliers

Asset Class	Gross Initial Margin (% of Notional Exposure)	Conversion Factor	Risk-Adjustment Multiplier
Credit: 0–2 year duration	2%	x 6 2/3	13.3%
Credit: 2–5 year duration	5%	x 6 2/3	33.3%
Credit: 5+ year duration	10%	x 6 2/3	66.7%
Commodity	15%	x 6 2/3	100.0%
Equity	15%	x 6 2/3	100.0%
Foreign Exchange/Currency	6%	x 6 2/3	40.0%
Cross Currency Swaps: 0–2 year duration	1%	x 6 2/3	6.7%
Cross-Currency Swaps: 2–5 year duration	2%	x 6 2/3	13.3%
Cross-Currency Swaps: 5+ year duration	4%	x 6 2/3	26.7%
Interest Rate: 0–2 year duration*	1%	x 6 2/3	6.7%
Interest Rate: 2–5 year duration	2%	x 6 2/3	13.3%
Interest Rate: 5+ year duration	4%	x 6 2/3	26.7%
Other	15%	x 6 2/3	100.0%

* Funds would adjust interest rate derivatives with less than a one-year maturity to a 12-month period prior to applying the risk-adjustment multiplier. For example, a fund would divide the notional amount of a 90-day instrument by four before multiplying it by the 6.7 percent risk-adjustment multiplier.

APPENDIX C

Standardized Minimum Initial Margin Requirements for Uncleared Swaps and Uncleared Security-Based Swaps

Asset Class	Gross Initial Margin (% of Notional Exposure)
Credit: 0–2 year duration	2%
Credit: 2–5 year duration	5%
Credit: 5+ year duration	10%
Commodity	15%
Equity	15%
Foreign Exchange/Currency	6%
Cross Currency Swaps: 0–2 year duration	1%
Cross-Currency Swaps: 2–5 year duration	2%
Cross-Currency Swaps: 5+ year duration	4%
Interest Rate: 0–2 year duration	1%
Interest Rate: 2–5 year duration	2%
Interest Rate: 5+ year duration	4%
Other	15%

Sources: *Margin and Capital Requirements for Covered Swap Entities*, 80 Fed. Reg. 74839 (Nov. 30, 2015) (final rule) at Appendix A; *Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants*, 81 Fed. Reg. 636 (Jan. 2, 2016) (final rule) at Section 23.154(c).

MEMORANDUM

To: File S7-24-15, Use of Derivatives by Registered Investment Companies and Business Development Companies

From: The Division of Economic and Risk Analysis[1]

Date: November 1, 2016

Re: Risk Adjustment and Haircut Schedules

Many commenters on proposed rule 18f-4 suggested that the rule should measure a fund's derivatives exposure using notional amounts adjusted to reflect the risks of the underlying reference assets. These commenters suggested that the Commission adopt risk-based adjustments derived from standardized schedules used for other regulatory purposes. Many commenters also suggested that a fund be permitted to maintain as qualifying coverage assets a range of assets in addition to cash and cash equivalents, subject to "haircuts" to the value of these additional assets identified in standardized schedules included in other regulatory requirements. In light of these comments, DERA staff analyzed the regulatory requirements most frequently identified by commenters.

This memorandum sets out the methods by which DERA staff performed its analysis and the results thereof. The Commission has expressed no view regarding any specific risk-based adjustments, or our analysis or its results.

1. Summary of Existing Schedules on Margin Requirements

First, we summarize the standardized schedules most frequently identified by commenters and which commenters suggested could be used to derive risk-based adjustments to notional amounts for purposes of rule 18f-4[2]: the schedules used in the final rules for margin requirements for uncleared swaps adopted by the prudential regulators and the Commodity Futures Trading Commission (PR and CFTC, respectively).[3] These schedules are consistent with the schedule

[1] This is a memo by the Staff of the Division of Economic and Risk Analysis of the U.S. Securities and Exchange Commission. The Commission has expressed no view regarding the analysis, findings or conclusions contained herein.

