

Use of Derivatives by Registered Investment Companies

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1. Summary

Anecdotal evidence and press reports suggest the potential increased use of derivatives by investment companies registered under the Investment Company Act of 1940. However, granular information is not available on the extent to which funds² may be making use of derivatives in pursuing their investment strategies. To better understand how funds currently use derivatives, we gathered a detailed, hand-collected random sample of 10% of funds based on Form N-CSR filed for 2014, assembling data on certain of those funds' derivatives positions. Because section 18 of the Investment Company Act restricts the ability of a fund to issue "senior securities,"³ we focused on those derivatives (and certain financial commitment transactions) that implicate section 18 because a fund that enters into these transactions is or may be required to make a payment or deliver cash or other assets during the life of the instrument or at maturity or early termination. For brevity, we generally use the term "derivatives" in this paper to refer only to these derivatives, which include, for example, futures, swaps, currency forwards, and written options. In contrast, other derivatives, such as purchased options and purchased swaptions, often provide the economic equivalent of leverage because they expose the fund to gains on an amount in excess of the fund's investment but do not impose a payment obligation on the fund beyond its investment. While these transactions involve economic leverage, they generally do not implicate section 18 of the Act, and we therefore did not focus on these kinds of derivatives.⁴

Supplementing our random sample of Form N-CSR filings with information gathered from Morningstar and Form N-SAR, we analyze the use of those derivatives together with certain financial commitment

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² The term "funds" refers to mutual funds (other than money market funds), exchange-traded funds (ETFs), closed-end funds and business development companies (BDCs). We classify funds using Morningstar's nine broad categories based on asset classes and investment strategies; see appendix for a list of these categories.

³ Section 18 of the Act imposes various limitations on the capital structure of funds, including, in part, by restricting the ability of funds to issue "senior securities." Section 18(g) of the Investment Company Act defines "senior security," in part, as "any bond, debenture, note, or similar obligation or instrument constituting a security and evidencing indebtedness."

⁴ As set forth in Appendix B, we have collected data regarding purchased options and purchased swaptions but have not included that data in our descriptions of the use of derivatives by funds herein.

transactions⁵ and other senior securities funds may issue, which similarly implicate section 18 of the Investment Company Act.⁶ We document the following empirical facts:

1. Based on data from Morningstar, total AUM of the U.S. registered fund industry was \$17.9 trillion as of June 2015. With a share of 38%, US Equity represents the largest category of funds, followed by Taxable Bond, Allocation, and International Equity funds with 19%, 17%, and 15%, respectively. Alt Strategies funds⁷ comprise 3% of total AUM with the bulk being invested in Alternative funds and Nontraditional Bond funds. Between 2010 and 2014, the total number of funds grew by an average of 8% per year. During the same period, the number of Alt Strategies funds grew at an annual rate of 17%. While the industry experienced an annual growth rate in AUM of 12% over this period, the Alt Strategies funds grew by only 10%. However, this appears to be attributable to the fact that Commodity funds experienced significant contraction in AUM over the period (-12% annually), while Alternative funds' and Nontraditional Bond funds' AUM grew at an annual rate of 22%.
2. Form N-SAR data⁸ indicates many funds often do not use derivatives even if their investment policies allow them to do so. For example, 77% of all funds that completed Form N-SAR for 2014 have investment policies that allow the use of equity options, but only 6% report that they have actually used equity options during the reporting period.
3. Based on the random sample drawn from N-CSR filings, 32% of funds held one or more derivatives. The most commonly used derivatives were currency forwards (used by 13% of funds), followed by equity futures (12%) and interest rate futures (11%). Equity swaps and written equity options were used by around 5% of funds, and over-the-counter (OTC) interest rate swaps, cleared or exchange-traded interest rate swaps and OTC credit default swaps (CDS) were used by 4% of funds. Ten percent of funds used one or more financial commitment transactions and 6% of funds issue other senior securities.
4. We define a fund's "derivatives exposure" to be its gross notional amount of derivatives. This measure of derivatives exposure averaged 20% of NAV. Among all funds, 68% had zero exposure, 89% had less than 50% exposure. The average aggregate exposure⁹ from derivatives, financial commitment transactions and other senior securities was 23% of NAV. Among all funds, 96% had aggregate exposure below 150%.
5. Interest rate derivatives, equity derivatives, and currency derivatives were the most heavily used with the notional amounts averaging 8%, 7%, and 4% of NAV, respectively. The average amounts

⁵ We use the term "financial commitment transactions" to refer to reverse repurchase agreements, short sale borrowings, and firm or standby commitment agreements or similar agreements.

⁶ Other senior securities include bank borrowings, margin loans, and with respect to closed-end funds and BDCs, senior debt and preferred shares.

⁷ We use "Alt Strategies" funds to refer collectively to Alternative funds, Commodities funds, and Nontraditional Bond funds. Nontraditional Bond funds are a category of Taxable Bond funds in Morningstar. We consider them as Alt Strategies funds primarily because many of the funds in this category aim to provide low correlations to the Traditional bond indexes and often feature absolute-return mandates. Moreover, there are a substantial number of funds within the category, primarily those with long-short credit strategies, that meet Morningstar's shorting criteria used to classify alternative funds. We refer to all other funds collectively as Traditional funds.

⁸ Form N-SAR does not distinguish between written and purchased options.

⁹ Aggregate exposure refers to the sum of the aggregate notional amounts of the fund's derivatives, the aggregate potential obligations of the fund under financial commitment transactions, and the aggregate indebtedness (and with respect to any closed-end fund or business development company, involuntary liquidation preference) with respect to any other senior securities.

of financial commitment transactions and issuance of other senior securities were each 2% of NAV.

6. “Alt Strategies” mutual funds (which we define as Alternative mutual funds, Commodities mutual funds, and Nontraditional Bond mutual funds) tended to use derivatives more often than other fund types, which we describe collectively as “Traditional” mutual funds. Seventy-three percent of Alt Strategies mutual funds used derivatives compared to 29% of Traditional mutual funds, and their average gross notional amount was 121% of NAV compared to 10% among Traditional mutual funds. Fifty-two percent of Alt Strategies mutual funds had derivatives with gross notional amounts exceeding 50% of NAV compared to only 6% of the Traditional mutual funds. Alt Strategies mutual funds’ aggregate exposure averaged 132% of NAV compared to 11% among Traditional mutual funds, and 27% of Alt Strategies mutual funds had 150% or greater aggregate exposure compared to less than 2% of the Traditional mutual funds.
7. Among closed-end funds and ETFs, 47% and 29%, respectively, had exposure to derivatives. None of the BDCs in the sample had any exposure to derivatives. Nine percent of closed-end funds and 18% of ETFs had derivatives with gross notional amounts exceeding 50% of NAV. No closed-end fund had 150% or greater aggregate exposure, but 8% of ETFs did.

2. Introduction

A growing number of academic studies and press reports point to the importance or increased use of derivatives by registered funds.¹⁰ This trend may have been amplified by the advent of new derivatives products and by the growing number and size of Alt Strategies funds that seek to implement hedge fund-like strategies.

Despite the perceived increase in the use of derivatives, there is currently little systematic evidence on their use by funds. It is likely the case that the paucity of investigation is driven by a lack of easily accessible detailed data on funds’ derivatives transactions. As a result, studies have limited their examinations to whether a fund uses any derivatives, investigated a small set of funds, or examined only a single type of derivative. For example, Koski and Pontiff (1999) compare funds that use derivatives with those that do not, using a sample of 679 funds they surveyed by phone. Frino, Lepone, and Wong (2009) use survey data for 273 Australian fund managers. Cao, Ghysels, and Hatheway (2011) investigate 322 funds with information gathered from Form N-SAR and Form N-CSR. Adam and Guettler (2015) examine the use of CDS by corporate bond funds in 2004, and Jiang and Zhu (2015) examine the holdings for a sample of funds from 2007 and 2008. Each of these studies use information collected from Form N-CSR. Finally, Cici and Palacios (2015) examine the use of equity and index options by 250 US Equity funds from 2003-2010 using information collected from Form N-CSR.

¹⁰ For example, Koski and Pontiff (1999) contend that the increasing use of derivatives in registered funds stems from the 1997 repeal of the short-short rule which previously made derivatives usage disadvantageous from a tax standpoint. Prior to The Taxpayer Relief Act of 1997, mutual funds were subject to the “short-short” rule, which eliminates preferential pass-through tax status for funds that realize more than 30 percent of their capital gains from positions held less than three months. The rule effectively inhibited derivative use because some derivative securities such as options and futures contracts involve realizing capital gains for holding periods of less than three months. The Taxpayer Relief Act of 1997 included the repeal of the short-short rule.

This paper provides data to inform the Commission’s consideration of the regulation of funds’ use of derivatives. To that end, we provide a comprehensive analysis of derivatives holdings based on a highly detailed hand-collected cross-sectional dataset representing a 10% random sample of all funds. This sample includes 1,188 open-end funds, closed-end funds, ETFs, and business development companies.¹¹ The data contain notional amounts on an extensive list of derivative instruments including written options, swaps, forwards, and futures related to commodity, currency, credit, interest rate, and equity market risks. The data also contain detailed information on financial commitment transactions and other senior security issuances.

We investigate the extent of derivatives usage by funds, including the types of derivatives and types of risk exposures taken, by analyzing the notional amounts of derivatives held by individual funds and across different fund category groups and size quintiles. We also measure aggregate exposure as the sum of the notional amount of derivatives, together with obligations under financial commitment transactions and other senior securities.

The rest of the paper is structured as follows. In Section III we discuss the regulatory background governing derivatives usage by funds. In Section IV we describe our data. Section V provides an overview of the US fund industry and describes recent trends in industry growth. Section VI provides evidence on fund policies regarding derivatives and a high-level analysis of their use. Section VII provides detailed results on the use of derivatives by funds, and Section VIII concludes.

3. Regulatory background

The activities and capital structures of funds are regulated extensively under the Investment Company Act, Commission rules, and Commission guidance. The use of derivatives by funds implicates certain requirements under the Investment Company Act, including section 18 of that Act. Section 18 limits a fund’s ability to obtain leverage, or incur obligations to persons other than the fund’s common shareholders, through the issuance of senior securities as defined in that section. Funds’ current practices with respect to derivatives and certain other transactions are based on their applications of Commission guidance concerning the requirements of section 18 provided in a release issued by the Commission in 1979, together with other guidance provided by the Commission’s staff.¹²

This examination of the use of derivatives is designed to evaluate the extent to which funds use derivatives, in light of this framework, and to inform the Commission’s consideration of the regulation of funds’ use of derivatives, as described in more detail in a contemporaneous release published by the Commission proposing a new regulatory framework for funds’ use of derivatives and financial commitment transactions.

¹¹ We include BDCs because they are closed-end investment companies and are subject to the requirements of section 18 of the Investment Company Act (as made applicable to a BDC by section 61 of the Act).

¹² For a discussion of certain of the requirements under the Investment Company Act that are applicable to funds’ use of derivatives, see *Use of Derivatives by Registered Investment Companies and Business Development Companies*, Investment Company Act Release No. 31933 (Dec. 11, 2015), at section II.B.

4. Data

Our base sample uses Morningstar Direct and allows us to provide a broad overview of the fund industry. It consists of all funds registered under the Investment Company Act in the database as of June 2015. We include funds marketed as part of variable insurance products, because they have the same legal structure as open-end funds and are subject to the Investment Company Act, but we exclude Money Market Funds¹³. The Morningstar sample consists of 11,973 funds.

The derivatives data currently provided by Morningstar (as well as other commercial vendors) is of somewhat limited detail.¹⁴ As a result, we create a second sample based on funds' most recent Form N-SAR filing with the Commission. Funds are required to indicate on Form N-SAR whether their fund policies allow for investment in certain derivatives and whether they used those derivatives during the reporting period. Therefore, this N-SAR sample offers the advantage of allowing us to examine the ability to use derivatives as well as the actual usage of derivatives. The N-SAR sample consists of 12,360 funds.¹⁵

Unfortunately, some Form N-SAR data are coarse. For example, not all types of derivatives are included and certain data are only reported at an aggregate level. Form N-SAR also does not distinguish in all cases between those derivatives that create potential future obligations (e.g., written options) and those that do not (e.g., purchased options). Funds also report market values of certain derivatives holdings, which do not necessarily represent the potential exposures of the holdings or the extent of senior claims.¹⁶

To facilitate a more detailed examination of derivatives usage, we create a third sample by drawing a random sample of 10% of the funds in our base Morningstar sample¹⁷ and hand collect data on derivatives investments, financial commitment transactions and senior security issuances from each fund's annual Form N-CSR filings. If a fund has not yet filed a Form N-CSR for 2014, it is dropped from the sample and replaced by one that has filed a Form N-CSR. The N-CSR sample consists of 1,188 funds.

¹³ Under rule 2a-7, money market funds are required to limit their investments to short-term, high-quality debt securities that fluctuate very little in value under normal market conditions. Money market funds thus do not engage in derivatives transactions.

¹⁴ The three vendors that provide fund holdings are Morningstar, Thomson Reuters's Lipper, and Bloomberg. However, there are a large variety of derivatives and no standard reporting scheme exists. Many of the derivatives are OTC and customized. Even for exchange-traded derivatives, no common identification scheme like CUSIP exists. This leads to incomplete collection of information on derivatives in fund holdings. Even if derivatives are collected in fund holdings, basic descriptors such as the notional amount of the derivatives are not readily available.

¹⁵ See Appendix for a listing of the investment practices queried by Form N-SAR. In certain cases, funds omitted answers if their answers were unchanged from a previous filing. We corrected the missing answers due to this convention. After the correction, out of 12,360 funds that filed N-SAR, about 2.2% of funds still had missing answers to these questions. The sample is larger than the Morningstar sample because we sample from all funds filing Form N-SAR rather than requiring funds to be in the Morningstar database. We note that Form N-SAR is self-reported and not verified by a third party or the SEC.

¹⁶ For example, futures and swaps generally have zero market value at initiation.

¹⁷ To ensure that all subcategories of the Alt Strategies are represented in our sample, we randomly select funds within each of the subcategory groups (subject to a minimum of three funds per category).

5. US fund industry growth and composition

5.1. Overview of the industry

In Table 1 we present an overview of the fund industry based on the Morningstar sample. As of June 2015, 11,973 funds with AUM information in Morningstar, had a total of \$17.9 trillion AUM with the majority being in open-end funds. US Equity is the largest fund category group with 3,361 funds and 38% of total industry AUM. The next largest three fund category groups – Taxable Bond, Allocation, and International Equity funds – each have slightly less than 2,100 funds and about 17% of total industry AUM. Among the Alt Strategies funds, the largest category group is Alternative funds containing 894 funds with a total of 1% of total industry AUM.¹⁸ Based on Form 10-K and 10-Q filings (at the end of June 2015), there are 88 active BDCs with an estimated \$52.3 billion in AUM.

5.2. Growth of Alt strategies funds

Table 2 presents information on the growth rates and net flows of different fund category groups between the end of 2010 and the end of 2014. We measure the number of funds and AUM at the end of each year and the net flows over the intervening years. Overall, the total number of registered funds grew from 8,577 to 11,573, an annual growth rate of 8%. While US Equity funds, International Equity funds, Allocation funds and Taxable Bond funds each added approximately 500 to 600 funds or about 8% per year in total, the largest percentage growth in number of funds occurred among Alt Strategies funds. The number of Nontraditional Bond funds increased from 39 to 138, an annual increase of 37% per year. The number of Alternative and Commodities funds grew by 16% and 13% per year, respectively.¹⁹

While total industry AUM increased 12% annually from 2010 to 2014, there was a large variation in annual growth rates across category groups. Nontraditional Bond funds experienced the largest growth (29%) and Commodity funds experienced negative growth (-12%). Interestingly, Figure 1.2 presents evidence that most of the dispersion in growth rates occurred in the years 2013 and 2014.

Growth in AUM is the result of both portfolio returns and net inflows of investor capital. Table 2 shows that as a percentage of AUM, US Equity and Municipal Bond funds received, on average, almost no net inflows. This contrasts with Nontraditional Bond funds and Alternative funds which received annual net inflows averaging 29% and 21%, respectively. The annual net flows as a percentage of industry flows in Table 2 reveal that Alt Strategies funds received a disproportionate amount of inflows given their industry share.

¹⁸ Alt Strategies funds tend to be smaller in size with a median size of \$40-\$70 million as compared to the median size of \$200-\$300 million for equity or taxable bond funds.

¹⁹ When plotting the cumulative growth in the number of funds between 2010 and 2014, Figure 1.1 reveals the large cross-sectional dispersion with positive growth rates in all category groups and Municipal Bond funds experienced the lowest growth rate and Nontraditional Bond funds the highest.

Comparing net inflows to growth in AUM suggests that US Equity funds experienced growth in AUM almost entirely driven by portfolio returns. In contrast, the growth in AUM of Alt Strategies funds was driven by inflows, despite relatively poor returns. Figure 1.3 plots the cumulative net inflows from 2010 to 2014 as a percentage of 2010 AUM. Like the growth rates in AUM, there is significant variation in net inflows across category groups with most of the dispersion coming from the years 2013 and 2014. While Nontraditional Bond funds and Alternative funds received the largest net inflows in 2013, US Equity funds had nearly zero net inflows and Commodity funds saw a net outflow of 10%. The long-term growth rates for Alt Strategies funds presented in Figures 2.1, 2.2, and 2.3 indicate that these funds have grown rapidly over the past 10 years.

6. Derivatives policies and usage

As discussed above, the Morningstar data do not offer insight into the usage of derivatives. We turn to the N-SAR Sample, which provides information on fund policies for investments in certain derivatives, fund usage of those derivatives, and the market value of the derivatives positions during the reporting period.

6.1. Fund policies allowing the use of derivatives and the actual use of derivatives

Funds are required to indicate on Form N-SAR whether their policies allow for investment in certain derivatives and whether they used those derivatives during the reporting period. We sought to identify funds filing Form N-SAR that pursue an “Alternative”²⁰ investment policy as defined by Morningstar. This involved matching our Morningstar sample of Alternative funds to N-SAR data by fund name and size. We also searched in the fund names for “Alternative”, “Bear market”, “Long/Short” and other keywords that indicate the fund is an Alternative fund. Accordingly, the number of “Alternative” and “Traditional” funds in Table 3 and 4 will not correspond identically to those identified using the Morningstar criteria in Tables 1 and 2. Panel A in Table 3 reports descriptive statistics on the fund responses to questions 70A through 70R on Form N-SAR as of 2014²¹ for all funds and separately for Alternative funds and Traditional funds. The last two columns report the difference between Alternative fund responses and Traditional fund responses with a *t*-test for the difference reported in parentheses.

²⁰ Because of the resources required to match N-SAR and Morningstar data, for the purposes of the analysis using N-SAR data, we focus on Alternative funds rather than the combination of Nontraditional Bond funds, Alternative funds, and Commodity funds (our definition of Alt Strategies funds). All funds other than Alternative funds are treated as Traditional funds for this analysis. Note also that the category Traditional funds includes the small number of Nontraditional Bond funds and Commodity funds and hence is distinct from Traditional Mutual funds use elsewhere in the paper.

²¹ We also examined historical responses to question 70 from 1993 to 2014. We find no cyclical patterns or increased use of derivatives during stressed market periods. We find a steadily increasing trend on the percentage of funds reporting the use of derivatives over the period. We present only the current snapshot of the N-SAR response.

The results in Table 3 indicate that on average 74% of funds had investment policies that allow the use of certain derivatives²² but that only 5% did so. There is significant variation in the policy provisions across investment types. For example, investments in other investment company shares were allowed by 95 of funds. Only 28% of funds had policies which allow margin purchases. The list of instruments actually being used by funds is dominated by investments in other investment company shares with 67% of all funds making such investments. Stock index futures and interest rate futures were used by 13% and 12% of all funds while various option contracts were used by between 5% and 1% of all funds. While 64% of all funds were allowed to engage in short selling, only 5% of all funds actually did so.

Among Alternative funds, an average of 91% of funds had investment policies allowing the use of certain derivatives. Alternative funds appear to have been less restricted than the Traditional funds in their ability to use derivatives. Only 73% of Traditional funds' policies allowed for the use of certain derivatives. The largest differences between Alternative funds and Traditional funds, in terms of investment policies, was short selling (for which allowed use was 94% compared to 63%), options on index futures (96% compared to 74%), stock index futures (96% compared to 75%), options on equities (97% compared to 76%), other commodity futures (71% compared to 50%), options on stock indexes (97% compared to 76%),

With an average actual usage of 14%, Alternative funds are also more likely to use derivatives compared to Traditional funds, of which 5% actually use derivatives, as reported on Form N-SAR. Alternative funds were more likely to use short selling and options and futures and Traditional funds were more likely to invest in securities of foreign issuers, loan portfolio securities, purchases and sales by exempted affiliates, and invest in restricted securities. In particular, 38% of Alternative funds engaged in short selling while only 4% of Traditional funds did so. Fifty-eight percent of Traditional funds invested in securities of foreign issuers while only 40% of Alternative funds did so.

In Panel B of Table 3, we report results on derivatives policies for a subsample of equity funds within six investment objectives:²³ Total Return, Aggressive Capital Appreciation, Capital Appreciation, Growth, Growth and Income, and Income. These funds all invest in equities, but they likely differ in their investment policies and potentially in their use of derivatives depending on their aggressiveness or investment objectives. Indeed, the results suggest that funds with more aggressive investment objectives were more likely to have investment policies that allowed the use of (equity) derivatives, borrowing money, and engaging in short selling. For example, 92% of Aggressive Capital Appreciation equity funds allowed the use of stock index futures but only 75% of Income equity funds allowed their use. Ninety-three percent of Aggressive Capital Appreciation funds allowed borrowing compared to 81% of Income funds. The same pattern emerges with respect to the actual usage of (equity) derivatives, borrowing money, or engaging in short selling. For example, while 29% of Aggressive Capital Appreciation equity funds invested in stock index futures, only between 10% and 20% of funds in the other objectives did so. Finally, we note that income funds were more likely to use interest rate futures than other equity fund types.

²² Average of percent of funds having: options on equities, options on debt securities, options on stock indexes, interest rate futures, stock index futures, options on futures, options on index futures and other commodity futures.

²³ See question 66 on Form N-SAR.

6.2. Market values of certain derivatives positions

Funds report in questions 74A through 74Y on Form N-SAR the market values of their derivative holdings. These derivatives include equity options, options on futures, written options, financial commitment transactions, senior long term debt, and senior equity. While market values of investments are not ideal to gauge potential senior obligations resulting from derivatives, they do potentially offer an indication of how funds use derivatives.

Panel A of Table 4 presents results for all funds as well as for Alternative funds and Traditional funds individually. The columns labeled “Non-zero” capture the percentage of funds that provided a non-zero response to a given question; “conditional average % NAV” captures values conditional on funds having a non-zero response to a given question; “unconditional average as % of NAV” captures values for all funds with non-missing responses.²⁴ The last two columns report the difference between Alternative funds and Traditional funds with the value in parenthesis representing the *t*-test of difference.

Overall, the market values of option contracts in fund portfolios for all funds that reported information on these questions is small with values between 1 to 4 basis points (bps) of NAV. Similarly, the market values of transactions in senior long term debt, reverse repurchase agreement, short sales, written options and senior equity are between 4bps and 50bps. The difference in the market value between Alternative funds and Traditional funds is starkest for short sales with Alternative funds being eight percentage points greater.

Panel B of Table 4 reports the same market values for the six equity fund categories investigated in Table 3. The patterns in market values of derivative holdings generally match the patterns in fund investment policies presented in Panel B of Table 3. For example, with an unconditional average of 14% of NAV, the values of repurchase agreements held by Aggressive Capital Appreciation funds is higher than for other funds (which are below 1%).

7. Detailed derivatives information and exposures of funds

While data from Form N-SAR filings allowed us to shed light on fund derivatives investment policies and whether funds had positions in derivatives, the data are not sufficiently detailed to fully understand registered funds’ usage of derivatives that create potential future obligations and thus implicate section 18 of the Investment Company Act. Thus, we hand-collect investment data from Form N-CSR for a 10% random sample of funds drawn from our Morningstar sample. For each of the 1,188 funds in the random sample, we identify its use of derivatives, financial commitment transactions and other senior securities. The use of derivatives is typically listed in Form N-CSR as part of a fund’s schedule of investments or in the footnotes to the fund’s financial statements. Financial commitment transactions such as short sales and reverse-repurchase agreements are generally listed in the fund’s schedule of investments whereas other financial commitment transactions may be described in the footnotes to a

²⁴ Due to textual size limits, funds cannot enter any values greater than 99999999 and will therefore default to 99999999. To correct these errors, the actual values were inputted from the annual reports prior to the N-SAR submission. Also, extreme outliers were compared to the annual statements to ensure the integrity of the data and were corrected when values were significantly different.

fund's financial statements. Other senior securities, such as bank borrowings, drawn credit lines, senior debt and preferred shares are set forth in the fund's financial statements.

7.1. Collecting and measuring derivatives exposure

Based on these data, we calculate the notional amount of each derivatives position. The choice of using notional amount to measure derivatives usage reflects some compromise. On one hand, the notional amount generally reflects an equivalent position in the underlying reference asset for the derivatives transaction. Further, since the concept of notional amount is applicable across various derivatives instrument types as well as underlying reference assets, notional amounts allow for aggregation. Mark-to-market value is an alternative measure of a derivatives position. The mark-to-market value of a derivative on the fund's financial statements generally only reflects the fund's gain or loss on the derivative and may be zero (as will generally be the case at the inception of a transaction). It does not reflect the market exposure or potential leverage resulting from the derivative. The notional amount achieves this goal to a greater extent.

On the other hand, there are drawbacks to using notional amounts. First, because of differences in expected volatilities of the underlying assets, notional amounts of derivatives across different underlying asset generally do not represent the same unit of risk. For example, the level of risk associated with a \$100 million notional of a S&P500 index futures is not equivalent to the level of risk of a \$100 million notional of interest rate swaps, currency forwards or commodity futures.

Second, data are not available to delta-adjust notional amounts of options. Funds do not report the delta of their option positions and we are not able to obtain that information from other sources. We do not delta-adjust due to this limitation in our data. This may lead to the deviation of notional amounts from economic exposure. Delta-adjusting would tend to reduce the calculated exposure for options.

Collecting the notional amounts of derivatives from fund annual reports posed several challenges. First, a significant percentage of funds do not clearly report the notional amounts for various derivatives or provide precise descriptions of notional amounts. For options and futures, for example, we manually looked up the contract size, historical value of the underlying, or spot price of the underlying asset (as applicable) as of the report date. Second, there is no standardized reporting of derivatives. For example, some funds reported numbers without units. In some cases the number of contracts for some options was reported in the same column as the notional amount for other options. We applied our judgment based on the magnitude, type of derivative, and consistency with other financial statement information to assign an appropriate notional amount in such cases. Third, when notional amounts were reported, there were instances where they were not consistent with other parameters of the derivatives. We correct such errors wherever possible. Fourth, many derivatives or underlying assets were denominated in foreign currencies. We converted their notional amounts to dollar amounts at the exchange rate on the reporting date. Fifth, for some types of derivatives, funds may enter into offsetting transactions in order to reduce or eliminate their economic exposure. In some cases, both initial and offsetting transactions continued to be reported on the fund's schedule of investments. For example, for some futures contracts that trade on foreign exchanges, offsetting positions remain open and carried forward until the maturity date, whereas for futures that trade on US exchanges, offsetting positions generally

are extinguished. We manually matched offsetting derivatives and netted them out. We only net the offsetting positions that have the same underlying asset, strike price and maturities, but we do not require the same counterparty.²⁵ As a result, our calculations reflect cancelled notional amounts for certain offsetting derivatives entered into with different counterparties. Sixth, for total return swaps, we computed the notional amounts as the sum of the notional amounts of securities referenced in the swaps. Finally, for short term interest rate futures, such as 90-day Euro-dollar futures, we followed the apparent industry convention to divide the notional amount by the appropriate divisor to adjust any interest rate future having a term shorter than one year. For example, with respect to 90-day Euro-dollar futures, the notional amount is divided by four.

We collect notional amounts separately for long and short positions or record them as NA when a direction is not applicable, categorize the derivatives positions by instrument, underlying risk factor, and whether the derivative is exchange-traded, centrally cleared, or neither.²⁶ We aggregate notional amounts for each fund by derivative instrument and primary underlying risk factor. The instrument categories are forwards, futures, swaps, options, and swaptions, and the underlying risk factors are interest rate risk, credit risk, equity market risk, currency risk, and commodity risk.

7.2. Descriptive statistics

The N-CSR random sample of 1,188 funds contains 81 Alt Strategies Mutual Funds²⁷, 899 Traditional mutual funds, 58 Closed-end funds, 22 Alt Strategies ETFs, 118 Traditional ETFs and 10 BDCs. In Table 5 we report summary statistics on notional amounts of the derivatives as well as information on financial commitment transactions and other senior securities. The first column shows the percentage of funds that use a certain type of derivative. The most commonly used derivatives are currency forwards, equity futures, and interest rate futures, with 13%, 12% and 11% of all funds using them, respectively. Five percent of all funds write equity options or use equity swaps, and 4% of all funds use cleared or exchange-traded interest rate swaps, OTC interest rate swaps, and OTC CDS. Cleared CDS are used by 3% of funds, 5% of all funds engage in short selling and 4% use bank borrowings.²⁸ All other types of derivatives and financial commitment transactions are typically used by less than 2% of the funds.

Table 5 also shows that the average gross notional amount of interest rate futures as a percentage of NAV is 4% across all funds and 38% among funds that use interest rate futures. The average notional amounts relative to fund NAV for currency forwards, equity futures, cleared/exchange-traded interest

²⁵ This provides a representation of the fund's economic exposure in cases where a fund chooses to use an offsetting transaction with a second counterparty rather than terminate its initial position, which could be less efficient due to tax or other considerations. Counterparty risk could be different depending on the relative riskiness of the two counterparties.

²⁶ Many OTC derivatives are not cleared. For a comparison among OTC, cleared and exchange-traded derivatives, see International Swaps and Derivatives Association FAQ at: <http://www.isda.org/educat/faqs.html>.

²⁷ We further divided the Alt Strategies Mutual Funds into the two categories, Index Alt Strategies Mutual Funds and Non-index Alt Strategies Mutual Funds. The sample contains 12 Index Alt Strategies Mutual Funds and 69 Non-index Alt Strategies Mutual Funds. We define index Alt Strategies Mutual Funds later in this section.

²⁸ Under section 18(g) of the Investment Company Act, certain loans for temporary purposes that do not exceed 5% of a fund's total assets are excluded from the definition of "senior security". It is possible that some funds in the sample that had bank borrowings were relying on this provision.

rates swaps, and written equity options are between 1% and 3% for all funds, and between 16% and 33% conditional on holding any derivative. Obligations related to short sales are only between 1% and 2% of NAV for all funds and between 8% and 20% for funds that engage in these transactions. What stands out is that, while the average notional amount of equity swaps is only 3% of NAV of all funds, the average notional amount is 70% of NAV for those funds that do engage in equity swaps.

7.3. Notional amounts across different risk exposures and instruments

In Table 6 we summarize the notional amounts aggregated by reference asset and instrument type. Panel A shows the statistics on the entire random sample. Overall, 32% of funds hold derivatives with an average gross notional amount 20% of the NAV. Equity derivatives, the most commonly used derivatives, are held by 18% of funds, currency derivatives by 14%, and cleared/exchange-traded interest rate derivatives by 12%. Interest rate derivatives, equity derivatives, and currency derivatives represent 8%, 7% and 4% of NAV, respectively. Classified by instrument type, 21% of funds use futures, 13% use currency forwards, 12% use swaps, 7% have written options. Average notional amounts as a percentage of NAV for futures, swaps, and currency forwards are 7%, 7%, and 3%, respectively. Ten percent of funds use some financial commitment transactions with an average of 2% of NAV. Only 5% of funds issue other senior securities with an average amount of 2% of NAV.

Since derivatives, financial commitment transactions, and other senior securities all allow funds to obtain additional market exposure and potentially create leverage, we calculate an aggregate exposure for each fund. Specifically, we calculate aggregate exposure by adding (i) the gross notional amounts of the derivatives; (ii) the aggregate obligations of the fund under financial commitment transactions; and (iii) the aggregate indebtedness (and with respect to any closed-end fund or business development company, involuntary liquidation preference) with respect to any other senior securities, including bank borrowings, margin loans, senior debt issuances and preferred shares. While the leveraging effect of derivatives transactions depends on a variety of factors, the aggregate exposure can be regarded as a rough measure of the total potential leverage that a fund may obtain from different types of derivatives and other senior securities transactions. For the entire random sample, the average aggregate exposure is 23% of NAV.

In Panel B, we examine the mutual funds in the Alt Strategies fund group that are not index funds. These non-index Alt Strategies mutual funds are more likely to use all types of derivatives and financial commitment transactions, but are not more likely to issue other senior securities. For example, 71% of the non-index Alt Strategies mutual funds use some type of derivative as compared to only 29% of Traditional mutual funds. Furthermore, among non-index Alt Strategies mutual funds, 51% use equity derivatives and 42% use currency derivatives whereas 15% and 14% of Traditional mutual funds use these derivatives.

Alt Strategies funds also hold derivatives with significantly larger notional amounts compared to Traditional mutual funds. For example, their interest rate derivatives represent 44% of NAV, currency derivatives 34%, equity derivatives 32%, and commodity derivatives 12%. Aggregated by instruments, futures represent 60% of NAV, swaps 30%, currency forwards 22% and written options 15%. On average,

their aggregate derivatives notional amount is 127% of NAV, their financial commitment transactions 12%, and other senior securities 0%.

Figure 3.1 shows individual fund usage of derivatives and financial commitment transactions for those funds with the greatest use of derivatives relative to NAV, ranked by the aggregate exposures.²⁹ Managed futures funds tend to have the highest aggregate exposures, ranging between approximately 500% and 950% of NAV. Among funds with the greatest exposure relative to NAV, interest rate and currency derivatives contribute significantly to the aggregate exposure. Many of the funds with the greatest exposure also use equity derivatives. Financial commitment transactions appear to be a main contributor to the aggregate exposures of Long/Short Equity funds. In Figure 4.1, when we aggregate derivatives by instruments, we find futures being the main type of derivatives used by high exposure funds, followed by swaps and currency forwards.

In panel C, we present information on index Alt Strategies mutual funds. Since a common goal of these funds is to replicate a given index, a multiple of that index, or the inverse performance of the index, funds commonly use simple futures or swaps to achieve index exposures and their aggregate exposure to derivatives often matches their stated goals. Among these funds, 83% use some type of derivatives, with 58%, 58%, and 42% using equity derivatives, swaps, and futures, respectively. Their average aggregate notional amount of derivatives is 88% of NAV, with equity derivatives being 81% and swaps 77%. Figure 3.2 shows that equity derivatives are the dominant type used. Funds that claim to track a multiple of an index use derivatives to achieve the exact exposures. Figure 4.2 shows that swaps are the main instruments used by index Alt Strategies Funds.

Panel E of Table 6 reports results for the Traditional mutual funds in our sample. Traditional mutual funds use significantly less derivatives than Alt Strategies funds. Approximately 29% of Traditional mutual funds have used some type of derivative with an average notional amount of 10% of NAV. Figure 3.3 lists Traditional mutual funds that have aggregate exposures of more than 50% of NAV. Most of their exposures come from interest rate derivatives, and Figure 4.3 shows that futures and swaps are the major instruments that these high-exposure Traditional funds tend to use.

For closed-end funds in the sample, Panel G shows that derivatives usage is more common than it is for mutual funds, but still significantly less than for the Alt Strategies funds. Among closed-end funds, 47% use some type of derivative, 35% use financial commitment transactions, and 66% enter into other senior securities. The gross notional amount of derivatives represents 14% of NAV on average. Financial commitment transactions represent 4% of NAV on average and other senior securities represent 25% of NAV on average. In Figure 3.4, other senior securities are the major contributor to the aggregate exposure of closed-end funds. The highest aggregate exposure is around 125% of NAV.

For Alt Strategies ETFs in the sample, Panel H shows that derivatives usage is more common than it is for Traditional ETFs. Among Alt Strategies ETFs, 95% use some type of derivative, 5% use financial commitment transactions, and 0% enter into other senior securities. The gross notional amount of derivatives represents 153% of NAV on average. Financial commitment transactions represent 4% of NAV on average and other senior securities represent 0% of NAV on average.

²⁹ We represent each fund with its Morningstar category.

For Traditional ETFs in the sample, 16% use some type of derivative, 1% use financial commitment transactions, and 0% enter into other senior securities. The gross notional amount of derivatives represents 7% of NAV on average; financial commitment transactions and other senior securities each represent 0% of NAV on average.

None of the business development companies in the sample uses derivatives, but 80% use financial commitment transactions, and 80% enter into other senior securities. The gross notional amount of derivatives represents 0% of NAV on average. Financial commitment transactions represent 16% of NAV on average and other senior securities represent 42% of NAV on average.

7.4. Gross notional amounts by fund category groups

In this subsection we examine how gross notional amounts differ across fund category groups. We use Morningstar broader US category groups for Traditional funds and the detailed Morningstar categories for Alt Strategies Funds.

Figures 5.1 and 6.1 show results for the entire sample. Overall, Alternative funds have the highest average aggregate exposure with 142% of NAV. They use interest rate, equity, and currency derivatives, mostly in the form of futures or swaps. Commodity funds have the second highest aggregate exposure at 91%, with a majority of exposure coming from commodity futures. All other funds have aggregate exposure below 50%.

Figures 5.2 and 6.2 present aggregate exposures for non-index Alt Strategies funds. With 450%, Managed futures funds have the highest average aggregate exposure. Interest rate derivatives represent more than half of their exposure, followed by equity and currency derivatives. These funds achieve most of their exposures through futures. The remaining categories have average aggregate exposures between 100% and 200% with the exception of Market neutral and Long/short equity, which have average aggregate exposures of about 50%. Furthermore, Market Neutral and Long/short equity all have significant amounts of financial commitment transactions, most commonly in short sales, contributing to their aggregate exposure.

Figures 5.3 and 6.3 show results for index Alt Strategies funds. The average aggregate exposure for Trading-Inverse Equity is 200%, for Bear market 125%, and for Trading-leveraged Equity 123%, with aggregate exposure mostly coming from equity swaps. Figures 5.4 and 6.4 present the information for Traditional mutual funds. For all funds in this category, their average aggregate exposure is below 50%.

Figures 5.5 and 6.5 provide the results for closed-end funds. Municipal Bond, Taxable Bond, Allocation, and Sector Equity funds all use significant amounts of other senior securities, and Taxable Bond funds and Allocation funds also use financial commitment transactions. All funds, except international equity, have between 40% to 50% exposures to financial commitment transactions and other senior securities. Closed-end equity funds also hold notable amounts of written options.

For Alt Strategies ETFs, funds that are used as trading tools have the largest aggregate exposure. Inverse debt ETFs have 290% aggregate exposure, leverage debt ETFs have 210%, inverse equity ETFs have 200% and leverage equity ETFs have 190%. Most of these exposures are created through swaps. Commodities, Single currency and Market Neutral ETFs have aggregate exposures around 100%.

For Traditional ETFs, the aggregate exposures are zero or close to zero. The exception is International ETFs, which have an average aggregate exposure of 22%, which is mostly coming from currency forwards.

7.5. Gross notional amounts by fund size

Figures 7 and 8 provide evidence on derivatives usage as a function of fund size. We group funds into quintiles based on fund size and compute the average aggregate exposures.³⁰

Figures 7.2 and 8.2 show that non-index Alt Strategies funds in the smallest size quintile use less derivatives with aggregate exposure about half that of other size quintiles. Small funds also do not seem to use written options. Similarly, for Traditional mutual funds in Figures 7.4 and 8.4 small funds exhibit only about half the average aggregate exposure of large funds. The funds in the smallest quintile do not have financial commitment transactions. For the closed-end funds presented in Figures 7.5 and 8.5, small funds use less equity derivatives and financial commitment transactions.

7.6. Distribution of number of funds and AUM across exposures

In this subsection we examine the distribution of aggregate exposures across fund types. Figures 9 and 10 present aggregate exposures grouped by exposure bins with the vertical bars showing the percentage of funds in number and in AUM³¹ that fall into a given bin. Across the entire random sample, 62% (48% in AUM) of funds have zero aggregate exposure, 96% (95% in AUM) have aggregate exposures below 150%, and only 3% (3% in AUM) of the funds have aggregate exposures greater than 300%.

Few of the Alt Strategies funds and Alt Strategies ETFs have zero aggregate exposure. The majority of exposure among Alt Strategies funds is below 150%, but 27% and 11% of the funds have exposures larger than 150% and 300%, respectively. Among Alt Strategies ETFs, 45% of funds have exposures larger than 150% but no fund has exposure above 300%.

This contrasts with aggregate exposures of the Traditional mutual funds and Traditional ETFs where 69% and 84% respectively have zero exposure and 99% in both categories have exposures below 150%. No Traditional mutual fund and only 1% of Traditional ETFs have aggregate exposure above 300%.

For the closed-end funds, 14% (5% in AUM) have zero aggregate exposure and none has exposure above 150%. For the business development companies, 20% (8% in AUM) have zero aggregate exposure and for all, the aggregate exposure is below 150%.

³⁰ Quantile 0 consists of funds with the smallest size and quantile 4 consists of funds with the largest size.

³¹ Figure 10 gives us the distribution of exposures across AUMs. We sum the AUMs of funds whose exposure falls within certain ranges. This gives us an estimate of the total dollar amount of exposures instead of the number of funds. It can also be seen as size weighted distribution, while in figure 9 small and large funds receive equal weights.

7.7. Distribution of gross notional of derivatives across fund types

Lastly, we examine the distribution of gross notional of derivatives across fund types in Figures 11 and 12. For our entire random sample, 68% (53% in AUM) of funds in the random sample have zero derivatives and 89% (90% in AUM) have derivatives below 50%.

For Alt Strategies funds, 27% (15% in AUM) have no derivatives and 48% (29% in AUM) have derivatives below 50%. For Alt Strategies ETFs, 5% (0% in AUM) have zero derivatives and only 15% (2% in AUM) have derivatives below 50%.

This contrasts with Traditional mutual funds and Traditional ETFs. Of the former, 71% (53% in AUM) have no derivatives and 94% (92% in AUM) have derivatives below 50%, and among the latter, 84% (66% in AUM) have zero derivatives and 95% (93% in AUM) have derivatives below 50%. Among closed-end funds, 54% (37% in AUM) have zero derivatives and 91% (87% in AUM) have derivatives below 50%. None of the business development companies has derivatives.

