Bond Dealers of America

2013 Bond Dealers of America Fixed-Income Compensation Survey

Executive Summary

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Transmittal Letter from BDA

October, 2013

As the only organization representing the unique interests of securities dealers and banks focused primarily on the U.S. fixed income markets, the Bond Dealers of America (BDA) is pleased to present the results of the Fifth Annual Fixed-Income Dealer Compensation Survey *("Compensation Survey")*.[1] It is our hope that the BDA 2013 Compensation Survey will serve as a valuable tool to enhance and inform your compensation management, strategic planning process and decision making.

At the outset, we wish to gratefully acknowledge the leadership of our Steering Committee and the BDA Board of Directors for its continued support and advice in the development of the survey instrument and presentation of the results in this report, as well as the regional and the middle-market fixed-income dealers who participated in the survey. Their input enables the Compensation Survey to remain a relevant document that serves the needs of the fixed-income industry, BDA members and the marketplace. I am pleased to report that this year's survey maintained the high number of responding regional and middle-market fixed-income bond dealers as it did last year and continued growth in participation since the inception of the Compensation Survey series three years ago. Moreover, there were a number of first-time contributors to the survey. The survey definitions and methodology may be found as Annexes to the report.

Based on the success of the first four reports, there was strong agreement to continue with the series and produce the Fifth annual Compensation Survey report. As was the case in the each of the last four years, the decision to produce the compensation report was a member-driven one. Our members communicated to us that the BDA Compensation Survey was both unique and of high value as it addresses both compensation (including salary, commission, and bonus) by position trends and broader strategic, human resources and financial management issues, as they relate to staffing and compensation policies of the middle-market fixed-income securities dealer industry.

The Compensation Survey's value extends across our membership to the industry and the marketplace. The BDA Compensation Survey is the one compensation and strategic survey specifically tailored to the needs of regional and middle-market fixed-income dealers and their managements.

The timing of each of the first four survey reports covering 2007-2012 was propitious and perhaps uniquely valuable to the middle-market bond dealer community. The first BDA Compensation Survey covered the period during which the firms began to plan for the fixed-income market recovery from the 2008 crisis. The second survey covered the strong bond market recovery from the ashes of the 2008 crisis. The 2010 into 2012 period covered in the last two surveys were generally a much stronger one for the fixed-income markets and middle-market dealers. Last year's survey reflects the firming up of the U.S. fixed-income markets,

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[1] The terms BDA Regional Dealer Fixed-Income Compensation Survey and Compensation Survey may be used as substitutes for each other throughout the report.

global economic challenges and the growth and prominence of middle-market firms. This year's survey is responsive to those trends combined with the developing uncertainty about the direction of rates after the prolonged period of the low interest rate environment.

This fifth survey period extended into a more challenging period (2012-2013) and one characterized with regulatory changes across the industry and markets. It was also a year that once again demonstrated the resiliency of the fixed-income markets and the integral role of regional and middle-market dealers in the markets. The U.S. bond markets continue to be source of strength and safety in this turbulent year. Similarly, as of this writing, the local government and taxable bond markets are showing stability and strength in the face of the evolving U.S. government debt outlook, the uncertainty about a continued low benchmark Treasury rate environment and divergent and uncertain state and local government finances. The last several years provide ample evidence that the middle-market fixed-income dealer industry will respond and flourish as the marketplace challenges and operating environment evolve.

There are indeed new sets of strategic challenges awaiting the industry today amid constantly shifting market conditions and regulatory demands. We expect this year's survey to be equally useful – if not more so – in the new emerging environment.

As we noted last year, middle-market firms appear to be better positioned in the developing marketplace and operating environment to grow and maintain and capture market share. Within this environment, insights about compensation levels, trends and policies would appear to be valuable tools for the middle-market dealers as their securities firms develop, fine-tune and implement strategies; decide how to allocate resources; and grow and manage capital and staffing in 2013 and beyond.

Median employment – full-time equivalents or FTEs – of this year's participating firms was higher in 2012 than 2011 among the survey participants that reported such information by 17% following a nearly 10% increase in 2010-2011 after a decline of 3% in 2009-10. Median fixed-income revenues among survey participants rose by 20% after being virtually unchanged last year and rising 5% the previous year but with some distinctions among the market sectors.[2]

When appropriate, the Compensation Survey results are presented (1) nationally and segmented by primary geographic region, revenue level and Full-Time Equivalent (FTE) staff size peers groups and (2) compared to previous years. We are collecting the same information as in two last years' survey, indicative of the survey maturity and stability, which enhances year over year trend comparisons. There are no changes in the questions asked although some additional metrics were added including an additional regional peer group for compensation by position and a new section and table presenting the base salary over the entire survey series, 2008-2012.