[2] *See, e.g.*, Comment Letter of the Investment Company Institute (July 28, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-244.pdf ("ICI July 28, 2016 Comment Letter") (proposing a schedule based on the PR/CFTC schedule) ; Comment Letter of the Investment Adviser Association (Aug. 18, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-250.pdf (while opposing portfolio limitations entirely, supporting the PR/CFTC-based schedule provided by the ICI); Comment Letter of James A. Overdahl, Delta Strategy Group (Mar. 24, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-85.pdf (suggesting the PR schedule as one possibility).

[3] Margin and Capital Requirements for Covered Swap Entities, 80 FR 74839 (Nov. 30, 2015), *available at* https://federalregister.gov/a/2015-28671; Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants, 81 FR 635 (Jan. 6, 2016), *available at* https://federalregister.gov/a/2015-32320.

for the margin requirements for non-centrally cleared derivatives published by the Bank for International Settlements (BIS), which some commenters also suggested could form a basis for adjustments to notional amounts for purposes of rule 18f-4, and so we analyze all three schedules (collectively, the "regulatory schedules") together.[4]

These sources generally provide standard margin schedules organized by reference asset class, including the asset classes most frequently discussed by commenters.[5]

Table 1. Summary of PR/CFTC/BIS Schedules

Asset Class	*Initial Margin Requirement*[a]
Credit: 0–2y duration	2%
Credit: 2–5y duration	5%
Credit 5+y duration	10%
Commodity	15%
Equity	15%
Foreign exchange	6%
Interest rate: 0–2y duration	1%
Interest rate: 2–5y duration	2%
Interest rate: 5+y duration	4%

[a] Expressed as % of notional exposure

As depicted in Table 1, the initial margin schedules set by the PR, CFTC, and BIS are identical for all reference asset classes analyzed.

[4] Basel Committee on Banking Supervision, Board of the International Organization of Securities Commissions (Mar. 2015), *available at* http://www.bis.org/publ/bcbs261.pdf; *see, e.g.*, Comment Letter of the Securities Industry and Financial Market Association (Mar. 28, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-174.pdf (primarily supporting BIS schedule).

[5] We do not analyze specific types of derivatives transactions, and thus do not analyze cross currency swaps, which are included in the PR/CFTC schedules but are not included in the BIS schedule.

2. Risk Analyses and Comparisons

To evaluate commenters' suggestions regarding these standardized schedules, we assess how they relate to the risks of the underlying reference assets. We use the PR and CFTC schedules, and the BIS schedule, as the main reference point because they were most frequently identified by commenters and provide identical values for all of the asset classes analyzed below.[6]

2.1. U.S. Treasury Securities

Commenters suggested two different means of risk-adjusting the notional values for interest rate derivatives. These are discussed below.

2.1.1. Risk Comparisons of the Existing Schedules

Because the regulatory schedules provide that the highest amount of initial margin applies to equity derivatives, the volatility of large capitalization equity securities can be used as a baseline against which to compare the other asset classes in the schedule.[7] To evaluate the suggested risk adjustments for interest rate ("IR") derivatives, we first determine the relative risk of U.S. Treasury securities as compared to domestic large capitalization equity securities. We compute risk levels (*i.e.*, monthly standard deviations) using monthly total returns of the S&P 500 and the Barclays Treasury Series from January 1997 to July 2016, for which we have data available.[8] We then divide the standard deviation of the U.S. Treasury securities by the standard deviation of the S&P 500 to compute the risk ratios. Table 2 summarizes the results.

[6] The risk analyses performed here are based on indexes rather than individual securities. We believe that the analyses should generally capture the relative risk across various asset classes.

[7] The initial margin requirements in the regulatory schedules are expressed as a percentage of notional amounts, which are subject to additional calculations to determine initial margin amounts to be collected under the applicable regulatory margin requirements. The regulatory schedules provide that the highest amount of initial margin also must be collected for commodity derivatives. A comparison of S&P 500 and two commonly used commodity indexes (the Bloomberg and the S&P GSCI commodity indexes) indicates that commodities have a similar or somewhat higher risk level as compared to equity securities.