8. Summary and discussion

The paper presents information on the US registered fund industry use of derivatives. Because existing aggregated data sources do not provide sufficient details, we hand collected data on the derivative holdings, financial commitment transactions and other senior securities for a sample of 1,188 funds that represents 10% of the universe of funds in Morningstar. We examine the frequency and magnitude of derivatives usage across different fund categories, derivatives risk exposures and instruments. We document that Alternative funds, Nontraditional Bond funds and Commodity funds use greater amounts of derivatives than Traditional mutual funds. We further present evidence that some funds in the random sampling have gross notional exposures ranging up to approximately 950% of NAV.

9. Appendix

A. Form N-SAR question 70

Form N-SAR requires funds to provide information on various fund investment policies and practices. In particular, Form N-SAR requires funds to disclose if certain investment practices are allowed under their policies, and if so, were they engaged in during the reporting period. The list of practices included on Form N-SAR is shown below.

70A: Writing or investing in repurchase agreements.

70B: Writing or investing in options on equities.

70C: Writing or investing in options on debt securities.

70D: Writing or investing in options on stock indices.

70E: Writing or investing in interest rate futures.

70F: Writing or investing in stock index futures.

- 70G: Writing or investing in options on futures.
- 70H: Writing or investing in options on stock index futures.
- 70I: Writing or investing in other commodity futures.
- 70J: Investments in restricted securities.
- 70K: Investments in shares of other investment companies.
- 70L: Investments in securities of foreign issuers.
- 70M: Currency exchange transactions.
- 70N: Loaning portfolio securities.
- 70O: Borrowing of money.
- 70P: Purchase/sales by certain exempted affiliated persons.
- 70Q: Margin purchases.
- 70R: Short selling.

B. Morningstar U.S. fund category groups.

Morningstar does not explicitly define its category groups beyond the names of the category groups themselves. They note that they assign portfolios to category groups based on average holdings over the prior three years or where they believe a fund will end up if it has existed for less than three years. We interpret Morningstar’s fund category groups as follows.

- US Equity: A group of similar funds that invests in US equities based on market capitalization and growth.
- Sector Equity: A group of similar funds that invests in US equities of specific sectors.
- International Equity: A group of similar funds that invests in non-US equities based on market capitalization and growth or specific geographic area or country.
- Allocation: A group of similar funds that invest to maintain a target mix of assets over time. The target mix may remain fixed, or vary over time.
- Taxable Bond: A group of similar funds that invest in debt securities whose returns are taxable at the local, state, or federal level.³²

³² Nontraditional Bond category contains funds that pursue strategies divergent in one or more ways from

Municipal Bond:	A group of similar funds that all invest in municipal bond securities. These funds may invest nationally, or they may invest primarily in one single state.
Alternative:	A group of funds that invest into one or more of the following three investment types: 1) Nontraditional asset classes, 2) Nontraditional strategies, and 3) less liquid assets.
Commodities:	A group of similar funds that have either direct, or indirect exposures to commodity prices.
Money Market:	A group of funds that invest in short-term securities that mature in less than one year, and are low risk enough to be considered cash equivalents.

10. References

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conventional practice in the broader bond-fund universe. Many funds in this group describe themselves as "absolute return" portfolios, which seek to avoid losses and produce returns uncorrelated with the overall bond market; they employ a variety of methods to achieve those aims. Another large subset are self-described "unconstrained" portfolios that have more flexibility to invest tactically across a wide swath of individual sectors, including high-yield and foreign debt, and typically with very large allocations. Funds in the latter group typically have broad freedom to manage interest-rate sensitivity, but attempt to tactically manage those exposures in order to minimize volatility. The category is also home to a subset of portfolios that attempt to minimize volatility by maintaining short or ultra-short duration portfolios, but explicitly court significant credit and foreign bond market risk in order to generate high returns. Funds within this category often will use credit default swaps and other fixed income derivatives to a significant level within their portfolios.

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Table 1: An overview of the registered fund industry (as of June, 2015)

Panel A presents all managed investments in the United States that provided AUM in Morningstar, including Open-Ended Funds, Closed-End funds and Exchange-Traded Funds. Insurance Product Funds are included and Money Market Funds are excluded. Alt Strategies funds include Morningstar category Alternative, Nontraditional Bond funds and commodity funds. See Appendix for the definition of Morningstar US fund categories. Panel B shows business development companies based on EDGAR filings 10-Ks and 10-Qs.

Panel A: Investment Companies

	Open-end			Closed-end			ETF			Total			
	Number of Funds	AUM	Median AUM	Number of Funds	AUM	Median AUM	Number of Funds	AUM	Median AUM	Number of Funds	AUM	Median AUM	% of Industry Total
All	9,707	15,854,383	252	560	250,357	287	1,706	1,818,034	84	11,973	17,922,774	225	100%
US Equity	3,037	6,100,200	330	40	25,455	371	284	762,137	224	3,361	6,887,792	322	38.43%
Sector Equity	536	529,654	209	66	43,099	506	301	286,588	164	903	859,341	217	4.79%
International Equity	1,422	2,326,626	235	58	20,133	170	397	390,144	57	1,877	2,736,903	188	15.27%
Allocation	1,835	3,038,436	193	47	20,707	248	32	8,079	64	1,914	3,067,222	192	17.11%
Municipal Bond	578	572,616	270	183	62,326	246	32	16,073	101	793	651,016	248	3.63%
Taxable Bond	1,693	3,075,031	312	160	75,639	303	220	253,819	136	2,073	3,404,488	295	19.00%
—Nontraditional Bond	139	154,944	101	1	697	697	17	1,048	11	157	156,688	71	0.87%
Alternative	561	180,421	49	1	154	154	332	45,303	24	894	225,878	38	1.26%
Commodities	45	31,399	109	5	2,844	301	108	55,891	18	158	90,134	35	0.50%
Alternative & Nontraditional	700	335,365	53	2	851	425	349	46,351	24	1,051	382,566	41	2.13%
Alt Strategies	745	366,764	55	7	3,695	301	457	102,242	21	1,209	472,701	40	2.64%

Panel B: Business Development Companies (BDC)

	Number of Funds	AUM	Median AUM
All	88	52,294	216

Table 2: Growth in assets under management in registered funds by investment category

This table shows the growth of different fund categories from the end of 2010 to the end of 2014. The sample includes all managed investments in the United States that provided AUM in Morningstar, including Open-Ended Funds, Closed-End funds and Exchange-Traded Funds. Insurance Product Funds are included and Money Market Funds are excluded. Alt Strategies funds include Morningstar category Alternative, Nontraditional Bond funds and commodity funds.

	2010				2014				2010-2014					
	Number of fund	AUM	% of Industry AUM	Net Flows	Number of fund	AUM	% of Industry AUM	Net Flows	Growth in number	Annual AUM Growth Rate	Change in % of Industry AUM	Annual net flow	Annual net flow as % AUM	Annual net flow as % of Industry
All	8,577	10,908,529	100%	553,012	11,573	17,341,434	100%	575,125	2,996	12.29%	0%	513,043	4.05%	100%
US Equity	2,756	4,053,996	37.16%	-43,758	3,291	6,806,198	39.25%	73,188	535	13.83%	2.08%	8,789	-0.03%	1.71%
Sector Equity	696	431,701	3.96%	27,189	883	833,265	4.81%	76,446	187	17.87%	0.85%	51,870	9.59%	10.11%
International Equity	1,199	1,739,078	15.94%	94,730	1,764	2,453,046	14.15%	155,867	565	8.98%	-1.80%	109,428	5.68%	21.33%
Allocation	1,235	1,657,860	15.20%	141,288	1,857	2,978,522	17.18%	109,538	622	15.77%	1.98%	138,841	6.97%	27.06%
Municipal Bond	721	513,992	4.71%	12,591	780	645,674	3.72%	32,198	59	5.87%	-0.99%	5,995	1.41%	1.17%
Taxable Bond	1,418	2,249,571	20.62%	269,983	2,011	3,316,353	19.12%	108,111	593	10.19%	-1.50%	171,513	6.72%	33.43%
—Nontraditional Bond	39	58,074	0.53%	30,834	138	160,973	0.93%	24,005	99	29.03%	0.40%	24,527	29.18%	4.78%
Alternative	455	113,952	1.04%	25,905	831	218,147	1.26%	22,991	376	17.63%	0.21%	30,359	21.49%	5.92%
Commodities	97	148,379	1.36%	25,084	156	90,229	0.52%	-3,214	59	-11.69%	-0.84%	-3,750	-2.04%	-0.73%
Alternative & Nontraditional	494	172,026	1.58%	56,739	969	379,120	2.19%	46,996	475	21.84%	0.61%	54,886	27.80%	10.70%
Alt Strategies	591	320,405	2.94%	81,823	1,125	469,349	2.71%	43,782	534	10.01%	-0.23%	51,136	13.57%	9.97%

Table 3: Self-reported use of derivatives in form N-SAR

This table presents the percent response to questions 70A through 70R of the year ending 2014 N-SAR form for all funds. The question contains information on whether funds are permitted and engaged in certain investment practices with responses being either “yes”, “no”, or no response (missing). Panel A is segmented into All funds, Alternative funds, and Traditional funds. Alternative and Traditional funds are determined based on Morningstar’s classification of Alternative and the fund’s investment strategy (See footnote 18). The last two columns are the difference between the Alternative funds responses and the Traditional funds responses. The value in parenthesis represents the t-test of difference assuming equal variance. Panel B presents equity funds segmented into investment objective which is determined by the response funds give to question 66 based on whether the fund invests in equity instruments. The six investment objectives are aggressive capital appreciation, capital appreciation, growth, growth and income, income, and total return. Funds that do not invest in equity instruments are not included in this table because the investment objective is conditional on investing in equity instruments.

Panel A: All funds, alternative vs. traditional

Number of fund / Missing Answer	Question	All funds		Alternative		Traditional		Alternative - Traditional	
		Permitted	Engaged	Permitted	Engaged	Permitted	Engaged	Permitted	Engaged
		12,360	2.20%	613	0.65%	11,747	2.28%		
Repurchase agreements	70A	91.92%	22.20%	97.89%	32.95%	91.61%	21.63%	6.28% (4.179)	11.32% (1.202)
Options on equities	70B	77.33%	5.45%	97.24%	19.16%	76.29%	4.74%	20.95% (10.778)	14.42% (17.033)
Options on debt securities	70C	77.07%	1.88%	85.06%	2.76%	76.65%	1.84%	8.42% (2.819)	0.92% (1.569)
Options on stock indexes	70D	76.80%	3.98%	96.59%	28.08%	75.76%	2.72%	20.83% (10.563)	25.36% (19.869)
Interest rate futures	70E	76.29%	11.80%	88.15%	15.10%	75.67%	11.63%	12.48% (5.238)	3.47% (3.492)
Stock index futures	70F	76.27%	12.86%	96.43%	30.68%	75.21%	11.93%	21.22% (10.712)	18.75% (12.54)
Options on futures	70G	81.13%	2.48%	96.75%	4.55%	80.31%	2.37%	16.44% (8.881)	2.17% (4.048)
Options on index futures	70H	74.63%	0.86%	95.62%	5.03%	73.54%	0.65%	22.08% (10.821)	4.39% (12.47)
Other commodity futures	70I	50.72%	1.66%	70.62%	9.58%	49.67%	1.24%	20.94% (7.335)	8.34% (17.187)
Restricted securities	70J	90.96%	23.97%	95.45%	12.34%	90.72%	24.58%	4.73% (2.231)	-12.24% (-5.851)
Inv in otr inv comp shr	70K	94.74%	66.64%	99.19%	58.77%	94.51%	67.06%	4.68% (4.032)	-8.29% (-1.215)
Securities of foreign issuers	70L	85.09%	56.95%	96.59%	39.77%	84.49%	57.85%	12.10% (7.100)	-18.07% (-6.322)
Currency exchange transactions	70M	76.54%	34.30%	88.47%	30.52%	75.92%	34.50%	12.56% (5.339)	-3.98% (-0.179)
Loaning portfolio securities	70N	83.95%	24.43%	94.16%	8.28%	83.42%	25.27%	10.74% (5.611)	-17.00% (-8.551)
Borrowing money	70O	85.89%	8.40%	93.02%	9.42%	85.52%	8.34%	7.50% (3.413)	1.07% (1.689)
Purc/sales by exempted affiliates	70P	79.64%	17.20%	80.19%	5.03%	79.62%	17.84%	0.58% (-1.628)	-12.81% (-7.343)
Margin purchases	70Q	27.52%	0.69%	49.03%	4.22%	26.39%	0.51%	22.64% (8.149)	3.71% (0.189)
Short selling	70R	64.13%	5.25%	93.99%	37.82%	62.56%	3.55%	31.43% (14.125)	34.28% (42.718)

Panel B: Equity funds, by investment objectives

Investment objective	Aggressive capital appreciation		Capital appreciation		Growth		Growth and income		Income		Total Return		
	Number of fund / Missing Answer	206	0.00%	3,492	0.72%	1,542	0.98%	872	0.70%	307	0.65%	1,817	0.40%
	Question	Permitted	Engaged	Permitted	Engaged	Permitted	Engaged	Permitted	Engaged	Permitted	Engaged	Permitted	Engaged
Repurchase agreements	70A	99.51%	62.62%	96.39%	21.62%	95.07%	23.09%	87.06%	15.58%	88.27%	13.36%	91.58%	13.15%
Options on equities	70B	95.63%	1.94%	90.32%	6.70%	91.63%	5.90%	82.93%	9.74%	74.27%	9.45%	89.54%	8.70%
Options on debt securities	70C	68.93%	0%	79.73%	0.60%	84.18%	0.19%	75.49%	0.34%	67.43%	2.28%	81.12%	1.16%
Options on stock indexes	70D	96.12%	0.49%	89.52%	3.49%	89.88%	1.75%	81.67%	2.29%	73.62%	7.82%	89.16%	7.04%
Interest rate futures	70E	68.45%	0.49%	77.18%	2.26%	77.89%	1.49%	74.00%	5.27%	70.36%	11.07%	84.42%	10.95%
Stock index futures	70F	91.75%	29.13%	87.71%	14.26%	89.04%	17.44%	79.50%	16.04%	75.24%	9.77%	88.83%	20.03%
Options on futures	70G	90.29%	0%	85.65%	0.92%	87.87%	0.45%	78.12%	0.57%	73.62%	1.30%	87.29%	2.04%
Options on index futures	70H	89.81%	0%	85.08%	0.86%	88.07%	0.45%	77.66%	0.46%	73.62%	0.33%	87.84%	1.65%
Other commodity futures	70I	43.69%	0.97%	57.93%	1.17%	53.18%	0.52%	49.71%	0.57%	49.19%	0.33%	65.66%	4.68%
Restricted securities	70J	96.60%	9.71%	95.25%	14.98%	92.22%	21.60%	85.91%	15.69%	83.71%	23.78%	90.53%	17.06%
Inv in otr inv comp shares	70K	97.57%	42.23%	97.37%	72.22%	97.92%	71.98%	96.91%	76.98%	98.70%	80.78%	99.12%	81.29%
Securities of foreign issuers	70L	96.60%	42.23%	95.36%	67.64%	95.14%	75.55%	86.14%	57.50%	84.04%	54.72%	90.20%	52.23%
Currency exchange transactions	70M	72.82%	30.10%	86.37%	40.23%	88.72%	45.53%	78.01%	33.68%	77.52%	36.16%	88.17%	36.43%
Loaning portfolio securities	70N	93.69%	29.13%	90.92%	36.51%	88.78%	32.94%	82.59%	27.38%	77.85%	16.61%	86.52%	24.93%
Borrowing money	70O	92.72%	15.53%	89.60%	9.91%	82.36%	6.42%	86.03%	7.67%	80.78%	13.68%	88.88%	8.20%
Purc/sales by exempted affiliates	70P	84.95%	15.53%	79.52%	19.79%	84.57%	17.83%	76.75%	18.33%	73.62%	11.73%	74.74%	9.36%
Margin purchases	70Q	7.28%	0%	32.36%	0.92%	30.87%	1.04%	33.68%	0.46%	22.80%	0.33%	27.68%	1.10%
Short selling	70R	82.04%	9.71%	71.31%	6.07%	71.66%	2.92%	58.19%	1.83%	61.24%	2.61%	70.72%	8.75%

Table 4: Self-reported market value of derivatives in form N-SAR

This table contains information on the condensed balance sheet of funds based on the responses to questions 74A through 74Y of the year ending 2014 N-SAR form for all funds. The non-zero represents the percentage of funds that provided a value greater than zero. The “average as % NAV” is conditional on funds having a value greater than zero. Finally, the “unconditional average as a % of NAV” includes funds who gave a value of zero but excludes funds that didn’t provide a value (missing). Due to textual size limits, funds cannot enter any values greater than 99999999 and will therefore default to 99999999. To correct these errors, the actual values were inputted from the annual reports prior to the N-SAR submission. Also, extreme outliers were compared to the annual statements to ensure the integrity of the data and were corrected when values were significantly different. The last two columns are the difference between the Alternative funds and the Traditional funds with the value in parenthesis representing the t-test of difference assuming equal variance. Panel A is segmented into All funds, Alternative funds, and Traditional funds. Alternative and Traditional funds are determined based on Morningstar’s classification of Alternative and the fund’s investment strategy (See footnote 18). Panel B presents equity funds segmented into investment objective which is determined by the response funds give to question 66 based on whether the fund invests in equity instruments. The six investment objectives are aggressive capital appreciation, capital appreciation, growth, growth and income, income, and total return. Funds that do not invest in equity instruments are not included in this table because the investment objective is conditional

Panel A: All funds, Nontraditional vs. traditional

	Question	All			Alternative			Traditional			Alternative - Traditional	
		Non-zero	Cond.	Uncond.	Non-zero	Cond.	Uncond.	Non-zero	Cond.	Uncond.	Cond. NAV	Uncond. average as % NAV
			Average % NAV	average as % NAV		Average % NAV	average as % NAV		Average % NAV	average as % NAV		
Cash	74A	54.2%	2.2%	1.26%	60.7%	15.7%	11.63%	53.8%	1.5%	0.82%	14.25% (34.33)	10.82% (38.9)
Repurchase Agreements	74B	17.5%	8.5%	1.57%	28.7%	28.6%	6.49%	16.9%	7.5%	1.36%	21.08% (13.77)	5.12% (14.29)
Other Short Term Debt	74C	30.7%	17.9%	5.87%	29.7%	31.4%	9.59%	30.8%	17.3%	5.72%	14.05% (5.39)	3.87% (4.2)
Long Term Debt	74D	30.3%	68.8%	22.29%	18.3%	25.5%	6.10%	30.9%	70.1%	22.96%	-44.66% (-13.65)	-16.86% (-9.38)
Preferred Stock	74E	16.2%	3.9%	0.69%	9.6%	1.6%	0.21%	16.6%	4.0%	0.71%	-2.40% (-1.53)	-0.50% (-2.01)
Common Stock	74F	56.7%	80.5%	48.23%	49.8%	52.8%	30.57%	57.1%	81.6%	48.98%	-28.86% (-16.44)	-18.42% (-8.62)
Options On Equities	74G	3.1%	1.1%	0.04%	16.2%	1.7%	0.37%	2.4%	0.9%	0.02%	0.81% (0.99)	0.35% (5.61)
Options On All Futures	74H	1.3%	0.5%	0.01%	2.6%	1.2%	0.04%	1.2%	0.4%	0.01%	0.81% (1.55)	0.04% (3.24)
Other Investments	74I	63.8%	27.4%	18.51%	57.3%	33.6%	24.24%	64.1%	27.1%	18.26%	6.51% (2.99)	5.97% (3.66)
Portfolio Instruments	74J	52.9%	1.8%	0.98%	38.3%	3.6%	1.69%	53.7%	1.7%	0.95%	1.94% (5.56)	0.74% (4.03)
Receivable from Affiliate	74K	22.8%	0.3%	0.08%	21.8%	0.6%	0.14%	22.9%	0.3%	0.08%	0.27% (0.82)	0.06% (0.78)
Other Receivables	74L	91.0%	0.9%	0.85%	80.8%	4.3%	3.89%	91.5%	0.8%	0.72%	3.56% (20.02)	3.17% (19.13)
All Other Assets	74M	65.7%	0.9%	0.62%	76.3%	7.7%	6.34%	65.2%	0.5%	0.37%	7.12% (29.96)	5.96% (32.93)
Total Assets	74N	95.6%	100.0%	100.0%	90.1%	100.0%	100.00%	95.8%	100.0%	100.0%	0.01% (0.36)	0.01% (0.36)
Payables for Portfolio Purchases	74O	57.2%	2.3%	1.39%	40.6%	4.0%	1.92%	58.0%	2.3%	1.37%	1.70% (4.7)	0.55% (2.69)
Amounts Owed Affiliate	74P	87.6%	0.1%	0.12%	78.9%	0.1%	0.11%	88.0%	0.1%	0.12%	0.00% (-0.03)	0.00% (-0.04)
Senior Long Term Debt	74Q	1.1%	21.5%	0.25%	0.0%	0.0%	0.00%	1.1%	21.5%	0.26%	0.0%	-0.26% (-2.14)
Other Liabilities	74R	92.8%	3.4%	3.31%	89.0%	13.2%	13.08%	93.0%	3.0%	2.90%	10.21% (28.57)	10.18% (28.91)
Reverse Repurchase Agreement	74R1	1.3%	11.5%	0.16%	0.6%	2.9%	0.03%	1.3%	11.8%	0.17%	-8.81% (-1.35)	-0.14% (-1.43)
Short Sales	74R2	3.5%	13.6%	0.51%	28.2%	22.4%	8.24%	2.2%	7.7%	0.18%	14.72% (13.3)	8.06% (51.77)
Written Options	74R3	6.1%	0.6%	0.04%	20.0%	1.2%	0.33%	5.3%	0.5%	0.03%	0.79% (3.86)	0.31% (11.62)
All Other Liabilities	74R4	92.7%	2.7%	2.61%	88.3%	4.6%	4.55%	92.9%	2.6%	2.53%	2.04% (6.77)	2.02% (6.85)
Senior Equity	74S	1.2%	21.9%	0.29%	0.2%	18.8%	0.04%	1.2%	22.0%	0.30%	-3.13%	-0.26%
Net Assets Shareholders	74T	95.5%	94.7%	94.68%	90.1%	85.0%	84.98%	95.8%	95.2%	95.09%	-10.18% (-23.15)	-10.12% (-22.31)
Value Segregated Accounts	74Y	25.4%	22.3%	6.01%	60.7%	29.6%	19.04%	23.5%	21.5%	5.45%	8.05% (0.88)	13.59% (3.68)

Panel B: Equity funds, by investment objectives

Question	Aggressive capital appreciation			Capital appreciation			Growth			Growth and income			Income			Total Return			
	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	Non-zero	Cond. Average % NAV	Uncond. average as % NAV	
Cash	74A	50.0%	5.2%	3.17%	49.2%	2.3%	1.19%	50.4%	1.0%	0.51%	47.9%	0.8%	0.40%	53.7%	1.4%	0.80%	52.6%	4.7%	2.59%
Repurchase Agreements	74B	36.4%	31.0%	14.25%	17.0%	4.5%	0.82%	17.3%	3.2%	0.57%	10.9%	2.3%	0.28%	11.1%	2.3%	0.26%	9.9%	3.4%	0.36%
Other Short Term Debt	74C	13.6%	12.5%	2.11%	20.8%	5.6%	1.25%	29.2%	4.4%	1.32%	29.2%	4.3%	1.35%	23.5%	18.9%	4.67%	26.5%	10.1%	2.86%
Long Term Debt	74D	1.9%	7.9%	0.19%	6.6%	13.0%	0.90%	7.5%	12.6%	0.98%	17.4%	22.6%	4.12%	35.8%	32.2%	11.98%	20.9%	27.1%	6.03%
Preferred Stock	74E	11.2%	2.4%	0.34%	16.6%	2.4%	0.42%	18.9%	1.8%	0.36%	16.6%	8.2%	1.45%	32.6%	19.1%	6.48%	15.9%	4.8%	0.82%
Common Stock	74F	69.4%	78.7%	67.02%	84.9%	89.4%	78.88%	87.0%	92.3%	82.21%	78.9%	86.3%	69.74%	55.4%	63.7%	36.35%	56.2%	76.5%	45.11%
Options On Equities	74G	1.0%	0.4%	0.00%	3.6%	2.3%	0.09%	2.2%	0.5%	0.01%	1.9%	0.2%	0.00%	5.2%	0.3%	0.02%	5.9%	0.7%	0.04%
Options On All Futures	74H	0.5%	0.4%	0.00%	0.3%	1.4%	0.00%	0.3%	0.2%	0.00%	0.1%	0.0%	0.00%	0.0%	0.0%	0.00%	1.8%	0.7%	0.01%
Other Investments	74I	46.1%	16.2%	9.14%	70.8%	20.0%	14.72%	64.3%	19.6%	13.04%	64.4%	33.1%	22.19%	72.3%	51.0%	37.99%	80.6%	47.2%	39.94%
Portfolio Instruments	74J	41.7%	2.1%	1.07%	57.4%	1.8%	1.05%	61.6%	0.9%	0.58%	52.5%	0.8%	0.46%	53.1%	1.2%	0.64%	48.9%	1.7%	0.86%
Receivable from Affiliate	74K	5.8%	0.1%	0.00%	22.9%	0.4%	0.11%	23.2%	0.4%	0.09%	25.3%	0.4%	0.11%	25.4%	0.2%	0.05%	23.8%	0.2%	0.04%
Other Receivables	74L	80.1%	2.8%	2.79%	92.0%	0.6%	0.57%	95.3%	0.5%	0.48%	94.4%	0.4%	0.41%	85.3%	1.2%	1.01%	88.8%	1.2%	1.13%
All Other Assets	74M	50.0%	0.6%	0.38%	69.2%	0.9%	0.65%	70.0%	0.5%	0.36%	62.0%	0.2%	0.15%	63.2%	0.5%	0.33%	56.4%	1.8%	1.09%
Total Assets	74N	81.6%	100.0%	100.00%	96.7%	100.0%	100.00%	97.9%	100.0%	100.0%	97.7%	100.0%	100.0%	97.4%	100.0%	100.00%	96.0%	100.0%	100.00%
Payables for Portfolio Purchases	74O	41.3%	2.0%	1.00%	58.0%	1.4%	0.87%	65.8%	0.9%	0.64%	59.9%	1.0%	0.62%	51.8%	2.1%	1.10%	56.6%	2.1%	1.24%
Amounts Owed Affiliate	74P	78.2%	0.1%	0.09%	88.7%	0.1%	0.13%	94.1%	0.1%	0.07%	91.9%	0.2%	0.16%	86.0%	0.1%	0.06%	83.5%	0.1%	0.09%
Senior Long Term Debt	74Q	0.0%	0.0%	0.00%	0.0%	15.3%	0.00%	0.2%	2.1%	0.00%	0.9%	20.2%	0.20%	5.2%	25.4%	1.39%	1.3%	19.8%	0.28%
Other liabilities	74R	77.2%	4.0%	3.94%	91.4%	3.6%	3.52%	92.6%	2.4%	2.31%	92.3%	1.9%	1.89%	87.9%	3.4%	3.19%	89.0%	4.3%	4.07%
Reverse Repurchase Agreement	74R1	0.0%	0.0%	0.00%	0.1%	2.3%	0.00%	0.0%	0.0%	0.00%	0.2%	25.7%	0.06%	0.7%	16.3%	0.11%	0.7%	9.7%	0.07%
Short Sales	74R2	1.5%	9.1%	0.17%	4.7%	19.3%	0.97%	2.2%	19.3%	0.45%	0.8%	9.8%	0.08%	2.6%	10.9%	0.29%	5.4%	12.0%	0.69%
Written Options	74R3	1.0%	0.3%	0.00%	3.9%	1.2%	0.05%	4.0%	0.3%	0.01%	7.8%	0.9%	0.07%	11.7%	0.8%	0.10%	8.6%	0.7%	0.06%
All Other Liabilities	74R4	81.1%	3.9%	3.91%	94.6%	2.6%	2.50%	95.3%	2.0%	1.91%	94.3%	1.7%	1.66%	89.6%	3.0%	2.74%	91.1%	3.4%	3.26%
Senior Equity	74S	0.0%	0.0%	0.00%	0.1%	11.2%	0.01%	0.2%	15.8%	0.03%	0.7%	8.2%	0.06%	1.3%	11.2%	0.15%	0.8%	13.8%	0.11%
Net Assets Shareholders	74T	81.6%	94.8%	94.83%	96.6%	95.6%	95.50%	97.8%	97.0%	96.92%	97.7%	97.0%	97.01%	97.4%	94.1%	94.10%	96.0%	94.2%	94.24%
Value Segregated Accounts	74Y	39.8%	11.9%	5.81%	16.1%	14.9%	2.54%	19.6%	23.3%	4.79%	22.6%	17.9%	4.22%	23.1%	29.3%	7.07%	27.1%	25.4%	7.32%

Table 5: Summary of derivatives holdings

This table shows the summary statistics on the notional value of derivatives (as percentages of NAV) held by registered funds. The sample consists of 1,188 funds, 10% random sample of the universe of all open-end funds, closed-end funds, ETFs and BDCs registered under the 1940 Act as of April 2015. We exclude money market funds from our sample. We collected their usage of derivatives, financing transactions and other senior securities from their latest N-CSRs at EDGAR. Notional amount of long and short positions are summed unless noted otherwise. Exact offsetting positions are netted out.

Notional of Derivatives (as % of NAV)	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
NAV (M) (Number of funds: 1,188)	100%	1,390	4,964	1,390	4,964	0	54	231	978	96,793
Currency Futures	1.01%	0.56	8.81	55.85	70.76	0.10	6.46	25.49	87.56	200.18
Interest Rate Futures	10.69%	4.05	27.24	37.88	75.50	0.05	4.66	15.30	39.56	528.85
Equity Futures	11.87%	1.88	10.94	15.85	28.13	0.01	1.23	4.15	18.92	199.78
Commodity Futures	1.26%	0.74	8.95	58.32	56.53	1.37	14.58	28.76	105.91	186.70
Currency Swaps	0.34%	0.25	8.16	73.48	138.36	0.79	1.53	6.10	145.43	280.93
Interest rate swaps (Cleared/exch-trd)	4.38%	1.43	11.19	32.77	43.23	0.11	3.81	16.83	39.09	197.98
Interest rate swaps (OTC)	4.04%	1.52	15.17	37.61	66.54	0.08	2.18	8.18	43.19	293.87
CDS (Cleared)	3.11%	0.41	4.66	13.31	23.23	0.06	0.75	4.76	9.86	93.63
CDS (OTC)	4.04%	0.36	3.66	8.81	16.21	0.02	0.70	2.90	8.60	75.39
Equity swaps	4.88%	3.40	23.41	69.61	81.99	0.00	2.61	32.00	112.55	283.12
Commodity swaps	0.34%	0.07	1.43	21.72	13.37	10.17	11.15	18.92	32.30	38.89
Currency forwards	12.96%	3.33	20.16	25.67	50.74	0.00	1.84	9.71	24.51	356.36
Written Currency Option	1.52%	0.13	3.10	8.85	24.25	0.01	0.35	2.11	5.70	104.92
Written interest rate option (Cleared/exch-trd)	1.60%	0.22	2.50	13.50	14.95	0.56	4.21	10.75	15.26	60.78
Written interest rate option (OTC)	2.10%	0.30	2.83	14.35	13.66	0.05	4.55	11.09	16.92	52.16
Written CDS option (Cleared)	0.08%	0.01	0.22	7.42		7.42	7.42	7.42	7.42	7.42
Written CDS option (OTC)	0.76%	0.09	2.17	12.03	23.15	0.29	2.46	3.54	9.80	73.00
Written equity option	4.71%	1.39	10.99	29.40	42.04	0.00	1.75	12.86	43.71	204.79
Written Commodity option	0.17%	0.01	0.43	7.57	10.39	0.23	0.23	7.57	14.92	14.92
Purchased Currency option	1.09%	0.15	2.14	14.01	15.58	0.53	5.19	8.13	19.74	52.96
Purchased interest rate option (Cleared/exch-trd)	1.35%	0.28	3.80	21.05	26.03	2.76	5.51	9.46	21.90	82.31
Purchased interest rate option (OTC)	0.51%	0.07	1.18	14.42	9.10	0.14	9.40	15.89	21.68	23.54
Purchased CDS option (Cleared)	0.08%	0.26	8.81	303.54		303.54	303.54	303.54	303.54	303.54
Purchased CDS option (OTC)	0.08%	0.03	1.12	38.49		38.49	38.49	38.49	38.49	38.49
Purchased equity option	2.78%	0.80	7.55	28.95	35.68	0.05	3.59	11.51	48.22	143.44
Purchased Commodity option	0.17%	0.09	2.37	52.12	35.05	27.34	27.34	52.12	76.90	76.90
Purchased Currency swaption	0.00%	0.00	0.00							
Purchased interest rate swaption (Cleared/exch-trd)	0.59%	0.06	1.14	10.89	10.96	0.93	1.61	7.10	19.32	29.89
Purchased interest rate swaption (OTC)	1.52%	0.28	3.80	18.67	25.40	0.02	1.64	5.65	28.03	84.62
Purchased CDS swaption (Cleared)	0.08%	0.00	0.14	4.90		4.90	4.90	4.90	4.90	4.90
Purchased CDS swaption (OTC)	0.17%	0.01	0.38	7.86	7.11	2.83	2.83	7.86	12.89	12.89
Purchased equity swaption	0.00%	0.00	0.00							
Purchased Commodity swaption	0.00%	0.00	0.00							
Reverse repo	1.60%	0.22	2.60	13.88	15.64	0.01	2.10	7.86	23.79	46.95
Short sale	4.71%	0.96	6.81	20.42	24.41	0.00	1.26	7.10	33.62	95.34
Commitment agreements	0.34%	0.02	0.53	4.78	9.01	0.13	0.24	0.35	9.33	18.30
Unfunded commitments	1.35%	0.08	1.57	6.22	12.43	0.00	0.15	1.56	6.60	49.47
When issued securities	1.68%	0.11	2.29	6.25	16.91	0.02	0.36	1.18	4.45	76.79
TBA	0.93%	0.11	2.40	11.88	22.96	0.00	0.01	0.90	10.56	66.11
Other financing	0.51%	0.06	1.28	12.27	14.46	0.73	3.76	4.25	24.92	35.75
Bank borrowings	4.21%	0.71	5.30	16.91	20.00	0.00	0.03	4.96	35.25	70.02
Margin loans	0.00%	0.00	0.00							
Senior debt issuances	1.43%	0.32	3.88	22.69	24.03	0.07	4.98	18.80	26.93	72.95
Preferred shares	1.18%	0.53	4.96	44.93	10.08	21.80	41.62	48.23	50.71	57.53
Securities lending collateral	21.21%	1.77	9.14	8.33	18.44	0.00	1.07	3.28	8.94	196.11

Table 6: Derivatives holdings by underlying assets and instruments

This table shows the notional value of derivatives (as percentages of NAV) held by mutual funds. The notional values are aggregated by derivative references and instrument types. The sample consists of 10% random sample of the universe of all open-end funds, closed-end funds, ETFs and BDCs registered under the 1940 Act as of April 2015. We exclude money market funds from our sample. We group Morningstar category "Alternative", "Nontraditional bond" and "Commodities" as Alt Strategies funds. We further group them into non-index and index funds. Those funds that do not fall within the Alt Strategies funds are called Traditional funds. Gross notional of derivatives is the sum of notional amount of derivatives that create potential future obligations, i.e. excluding purchased options.

Panel A: All funds

Notional of Derivatives (as % of NAV)	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
NAV (M) (Number of funds: 1,188)	100%	1,390	4,964	1,390	4,964	0	54	231	978	96,793
Currency	13.89%	4.27	24.15	30.76	58.33	0.00	1.84	10.24	28.07	356.36
Interest rate	13.47%	7.52	37.32	55.84	87.65	0.05	5.87	20.44	74.06	528.85
Interest rate (Cleared/exch-trd)	12.12%	5.70	32.06	47.02	81.08	0.05	5.40	18.70	56.12	528.85
Interest rate (OTC)	4.88%	1.82	15.61	37.31	61.04	0.08	3.17	12.83	42.59	293.87
CDS	5.39%	0.87	6.66	16.12	24.21	0.02	0.90	5.05	20.83	93.63
CDS (Cleared)	3.11%	0.42	4.67	13.51	23.16	0.06	0.75	5.03	9.86	93.63
CDS (OTC)	4.04%	0.45	4.56	11.07	20.11	0.02	0.71	3.79	9.75	85.19
Equity	17.76%	6.67	29.12	37.53	60.25	0.00	1.44	8.30	44.46	283.12
Commodity	1.43%	0.82	9.23	57.46	53.49	0.23	14.80	54.47	98.91	186.70
Futures	20.54%	7.23	39.82	35.21	82.21	0.01	2.78	11.57	32.79	859.31
Swaps	12.12%	7.44	33.02	61.41	75.58	0.00	4.65	30.76	91.26	293.87
Forwards	12.96%	3.33	20.16	25.67	50.74	0.00	1.84	9.71	24.51	356.36
Written option	7.32%	2.15	14.25	29.33	44.69	0.00	2.91	14.62	41.77	320.46
Purchased option	5.22%	1.69	12.71	32.37	46.21	0.05	6.02	15.65	38.49	303.54
Purchased swaption	2.19%	0.36	4.01	16.66	21.94	0.02	1.64	6.24	20.95	84.62
Gross notional of derivatives	32.24%	20.15	67.80	62.50	107.84	0.00	3.56	20.13	79.35	961.98
Financing	9.93%	1.56	8.33	15.72	21.89	0.00	0.90	4.18	24.21	95.34
Senior security	5.47%	1.57	8.76	28.62	25.24	0.00	0.12	31.34	52.17	80.77
Aggregate exposure incl. financing	36.36%	21.71	68.50	59.71	103.19	0.00	3.11	20.51	75.16	961.98
Aggregate exposure incl. financing & Senior Sec	37.96%	23.28	68.81	61.32	100.76	0.00	3.59	27.16	76.67	961.98

Panel B: Alt Strategies mutual funds (Non-index)

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 69)	100%	726	3,004	726	3,004	0	28	91	374	24,371
Currency	42.03%	33.60	75.14	79.94	99.36	0.10	10.03	43.88	93.01	356.36
Interest rate	30.43%	44.12	109.54	144.98	159.50	0.61	34.10	87.44	188.63	528.85
Interest rate (Cleared/exch-trd)	26.09%	38.88	106.73	149.06	167.87	0.61	13.25	101.87	188.63	528.85
Interest rate (OTC)	14.49%	5.24	18.24	36.15	35.68	0.68	8.92	23.34	56.18	97.78
CDS	20.29%	5.68	18.07	27.98	32.19	1.89	5.07	13.97	31.07	93.63
CDS (Cleared)	10.14%	1.91	11.38	18.79	33.14	0.51	4.76	8.42	9.29	93.63
CDS (OTC)	17.39%	3.77	14.26	21.68	28.86	1.62	3.34	7.84	28.53	85.19
Equity	50.72%	32.19	53.36	63.47	60.43	0.91	19.17	39.65	95.49	265.37
Commodity	14.49%	11.71	34.29	80.81	51.77	14.58	54.47	77.61	105.91	186.70
Futures	52.17%	60.32	137.44	115.61	173.57	2.81	23.98	54.04	112.17	859.31
Swaps	39.13%	29.89	58.64	76.39	72.83	1.97	17.84	75.73	104.33	280.93
Forwards	34.78%	21.87	61.16	62.89	91.47	1.10	9.24	24.72	77.13	356.36
Written option	30.43%	15.22	46.37	50.01	74.05	0.18	9.24	29.84	54.96	320.46
Purchased option	31.88%	14.92	42.57	46.80	65.61	0.43	8.11	26.45	60.85	303.54
Purchased swaption	13.04%	1.90	6.26	14.56	11.21	1.61	3.59	19.24	20.95	29.89
Gross notional of derivatives	71.01%	127.30	193.34	179.26	208.44	0.91	42.72	98.91	269.41	961.98
Financing	40.58%	11.86	21.28	29.23	24.78	0.73	4.39	25.22	43.97	95.34
Senior security	0.00%	0.00	0.00							
Aggregate exposure incl. financing	88.41%	139.16	188.55	157.41	193.31	0.91	44.08	86.57	186.70	961.98
Aggregate exposure incl. financing & Senior Sec	88.41%	139.16	188.55	157.41	193.31	0.91	44.08	86.57	186.70	961.98

Panel C: Alt Strategies mutual funds (Index)

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 12)	100%	26	22	26	22	0	6	26	39	64
Currency	8.33%	2.81	9.73	33.70		33.70	33.70	33.70	33.70	33.70
Interest rate	8.33%	2.65	9.19	31.84		31.84	31.84	31.84	31.84	31.84
Interest rate (Cleared/exch-trd)	8.33%	2.65	9.19	31.84		31.84	31.84	31.84	31.84	31.84
Interest rate (OTC)	0.00%	0.00	0.00							
CDS	0.00%	0.00	0.00							
CDS (Cleared)	0.00%	0.00	0.00							
CDS (OTC)	0.00%	0.00	0.00							
Equity	58.33%	81.35	84.62	139.46	60.62	70.34	70.63	136.06	199.83	200.16
Commodity	8.33%	1.23	4.27	14.80		14.80	14.80	14.80	14.80	14.80
Futures	41.67%	8.64	11.40	20.74	6.61	14.80	17.43	18.44	21.20	31.84
Swaps	58.33%	76.59	81.17	131.30	60.82	70.34	70.63	114.85	199.83	200.16
Forwards	8.33%	2.81	9.73	33.70		33.70	33.70	33.70	33.70	33.70
Written option	0.00%	0.00	0.00							
Purchased option	0.00%	0.00	0.00							
Purchased swaption	0.00%	0.00	0.00							
Gross notional of derivatives	83.33%	88.04	78.35	105.65	73.73	14.80	33.70	85.14	199.52	200.16
Financing	8.33%	4.76	16.48	57.08		57.08	57.08	57.08	57.08	57.08
Senior security	8.33%	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Aggregate exposure incl. financing	83.33%	92.80	76.34	111.36	69.47	14.80	70.34	94.28	199.52	200.16
Aggregate exposure incl. financing & Senior Sec	83.33%	92.80	76.34	111.36	69.47	14.80	70.34	94.28	199.52	200.16

Panel D: Alt Strategies mutual funds (All)

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 81)	100%	623	2,781	623	2,781	0	25	61	275	24,371
Currency	37.04%	29.04	70.23	78.40	98.00	0.10	10.03	43.18	93.01	356.36
Interest rate	27.16%	37.98	102.13	139.83	157.52	0.61	31.84	87.32	188.63	528.85
Interest rate (Cleared/exch-trd)	23.46%	33.52	99.31	142.89	165.34	0.61	13.25	87.21	188.63	528.85
Interest rate (OTC)	12.35%	4.46	16.92	36.15	35.68	0.68	8.92	23.34	56.18	97.78
CDS	17.28%	4.84	16.78	27.98	32.19	1.89	5.07	13.97	31.07	93.63
CDS (Cleared)	8.64%	1.62	10.52	18.79	33.14	0.51	4.76	8.42	9.29	93.63
CDS (OTC)	14.81%	3.21	13.21	21.68	28.86	1.62	3.34	7.84	28.53	85.19
Equity	51.85%	39.48	60.94	76.13	66.24	0.91	23.98	59.71	99.65	265.37
Commodity	13.58%	10.16	31.87	74.81	52.99	14.58	14.92	60.06	105.91	186.70
Futures	50.62%	52.66	128.13	104.04	165.39	2.81	22.43	39.59	104.74	859.31
Swaps	41.98%	36.81	64.09	87.70	73.21	1.97	29.98	81.40	116.54	280.93
Forwards	30.86%	19.05	56.91	61.72	89.73	1.10	10.45	26.97	74.05	356.36
Written option	25.93%	12.96	43.09	50.01	74.05	0.18	9.24	29.84	54.96	320.46
Purchased option	27.16%	12.71	39.61	46.80	65.61	0.43	8.11	26.45	60.85	303.54
Purchased swaption	11.11%	1.62	5.81	14.56	11.21	1.61	3.59	19.24	20.95	29.89
Gross notional of derivatives	72.84%	121.49	181.15	166.79	193.84	0.91	40.76	98.91	227.94	961.98
Financing	35.80%	10.81	20.70	30.19	24.88	0.73	4.45	25.40	44.08	95.34
Senior security	1.23%	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Aggregate exposure incl. financing	87.65%	132.29	176.90	150.93	181.42	0.91	44.08	88.92	199.52	961.98
Aggregate exposure incl. financing & Senior Sec	87.65%	132.29	176.90	150.93	181.42	0.91	44.08	88.92	199.52	961.98

Panel E: Traditional mutual funds

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 899)	100%	1,537	5,361	1,537	5,361	0	67	271	1,205	96,793
Currency	12.57%	2.09	10.90	16.60	26.64	0.00	1.51	7.82	21.41	200.18
Interest rate	13.68%	5.34	24.26	39.00	54.85	0.05	4.98	18.68	56.29	330.19
Interest rate (Cleared/exch-trd)	12.57%	4.32	19.97	34.38	46.42	0.05	4.69	17.02	51.76	288.42
Interest rate (OTC)	4.78%	1.01	8.17	21.22	31.44	0.08	2.76	9.13	32.13	147.27
CDS	5.23%	0.70	5.65	13.47	21.15	0.02	0.62	4.73	20.64	83.80
CDS (Cleared)	3.23%	0.41	4.33	12.58	21.04	0.06	0.74	2.81	13.56	83.80
CDS (OTC)	3.78%	0.30	3.34	7.89	15.54	0.02	0.39	2.44	8.61	80.90
Equity	14.57%	1.98	12.30	13.56	29.77	0.00	0.88	3.02	11.97	199.78
Commodity	0.56%	0.05	1.05	9.56	11.65	0.23	1.37	2.15	18.62	25.42
Futures	19.58%	4.39	20.19	22.40	41.05	0.05	2.19	6.75	28.14	399.96
Swaps	9.34%	3.08	17.51	32.94	48.17	0.00	2.11	13.93	43.24	217.05
Forwards	11.90%	1.74	8.42	14.59	20.27	0.00	1.51	7.31	20.28	112.62
Written option	5.67%	0.96	7.33	16.86	26.28	0.00	2.15	7.42	19.23	141.09
Purchased option	4.23%	1.05	7.82	24.78	29.66	0.05	5.19	12.05	32.42	143.44
Purchased swaption	1.78%	0.30	4.13	16.97	26.83	0.02	1.15	3.89	17.78	84.62
Gross notional of derivatives	28.59%	10.15	35.87	35.52	60.07	0.00	2.59	10.21	39.01	399.96
Financing	6.56%	0.53	4.37	8.05	15.31	0.00	0.48	1.80	9.49	76.79
Senior security	2.00%	0.00	0.01	0.06	0.08	0.00	0.01	0.03	0.10	0.32
Aggregate exposure incl. financing	30.48%	10.68	36.53	35.05	59.43	0.00	1.99	10.18	38.43	399.96
Aggregate exposure incl. financing & Senior Sec	31.37%	10.68	36.53	34.06	58.87	0.00	1.69	8.99	36.14	399.96

Panel F: Open-end funds (All)

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 980)	100%	1,462	5,202	1,462	5,202	0	58	241	1,081	96,793
Currency	14.59%	4.31	23.82	29.56	56.20	0.00	1.84	10.31	28.07	356.36
Interest rate	14.80%	8.03	38.38	54.30	86.52	0.05	5.87	22.25	71.51	528.85
Interest rate (Cleared/exch-trd)	13.47%	6.73	35.16	50.00	84.03	0.05	5.40	19.88	57.68	528.85
Interest rate (OTC)	5.41%	1.30	9.25	24.04	32.46	0.08	2.91	10.24	36.47	147.27
CDS	6.22%	1.05	7.32	16.80	24.60	0.02	0.75	6.83	21.02	93.63
CDS (Cleared)	3.67%	0.51	5.13	13.79	23.43	0.06	0.74	5.69	11.71	93.63
CDS (OTC)	4.69%	0.54	5.01	11.49	20.45	0.02	0.70	4.12	10.70	85.19
Equity	17.65%	5.08	23.43	28.75	49.39	0.00	1.38	5.20	32.42	265.37
Commodity	1.63%	0.89	9.58	54.42	53.70	0.23	14.69	39.95	97.03	186.70
Futures	22.14%	8.38	43.50	37.82	86.35	0.05	2.98	13.01	36.14	859.31
Swaps	12.04%	5.87	26.52	48.71	61.47	0.00	4.01	28.69	72.77	280.93
Forwards	13.47%	3.17	18.77	23.51	46.38	0.00	1.92	9.52	24.46	356.36
Written option	7.35%	1.95	14.56	26.53	47.55	0.00	2.55	10.42	30.09	320.46
Purchased option	6.12%	2.01	13.95	32.85	46.89	0.05	5.62	15.65	43.36	303.54
Purchased swaption	2.55%	0.41	4.31	16.10	22.21	0.02	1.64	5.38	19.41	84.62
Gross notional of derivatives	32.24%	19.36	69.30	60.03	111.70	0.00	3.37	17.87	65.98	961.98
Financing	8.98%	1.38	7.78	15.34	21.56	0.00	0.89	4.14	24.62	95.34
Senior security	1.94%	0.00	0.01	0.06	0.08	0.00	0.01	0.02	0.10	0.32
Aggregate exposure incl. financing	35.20%	20.73	70.03	58.90	108.17	0.00	3.25	18.68	70.34	961.98
Aggregate exposure incl. financing & Senior Sec	36.02%	20.74	70.03	57.57	107.30	0.00	2.85	17.22	67.63	961.98

Panel G: Closed-end funds

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 58)	100%	430	524	430	524	5	137	261	456	3,198
Currency	18.97%	1.53	3.92	8.07	5.44	0.43	3.27	9.88	10.36	18.86
Interest rate	17.24%	3.54	11.65	20.55	21.71	4.97	9.15	14.65	20.49	79.00
Interest rate (Cleared/exch-trd)	17.24%	2.83	7.45	16.39	10.21	4.97	9.15	14.65	20.49	37.41
Interest rate (OTC)	1.72%	0.72	5.46	41.59		41.59	41.59	41.59	41.59	41.59
CDS	5.17%	0.11	0.54	2.17	1.26	1.27	1.27	1.63	3.61	3.61
CDS (Cleared)	1.72%	0.06	0.47	3.61		3.61	3.61	3.61	3.61	3.61
CDS (OTC)	3.45%	0.05	0.27	1.45	0.25	1.27	1.27	1.45	1.63	1.63
Equity	22.41%	8.96	20.86	39.97	26.91	1.78	25.59	42.01	48.66	91.22
Commodity	0.00%	0.00	0.00							
Futures	15.52%	1.64	4.41	10.59	5.65	2.02	5.61	12.15	14.00	19.74
Swaps	12.07%	1.56	5.55	12.92	11.01	0.95	1.27	16.00	20.49	28.85
Forwards	18.97%	1.53	3.92	8.07	5.44	0.43	3.27	9.88	10.36	18.86
Written option	22.41%	9.41	21.18	41.99	25.46	0.83	25.83	42.01	48.66	91.22
Purchased option	1.72%	0.19	1.45	11.03		11.03	11.03	11.03	11.03	11.03
Purchased swaption	1.72%	0.53	4.01	30.52		30.52	30.52	30.52	30.52	30.52
Gross notional of derivatives	46.55%	14.15	23.26	30.39	25.95	0.43	9.90	22.03	46.92	91.22
Financing	34.48%	4.18	11.52	12.11	17.24	0.07	0.22	1.65	23.16	46.95
Senior security	65.52%	24.74	24.07	37.76	19.69	0.02	24.22	41.12	53.28	66.42
Aggregate exposure incl. financing	67.24%	18.32	26.69	27.25	28.62	0.07	2.02	21.07	45.30	124.78
Aggregate exposure incl. financing & Senior Sec	86.21%	43.06	28.59	49.95	24.48	0.20	41.43	52.17	63.46	124.78

Panel H: Alt Strategies ETFs

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 22)	100%	197	369	197	369	3	7	55	176	1,626
Currency	9.09%	6.04	22.21	66.39	48.44	32.13	32.13	66.39	100.64	100.64
Interest rate	18.18%	38.70	90.97	212.84	92.23	132.90	132.97	212.29	292.71	293.87
Interest rate (Cleared/exch-trd)	4.55%	0.13	0.60	2.82		2.82	2.82	2.82	2.82	2.82
Interest rate (OTC)	18.18%	38.57	90.83	212.13	93.05	130.08	131.56	212.29	292.71	293.87
CDS	0.00%	0.00	0.00							
CDS (Cleared)	0.00%	0.00	0.00							
CDS (OTC)	0.00%	0.00	0.00							
Equity	68.18%	103.10	102.53	151.22	89.29	15.99	53.12	199.88	200.49	283.12
Commodity	4.55%	4.83	22.64	106.18		106.18	106.18	106.18	106.18	106.18
Futures	36.36%	8.11	22.65	22.30	34.32	2.82	5.93	12.45	16.31	106.18
Swaps	81.82%	136.11	104.25	166.35	89.98	15.99	106.45	191.60	207.32	293.87
Forwards	9.09%	6.04	22.21	66.39	48.44	32.13	32.13	66.39	100.64	100.64
Written option	4.55%	2.41	11.32	53.12		53.12	53.12	53.12	53.12	53.12
Purchased option	4.55%	1.13	5.31	24.91		24.91	24.91	24.91	24.91	24.91
Purchased swaption	0.00%	0.00	0.00							
Gross notional of derivatives	95.45%	152.66	90.91	159.93	86.35	15.99	106.18	133.04	200.49	293.87
Financing	4.55%	4.04	18.96	88.94		88.94	88.94	88.94	88.94	88.94
Senior security	0.00%	0.00	0.00							
Aggregate exposure incl. financing	95.45%	156.71	86.67	164.17	81.25	15.99	110.35	133.04	200.49	293.87
Aggregate exposure incl. financing & Senior Sec	95.45%	156.71	86.67	164.17	81.25	15.99	110.35	133.04	200.49	293.87

Panel I: Traditional ETFs

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 118)	100%	1,521	4,745	1,521	4,745	2	18	116	708	38,555
Currency	7.63%	5.31	32.70	69.68	102.91	0.54	0.99	6.08	102.02	311.77
Interest rate	0.85%	0.04	0.43	4.69		4.69	4.69	4.69	4.69	4.69
Interest rate (Cleared/exch-trd)	0.85%	0.04	0.43	4.69		4.69	4.69	4.69	4.69	4.69
Interest rate (OTC)	0.00%	0.00	0.00							
CDS	0.00%	0.00	0.00							
CDS (Cleared)	0.00%	0.00	0.00							
CDS (OTC)	0.00%	0.00	0.00							
Equity	8.47%	1.33	10.36	15.73	33.82	0.01	0.10	0.46	2.28	99.90
Commodity	0.00%	0.00	0.00							
Futures	8.47%	0.93	9.20	10.93	31.30	0.01	0.10	0.46	2.28	99.90
Swaps	0.85%	0.08	0.90	9.82		9.82	9.82	9.82	9.82	9.82
Forwards	7.63%	5.31	32.70	69.68	102.91	0.54	0.99	6.08	102.02	311.77
Written option	0.85%	0.36	3.95	42.92		42.92	42.92	42.92	42.92	42.92
Purchased option	0.00%	0.00	0.00							
Purchased swaption	0.00%	0.00	0.00							
Gross notional of derivatives	16.10%	6.69	34.08	41.53	77.62	0.01	0.16	1.20	99.90	311.77
Financing	0.85%	0.12	1.33	14.44		14.44	14.44	14.44	14.44	14.44
Senior security	0.00%	0.00	0.00							
Aggregate exposure incl. financing	16.10%	6.81	34.11	42.29	77.32	0.01	0.16	1.20	99.90	311.77
Aggregate exposure incl. financing & Senior Sec	16.10%	6.81	34.11	42.29	77.32	0.01	0.16	1.20	99.90	311.77

Panel J: ETFs (All)

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 140)	100%	1,313	4,382	1,313	4,382	2	17	103	585	38,555
Currency	7.86%	5.43	31.22	69.08	93.32	0.54	0.99	32.13	102.02	311.77
Interest rate	3.57%	6.11	38.07	171.21	122.65	4.69	132.90	133.04	291.54	293.87
Interest rate (Cleared/exch-trd)	1.43%	0.05	0.46	3.76	1.33	2.82	2.82	3.76	4.69	4.69
Interest rate (OTC)	2.86%	6.06	38.01	212.13	93.05	130.08	131.56	212.29	292.71	293.87
CDS	0.00%	0.00	0.00							
CDS (Cleared)	0.00%	0.00	0.00							
CDS (OTC)	0.00%	0.00	0.00							
Equity	17.86%	17.33	55.32	97.02	98.33	0.01	1.20	53.12	200.00	283.12
Commodity	0.71%	0.76	8.97	106.18		106.18	106.18	106.18	106.18	106.18
Futures	12.86%	2.05	12.48	15.98	32.21	0.01	0.16	2.95	13.73	106.18
Swaps	13.57%	21.46	64.11	158.11	94.53	9.82	98.18	186.28	207.32	293.87
Forwards	7.86%	5.43	31.22	69.08	93.32	0.54	0.99	32.13	102.02	311.77
Written option	1.43%	0.69	5.75	48.02	7.21	42.92	42.92	48.02	53.12	53.12
Purchased option	0.71%	0.18	2.11	24.91		24.91	24.91	24.91	24.91	24.91
Purchased swaption	0.00%	0.00	0.00							
Gross notional of derivatives	28.57%	29.63	71.20	103.69	100.95	0.01	2.01	101.12	199.94	311.77
Financing	1.43%	0.74	7.61	51.69	52.68	14.44	14.44	51.69	88.94	88.94
Senior security	0.00%	0.00	0.00							
Aggregate exposure incl. financing	28.57%	30.36	71.50	106.28	99.72	0.01	2.01	101.81	199.94	311.77
Aggregate exposure incl. financing & Senior Sec	28.57%	30.36	71.50	106.28	99.72	0.01	2.01	101.81	199.94	311.77

Panel K: Business development companies

	% non-zero	Unconditional		Conditional						
		mean	std	mean	std	min	q1	median	q3	max
Notional of Derivatives (as % of NAV)										
NAV (M) (Number of funds: 10)	100%	973	1,256	973	1,256	1	157	504	1,084	3,695
Currency	0.00%	0.00	0.00							
Interest rate	0.00%	0.00	0.00							
Interest rate (Cleared/exch-trd)	0.00%	0.00	0.00							
Interest rate (OTC)	0.00%	0.00	0.00							
CDS	0.00%	0.00	0.00							
CDS (Cleared)	0.00%	0.00	0.00							
CDS (OTC)	0.00%	0.00	0.00							
Equity	0.00%	0.00	0.00							
Commodity	0.00%	0.00	0.00							
Futures	0.00%	0.00	0.00							
Swaps	0.00%	0.00	0.00							
Forwards	0.00%	0.00	0.00							
Written option	0.00%	0.00	0.00							
Purchased option	0.00%	0.00	0.00							
Purchased swaption	0.00%	0.00	0.00							
Gross notional of derivatives	0.00%	0.00	0.00							
Financing	80.00%	15.95	23.10	19.94	24.40	1.54	5.72	10.72	25.35	74.39
Senior security	80.00%	42.44	28.84	53.05	20.65	24.52	36.66	51.40	71.48	80.77
Aggregate exposure incl. financing	80.00%	15.95	23.10	19.94	24.40	1.54	5.72	10.72	25.35	74.39
Aggregate exposure incl. financing & Senior Sec	80.00%	58.39	39.55	72.99	28.17	37.77	55.28	70.66	82.13	129.97

Figure 1: Cumulative growth of registered funds by investment category groups (2011-2014)

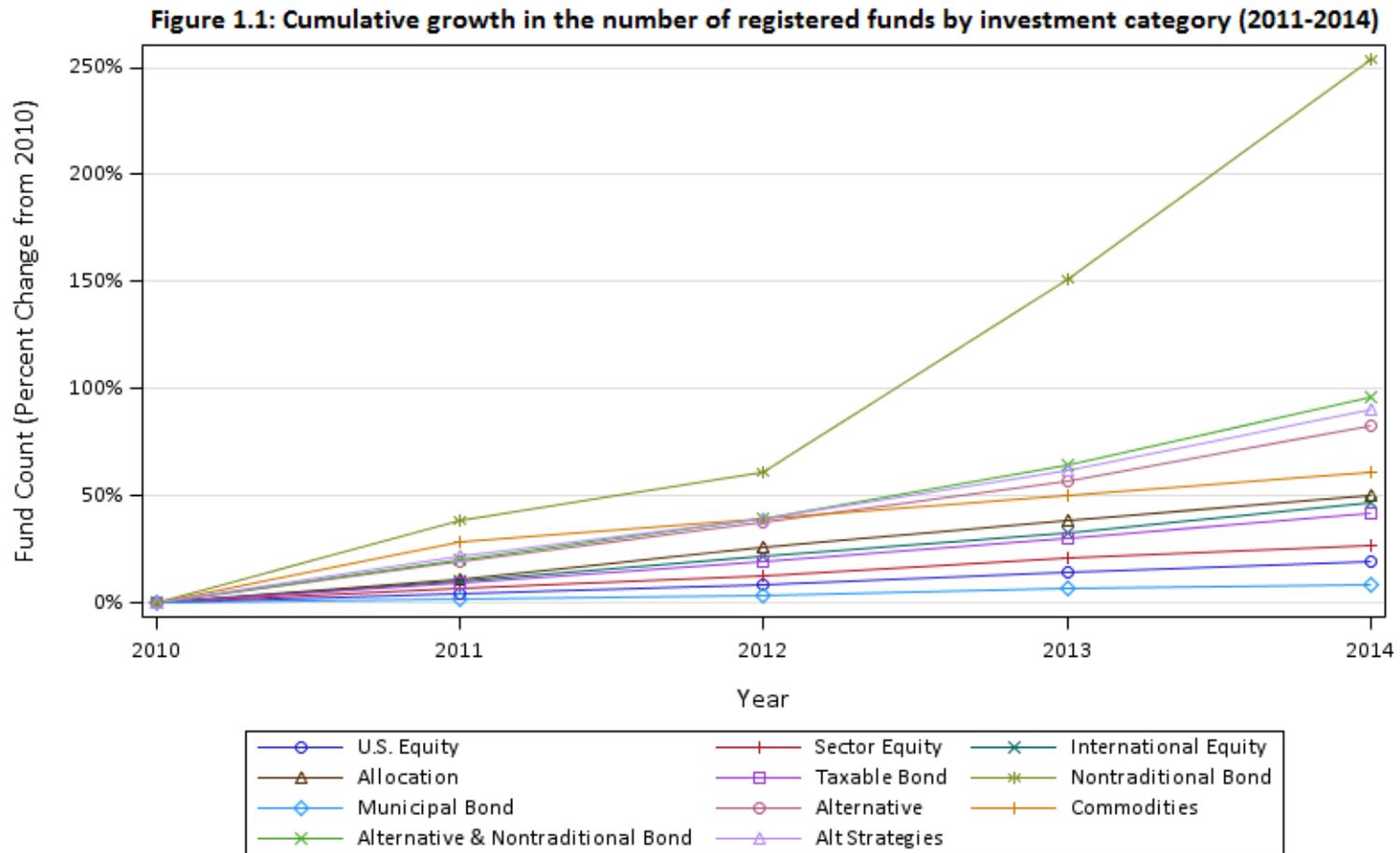


Figure 1.2: Cumulative growth in the AUM of registered funds by investment category (2011-2014)

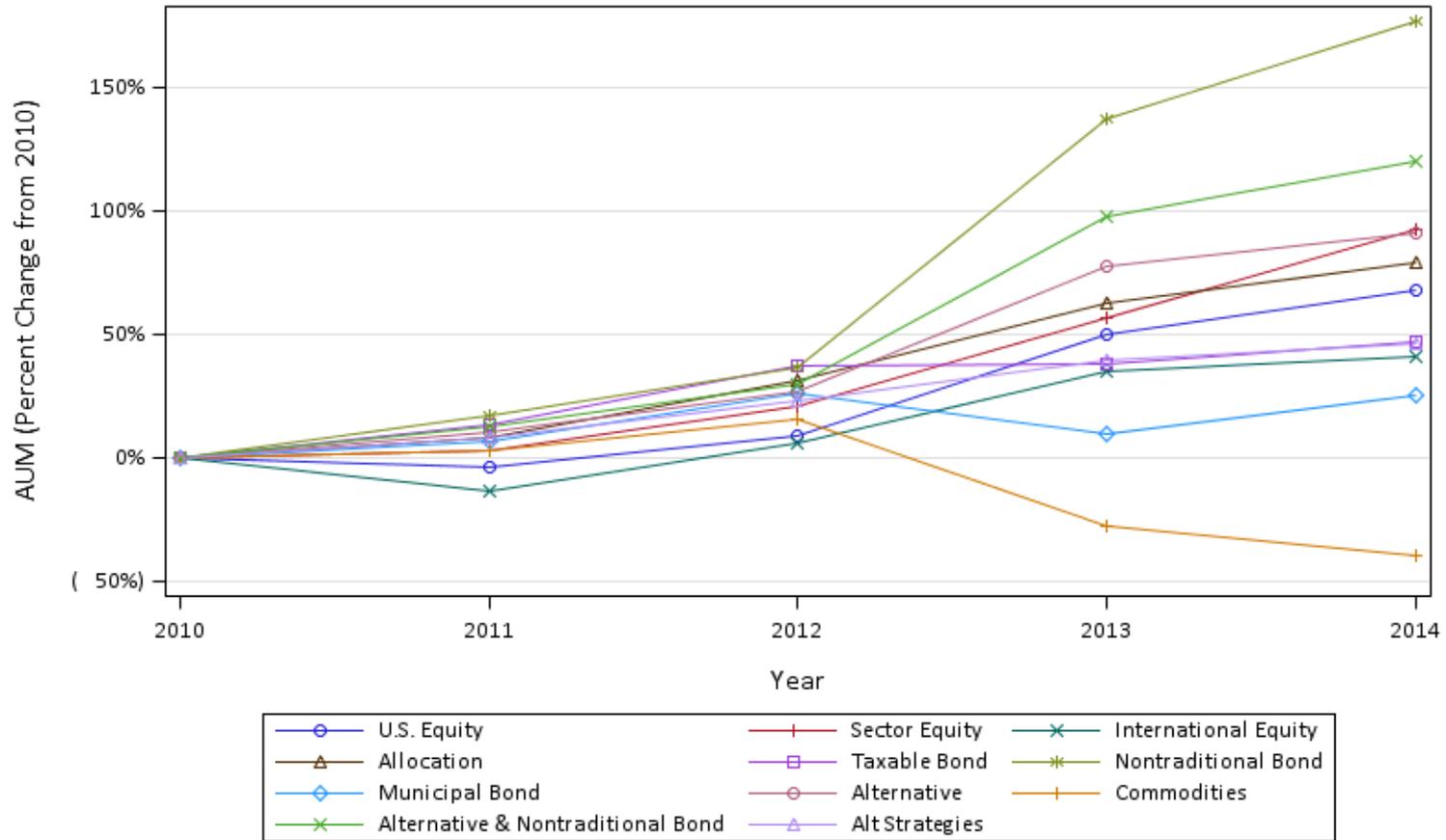


Figure 1.3: Cumulative net flow as % of AUM to registered funds by investment category (2011-2014)

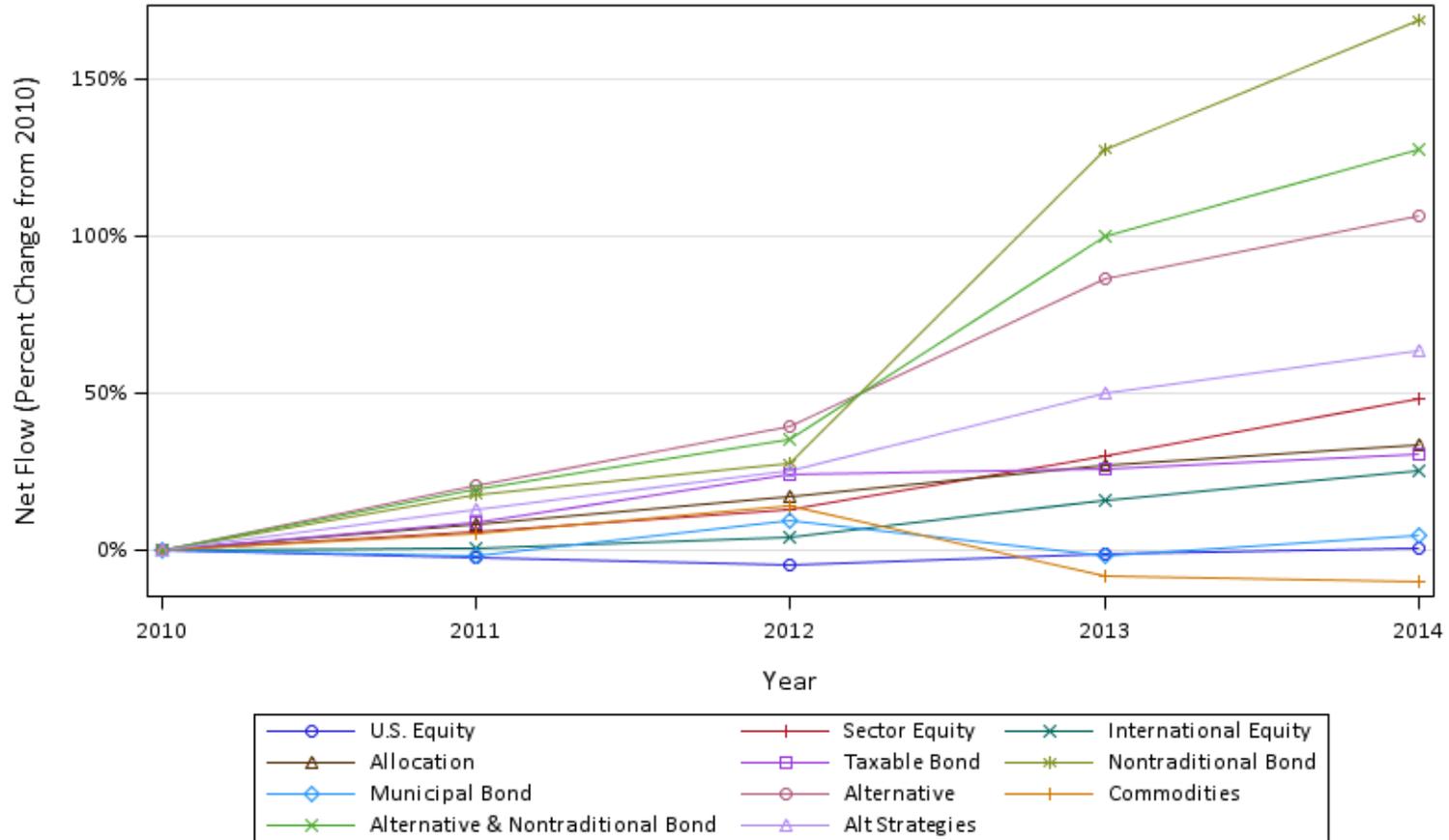


Figure 2: Growth of Alt Strategies funds by Morningstar categories

Figure 2.1: Growth in the number of registered funds by alternative investment category (1970-2014)

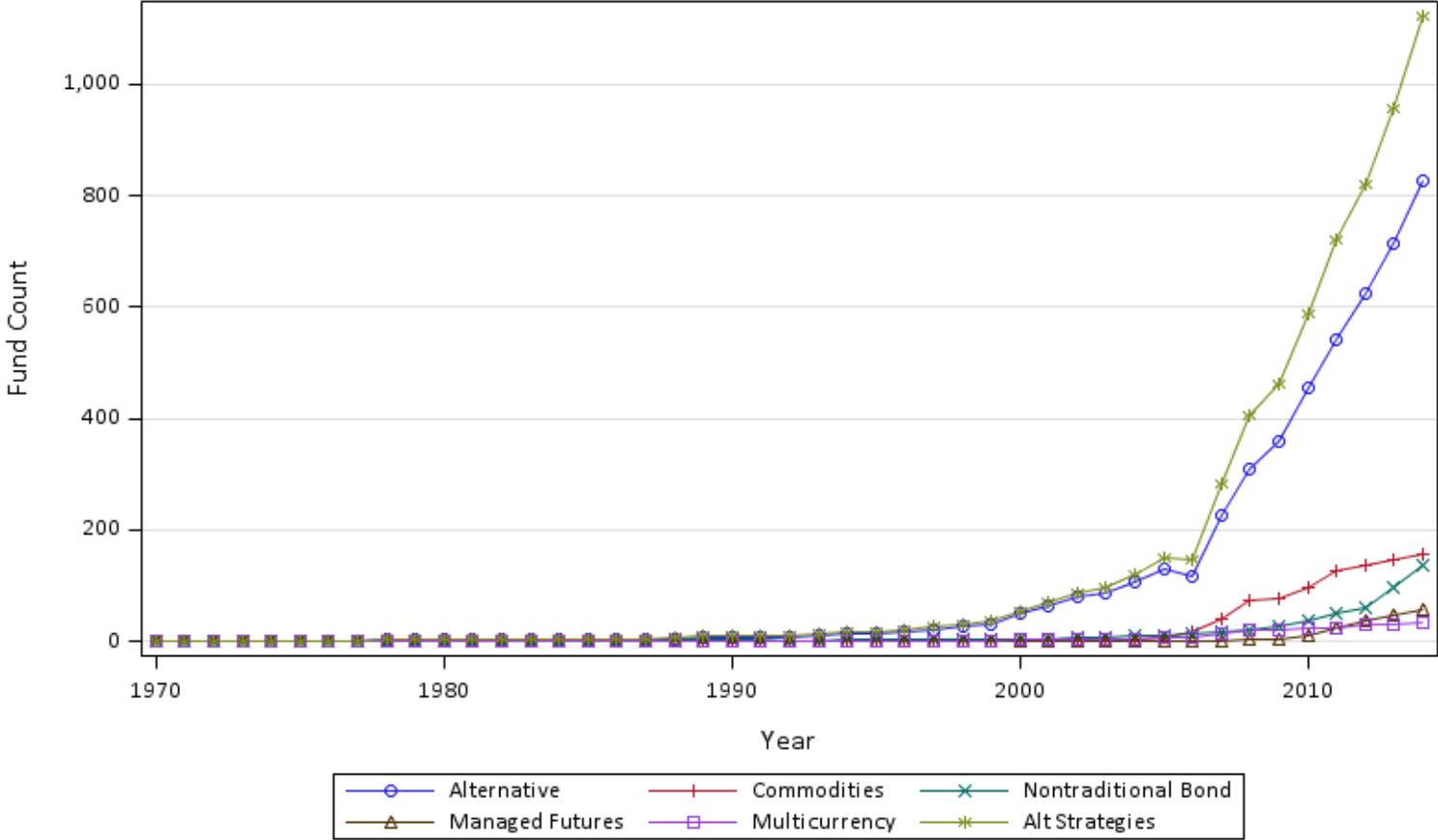


Figure 2.2: Growth in the AUM of registered funds by alternative investment category (1970-2014)

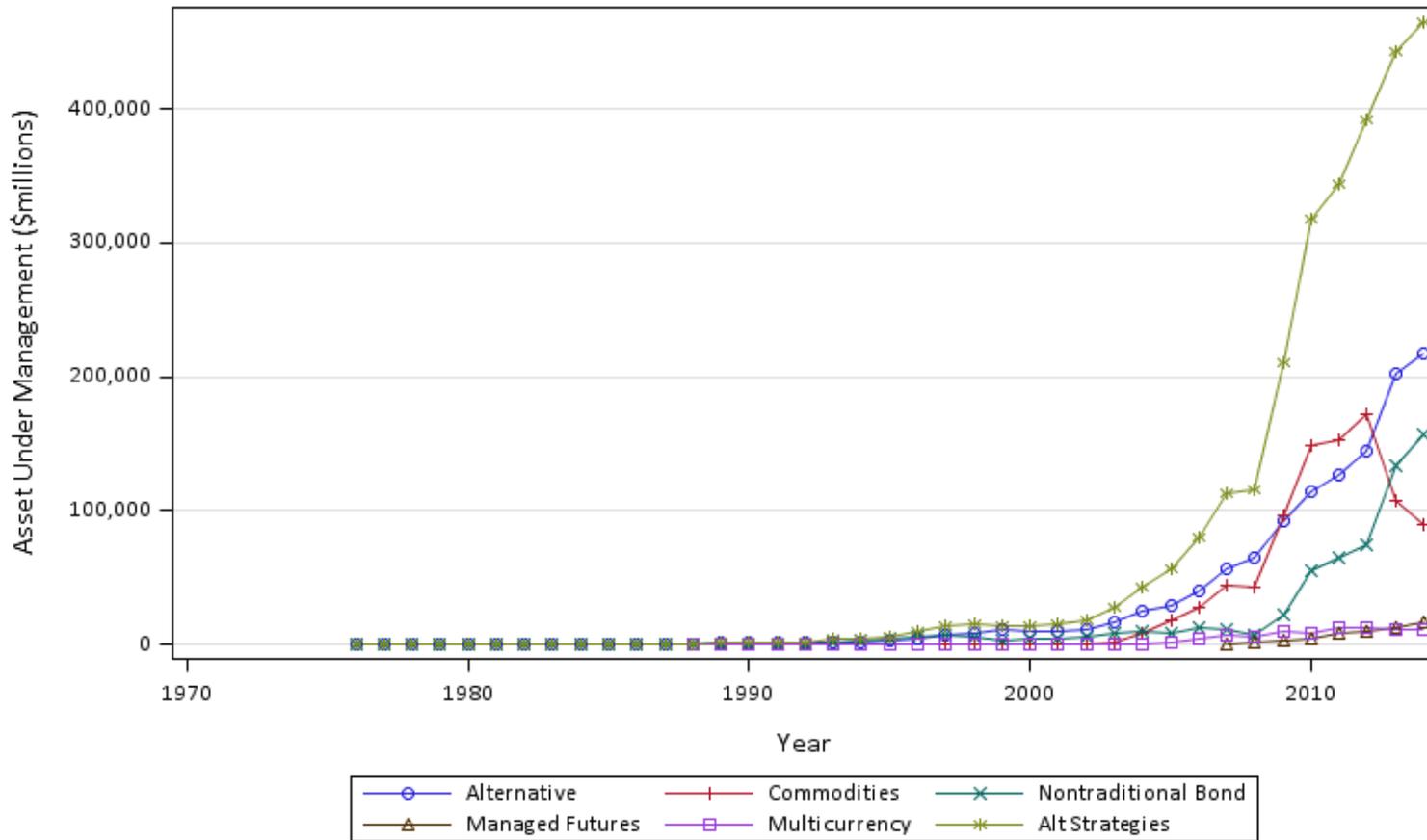


Figure 2.3: Growth in the net flows of registered funds by alternative investment category (1970-2014)

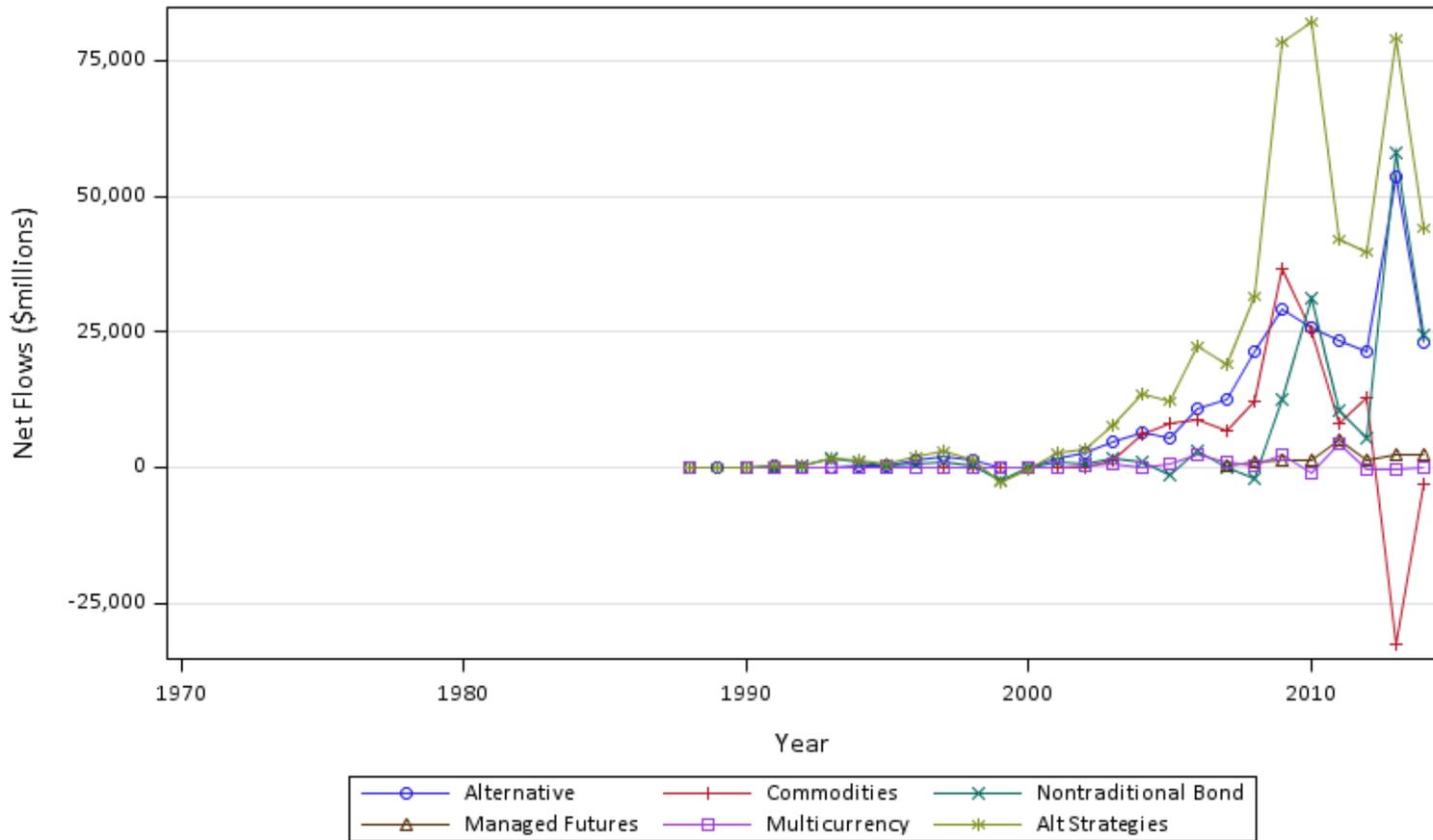
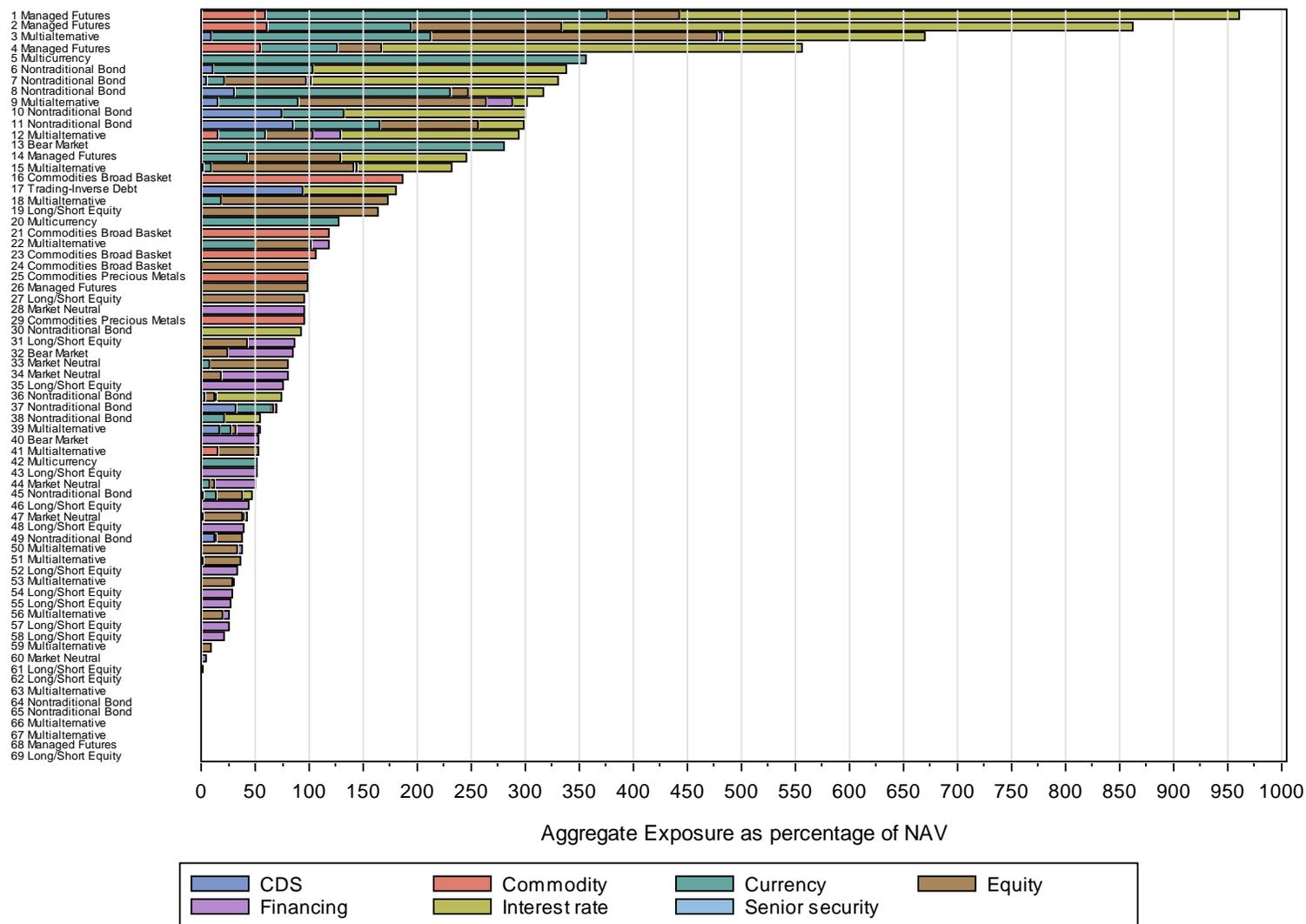
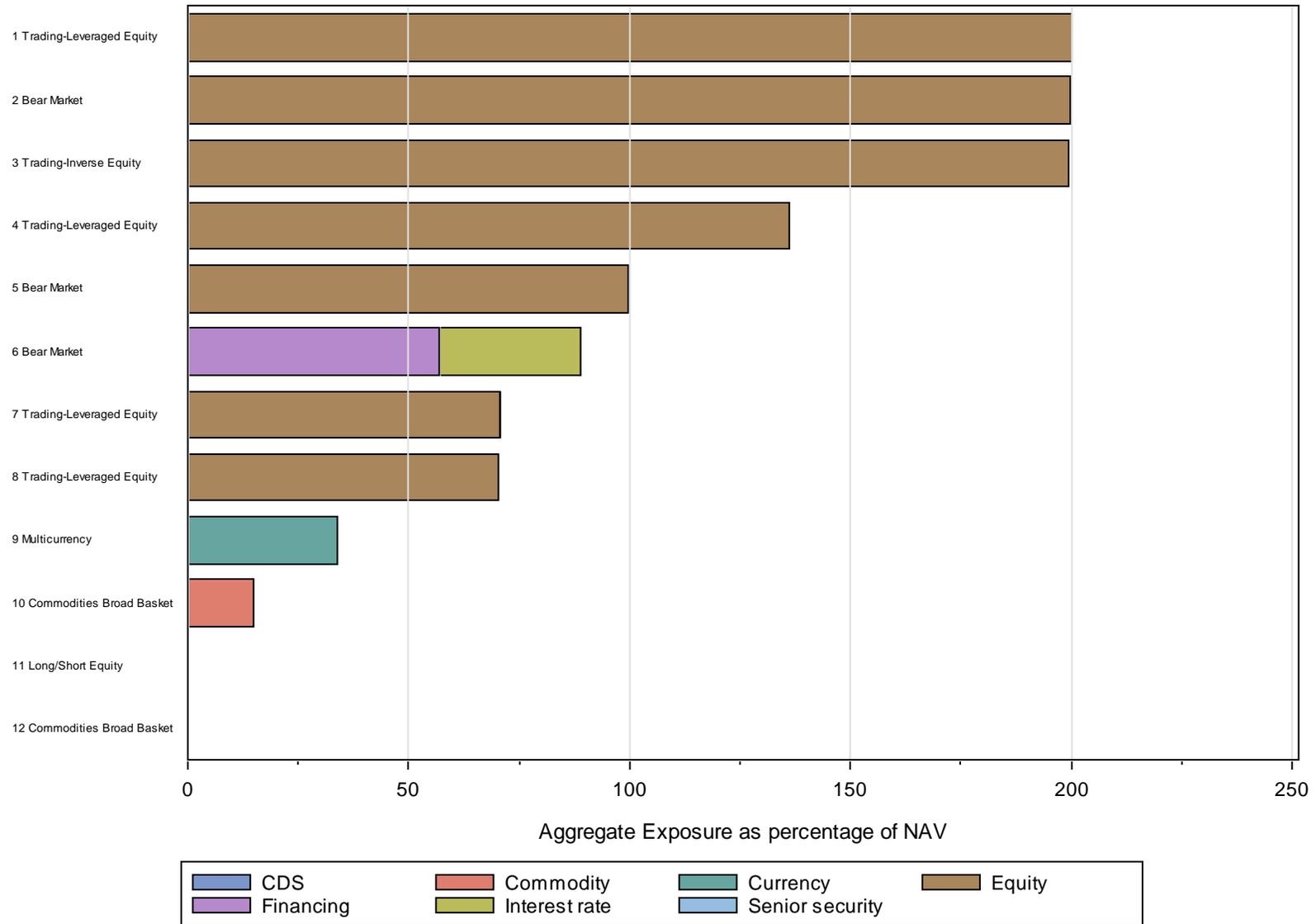