[8] To understand whether the risk ratios we calculated would be materially different under different sets of market conditions, including during periods of financial stress, we perform these analyses using data from 2008-2010. We obtain similar findings, which are provided in the appendix. Data for the S&P 500 are obtained from Morningstar. Data for all Treasury and corporate bond series are obtained from Datastream.

Table 2. Risk Analyses for U.S. Treasury vs Equity Securities

	(1)	*(2)*	*(3)*	*(4)*
Asset Class	*Risk Level (standard deviation of historical returns)*	*Initial Margin Requirement under PR/ CFTC/BIS schedules*	*Risk Ratio implied by PR/CFTC/BIS schedules*[a]	*Risk Ratio computed relative to Equity risk level*
Equity	4.45	15%	100%	100%
Treasury IR: 0–2y	0.27[b]	1%	7%	6%
Treasury IR: 2–5y	0.62[c]	2%	13%	14%
Treasury IR: 5+y	2.48[d]	4%	27%	56%

[a] Computed as the initial margin requirement of an asset class divided by the initial margin requirement of equity (15%)
[b] Computed using interest rate of Treasury 0-3 months and 1-2 years
[c] Computed using interest rate of Treasury 1-5 years
[d] Computed using interest rate of Treasury 5-10, 10-20, and 20+ years

Historical risk levels and risk ratios implied by the PR, CFTC, and BIS schedules for equity (S&P 500 as proxy) and various Treasury securities are reported in Columns 1 and 2 of Table 2. The implied risk ratio from the existing regulatory schedules (initial margin of an asset class divided by initial margin requirement for equity) is reported in Column 3. Commenters suggested that these implied risk ratios can be used as the multipliers to calculate risk-adjusted notional amounts for purposes of rule 18f-4.[9] Column 4 reports realized risk ratios calculated by the ratio between the historical volatility of the Treasury series and the historical volatility of the S&P 500.

Comparing columns 3 and 4, we observe that for short-term Treasury securities (2 years or less), the margin schedules are roughly consistent with the underlying risk levels of the reference assets. We compute a risk ratio of 6%, as compared to the 7% implied from the PR, CFTC, and BIS schedules.

For medium-term U.S. Treasury securities, the ratios are also consistent, although due to data availability our series is for 1 to 5 years, rather than 2 to 5 years as in the regulatory schedules.[10,11]

[9] *See supra* footnotes 2 & 4.

[10] Please also note that BIS and CFTC schedules classify interest rate derivatives using duration rather than maturity. For most U.S. Treasury securities (up to 10 years), durations are fairly close to actual maturities (*e.g.*, for 1 year U.S. Treasury securities, duration is 0.96; for 5 year U.S. Treasury securities, duration is 4.85). Therefore, using maturity as a substitute for duration in this analysis will have a minimal impact on our comparisons using maturity-based series.

For long-term U.S. Treasury securities with maturities exceeding 5 years, our analyses indicate a higher calculated risk ratio (56%) versus what is implied by the PR, CFTC, and BIS schedules (27%). We note, however, that if long-term U.S. Treasury securities refer to those with mainly 5 to 10 year maturities, our risk analyses yield a risk ratio of 36%, which is closer to these schedules.

2.1.2. Reference Bond

Commenters suggested in the alternative that rule 18f-4 should permit funds to adjust the amount of interest rate derivatives by normalizing them to a specified reference bond. Some commenters suggested that the 10-year Treasury bond would be an appropriate reference bond, whereas others suggested the appropriate reference bond would be the 30-year Treasury bond because these commenters asserted that the 30-year Treasury bond has a level of volatility roughly comparable to that of equity markets.[12]

Using data from 1980 to 2016, we compute the risk levels of these asset classes and find that this methodology suggests that the relative risk level for the 30-year Treasury bond is 86% of the S&P 500, while the relative risk level for the 10-year Treasury bond is 55%.