Figure 3: Gross Notional Exposure by Derivative Reference: Individual funds

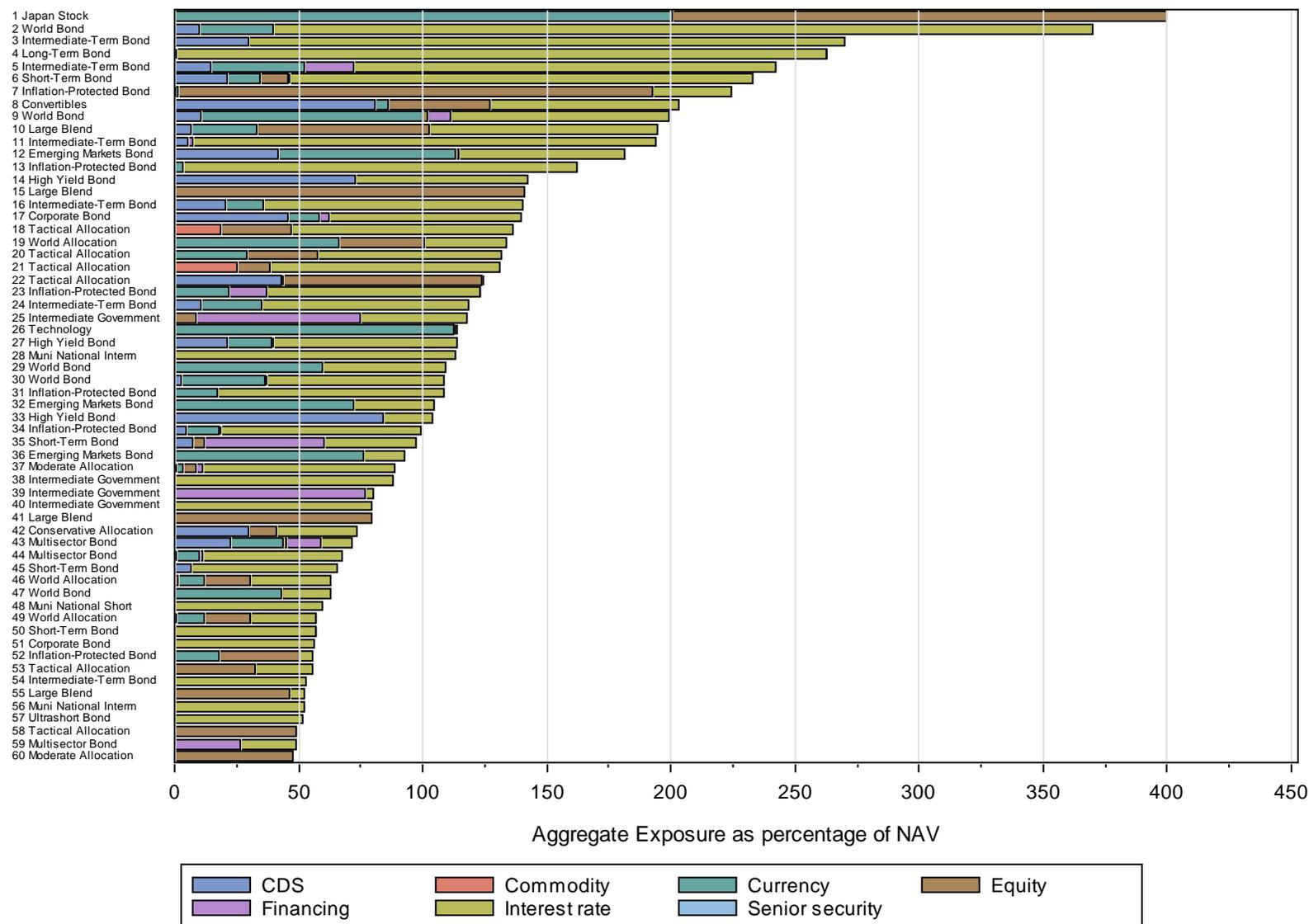
F3.1 Alt Strategies mutual funds (Non-index)



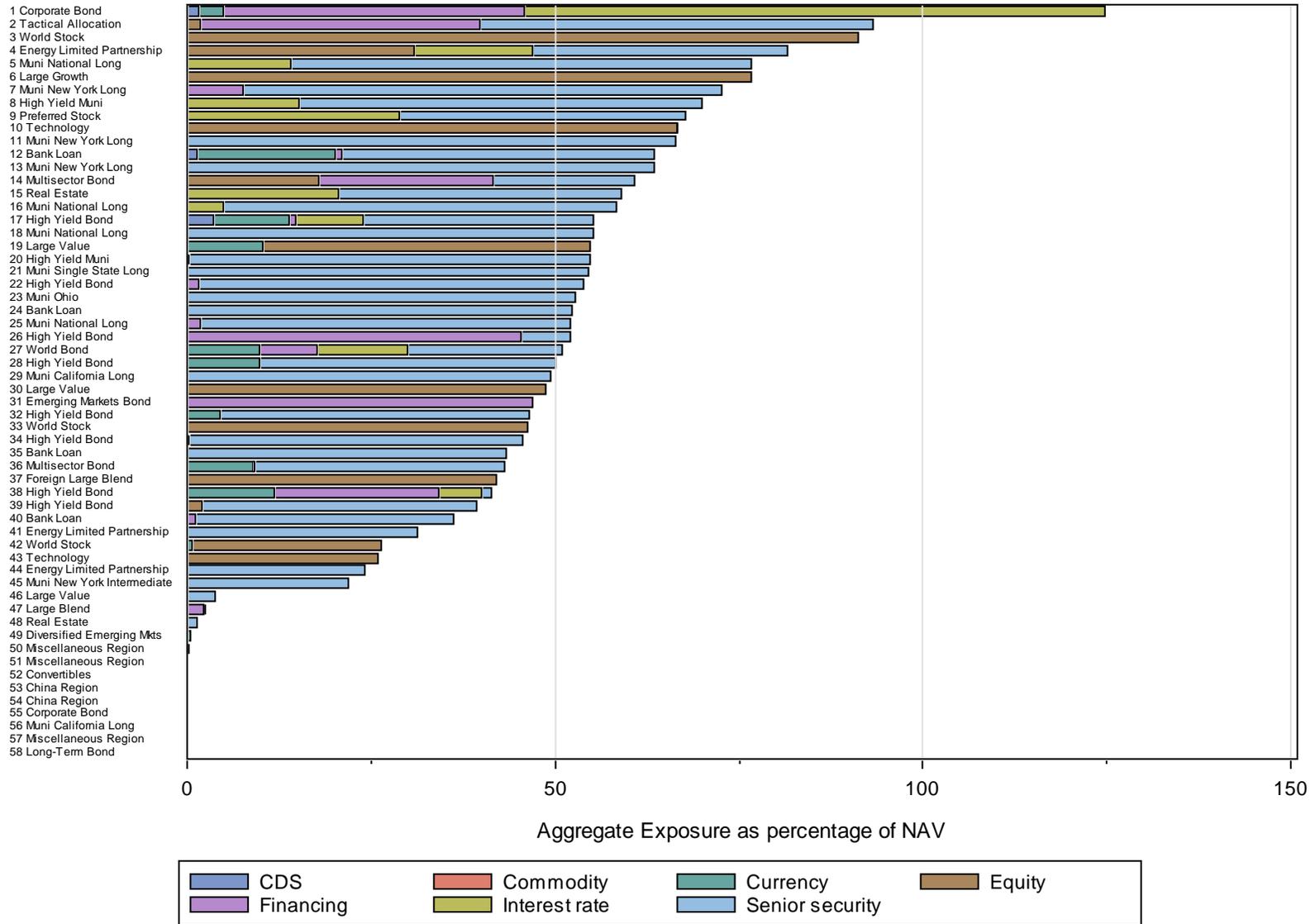
F3.2 Alt Strategies mutual funds (Index)



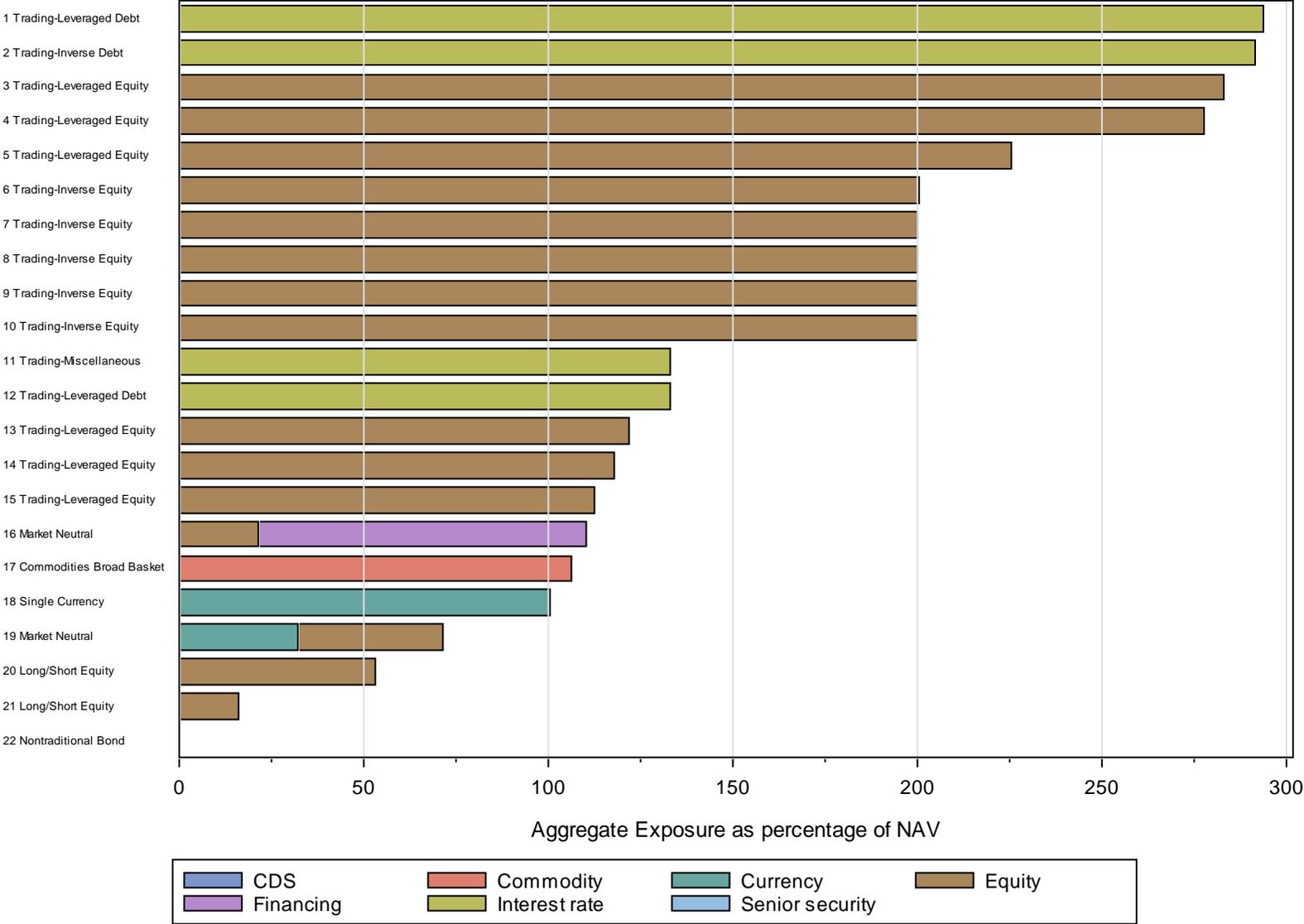
F3.3 Traditional mutual funds (Top 60)



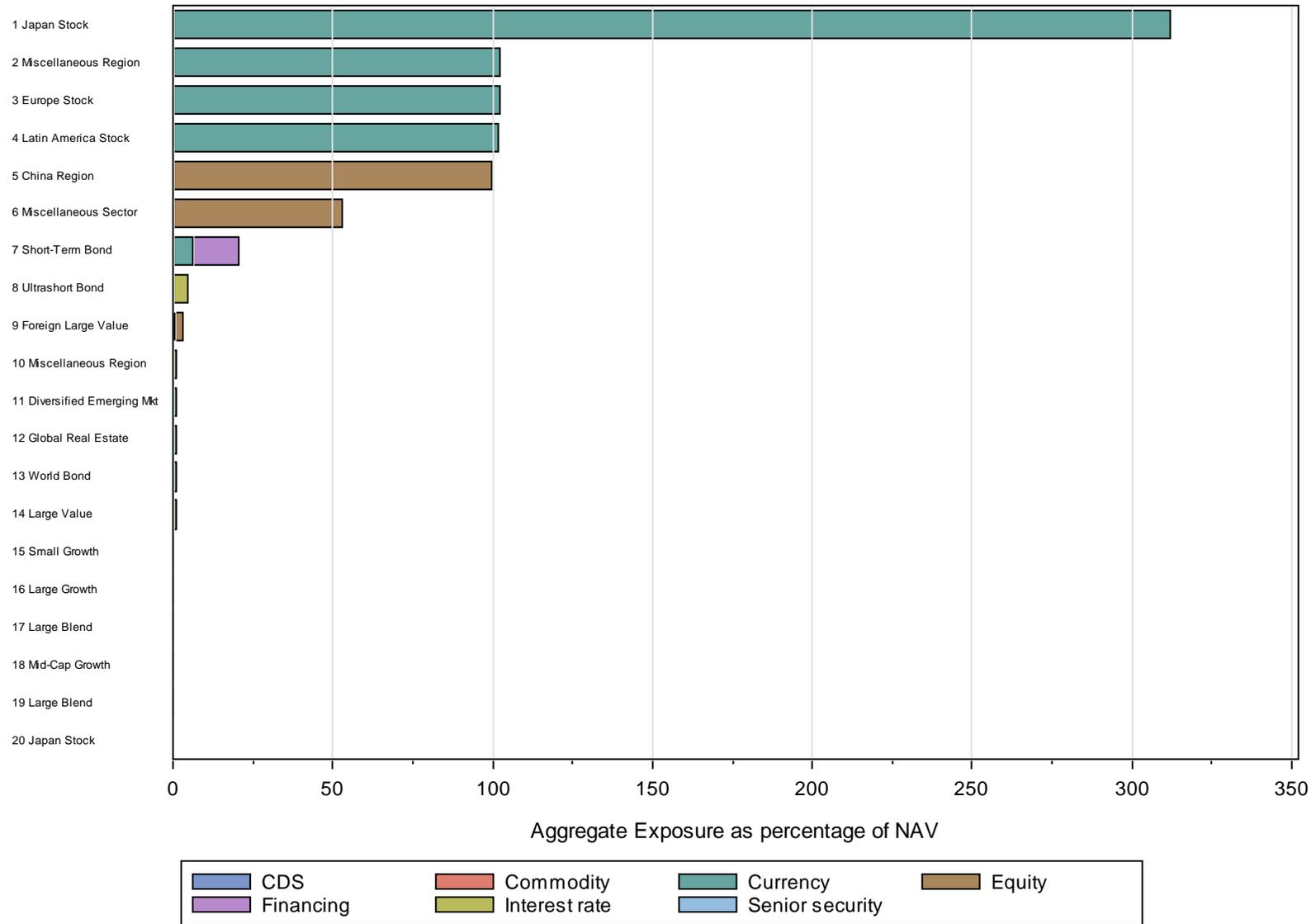
F3.4 Closed-end funds



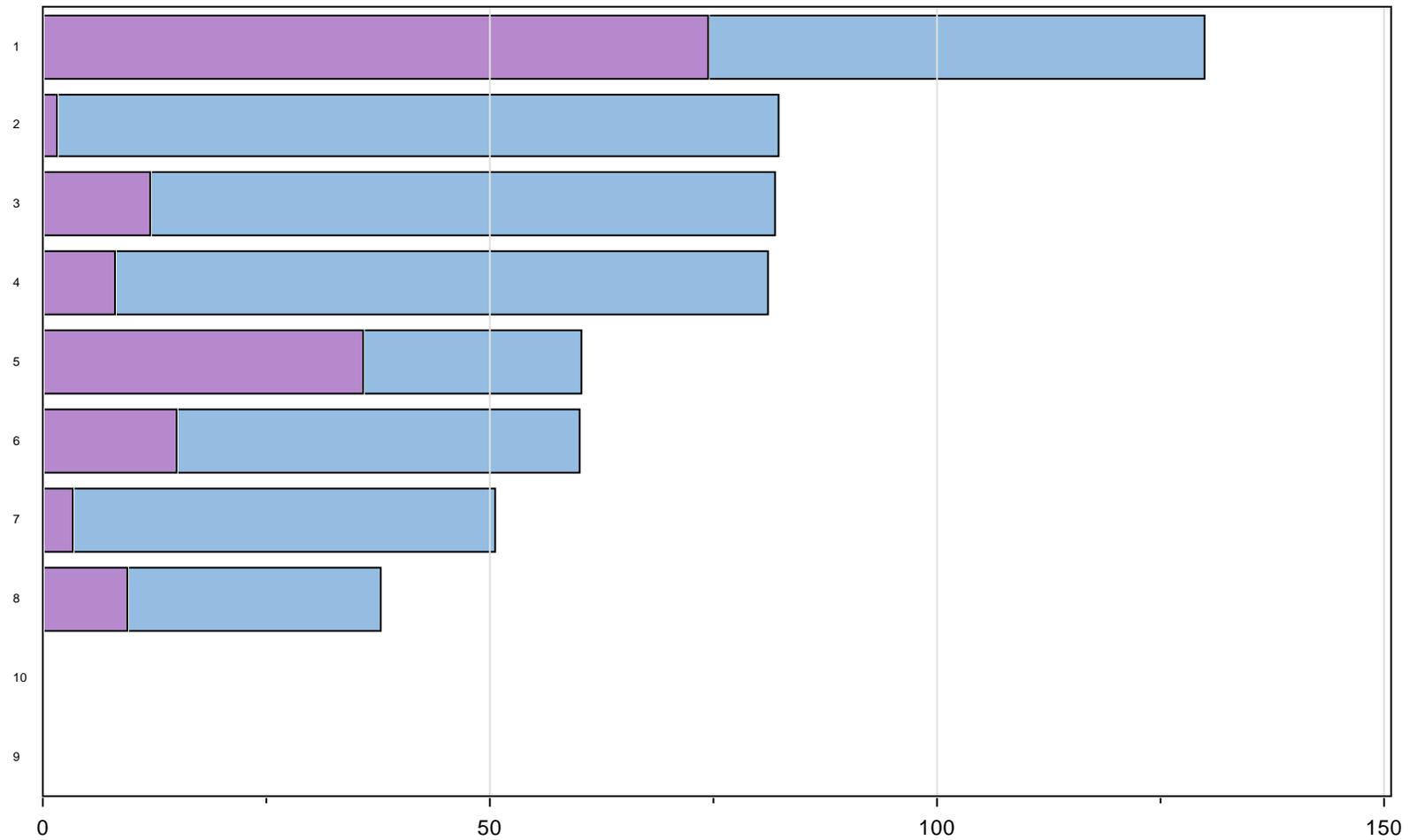
F3.5 Alt Strategies ETFs



F3.6 Traditional ETFs (Top 20)



F3.7 Business development company



Aggregate Exposure as percentage of NAV

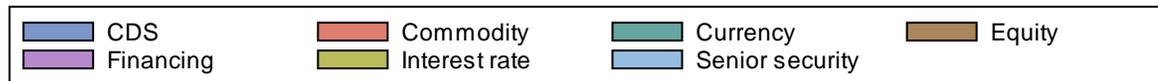
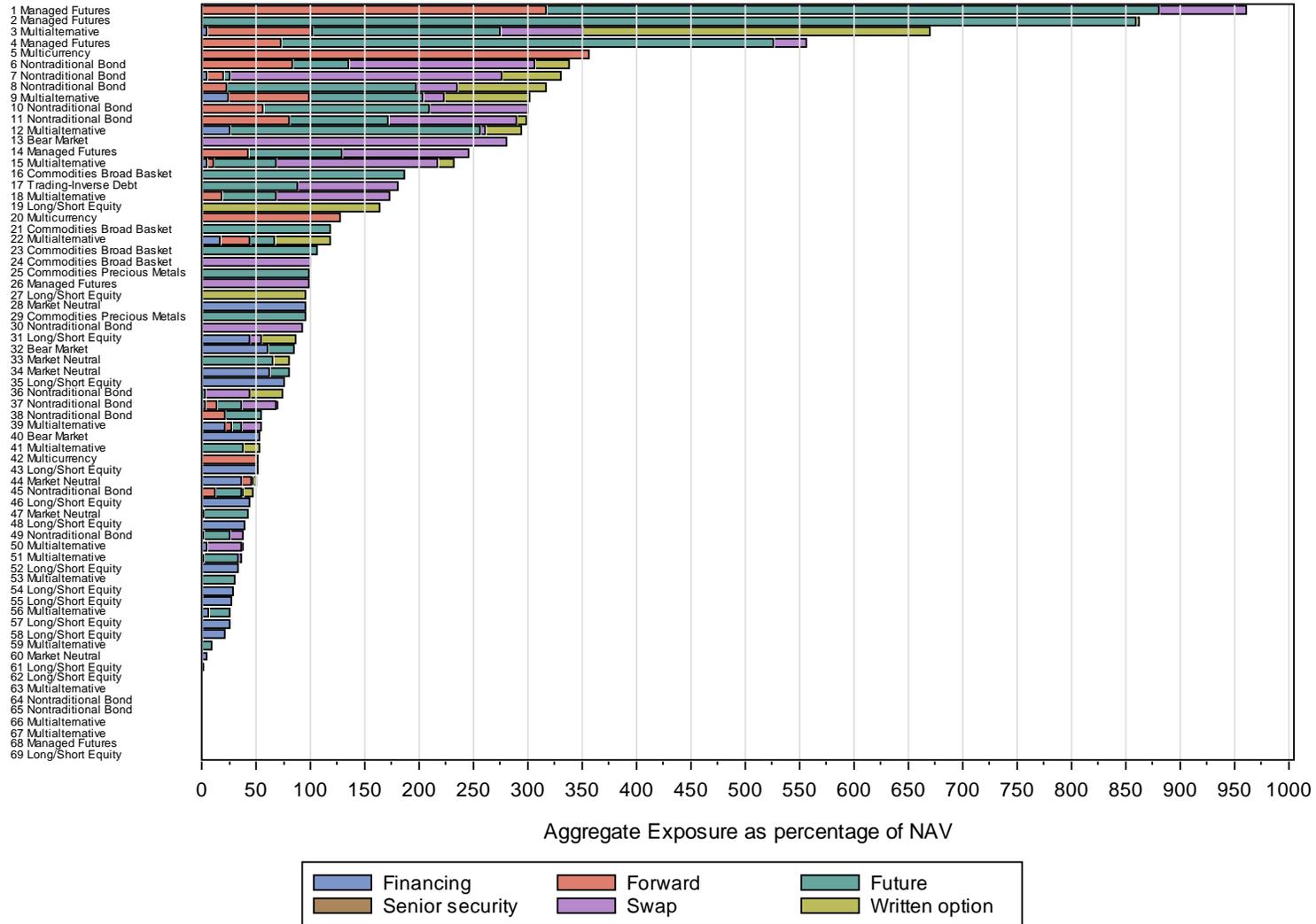
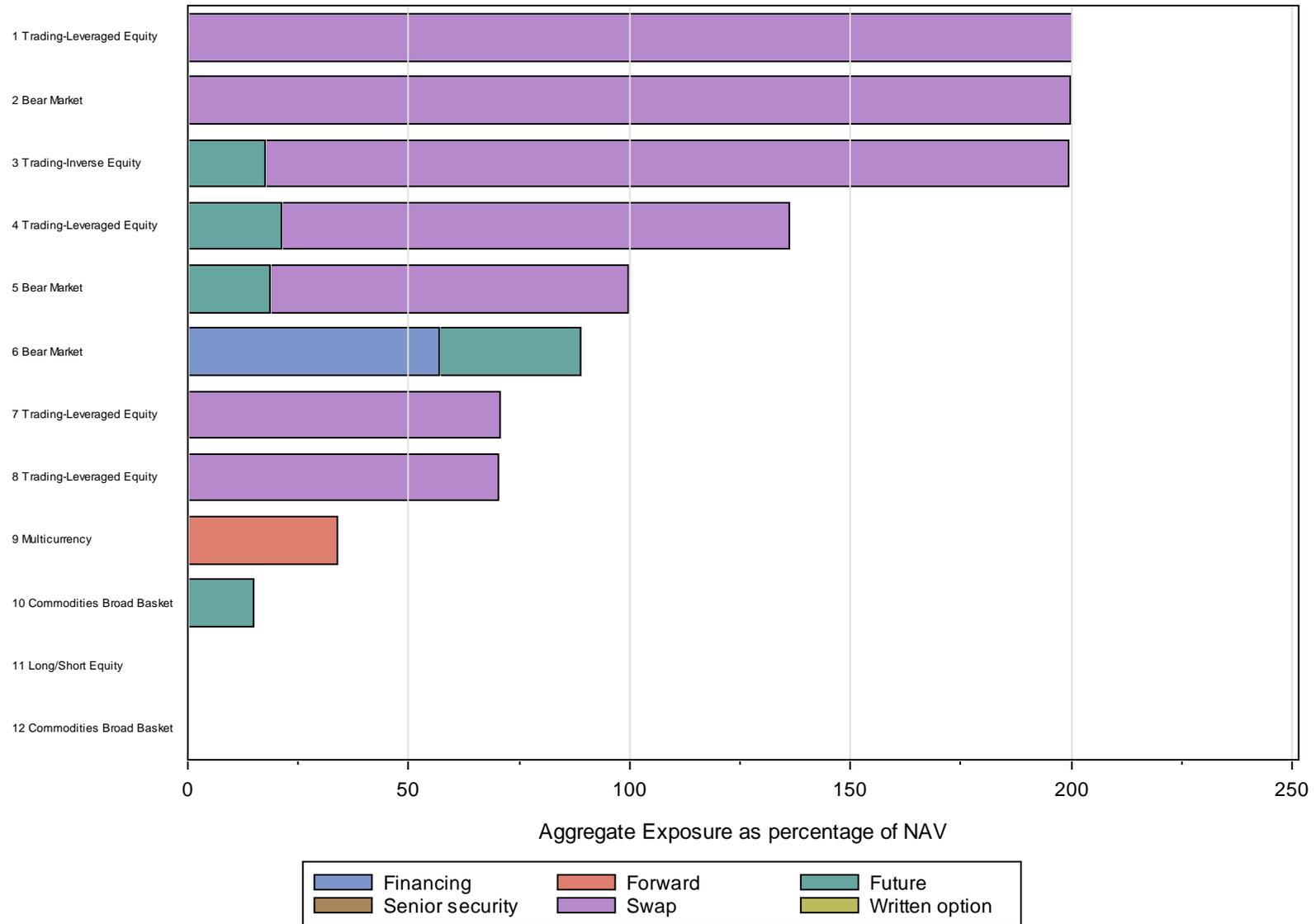


Figure 4: Gross Notional Exposure by Derivative instrument: Individual funds

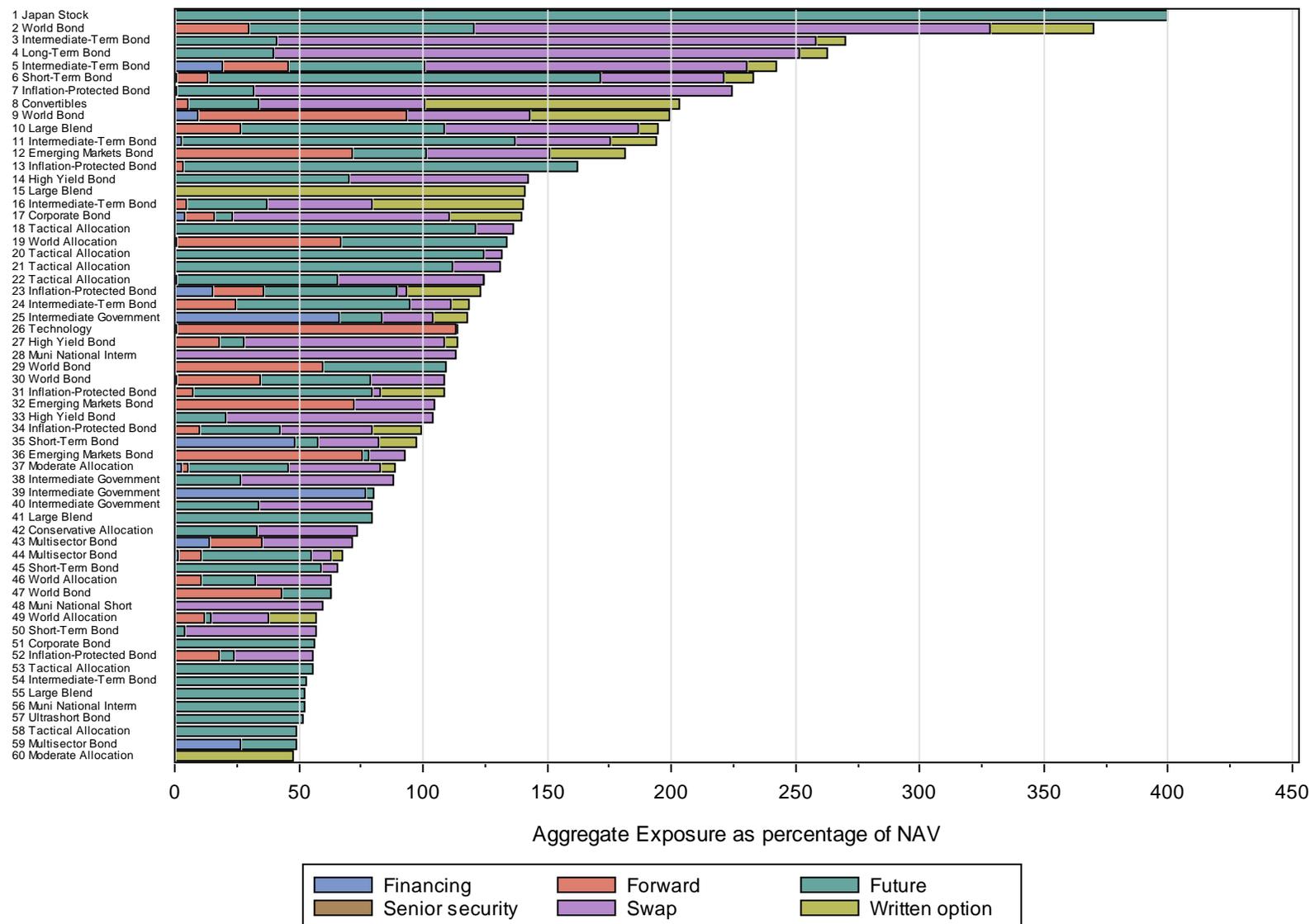
F4.1 Alt Strategies mutual funds (Non-index)



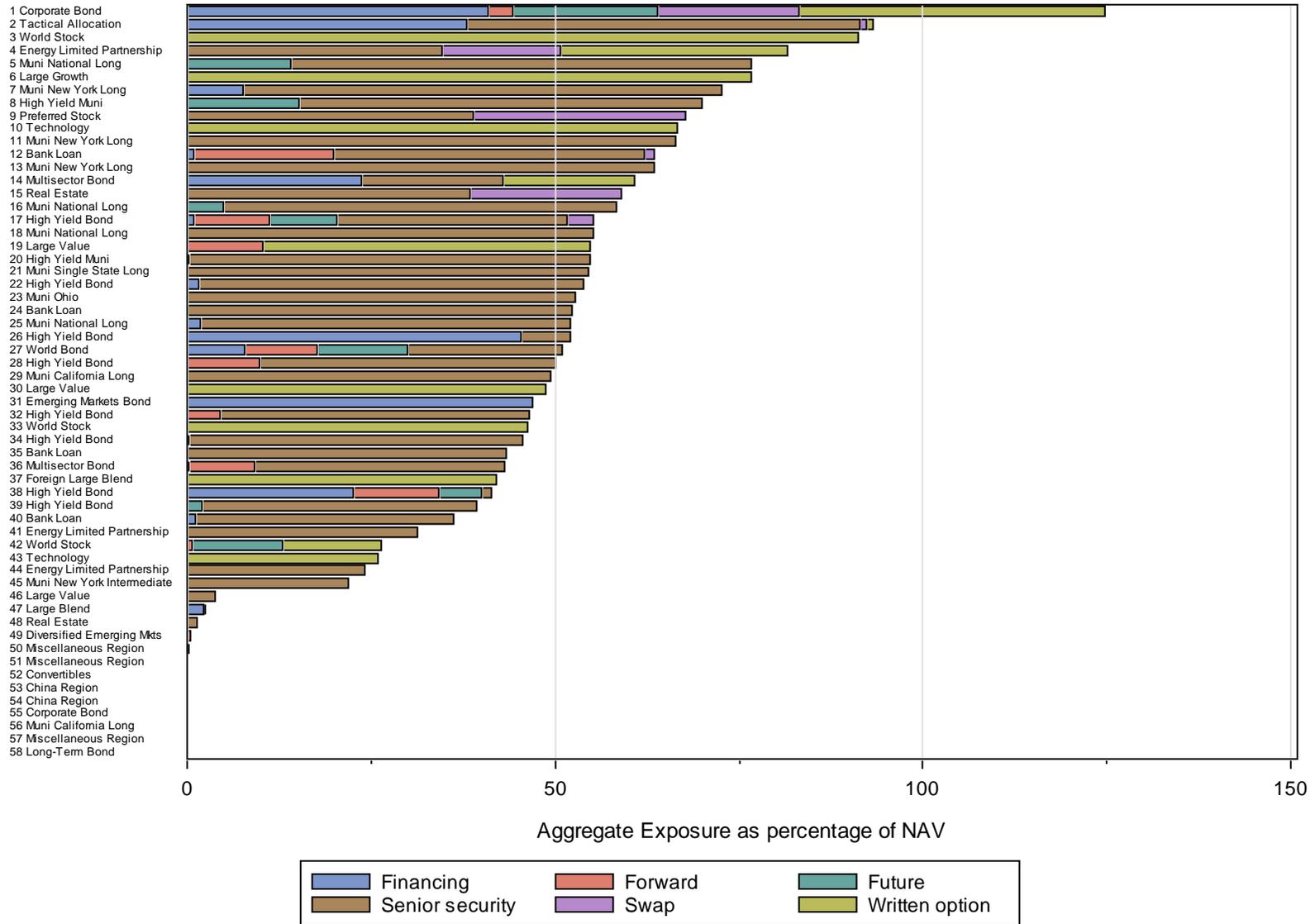
F4.2 Alt Strategies mutual funds (Index)



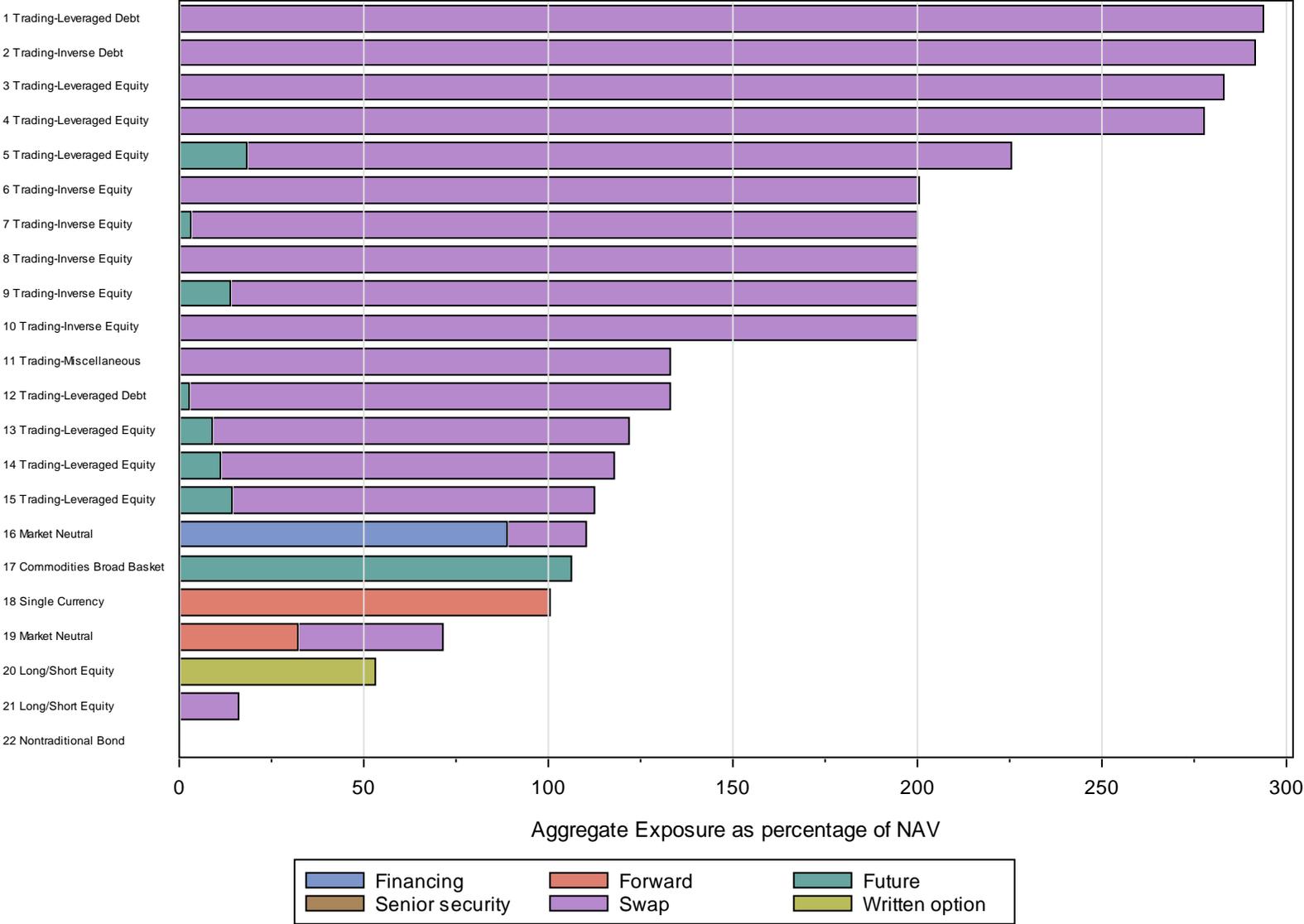
F4.3 Traditional mutual funds (Top 60)