Table 3. 10-year vs 30-year Treasury Bond Risk

	S&P500	*30-year Treasury*	*10-year Treasury*
Risk (std. dev.)	4.35	3.74	2.38
Risk Ratio	1	0.86	0.55

2.2. Credit Derivatives

Credit derivatives can be exposed to either both default risk and interest rate risk or to predominantly default risk. We first evaluate commenters' suggested adjustments for credit derivatives based on regulatory schedules by analyzing how the risk of corporate debt compares to the risk of equity. Then, we investigate credit derivatives that predominantly are exposed to default risk by comparing the risk of credit default swaps ("CDS") relative to the risk of equity.

[11] For the consistency of the analyses, we used U.S. Treasury series from Barclays obtained from Datastream. This data source is only available in a 1 to 5 year series, and a 2 to 5 year series cannot be separately derived from it.

[12] *See, e.g.* Comment Letter of Guggenheim Investments, *available at* https://www.sec.gov/comments/s7-24-15/s72415-163.pdf; Comment Letter of Pacific Investment Management Company LLC, *available at* https://www.sec.gov/comments/s7-24-15/s72415-168.pdf ("PIMCO Comment Letter"); Comment Letter of Capital Research and Management Company, *available at* https://www.sec.gov/comments/s7-24-15/s72415-153.pdf.

2.2.1. Corporate Debt

Table 4 reports risk levels using total returns of the S&P 500 and the indexes of the AAA- and BBB- rated bonds from 2004 to 2016, the period for which we have data available.

Table 4. Risk Analyses for Corporate Debt vs Equity

	(1)	*(2)*	*(3)*	*(4)*
Asset Class	*Risk Level (standard deviation of historical returns)*	*Initial Margin Requirement under PR/CFTC/BIS schedules*	*Risk Ratio implied by PR/CFTC/BIS schedules*	*Risk Ratio computed relative to Equity risk level*
Equity	4.09	15%	100%	100%
Credit: 0–2y duration	0.70[a]	2%	13%	17%
Credit: 2–5y duration	1.33[b]	5%	33%	33%
Credit 5+y duration	2.46[c]	10%	67%	60%

[a] Computed using AAA and BBB 1-3 years
[b] Computed using AAA and BBB 3-5 years and 5-7 years
[c] Computed using AAA and BBB 7-10, 10-15 and 15+ years

The implied risk ratios are, again, computed as the initial margin requirement for an asset class divided by the initial margin requirement for equity. Comparing columns 3 and 4, we observe that the implied risk adjustment ratios and the ratios we computed from the risk analyses are generally consistent for all three maturity categories.[13] For the short-term credit category, our analyses indicate that the PR, CFTC, and BIS schedules have an implied risk ratio that is slightly lower than the risk ratio computed, while for the long-term category, the risk ratio implied from the schedules is slightly higher. To evaluate a comment regarding adjusting risk on a continuum rather than by bucketing instruments together,[14] we note that dividing duration by 10 times 100% results in a continuum of risk ratios that is generally consistent with the risk adjustments in the regulatory schedules.[15]

[13] The maturities used in our risk analyses are slightly higher in order to provide for a comparable comparison between the values included in the regulatory schedules, which are determined on the basis of duration, and the values used in our analyses, which are based on the relevant securities' maturities.

[14] PIMCO Comment Letter (noting that a duration adjustment to a specified reference bond adjusts risk on a continuum rather than bucketing instruments with different risk characteristics together).

[15] For durations between 0.25 years and 2 years, between 2 years and 5 years, and between 5 years and 10 years, the adjusted risk ratios are between 2.5% and 20%, between 20% and 50%, and between 50% and 100%, respectively.

2.2.2. Credit Default Swaps

To evaluate the risk of CDS we compute standard deviations of CDS returns.[16] Table 5 reports the risk levels of returns of the CDX CDS index obtained from Capital IQ Inc. and those of total returns of the S&P 500 index. The data cover the period from 2008 to 2014, for which the CDS data is available.[17]

The table shows that returns for CDS contracts referencing high yield corporate debt are more volatile than those for CDS referencing investment grade corporate debt.[18] The CDS contracts that exhibit the highest risk level are those for high yield CDS with a tenor of 10 years. [19] The returns to these CDS have a standard deviation of 1.16 % per month and their risk ratio relative to equities is 24%.

Table 5. Risk Analyses for CDS vs Equity

		(1)	*(2)*
Asset Class		*Risk Level (standard deviation of historical returns)*	*Risk Ratio computed relative to Equity risk level*
Equity (S&P 500)		4.86	100%
CDS, investment grade	1y tenor	0.02	0%
	5y tenor	0.18	4%
	10y tenor	0.31	6%
CDS, high yield	1y tenor	0.29	6%
	5y tenor	0.84	17%
	10y tenor	1.16	24%

[16] Standard deviations are computed from daily data and scaled to monthly frequency using the square root of the average number of daily observations per month during the sample.

[17] CDS returns are computed as -Δ(CDS Spread)×PV01, where PV01 is the change in the value of the CDS contract, relative to the notional amount of the CDS, for a one percentage point increase in the CDS spread.

[18] In this table, we are not reproducing the initial margin requirements under the PR/CFTC/BIS schedules and the risk ratios implied by PR/CFTC/BIS schedules because the schedules do not distinguish between investment grade and high-yield corporate debt.

[19] In recommending how funds would use the PR/CFTC schedule, one commenter distinguished the way that funds should calculate the risk adjustment for credit default swaps from the calculation for other credit derivatives, suggesting that for credit default swaps, funds use the maturity or tenor of the swap, while for other derivative instruments, funds use the duration of the underlying reference asset. *See* ICI July 28, 2016 Comment Letter.

2.3. Currency

To understand the risk of currency, we estimate currency risk using the Nominal Broad Dollar Index, obtained from the Federal Reserve Board website.[20] The broad index is a weighted average of the foreign exchange values of the U.S. dollar against the currencies of a large group of major U.S. trading partners.[21]

We compare the risk of currency to the risk of the S&P 500 index from 1973 to July 2016, the period for which we have data for both data series. We follow the same approach discussed above by dividing the standard deviation of this currency basket by the standard deviation of the S&P 500. The comparison yields a risk adjustment multiplier of 29%, as compared to the 40% multiplier implied by the PR, CFTC, and BIS schedules. The schedules are broadly consistent with our analysis, which is based on a broad currency index that is highly diversified. This analysis, however, does not address whether narrower groupings of currencies or particular currencies would yield different risk adjustment multipliers.

3. Haircut Schedule

In addition to risk-based notional amount adjustments, commenters also suggested that the final rule permit funds to maintain high quality and liquid assets in addition to cash and cash equivalents as qualifying coverage assets.[22] Many commenters also suggested that the haircuts applicable to these assets be determined pursuant to the schedule of assets that may be used to satisfy the PR and CFTC margin requirements for uncleared swaps.[23] In light of these comments, we summarize assets that may be used to satisfy these margin requirements and analyze these assets and their corresponding haircuts in light of historical risk levels across certain asset classes.

[20] The data is available from Federal Reserve Board website at http://www.federalreserve.gov/datadownload/Choose.aspx?rel=h10.

[21] For details on the construction of the index, see the article in the Winter 2005 Federal Reserve Bulletin, available at http://www.federalreserve.gov/pubs/bulletin/2005/winter05_index.pdf.

[22] *See* SIFMA Letter, *supra* note 2, at 29.

[23] *See id.*; *see also* ICI July 28, 2016 Comment Letter; Comment Letter of the US Chamber of Commerce (Mar. 28, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-148.pdf; Comment Letter of Vanguard (Mar. 28, 2016), *available at* https://www.sec.gov/comments/s7-24-15/s72415-162.pdf.