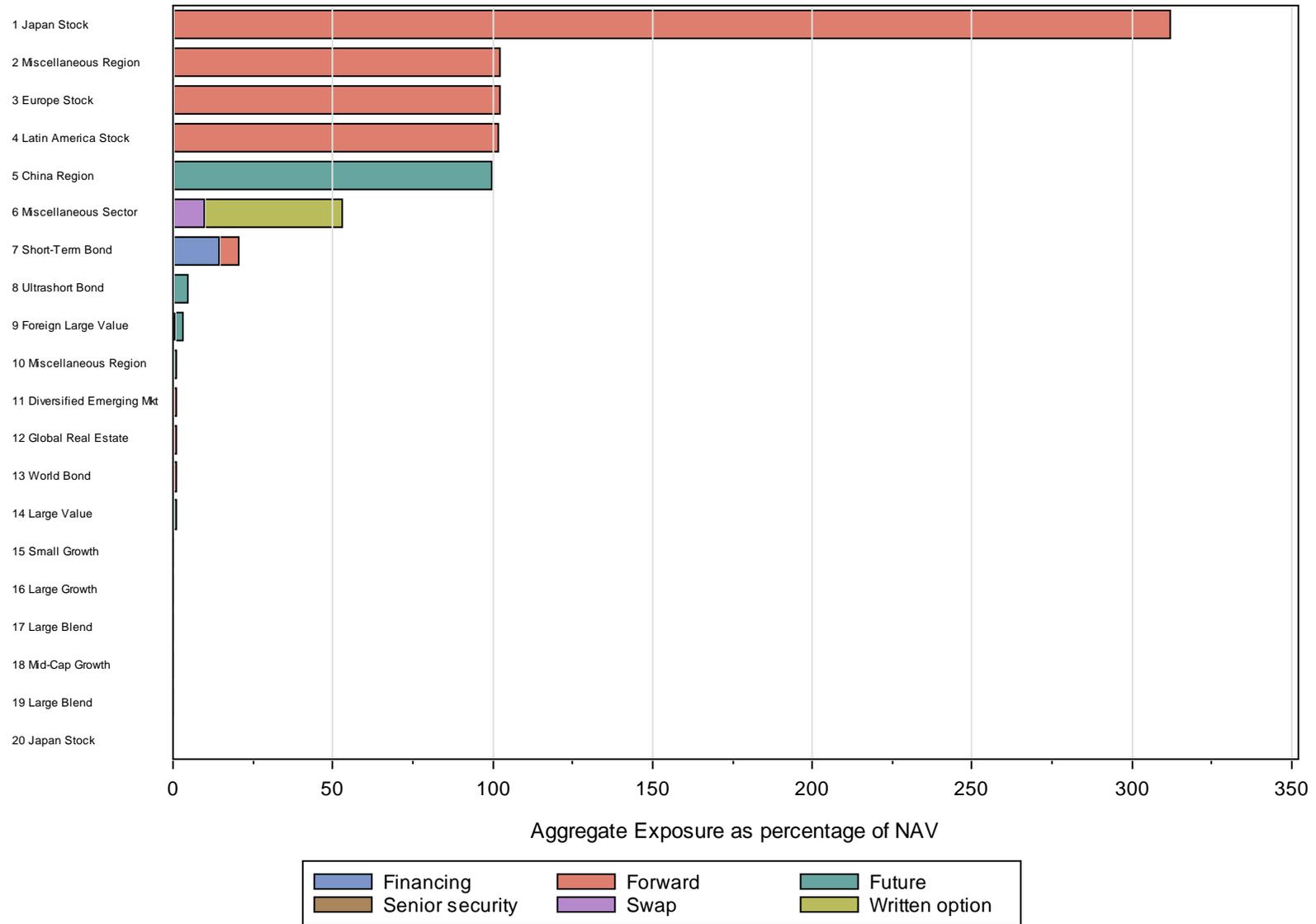
F4.4 Closed-end funds



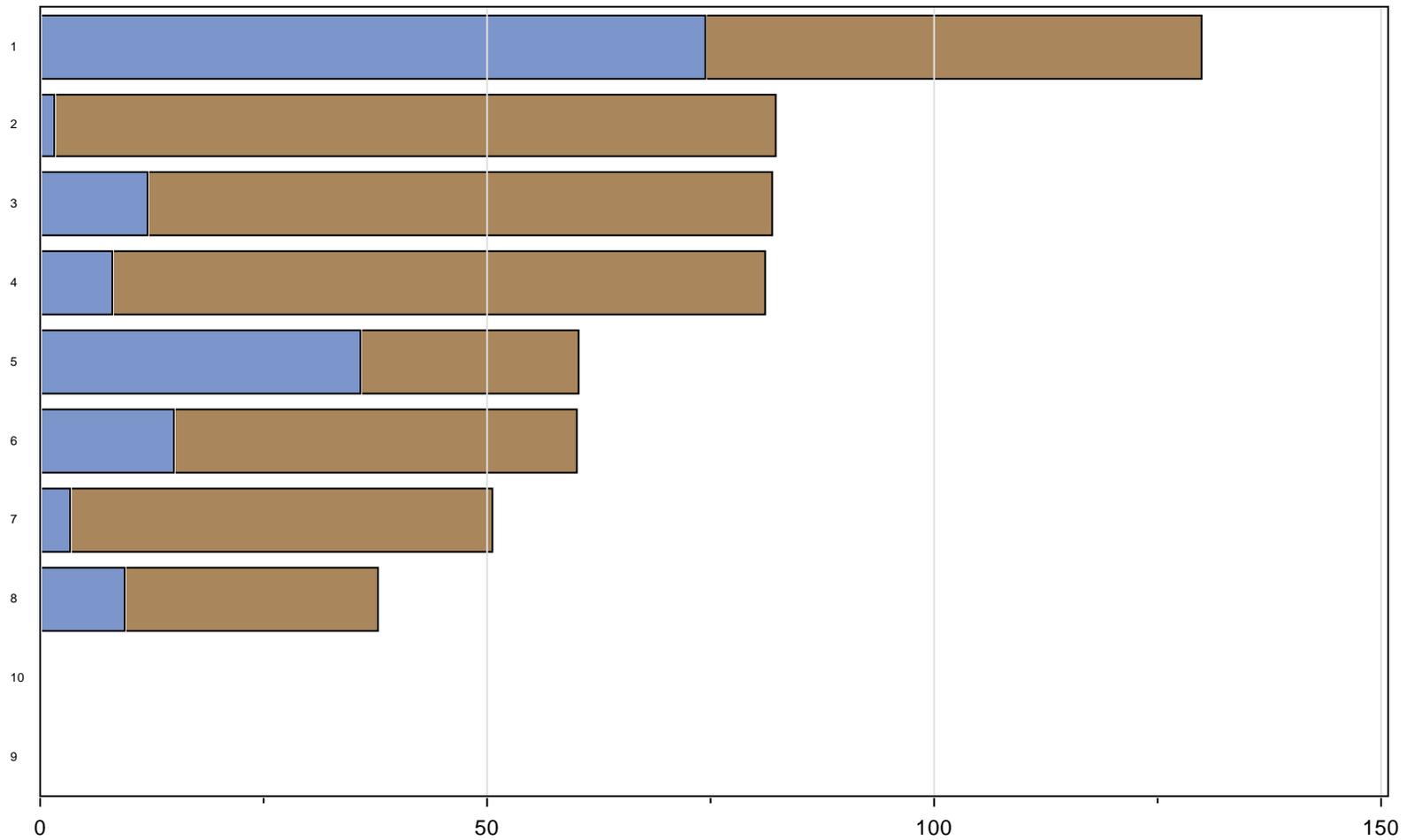
F4.5 Alt Strategies ETFs



F4.6 Traditional ETFs (Top 20)



F4.7 Business development company



Aggregate Exposure as percentage of NAV

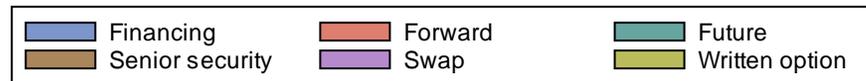
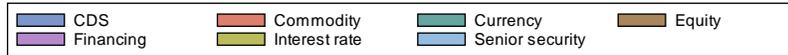
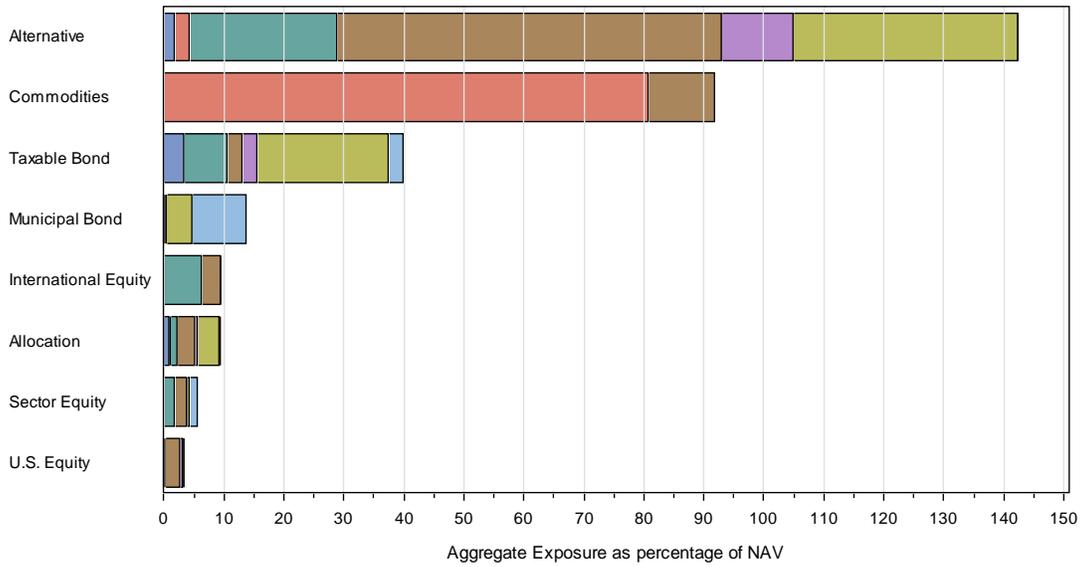
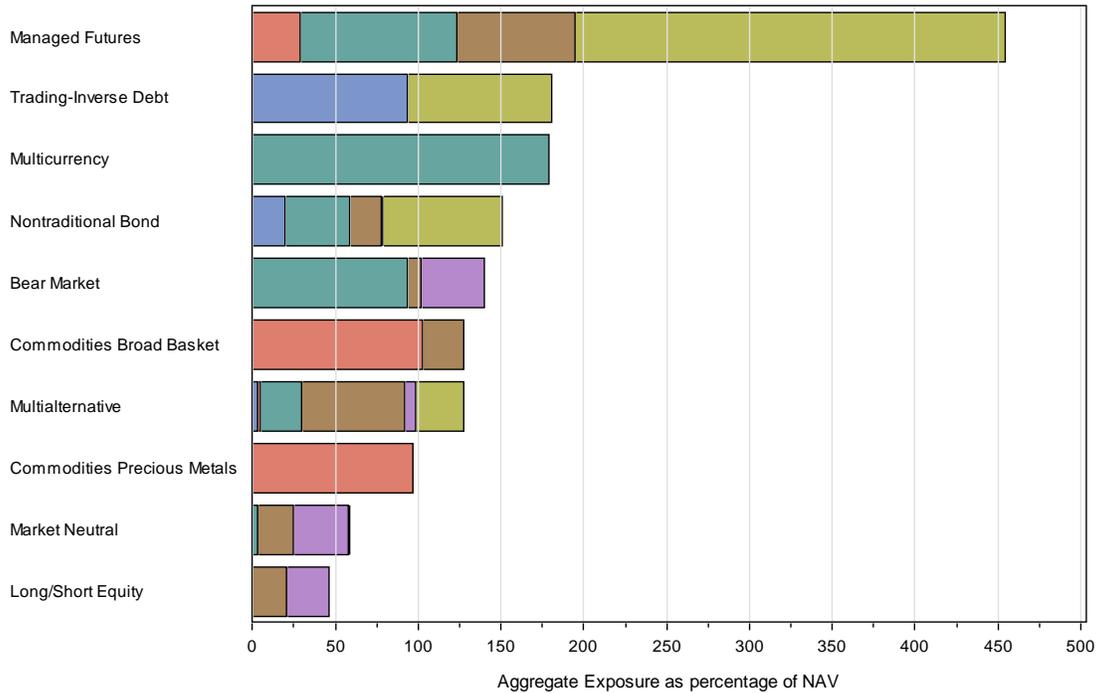


Figure 5: Gross Notional Exposure by Derivative Reference: fund category group

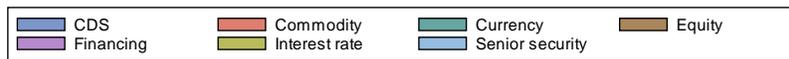
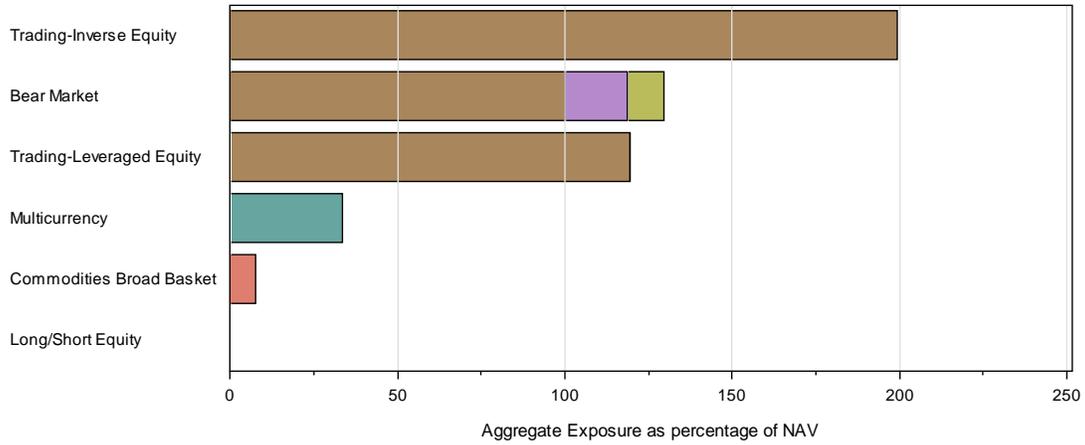
F5.1 All funds



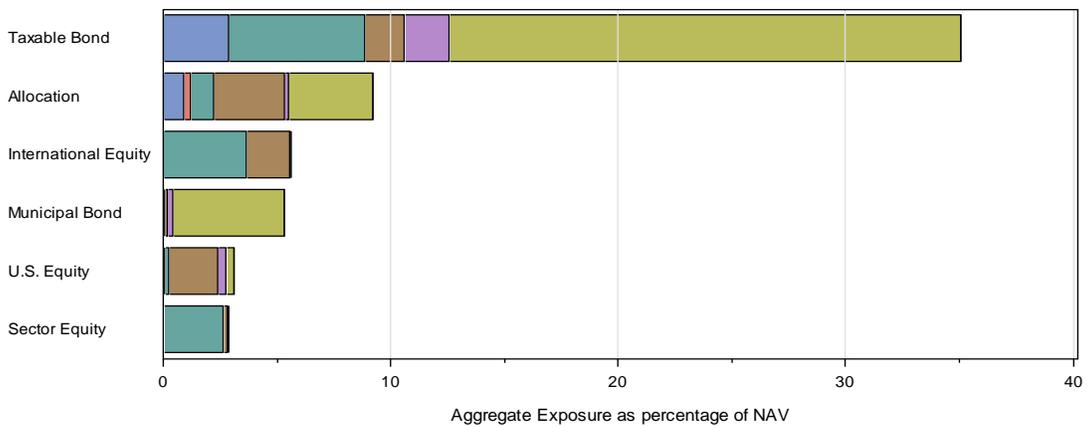
F5.2 Alt Strategies mutual funds (Non-index)



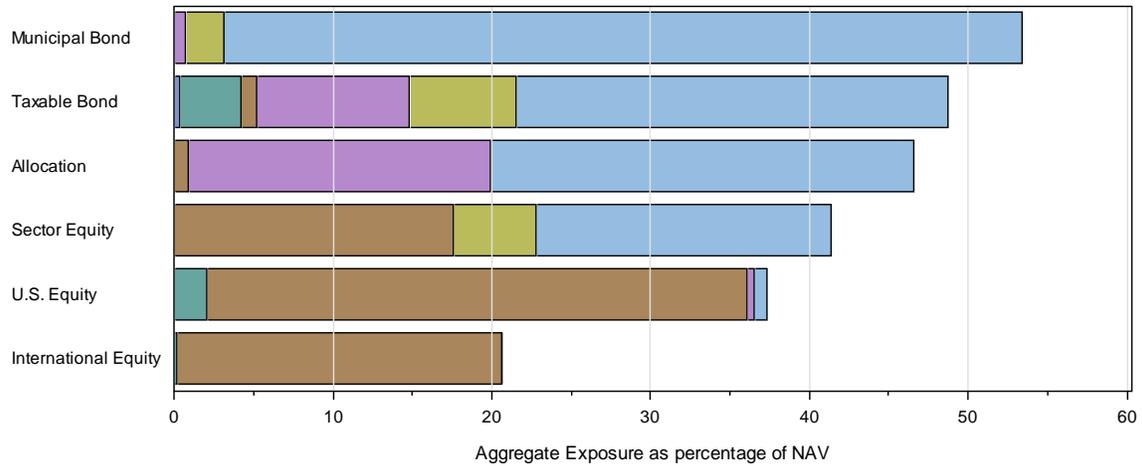
F5.3 Alt Strategies mutual funds (Index)



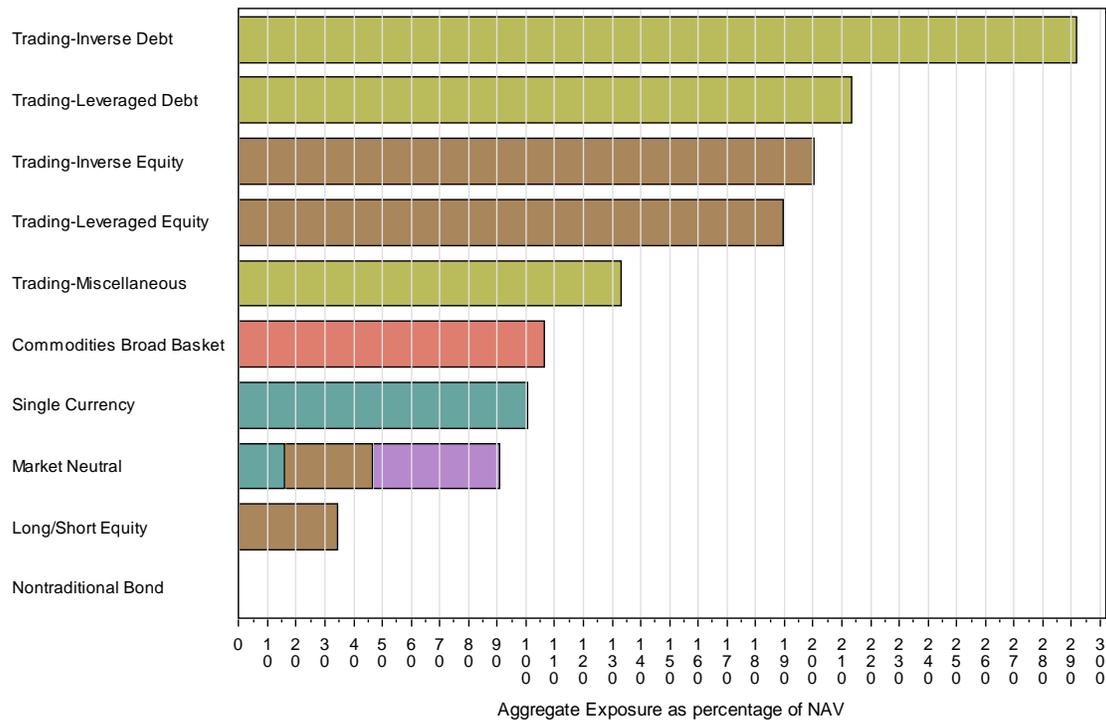
F5.4 Traditional mutual funds



F5.5 Closed-end funds



F5.6 Alt Strategies ETFs



F5.7 Traditional ETFs

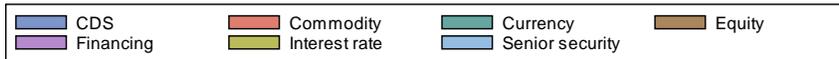
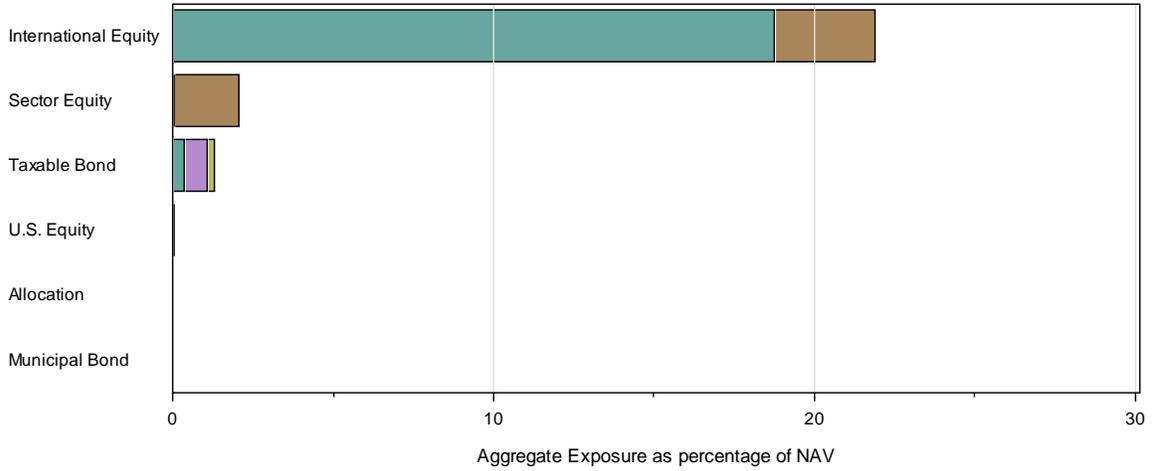
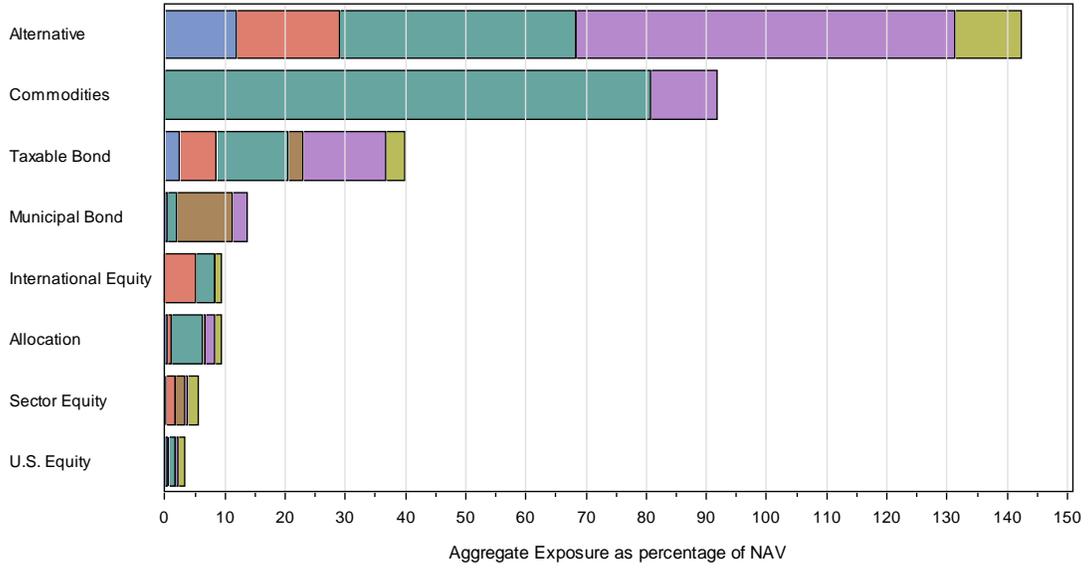
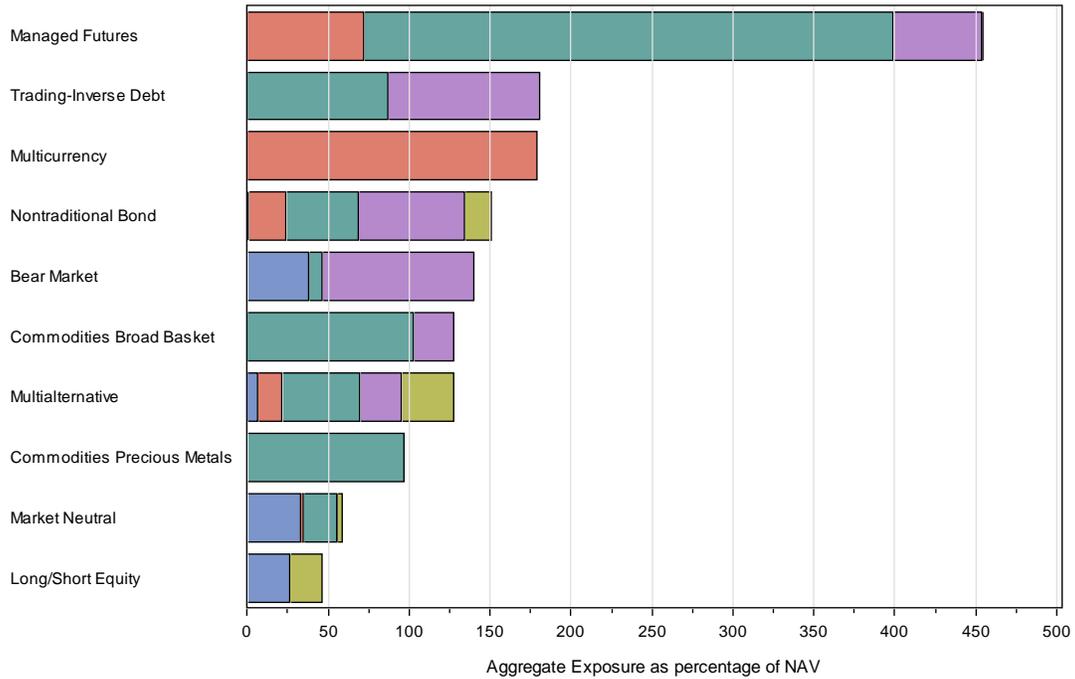


Figure 6: Gross Notional Exposure by Derivative Instrument: fund category group

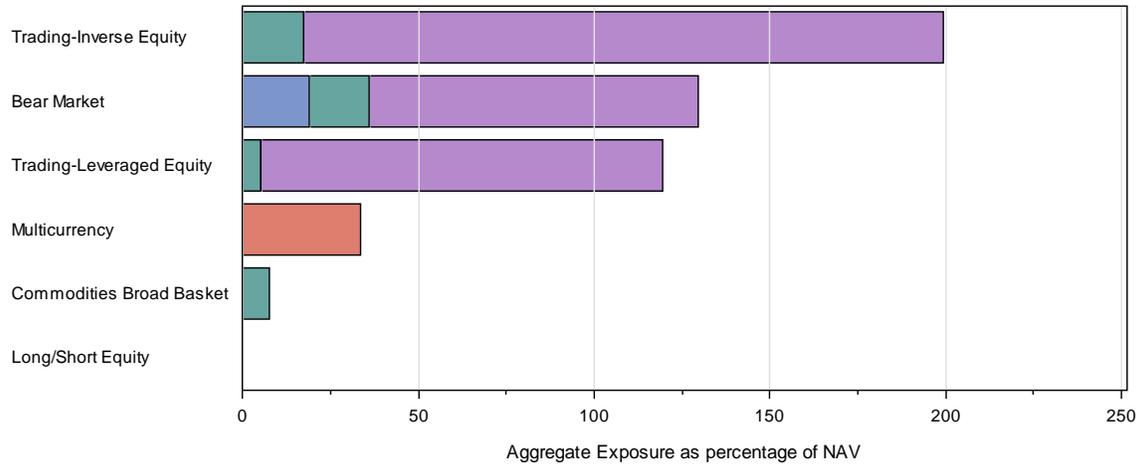
F6.1 All funds



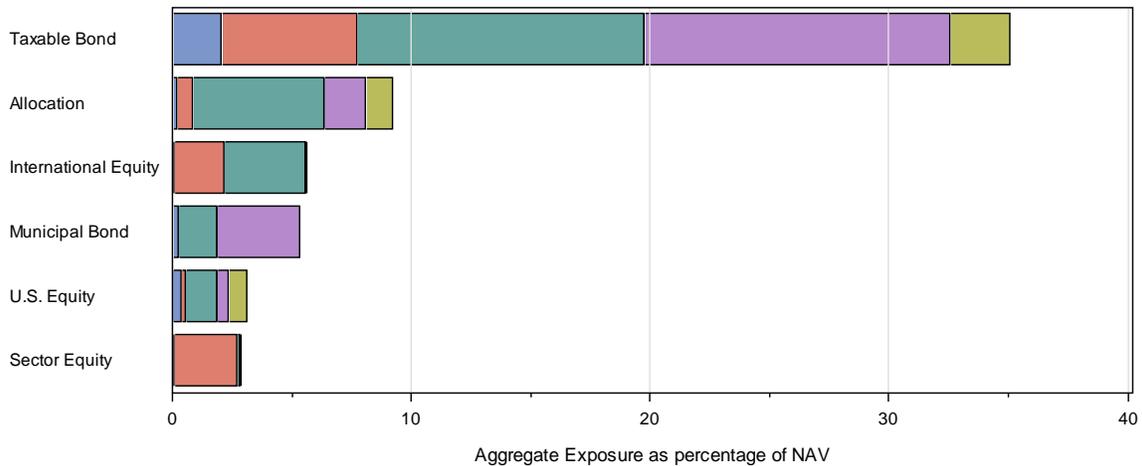
F6.2 Alt Strategies mutual funds (Non-index)



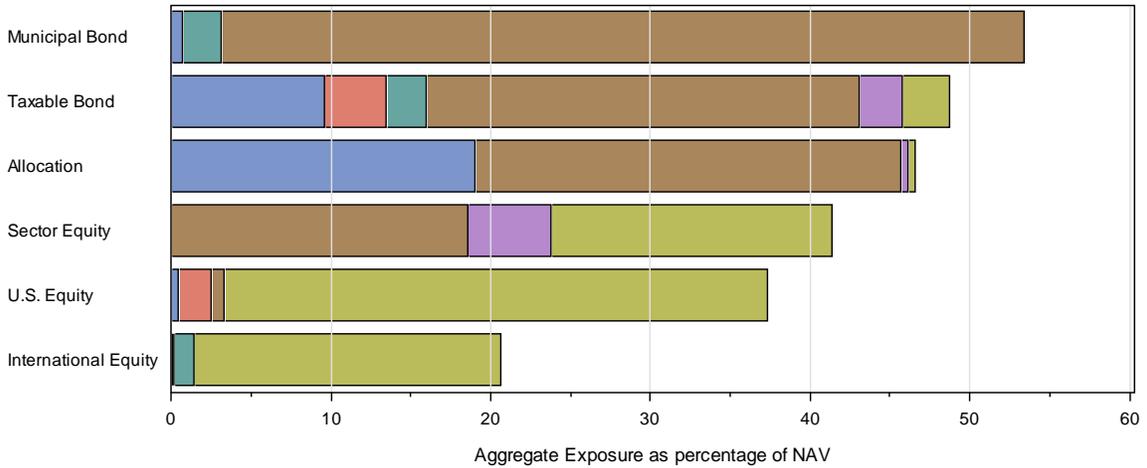
F6.3 Alt Strategies mutual funds (Index)



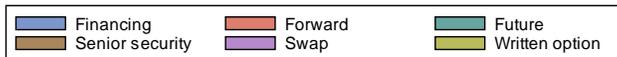
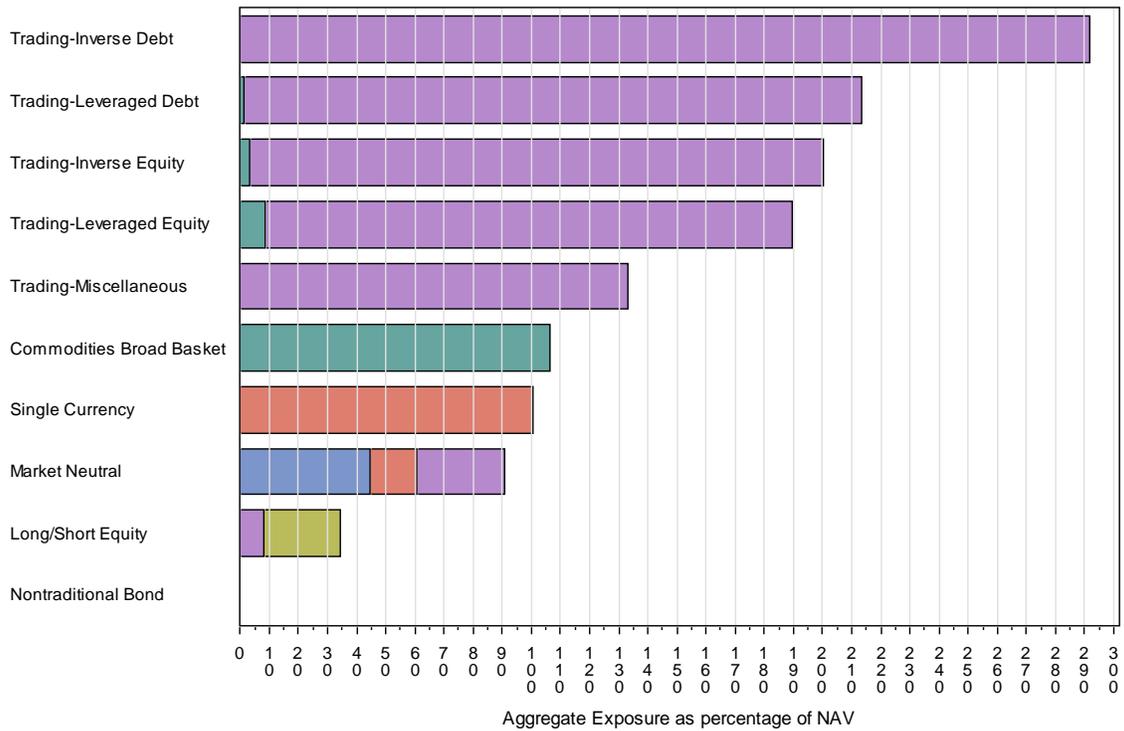
F6.4 Traditional mutual funds



F6.5 Closed-end funds



F6.6 Alt Strategies ETFs



F6.7 Traditional ETFs

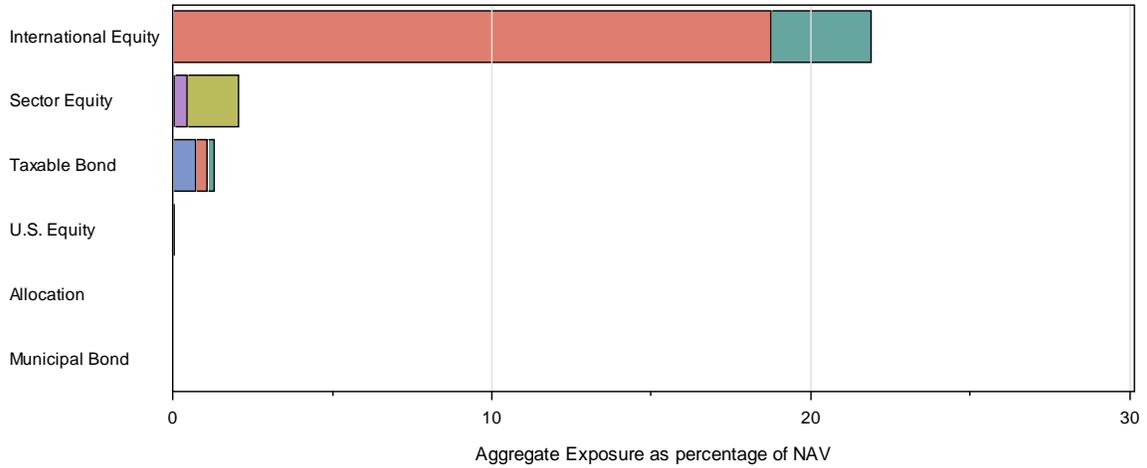
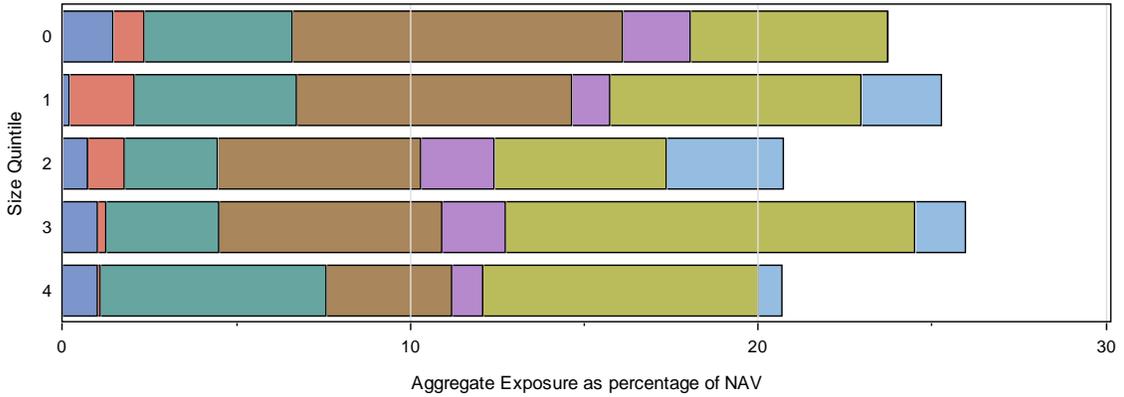
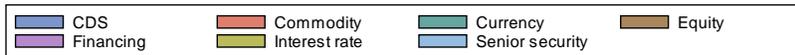
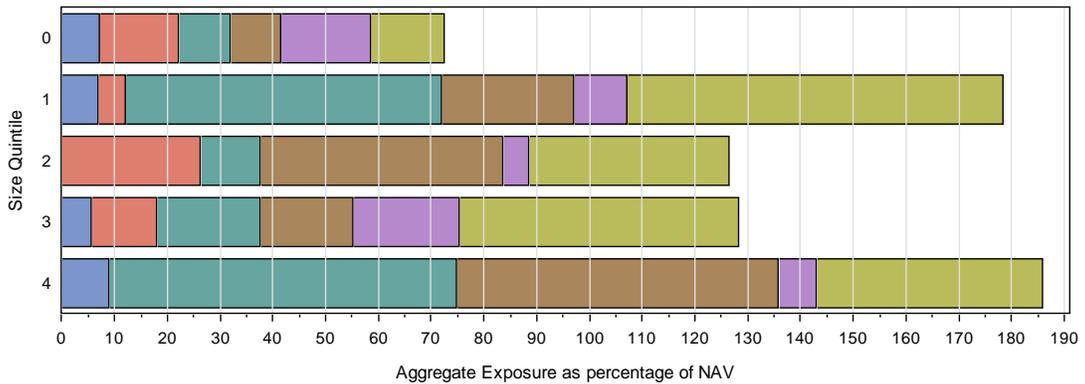


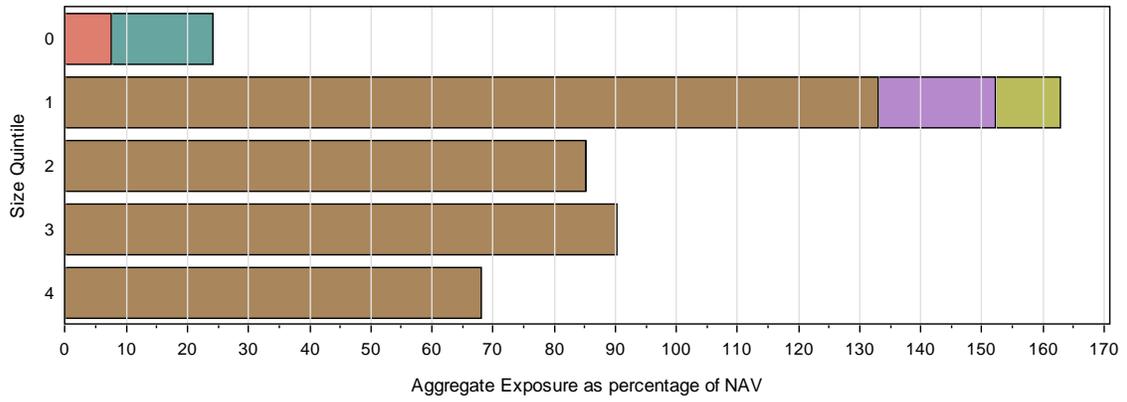
Figure 7: Gross Notional Exposure by Derivative Reference: fund size quintile (4=largest)
F7.1 All funds