Table 6. Margin Values for Eligible Noncash Margin Collateral from PR/CFTC Schedules

Asset Class	*Discount %*
Eligible government and related (e.g., central bank, multilateral development bank, GSE securities identified in §23.156(a)(1)(iv)) debt[1]: residual maturity less than one-year.	0.5
Eligible government and related (e.g., central bank, multilateral development bank, GSE securities identified in §23.156(a)(1)(iv)) debt[1]: residual maturity between one and five-years	2.0
Eligible government and related (e.g., central bank, multilateral development bank, GSE securities identified in §23.156(a)(1)(iv)) debt[1]: residual maturity greater than five-years	4.0
Other eligible publicly traded debt[2,3]: residual maturity less than one year	1.0
Other eligible publicly traded debt[2,3]: residual maturity between one and five years	4.0
Other eligible publicly traded debt[2,3]: residual maturity greater than five years	8.0
Equities included in S&P 500 or related index	15.0
Equities included in S&P 1500 Composite or related index but not S&P 500 or related index[24]	25.0

[1] This category includes any security that is issued by, or fully guaranteed as to the payment of principal and interest by, the European Central Bank or a sovereign entity that is assigned no higher than a 20 percent risk weight under the capital rules applicable to the covered swap entity, or an OECD Country Risk Classification rating of 0-2.

[2] This category includes corporate and municipal debt securities that are investment grade, as defined by the prudential regulators.

[3] Note that GSE debt securities not identified in §23.156(a)(1)(iv) receive the same discounts as Other eligible publicly traded debt.

First, to understand how the schedule of assets that may be used to satisfy the PR and CFTC margin requirements for uncleared swaps relates to the underlying risk of certain margin-eligible assets, Table 7 reports haircut discounts computed based on historical risk levels of various asset classes and compares them to the schedules. The risk ratios reported in the table are calculated by dividing the standard deviation of the given reference asset by the standard deviation calculated for the S&P 500. The haircut discounts are then computed by multiplying that risk ratio by the haircut (15%) set for the S&P 500.[25]

[24] We did not analyze the risk associated with the S&P 1500 due to data limitations.

[25] Our review of Table 6 does not seek to analyze the entire PR/CFTC schedule, but rather to examine common categories of assets (U.S. Treasury securities, corporate debt, and equity).

Table 7. Haircut Schedule Based on Risk

		(1)	*(2)*	*(3)*	*(4)*	*(5)*
Asset Class		*Risk Level (standard deviation of historical returns)*	*Haircut/ Discount under PR/CFTC schedules*	*Risk Ratio implied by PR/CFTC schedules*	*Risk Ratio computed relative to Equity risk level*	*Haircut/ Discount Computed*[e]
Treasury[a,b]	<1yr	0.18	0.5	3%	4%	0.6
	1-5yr	0.62	2	13%	14%	2.1
	>5yr	2.48	4	27%	56%	8.4
Corporate[c,d]	<1yr	—[g]	1	7%	—[g]	—[g]
	1-5yr	0.90	4	27%	22%	3.3
	>5yr	2.24	8	53%	55%	8.3
Equity (S&P 500)		4.45[f] (4.09)	15	100%		

[a] The securities in the regulatory schedule are defined as eligible "government and related"
[b] The risk is computed using U.S. Treasury series from 1997 to 2016
[c] The securities in the regulatory schedule are defined to include certain eligible "publicly traded debt"
[d] The risk is computed using AAA and BBB corporate bond series from 2004 to 2016. The risk of corporate 1-5 year series is computed using 1-3 and 3-5 year corporate series
[e] Haircut Discount Computed = Risk Ratio Computed × Equity Haircut = Risk Ratio Computed × 15
[f] The risk levels of equity (S&P 500) are 4.45% from 1997 to 2016 and 4.09% from 2004 to 2016
[g] Due to data limitations, we do not analyze risk of corporate debt with maturity of less than 1 year

Comparing the existing discounts, or haircuts, reported in column 2 and the discounts based on risk levels reported in the last column, we observe that the existing haircut schedule generally is consistent with the underlying risk levels of the reference assets. The risk level of the long-term U.S. Treasury securities, however, based on historical risk levels, is higher than the risk level implied in the existing haircut schedule (i.e., 56% vs 27% as compared to equity). We note, however, that if we focus on the 5–10 year U.S. Treasury series, our risk analyses indicate a 35% risk ratio and a 5.3 haircut/discount, which are roughly consistent with the existing schedule.[26]

[26] Note also that corporate debt securities included in this analysis only consist of AAA and BBB bonds; high-yield categories are not included so as to facilitate the comparison with the existing schedule. Therefore, the risk differences between corporate and Treasury securities appear small, especially for the long-term maturity series. But our analyses show that high-yield bonds are more than twice as risky as comparable Treasury securities.