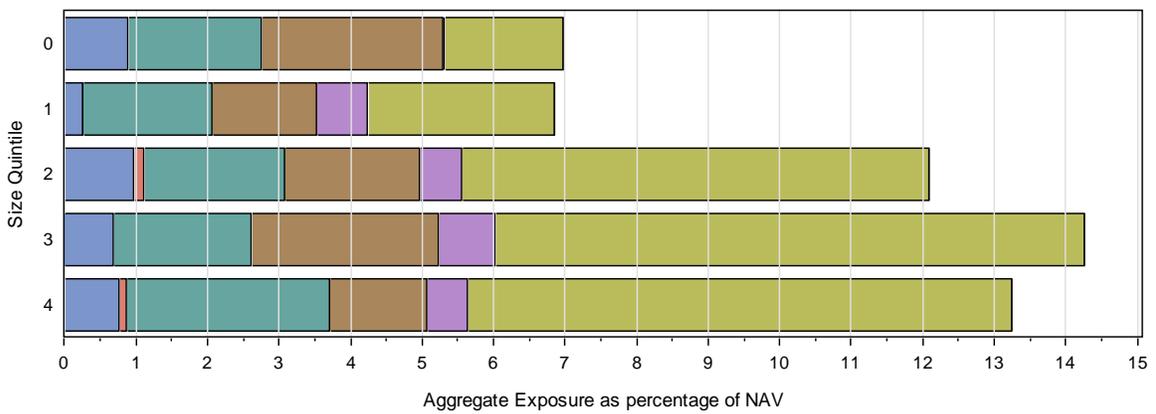
F7.2 Alt Strategies mutual funds (Non-index)



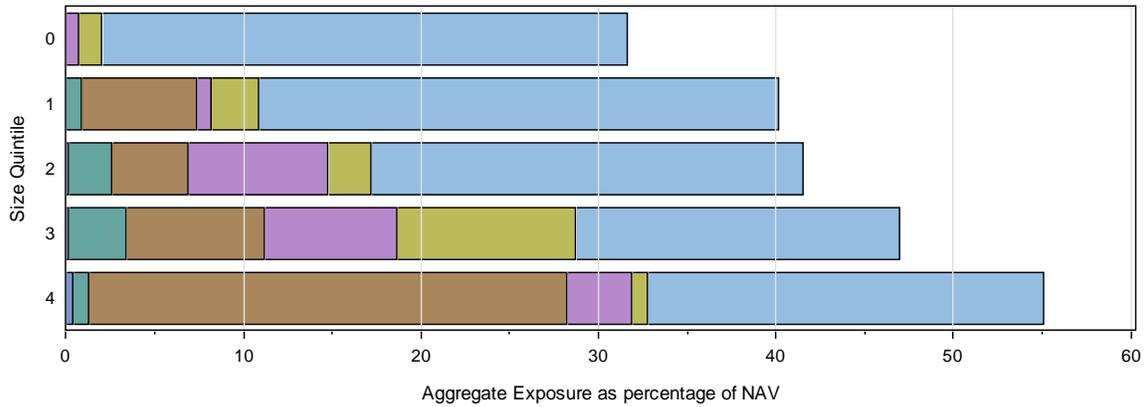
F7.3 Alt Strategies mutual funds (Index)



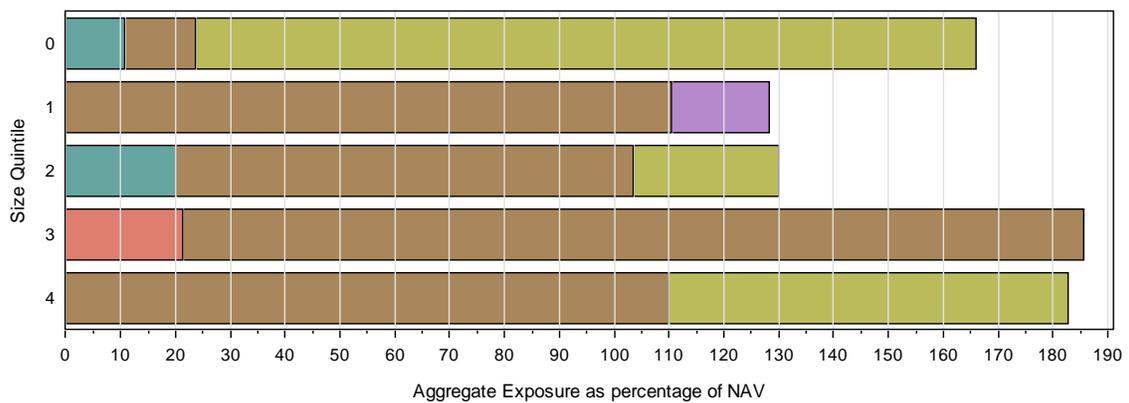
F7.4 Traditional mutual funds



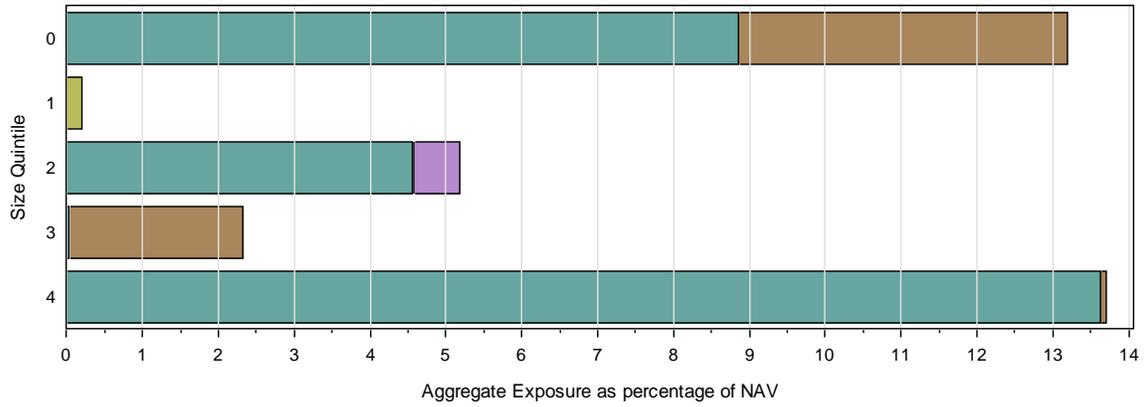
F7.5 Closed-end funds



F7.6 Alt Strategies ETFs



F7.7 Traditional ETFs



F7.8 Business development companies

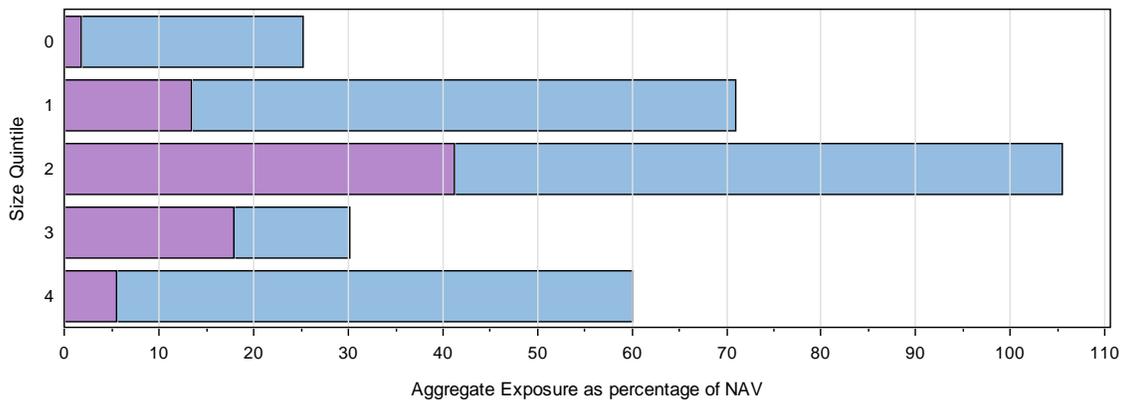
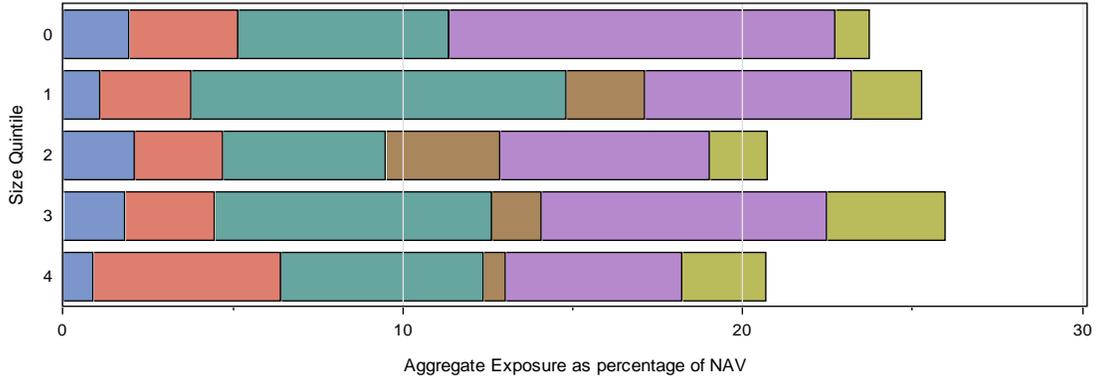
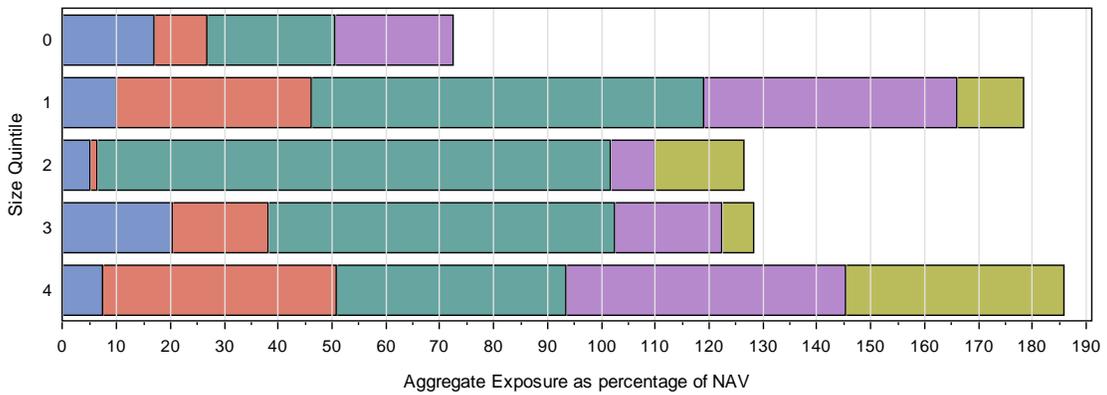


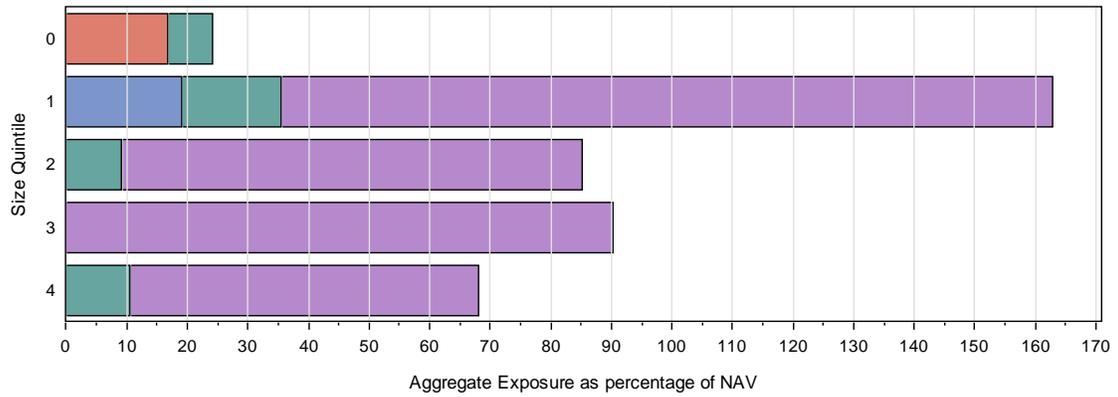
Figure 8: Gross Notional Exposure by Derivative Instrument: fund size quintile (4=largest)
F8.1 All funds



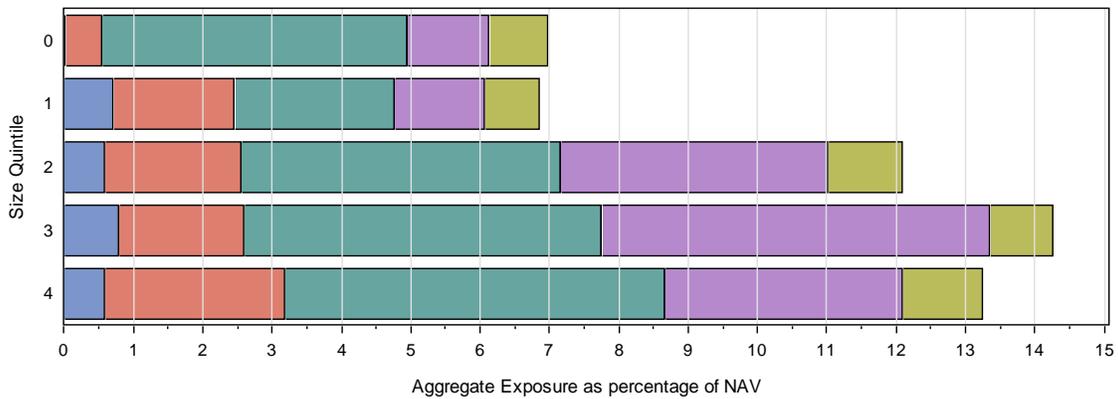
F8.2 Alt Strategies mutual funds (Non-index)



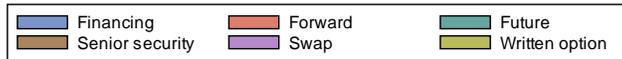
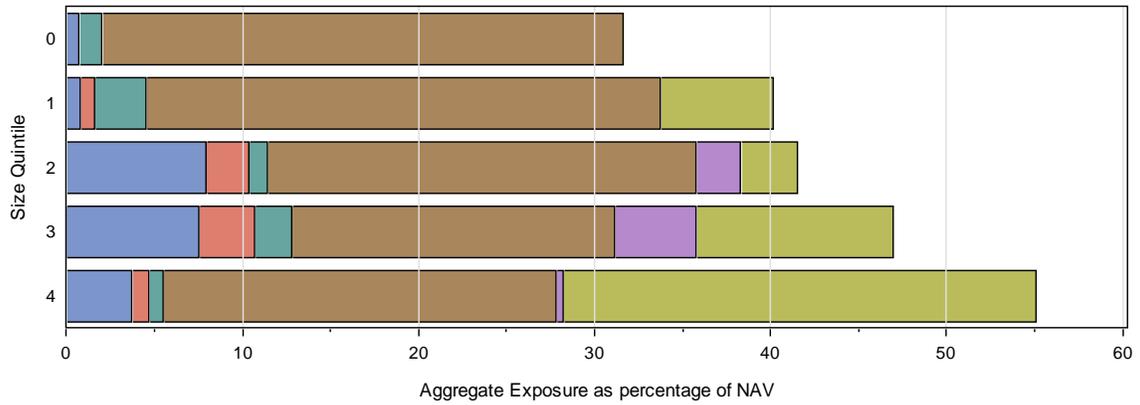
F8.3 Alt Strategies mutual funds (Index)



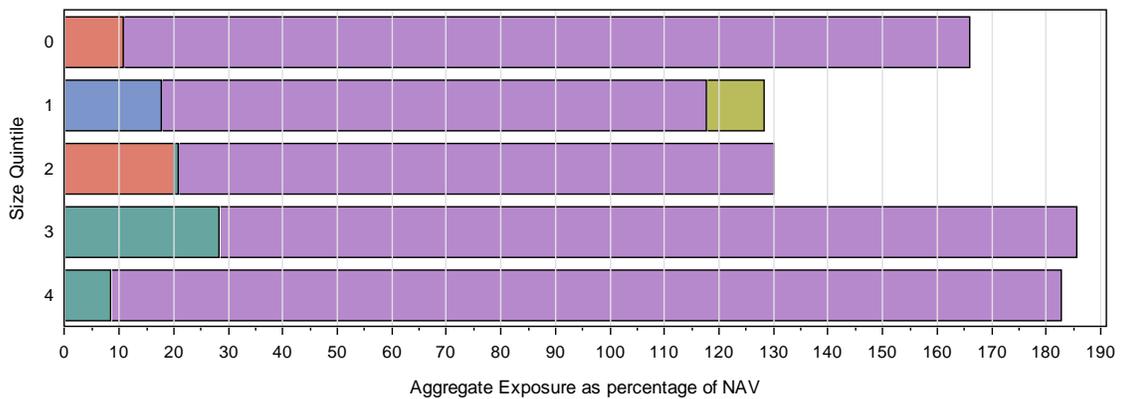
F8.4 Traditional mutual funds



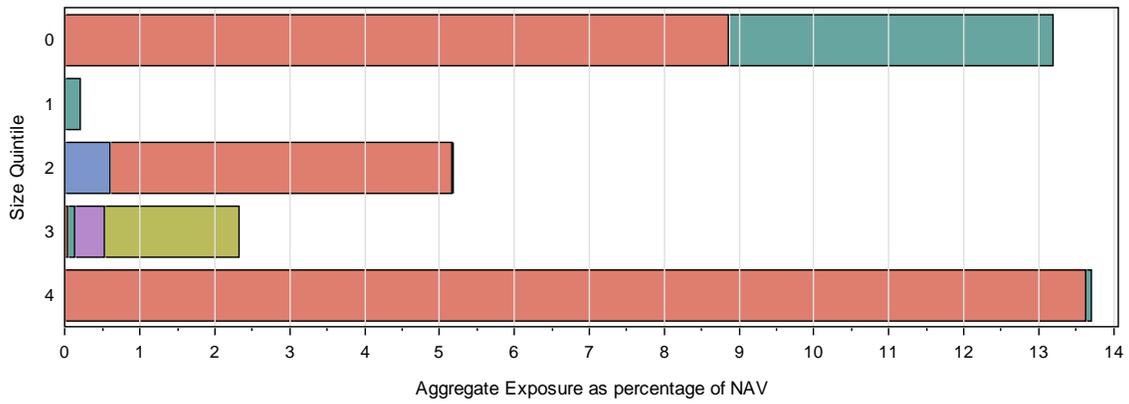
F8.5 Closed-end funds



F8.6 Alt Strategies ETFs



F8.7 Traditional ETFs



F8.8 Business development companies

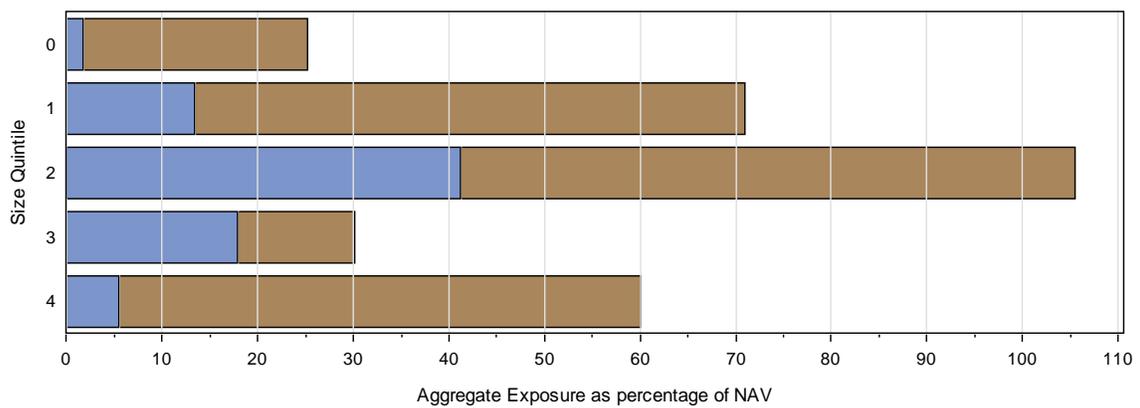
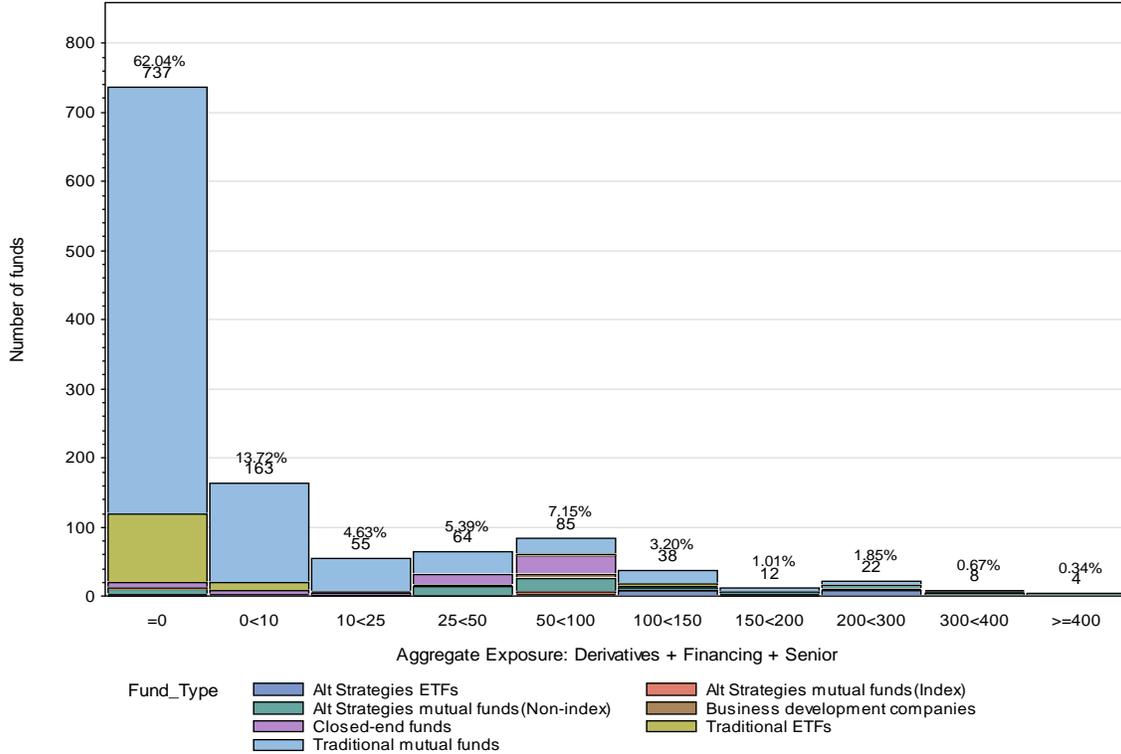
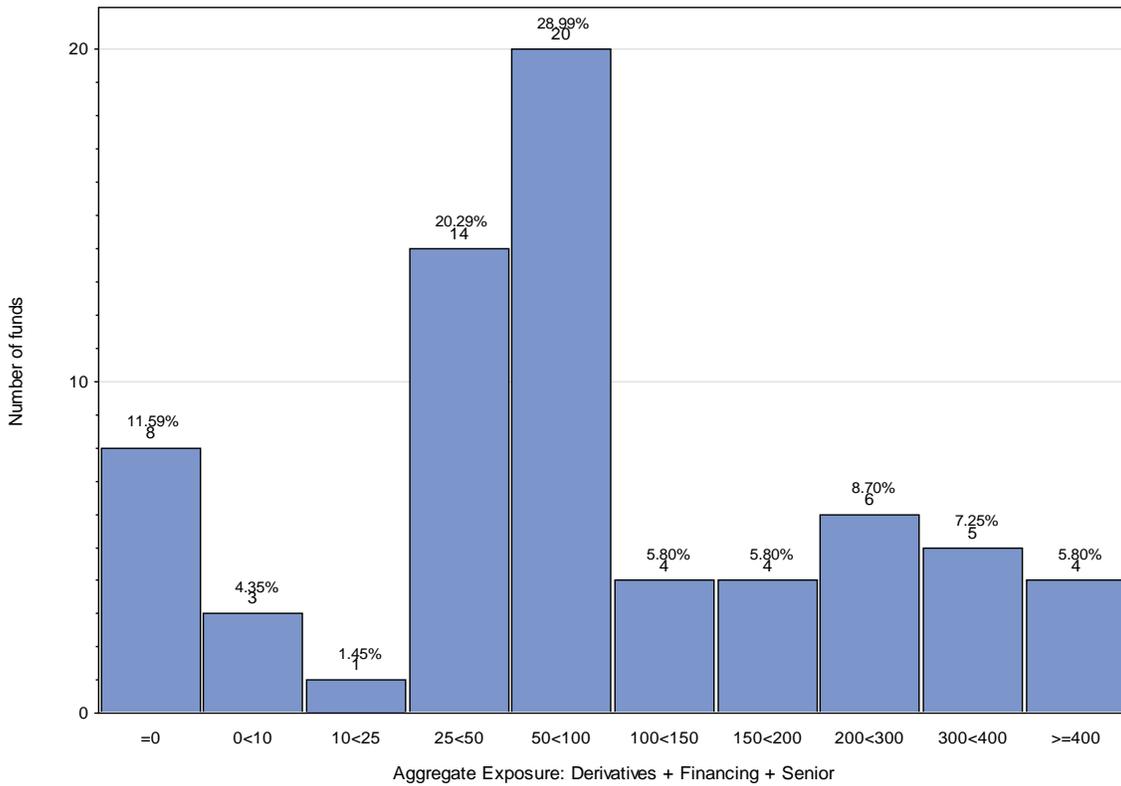


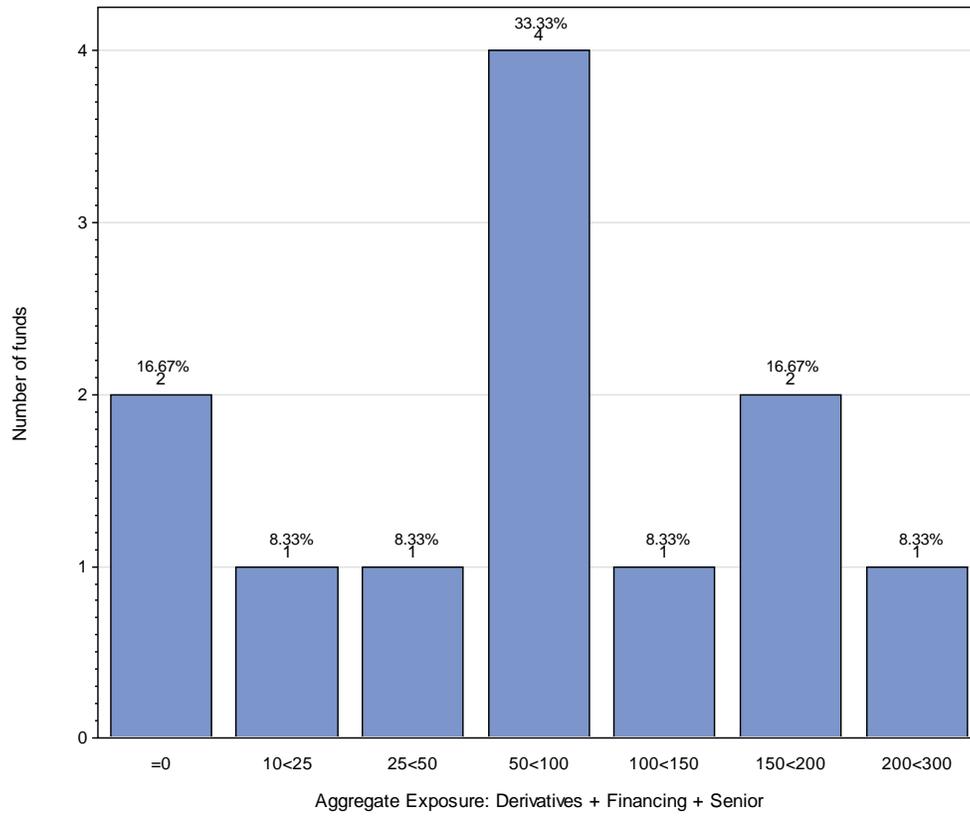
Figure 9: The distribution of aggregate exposure: number of fund
F9.1 All funds



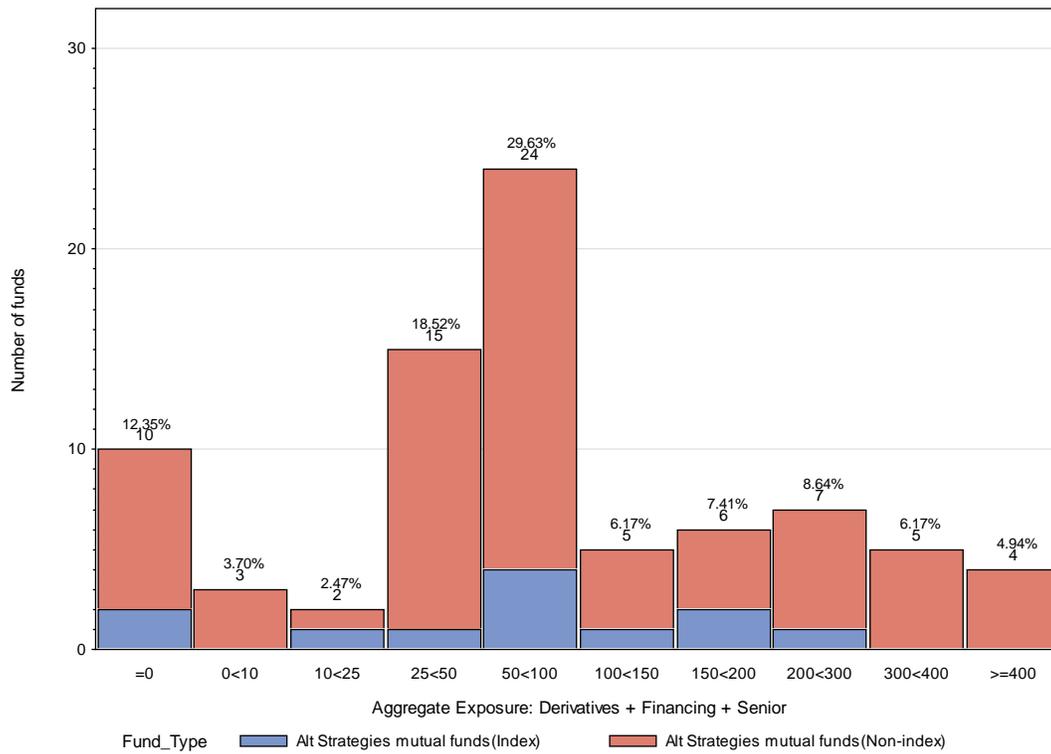
F9.2 Alt Strategies mutual funds (Non-index)



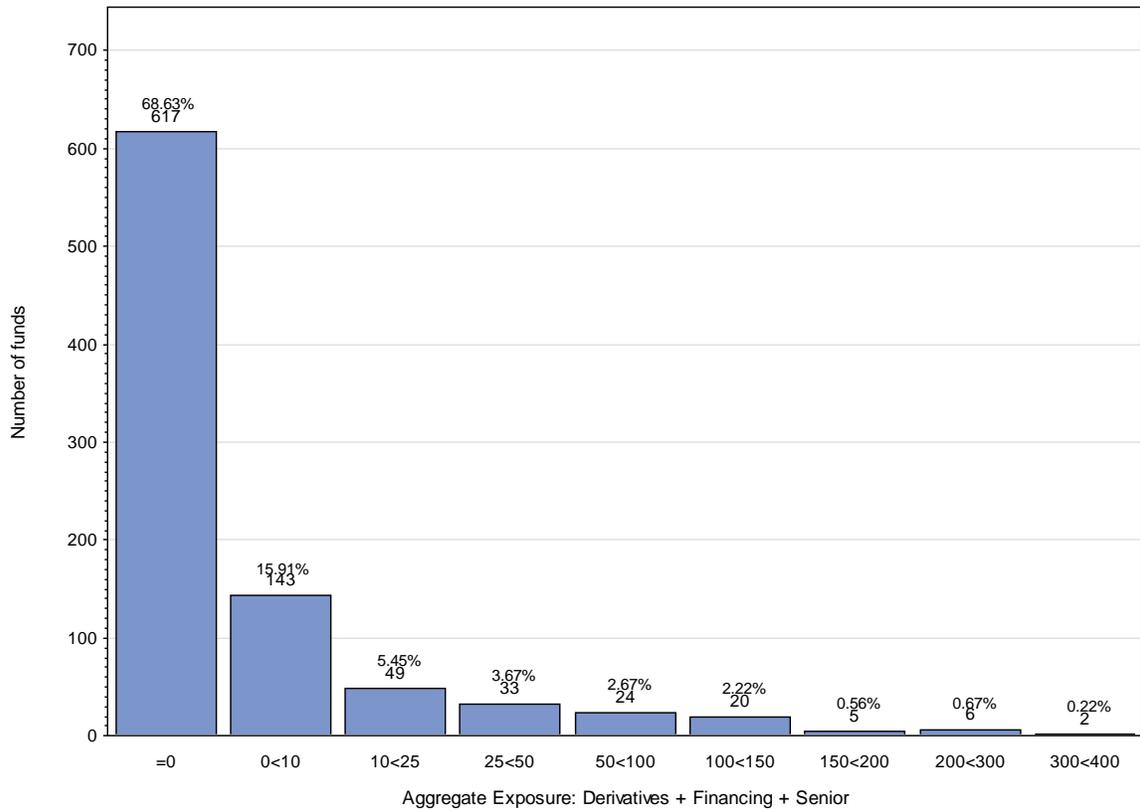
F9.3 Alt Strategies mutual funds (Index)



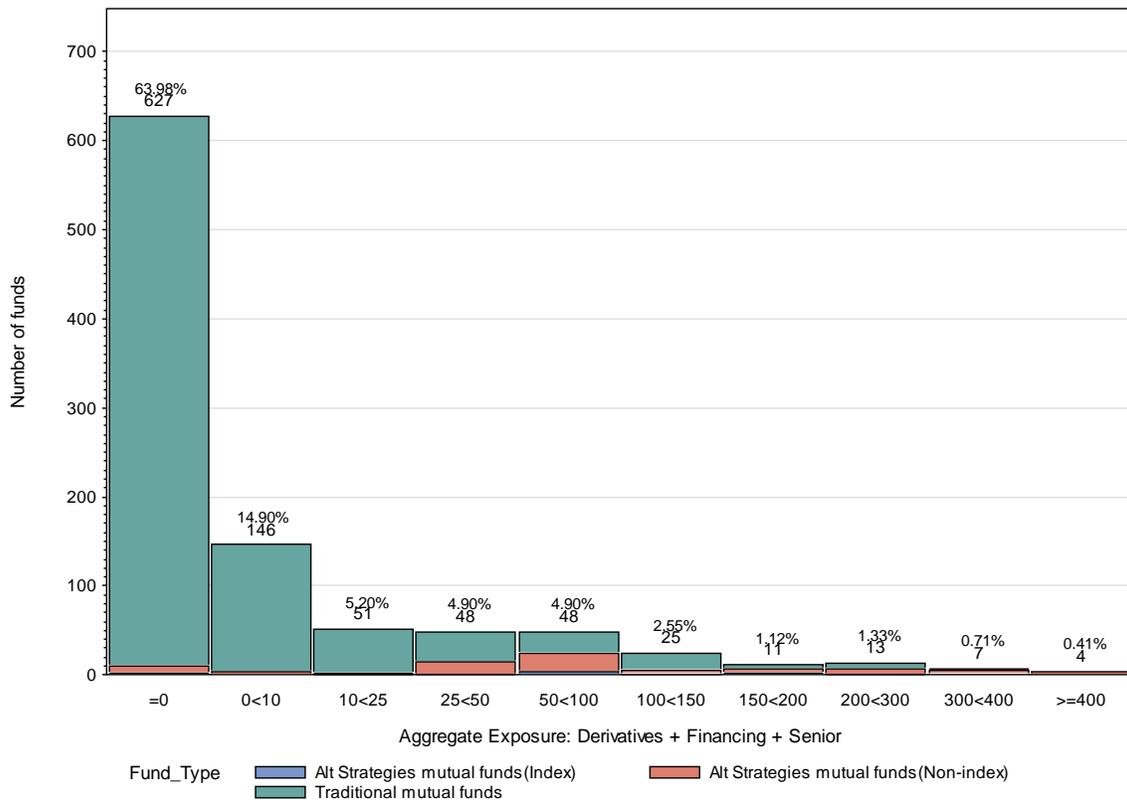
F9.4 Alt Strategies mutual funds (All)



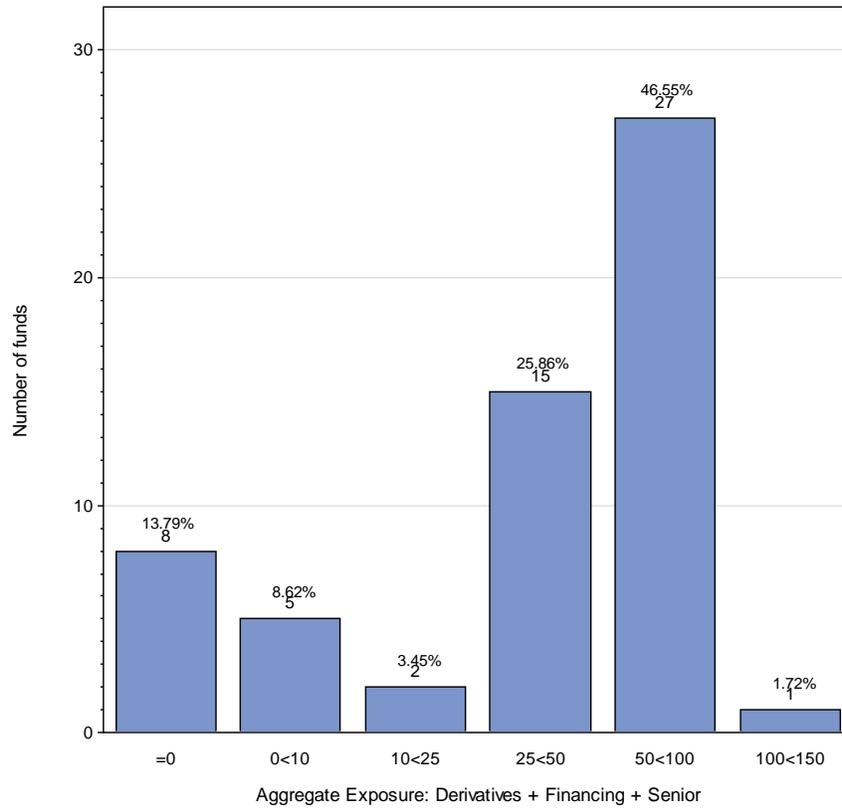
F9.5 Traditional mutual funds



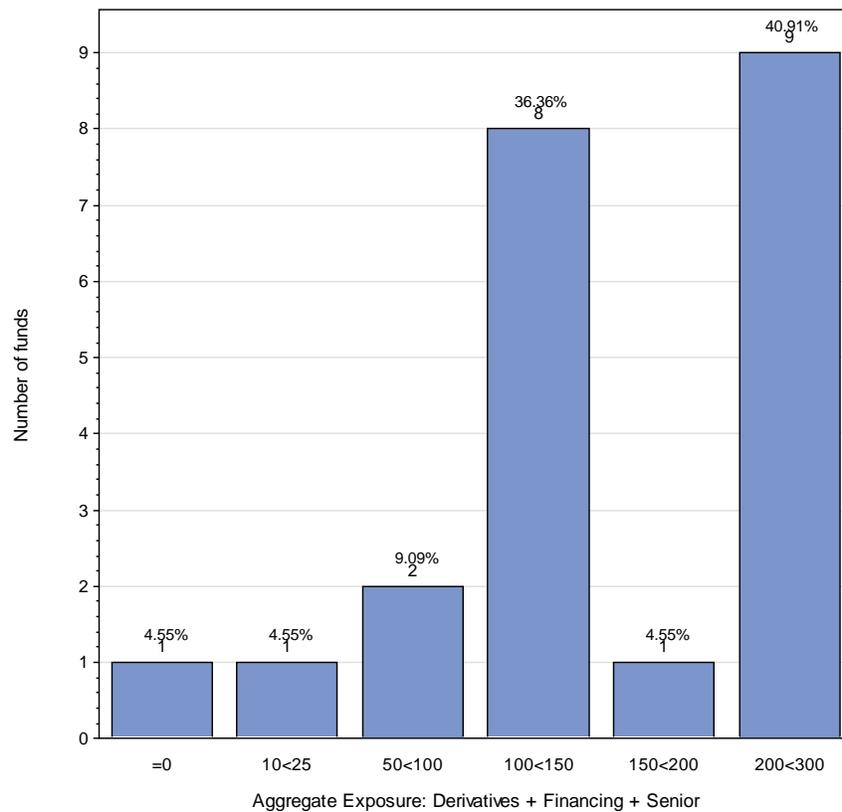
F9.6 Open-end funds (All)



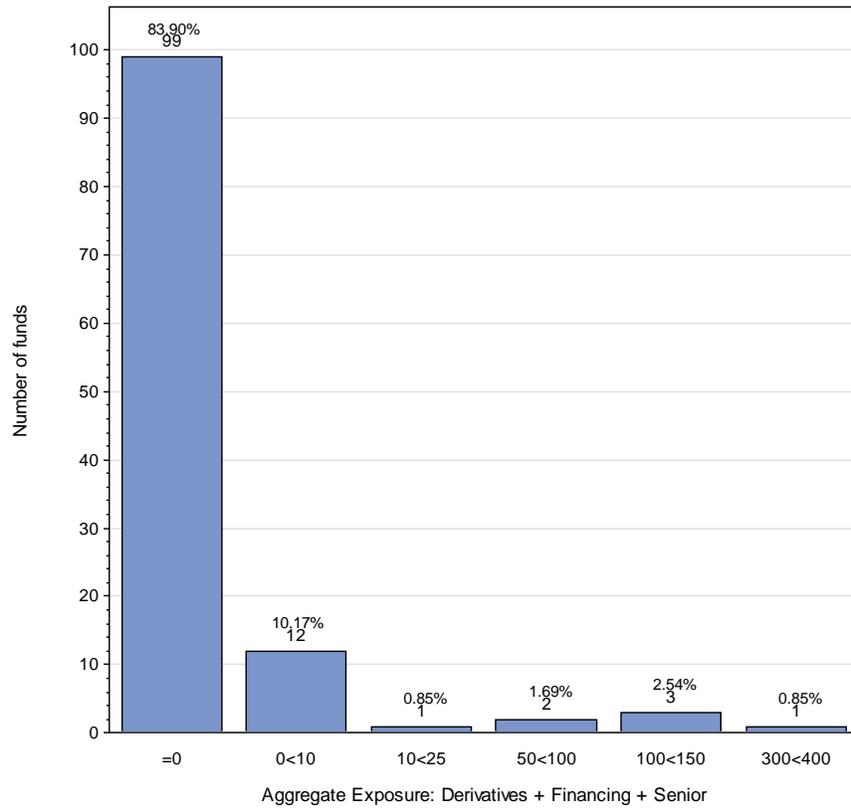
F9.7 Closed-end funds



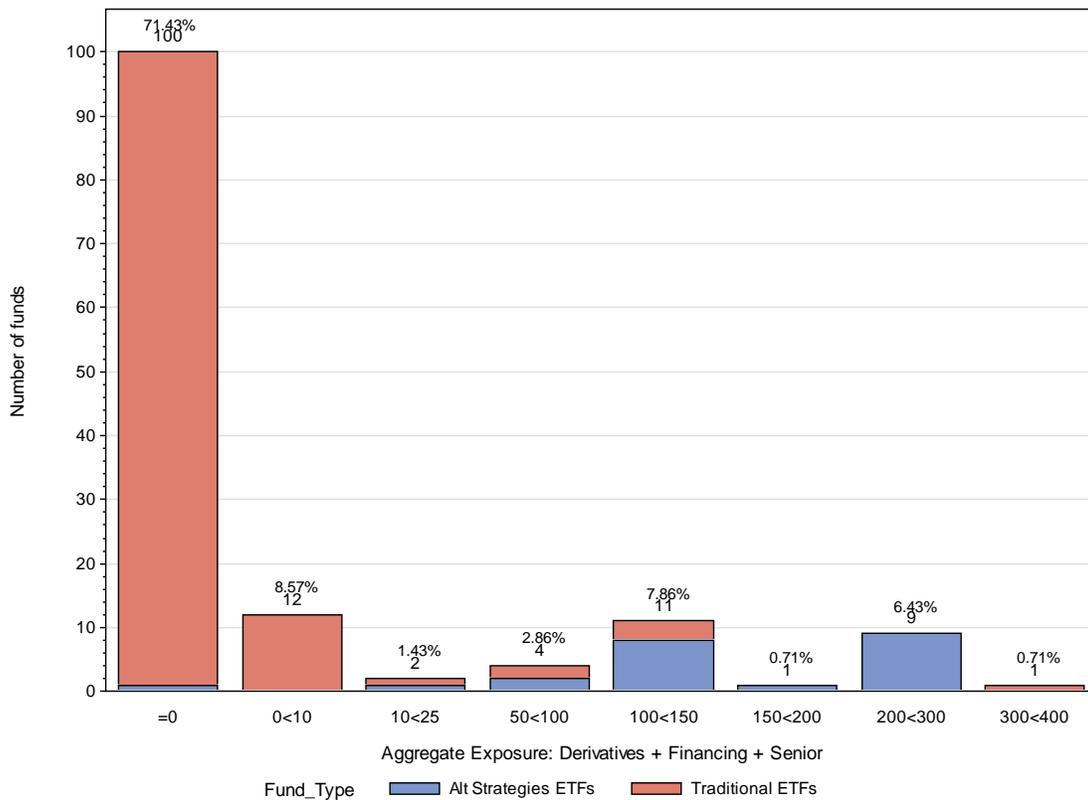
F9.8 Alt Strategies ETFs



F9.9 Traditional ETFs



F9.10 ETFs (All)



F9.11 Business development companies

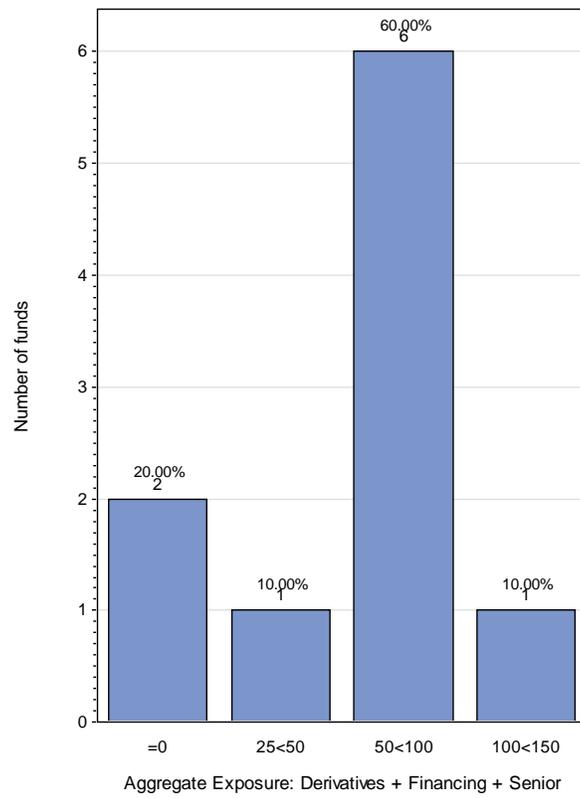
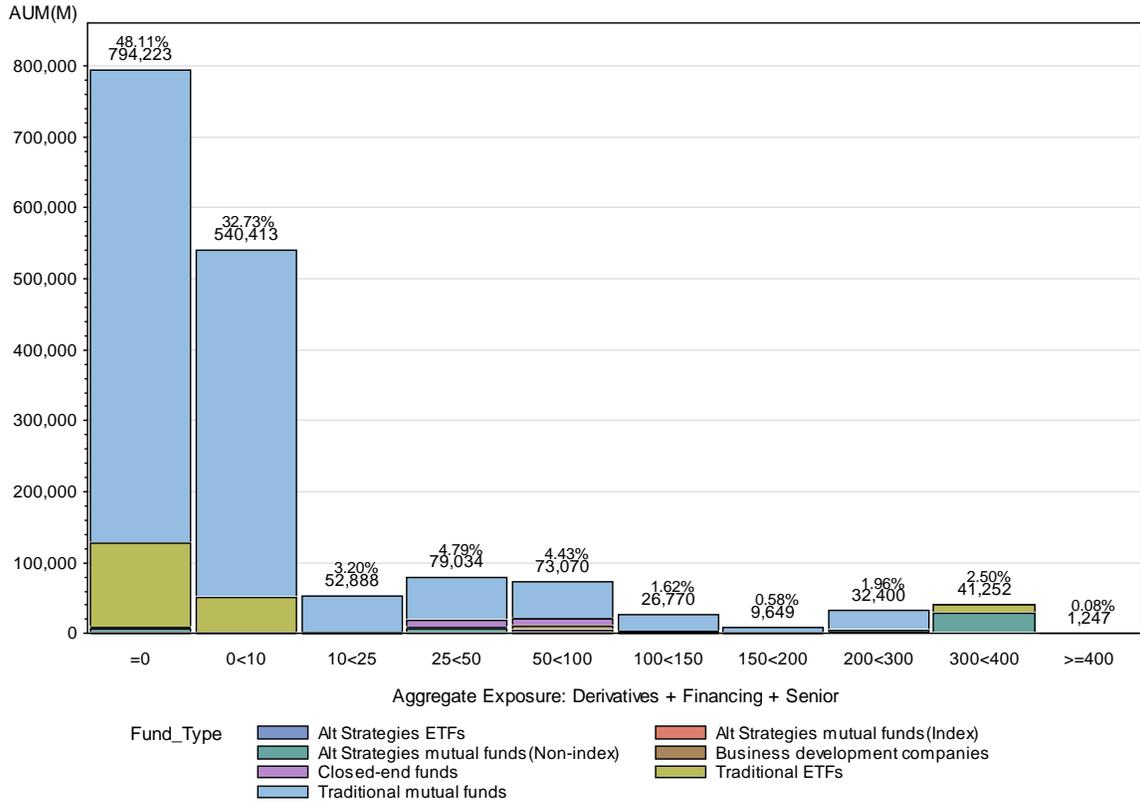
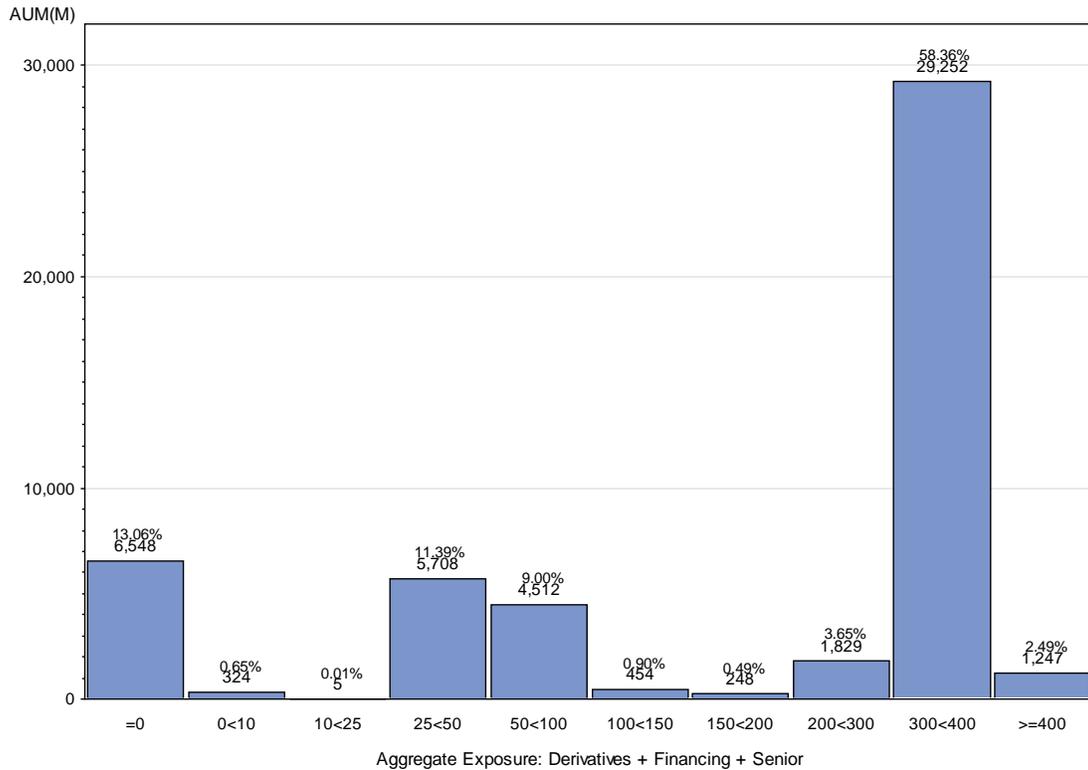


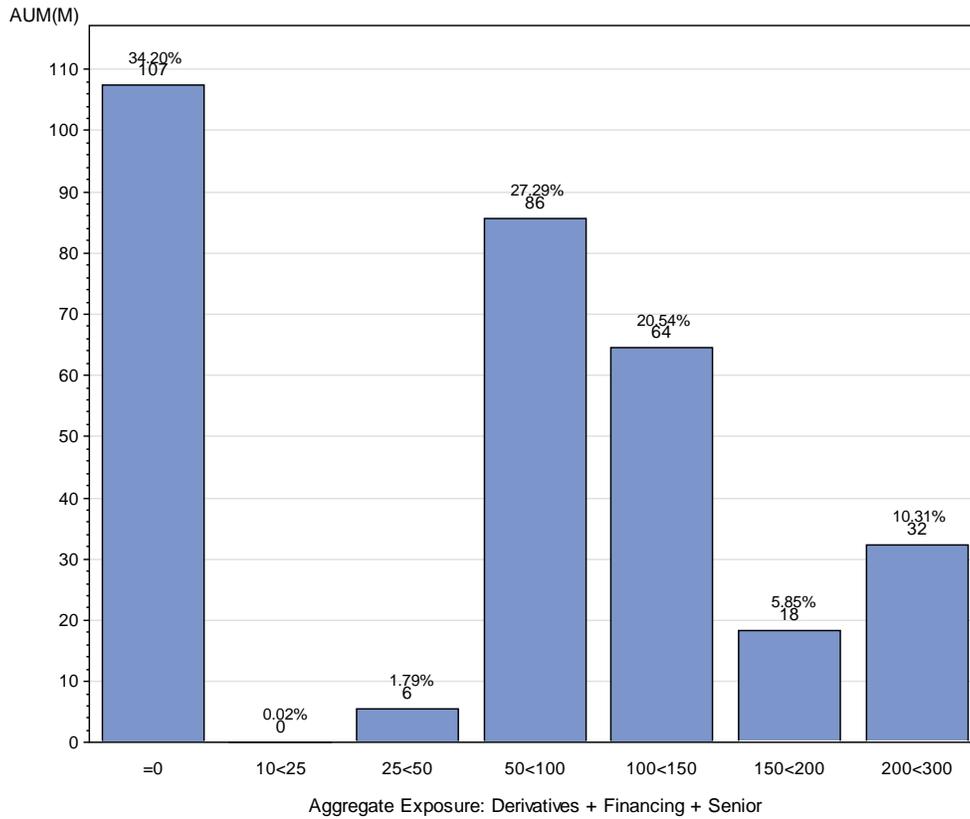
Figure 10: The distribution of aggregate exposure: AUM
F10.1 All funds



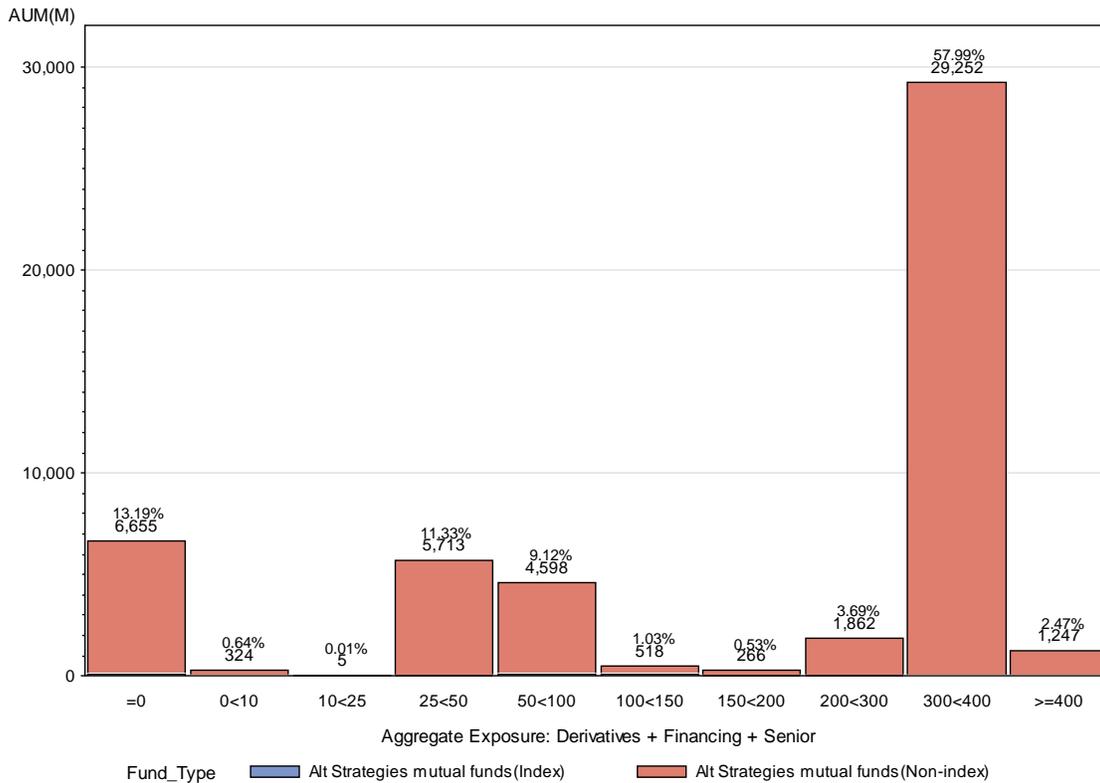
F10.2 Alt Strategies mutual funds (Non-index)



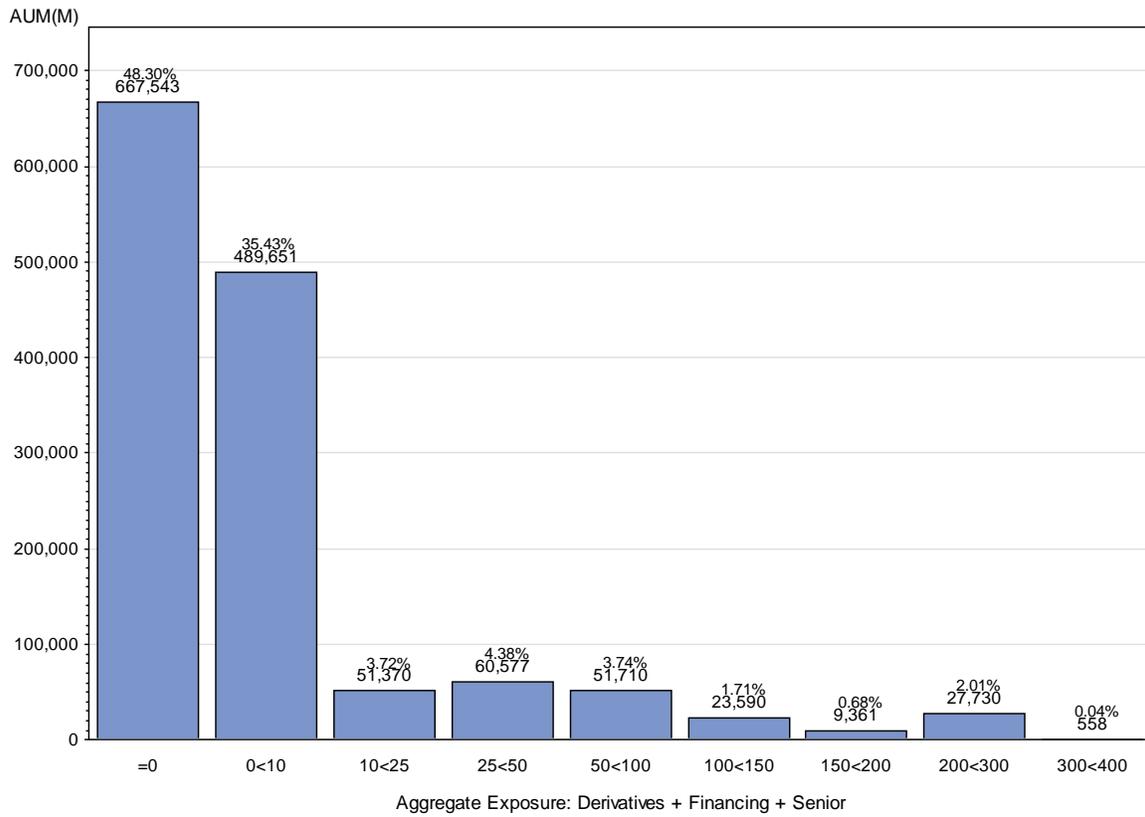
F10.3 Alt Strategies mutual funds (Index)



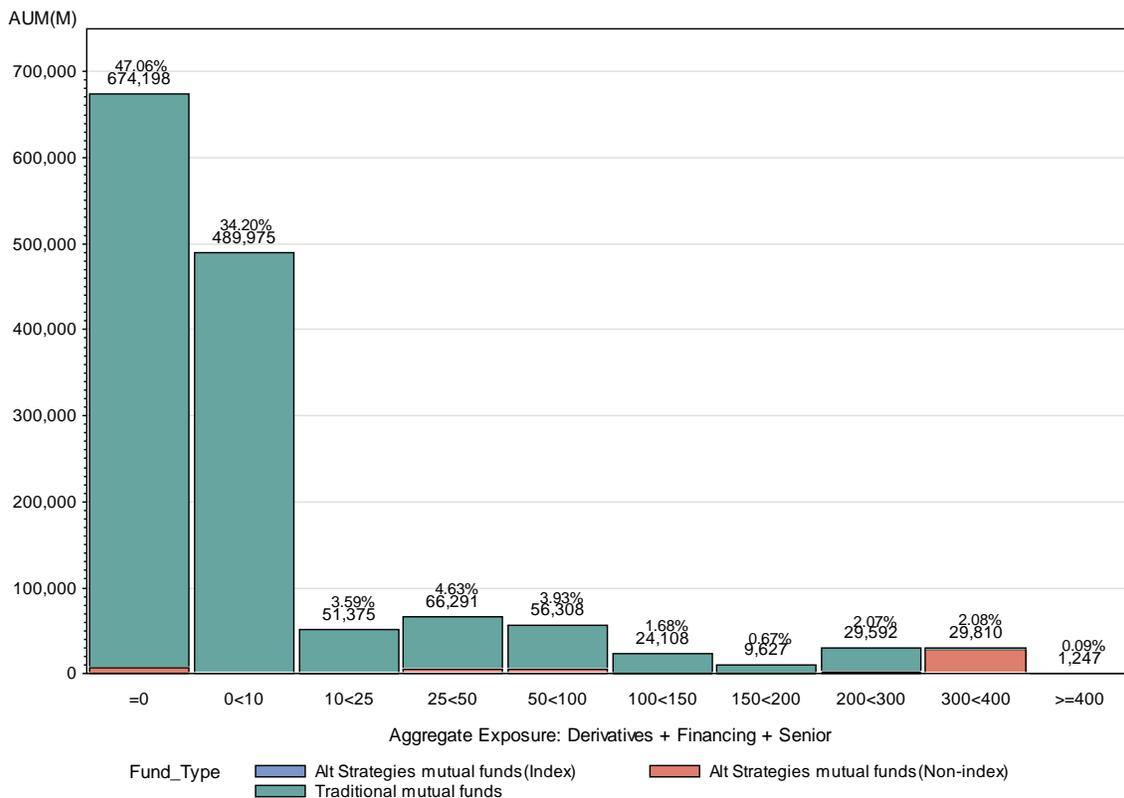
F10.4 Alt Strategies mutual funds (All)



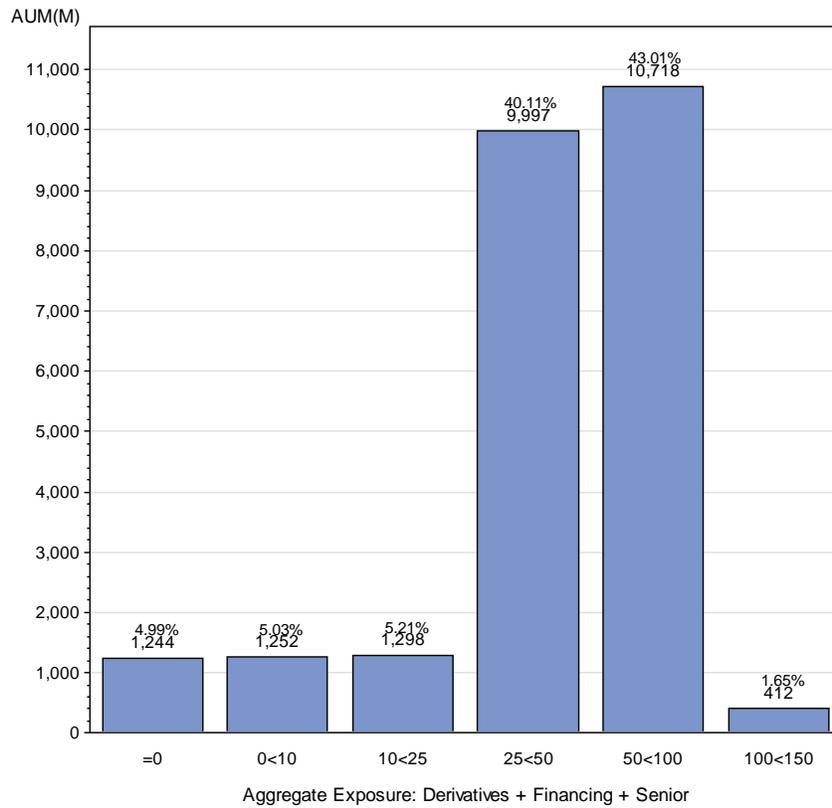
F10.5 Traditional mutual funds



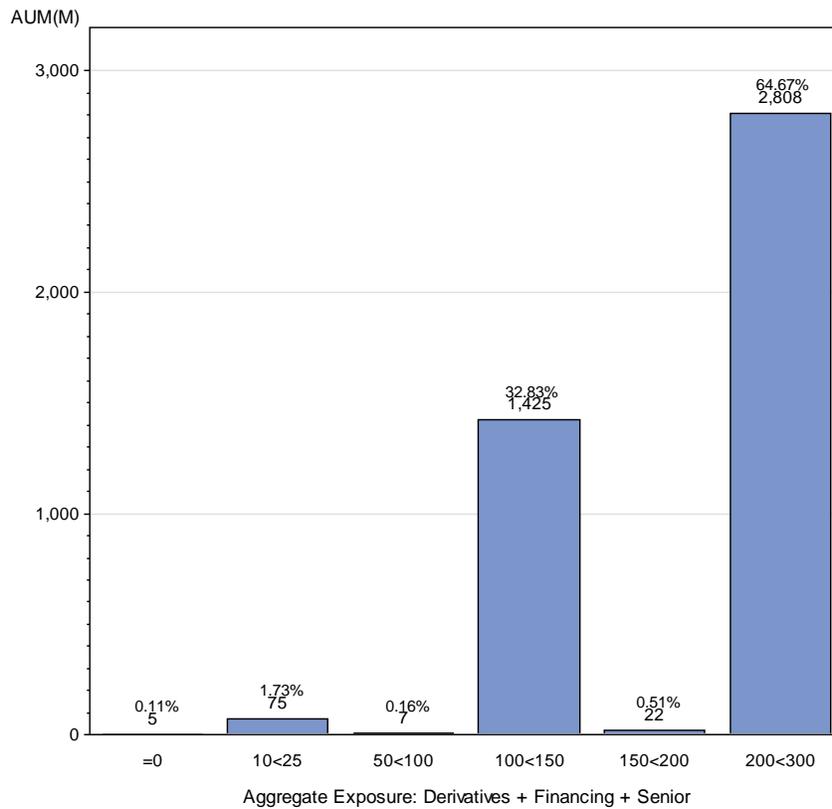
F10.6 Open-end funds (All)



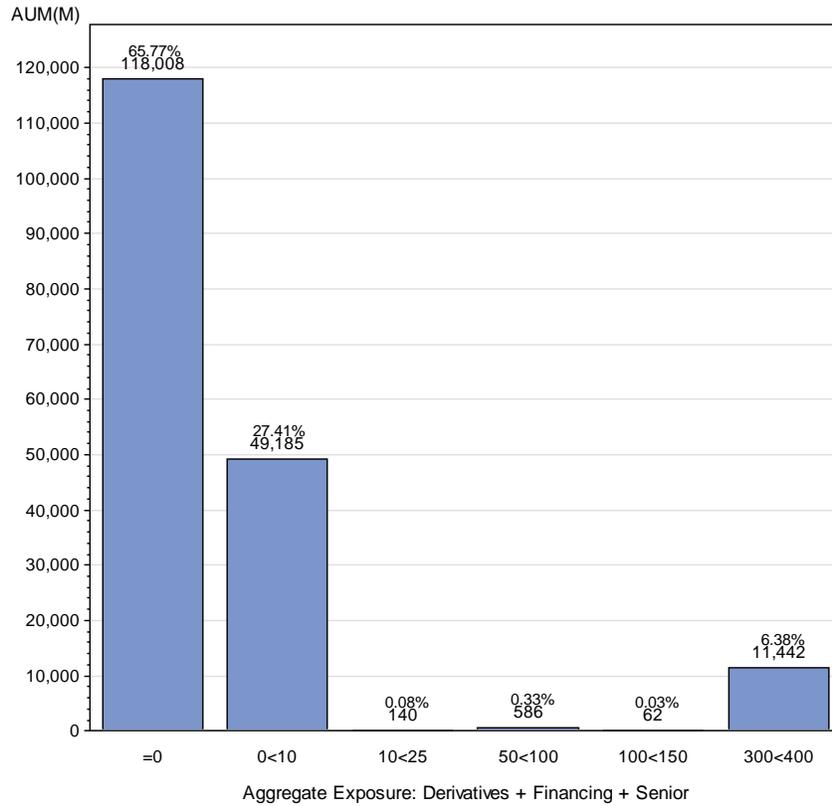
F10.7 Closed-end funds



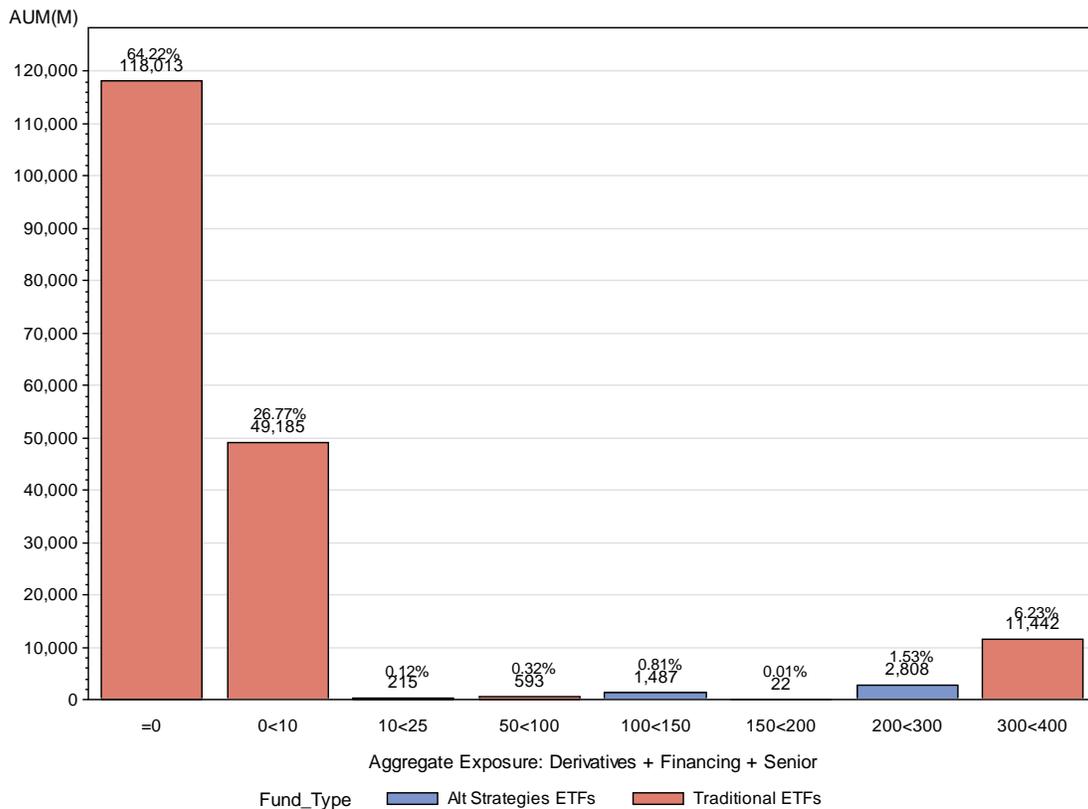
F10.8 Alt Strategies ETFs



F10.9 Traditional ETFs



F10.10 ETFs (All)



F10.11 Business development companies

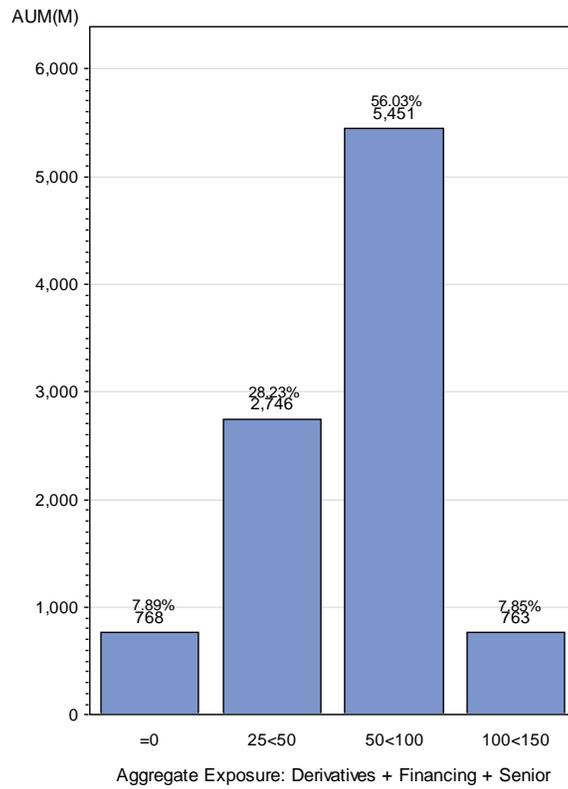
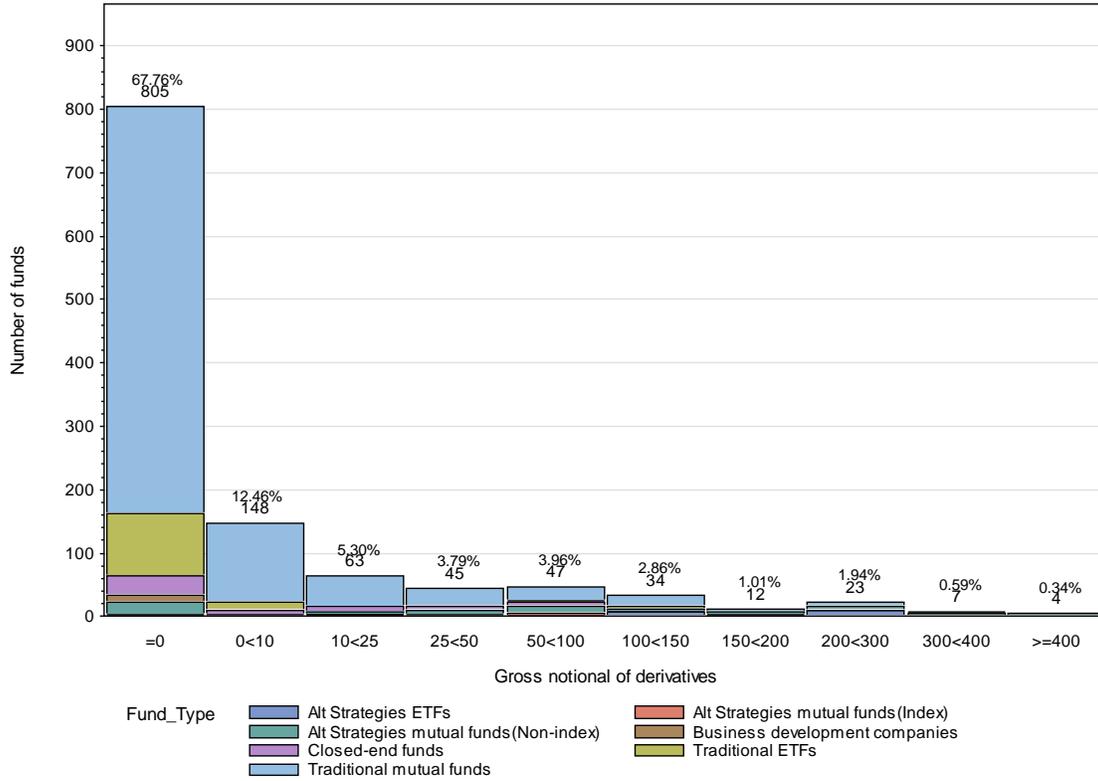
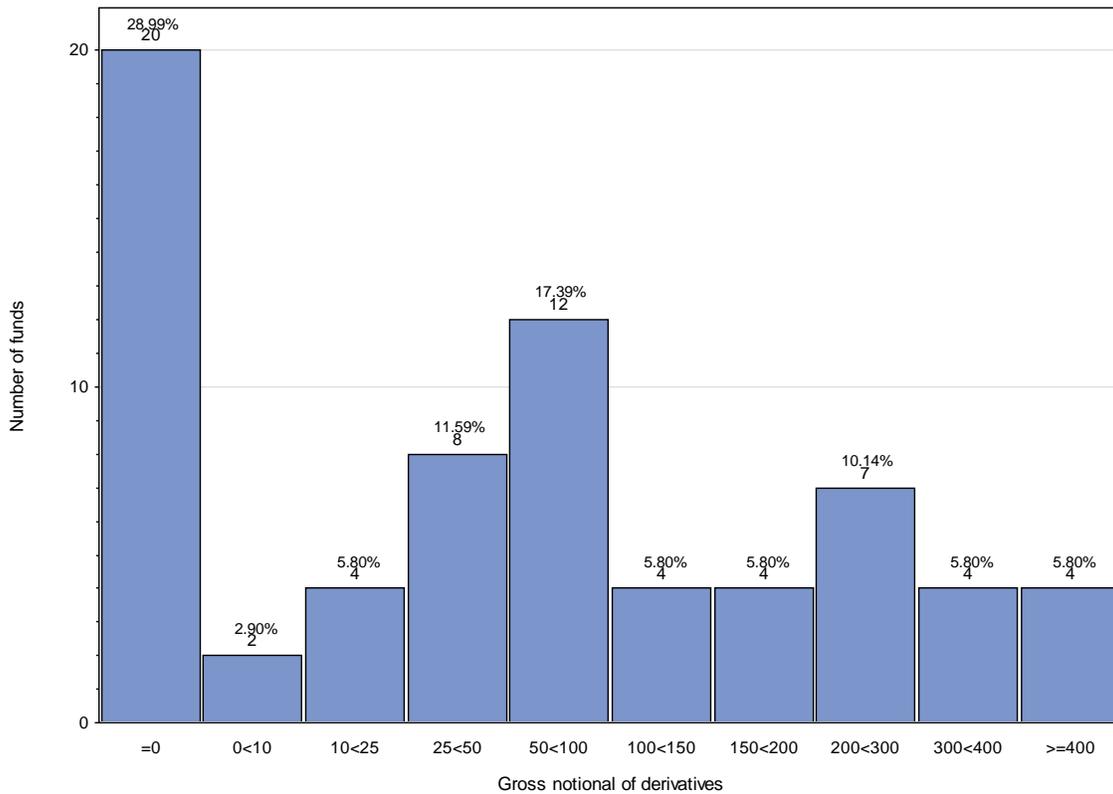


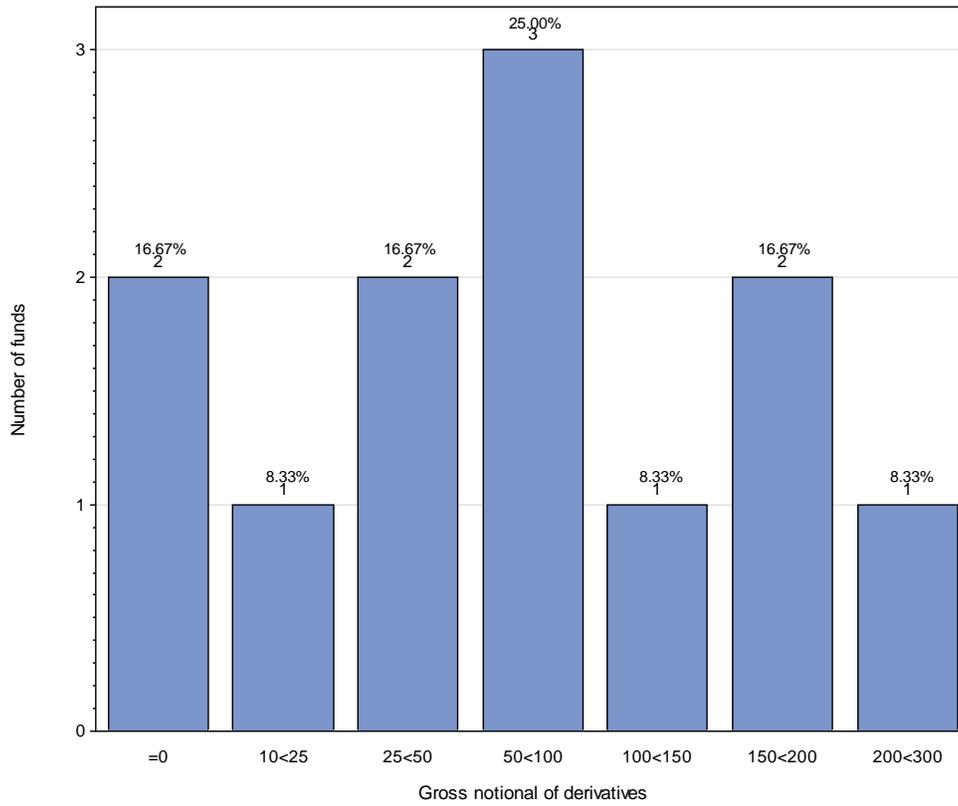
Figure 11: The Distribution of gross notional amounts of derivatives: number of funds
F11.1 All funds



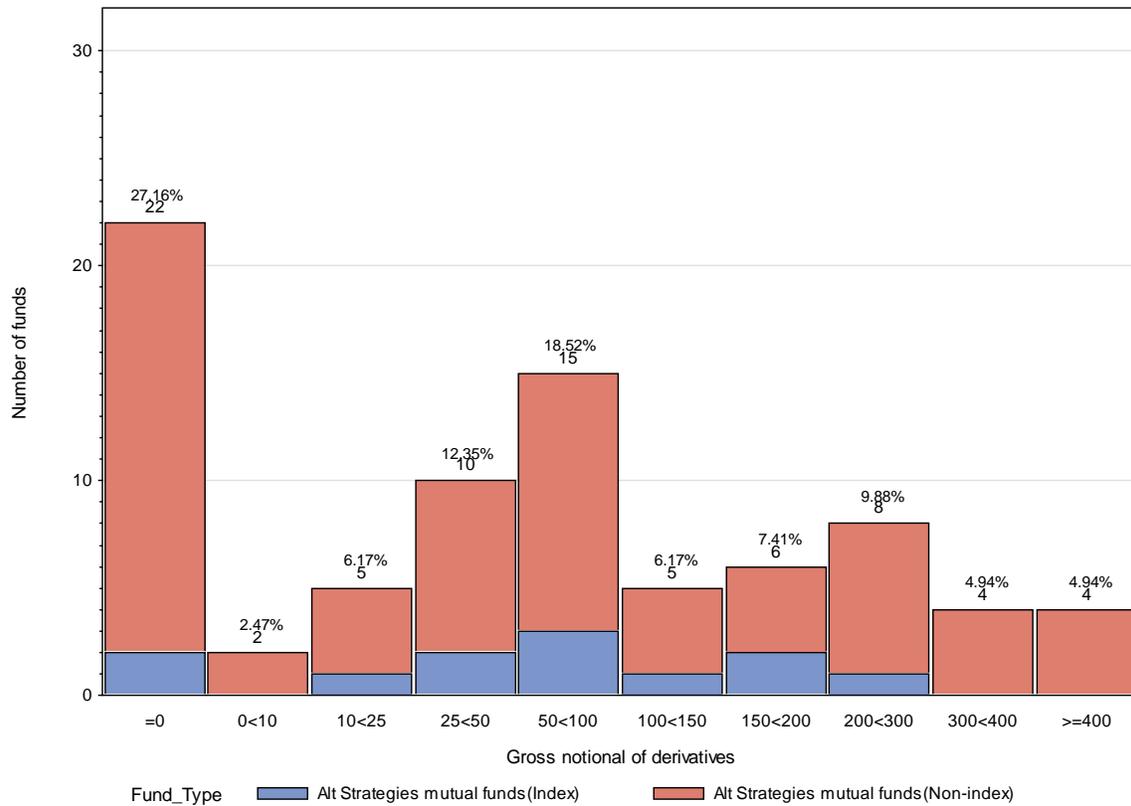
F11.2 Alt Strategies mutual funds (Non-index)