In addition, the 15% discount for domestic large capitalization equities is used in our analyses as a benchmark to compare risk levels and set the schedule. To understand whether this discount level is consistent with the observed volatility of large capitalization domestic equities, we further perform VaR tests on the S&P 500. These allow us to understand how much equity value can be expected to be lost under extreme conditions. Using monthly data from the past four decades, we observe that 1% of the time, the S&P 500 index can be expected to lose more than 11% in value over a month (*i.e.*, approximately 20 trading days). The haircut schedule included in the PR and CFTC rules for uncleared swaps is generally consistent with this analysis, in that it provides for a 15% haircut for large cap equity securities and provides a greater haircut of 25% for other equity securities that generally would be expected to experience greater volatility.

4. Risk Analyses for Crisis Periods

To further understand whether the values in the regulatory schedules are consistent during crisis periods when market volatility increases, we perform the above risk analyses using data from 2008 to 2010. Overall, the risk ratios among various asset classes stay roughly consistent with those found in the overall sample. The detailed results are attached in the appendix.

Appendix: Risk Analyses during 2008-2010

A.1. Risk Analyses for U.S. Treasury Securities vs Equity

	(1)	*(2)*	*(3)*	*(4)*
Asset Class	*Risk Level (standard deviation of historical returns)*	*Initial Margin Requirement under PR/ CFTC/BIS schedules*	*Risk Ratio implied by PR/CFTC/BIS schedules*[a]	*Risk Ratio computed relative to Equity risk level*
Equity	6.40	15%	100%	100%
Treasury IR: 0–2y	0.25[b]	1%	7%	4%
Treasury IR: 2–5y	0.80[c]	2%	13%	12%
Treasury IR: 5+y	3.62[d]	4%	27%	57%

[a] This is computed as initial margin requirement divided by the initial margin requirement of equity (15%).
[b] Computed using interest rate of Treasury 0-3 months, 1-2 years
[c] Computed using interest rate of Treasury 1-5 years
[d] Computed using interest rate of Treasury 5-10, 10-20, and 20+ years

A.2. Risk Analyses for Corporate Debt vs Equity

	(1)	*(2)*	*(3)*	*(4)*
Asset Class	*Risk Level (standard deviation of historical returns)*	*Initial Margin Requirement under PR/CFTC/BIS schedules*	*Risk Ratio implied by PR/CFTC/BIS schedules*	*Risk Ratio computed relative to Equity risk level*
Equity	6.40	15%	100%	100%
Credit: 0–2y duration	1.27[a]	2%	13%	20%
Credit: 2–5y duration	2.25[b]	5%	33%	35%
Credit 5+y duration	3.91[c]	10%	67%	61%

[a] Computed using AAA and BBB 1-3 years
[b] Computed using AAA and BBB 3-5 years and 5-7 years
[c] Computed using AAA and BBB 7-10, 10-15 and 15+ years

A.3. Haircut Schedule Based on Risk

		(1)	*(2)*	*(3)*	*(4)*	*(5)*
Asset Class		*Risk Level (standard deviation of historical returns)*	*Haircut/ Discount under PR/CFTC schedules*	*Risk Ratio implied by PR/CFTC schedules*	*Risk Ratio computed relative to Equity risk level*	*Haircut/ Discount Computed*[b]
Treasury[a,b]	<1yr	0.08	0.5	3%	1%	0.2
	1-5yr	0.80	2	13%	12%	1.9
	>5yr	3.62	4	27%	57%	8.5
Corporate[a]	<1yr	—	1	7%	—	—
	1-5yr[c]	1.56	4	27%	24%	3.7
	>5yr	3.59	8	53%	56%	8.4
Equity (S&P 500)		6.40	15	100%		

[a] Computed using AAA and BBB series
[b] Haircut Discount Computed = Risk Ratio Computed × Equity Haircut = Risk Ratio Computed × 15
[c] Computed using 1-3 and 3-5 year corporate series