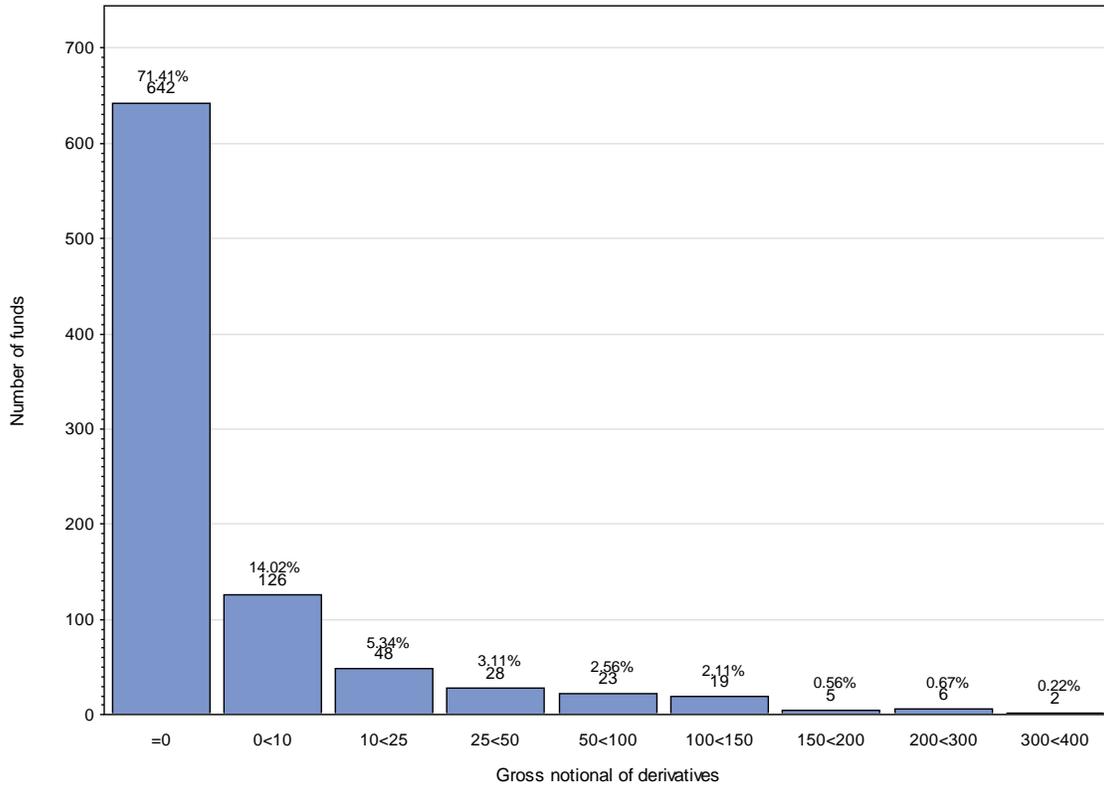
F11.3 Alt Strategies mutual funds (Index)



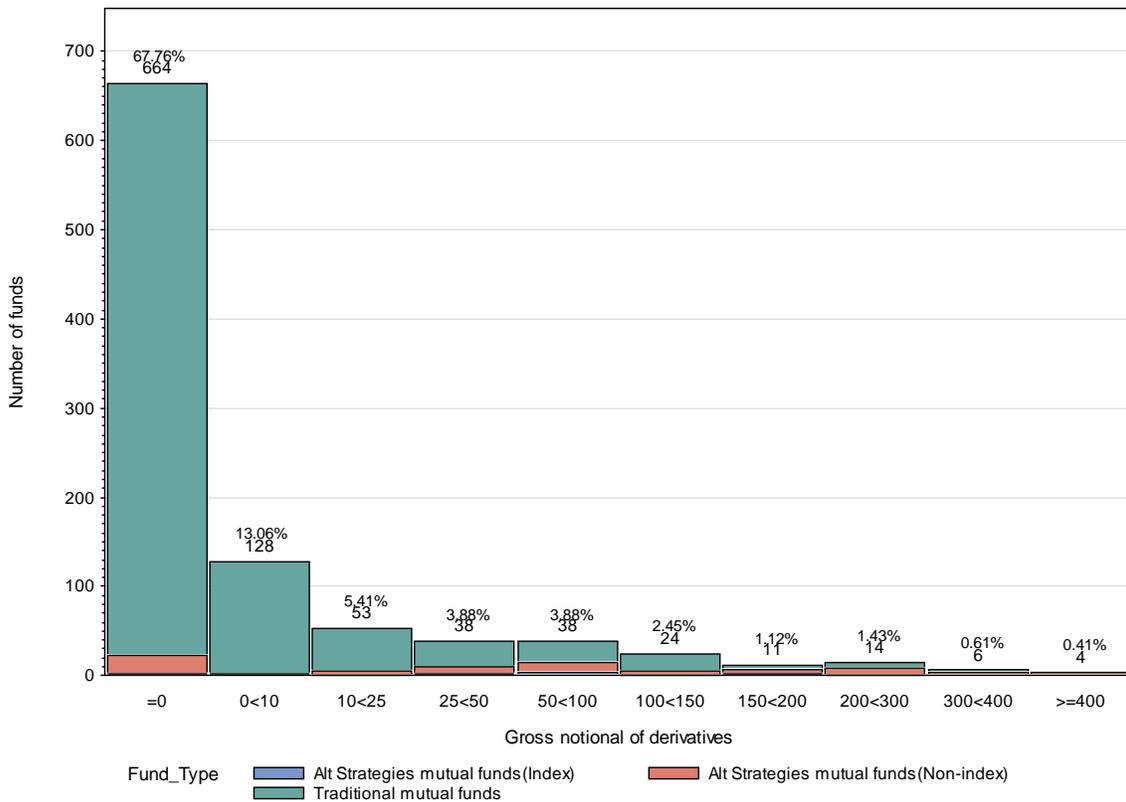
F11.4 Alt Strategies mutual funds (All)



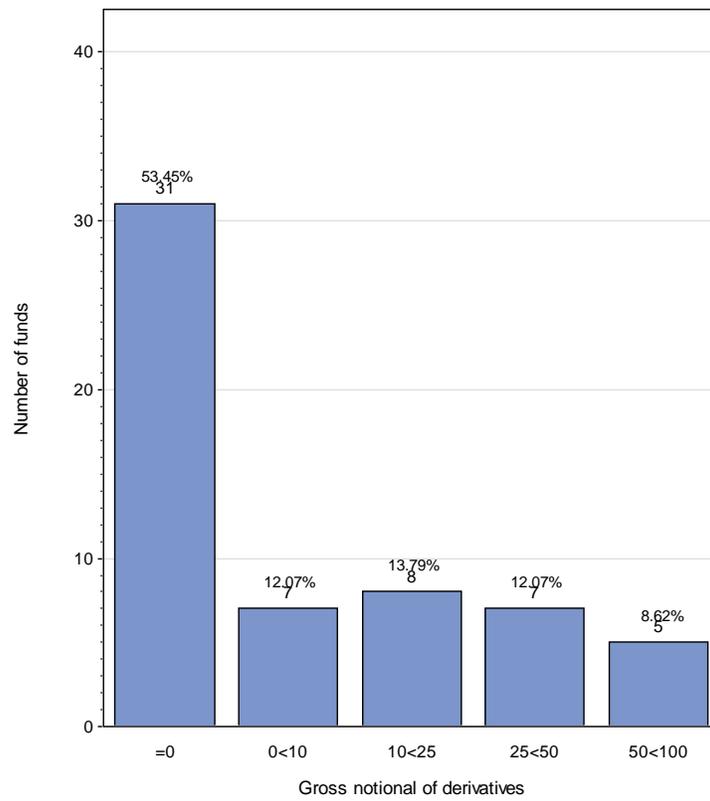
F11.5 Traditional mutual funds



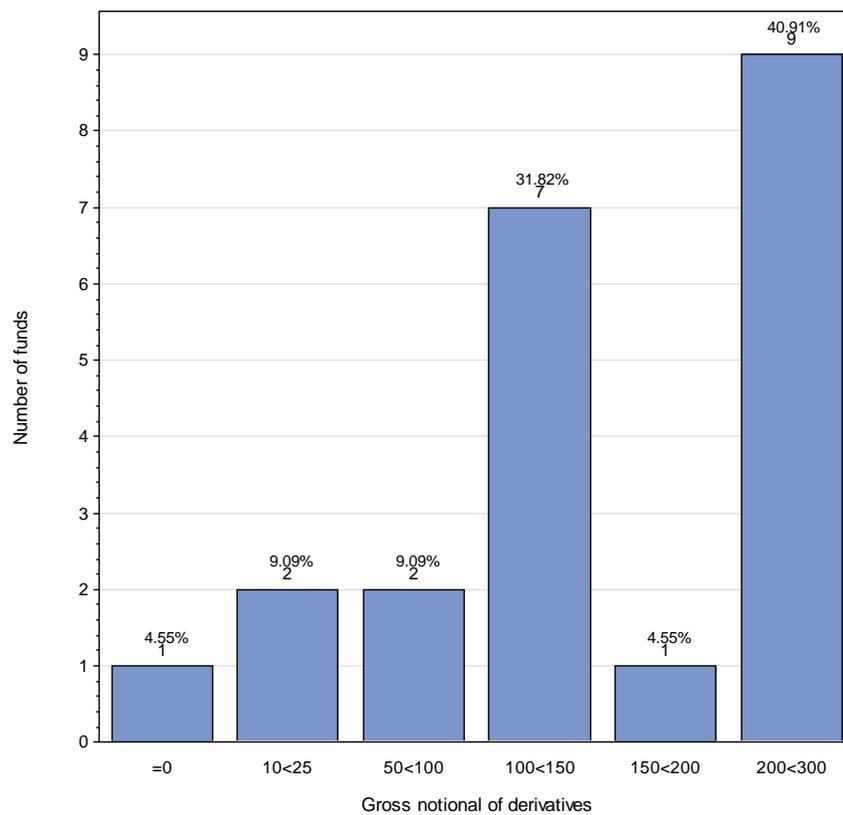
F11.6 Open-end funds (All)



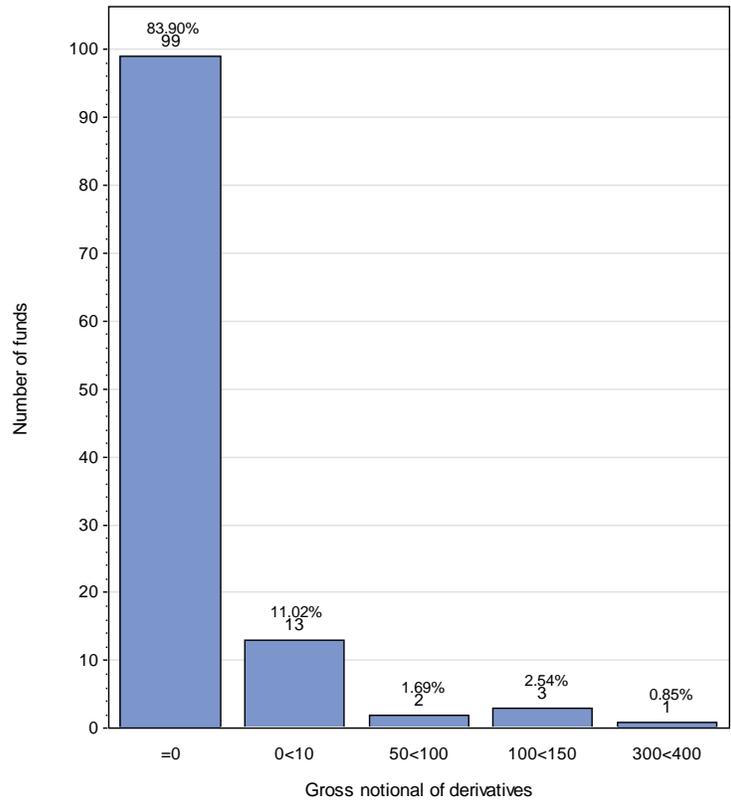
F11.7 Closed-end funds



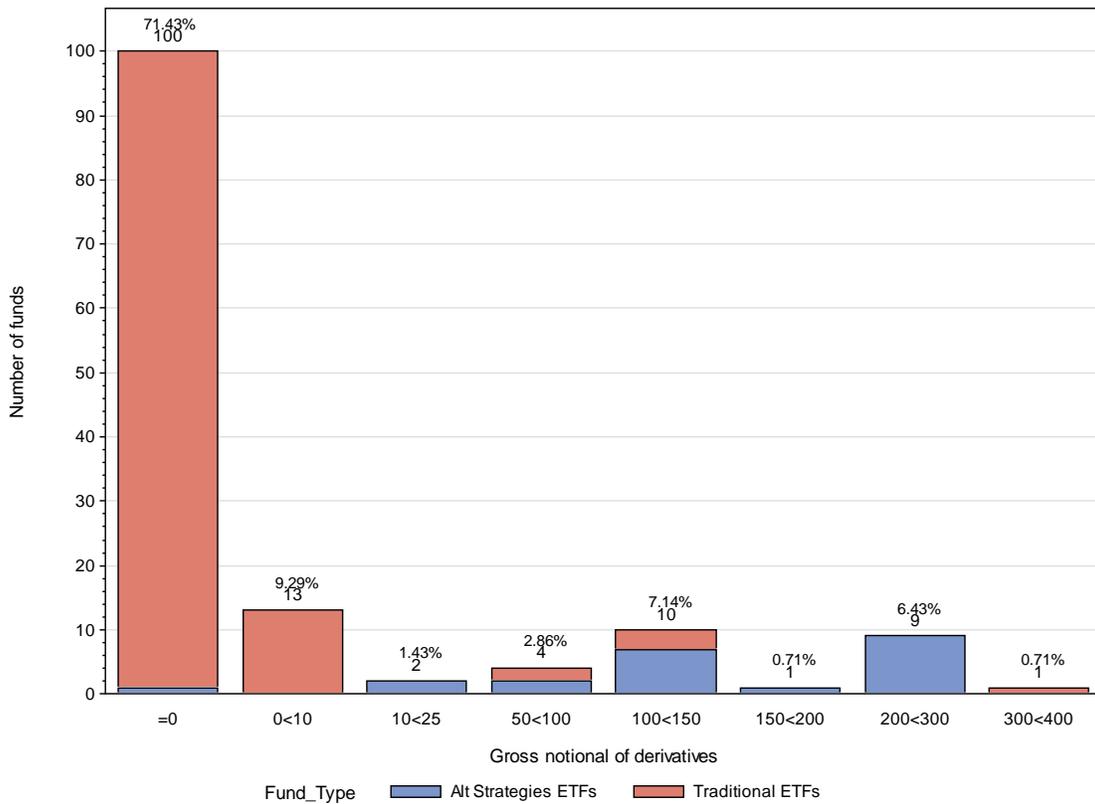
F11.8 Alt Strategies ETFs



F11.9 Traditional ETFs



F11.10 ETFs (All)



F11.11 Business development companies

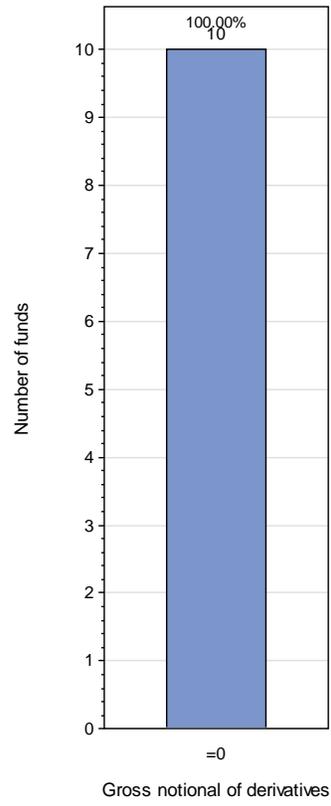
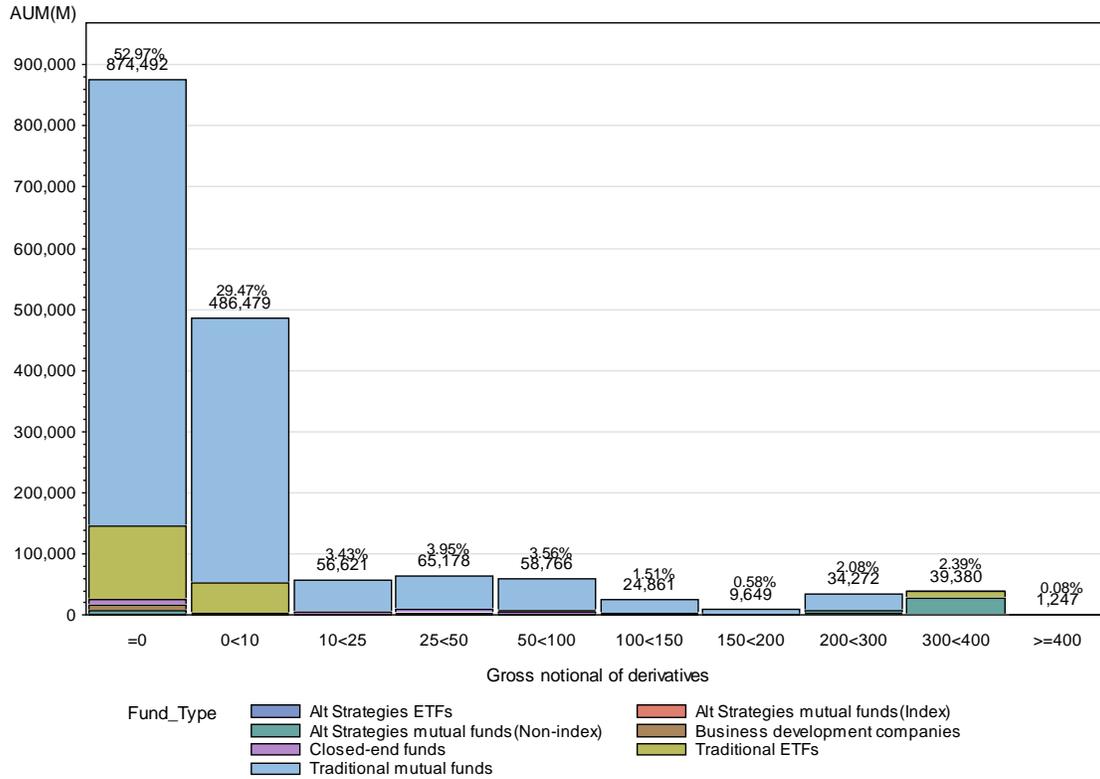
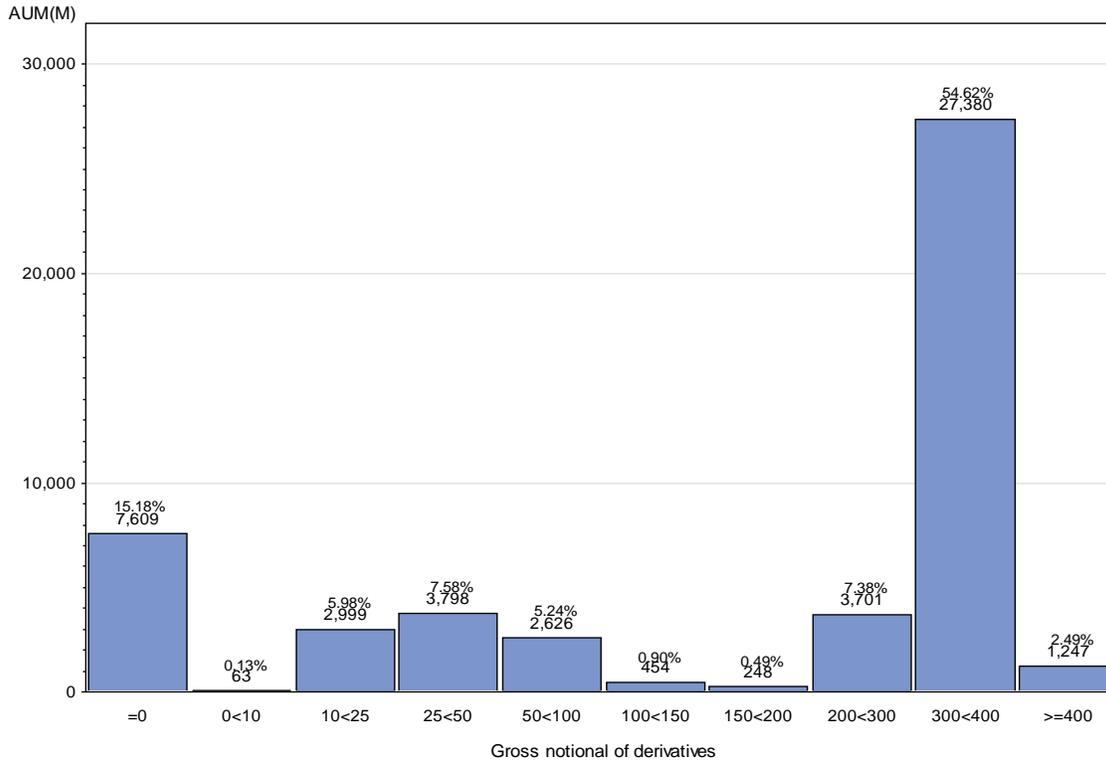


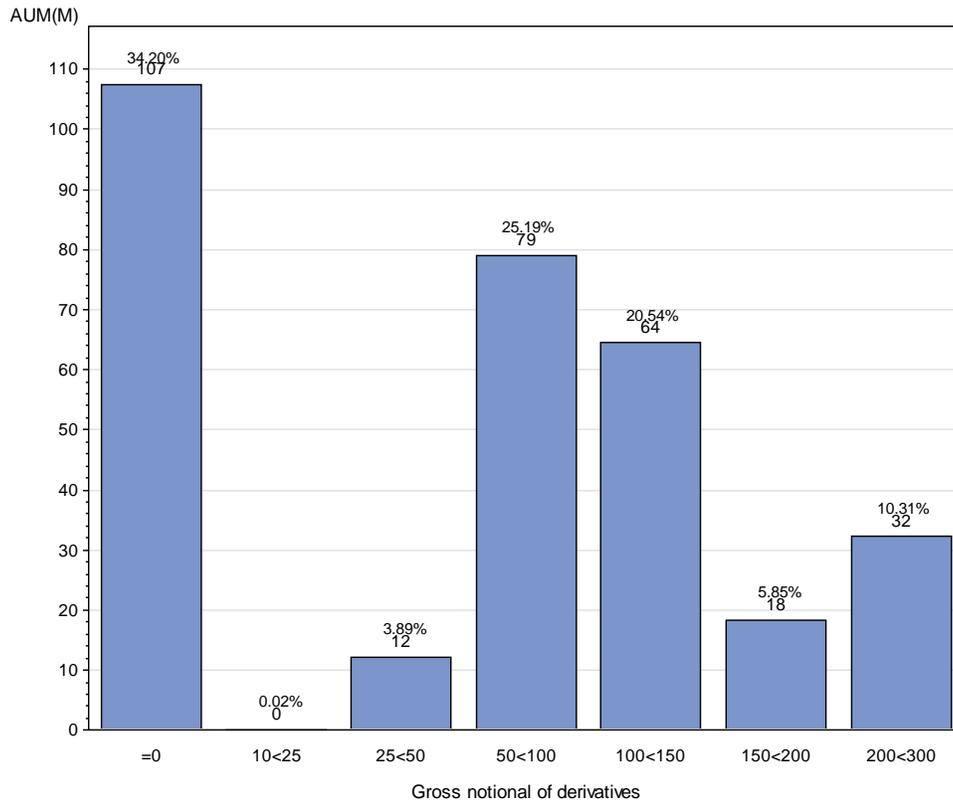
Figure 12: The Distribution of gross notional amounts of derivatives: AUM
F12.1 All funds



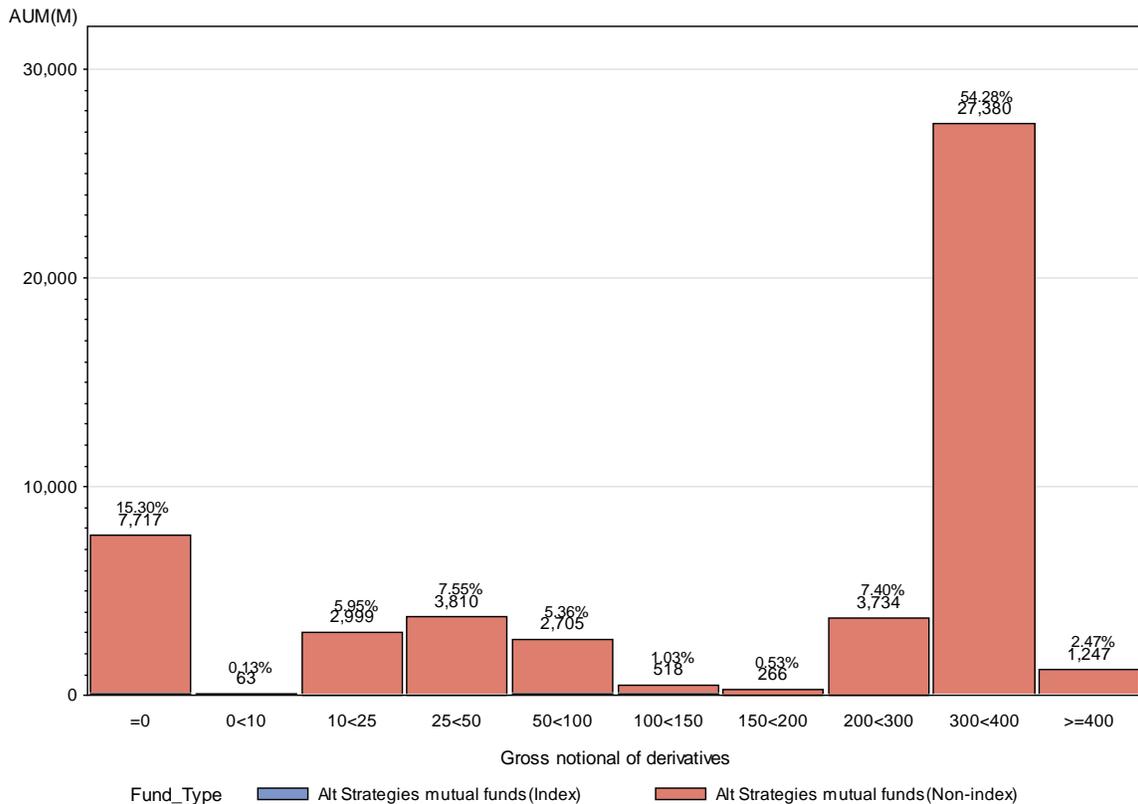
F12.2 Alt Strategies mutual funds (Non-index)



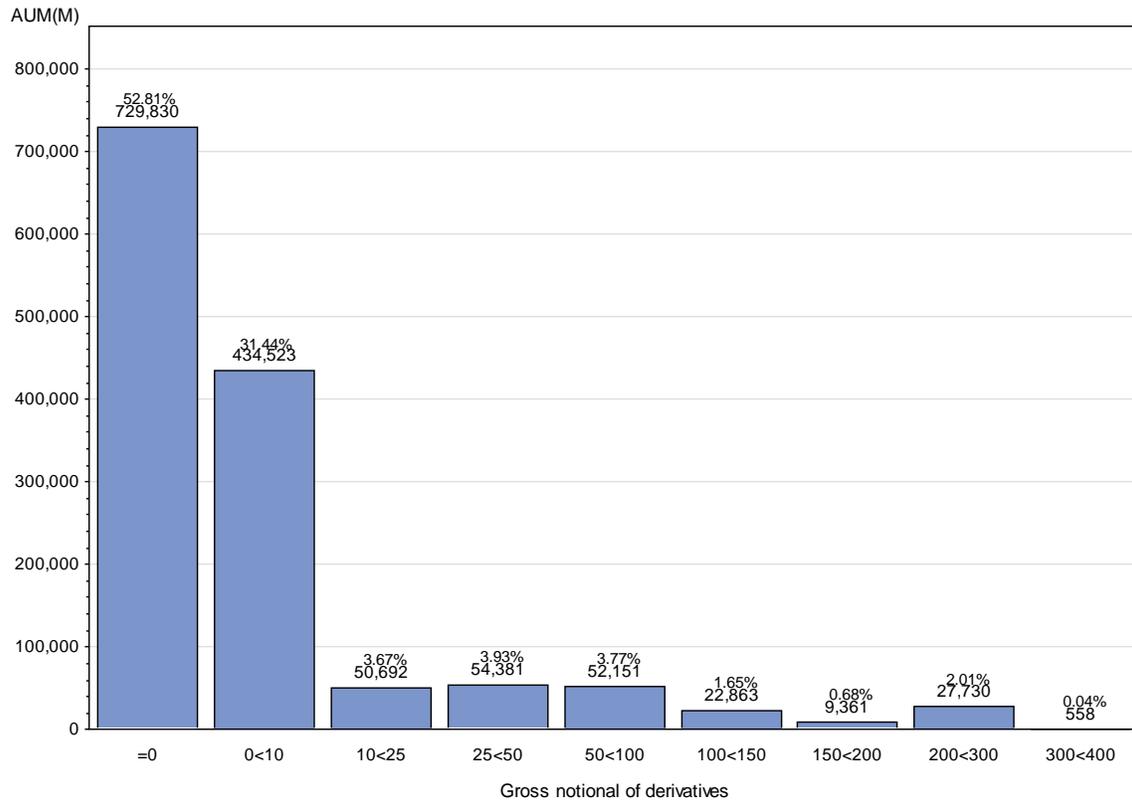
F12.3 Alt Strategies mutual funds (Index)



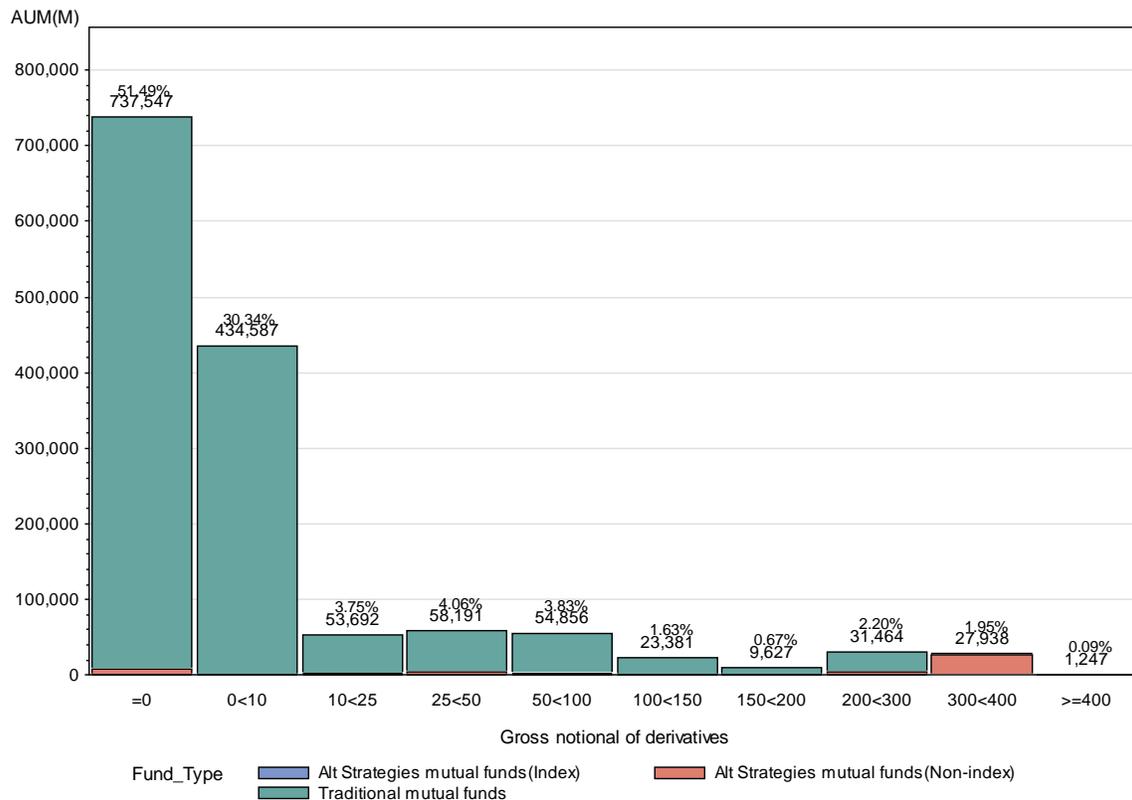
F12.4 Alt Strategies mutual funds (All)



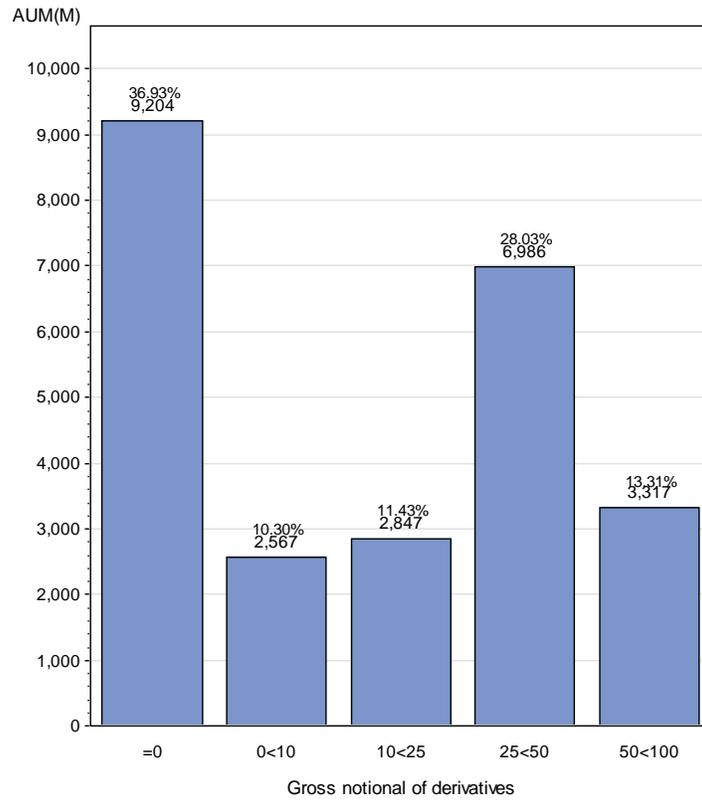
F12.5 Traditional mutual funds



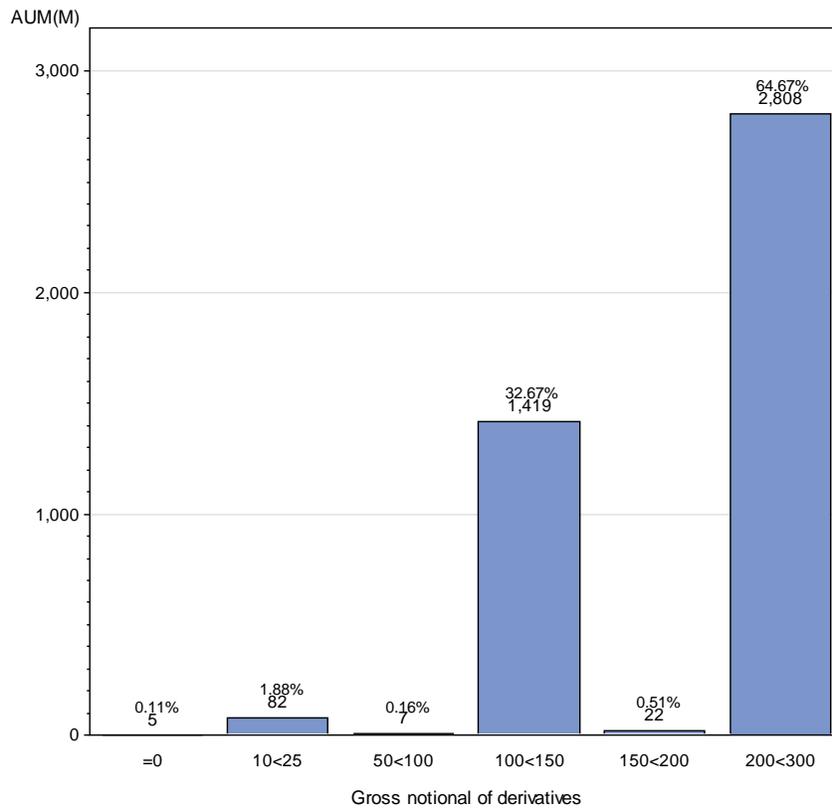
F12.6 Open-end funds (All)



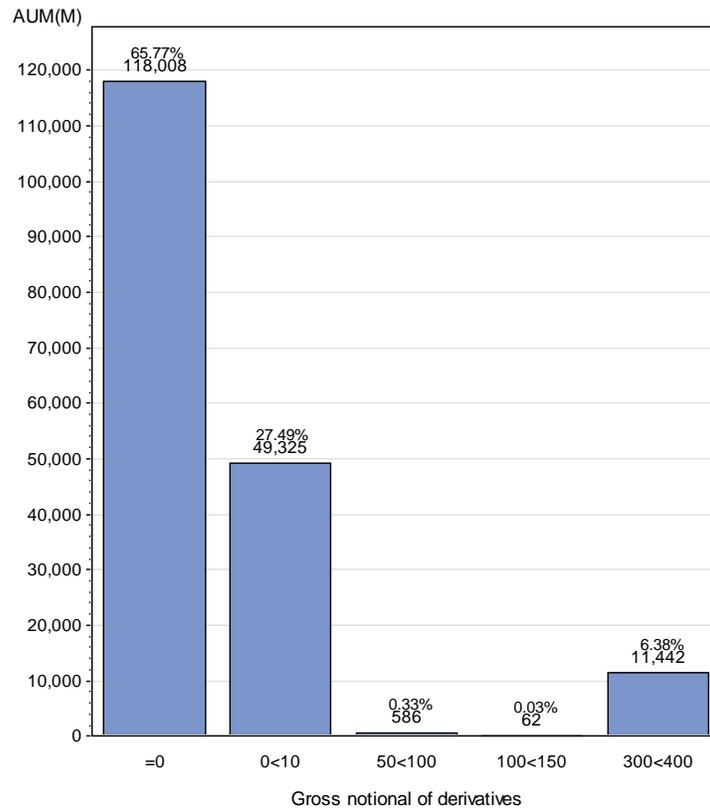
F12.7 Closed-end funds



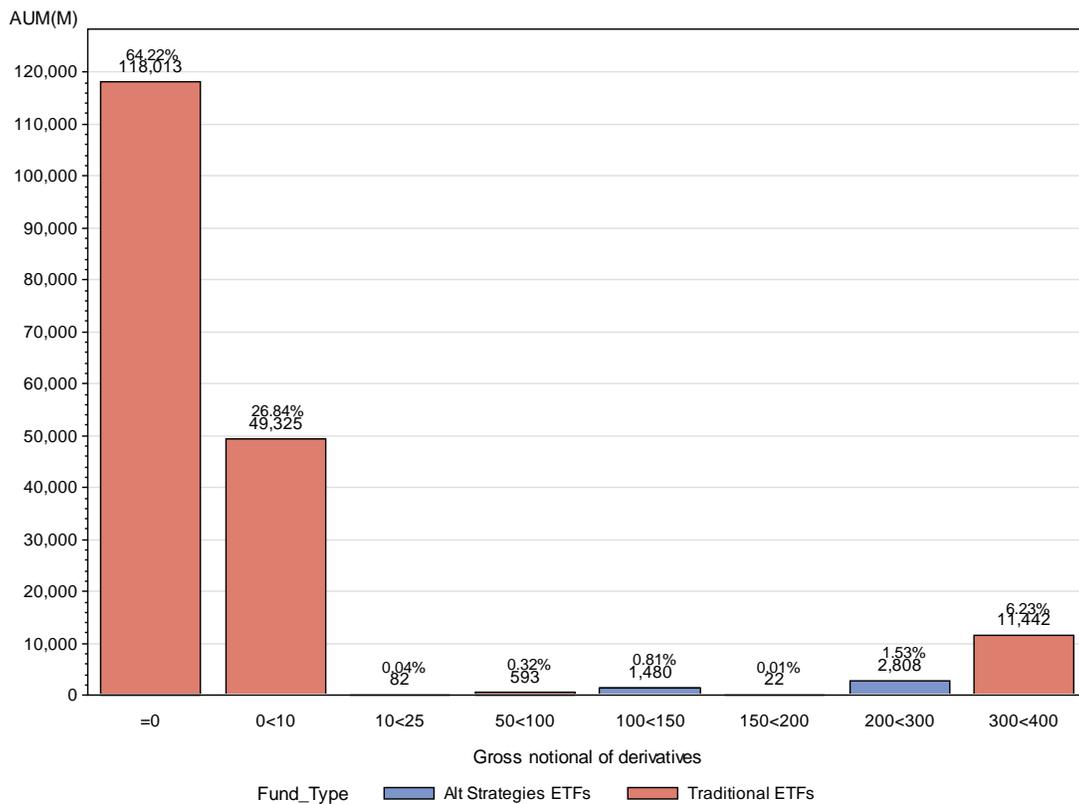
F12.8 Alt Strategies ETFs



F12.9 Traditional ETFs



F12.10 ETFs (All)



F12.11 Business development companies