[2] Year-over-year comparisons should be evaluated with some caution of there are invariably some entries and exits from the survey, although the middle-market survey population is generally relatively stable. These comments hold for this year's Compensation Survey

That we are asking the same questions as last year reflects the success of the format and that the survey questionnaire has achieved stability and critical mass. It also indicates that BDA member firms appear to be satisfied with the questions and data requested and the results reported. The increased participation and survey structure stability also speak to the fact that the industry finds value in the survey structure and reported results. Of course, as the industry and markets evolve and change, we are looking to further enhance the BDA compensation product in future years based on input from the fixed-income market participants, the BDA membership.

The results are divided into 12 topical areas within six report sections summarized below. We encourage you to read the methodology and definitions annexes at the end of the report in conjunction with the tables and results. By doing that, you will have a fuller understanding of our approach, the definitions used in the tables and how we arrived at the reported data.

- **Compensation by position:** 49 positions (one more than last year), including executive management; and compliance, trading, sales, investment banking, public finance, operations and technology, research, risk management and accounting. Within each department, compensation results are separated between senior, mid-level and junior positions, generally defined by level of responsibility and seniority.
    - Averages, medians, maximums, minimums and medians are provided by position, including total 2012 compensation, and by bonus (2011 and 2012), salary (2012), commission (2012), and sum of commission, salary and bonus (2012).
    - Data were presented nationally and by region, four regions – West and Midwest combined and South and East combined; full-time equivalents or FTE (two peer groups, up to 150 and above 150 as of the end of 2012) and annual fixed-income revenue (two peers, above $70 million and below $70 million in 2012 fixed-income revenue) peer groups.
    - Comparison of median bonus levels by position from 2007 to 2012 and base salary 2008-2012.

- **Trader compensation by market:** Average, median, maximum, and minimum salary, commission, bonus and total compensation for municipal, agency and government, securitization, corporate bond and money markets for senior, mid-level and junior trading professionals nationally. Averages are presented for trading by market sector depending on whether sufficient responses were received by FTE (2 groups, above and below 150) and fixed-income revenue (2 groups, above and below $60 million annually[3]) peer groups**.** This section was incorporated to provide more detailed breakdown for trader compensation among market sectors than is provided in the general compensation tables.

[3] The difference between the broader compensation by position and trader compensation fixed-income revenue groups reflect the fact that a few firms responded to the general compensation by position question but not the trader compensation tables.

- **Compensation policies**
    - **Payout Trends:**
        - Sales: Percentage payout of all net transaction revenues and for primary market and secondary market transactions segmented by market sectors – municipal, corporate bond, Treasury/Federal agency and securitization. As appropriate, the responses are divided between the retail and institutional sales segments.
        - Municipal Market/Public Finance Banking and Underwriting and Trading: Percentage payout for primary market and, as appropriate, broken out between negotiated and competitive sales.
    - **Sales professional compensation structure; and Bonus payment frequency:**
        - Whether sales professionals are paid by commission only, salary/bonus only or commission and salary/bonus.
        - Whether traders are paid bonus in equity, cash or other form, and frequency of compensation (quarterly, semiannually or annually). Results are presented in percentage terms.
    - **Bonus criteria:**
        - Whether based on objective quantitative basis, subjective basis, or combination of subjective and objective factors.
        - Responses are divided by trading – traders and trading desk managers; sales – sales professionals and managers; investment banking and public finance.
    - **Retirement/deferred compensation programs**
        - Whether the firm has a deferred compensation program.
        - Whether the program is based on a formula or fixed amount and what the formula is.

- **Revenue & Staffing Trends**
        - Whether staffing will change and in what direction it will change in 2013 by department (compliance, sales, trading, investment banking, research, operations).
        - Whether revenues changed in 2012 and are expected to change in 2013 and in what direction (increase and decrease) by market sector (Treasury or government sector, Federal agencies, municipal bonds, corporate bonds, and securitization).
        - Composition (percentage) of fixed income revenues by market sector
            - Market sectors include agency, Treasury, corporate bonds, MBS/ABS and municipal bonds.
            - Average responding firm percentage fixed-income revenue distribution by market sector.
            - Maximum percentage of trading revenues generated from a particular sector.

- **Operating & Technology Expense Ratios**
    - Operational expenses as a percentage of fixed income revenues: Total non-interest operating expenses, technology expenses, Bloomberg terminal and

other data service expenses, presenting the minimums, maximums, medians and averages at the national level.
    - Responses broken out by FTE and fixed-income revenue peer groups presenting medians and averages.
  - Whether technology and operations functions are outsourced.

- **Annexes provide detailed explanations about the methodology and definitions used in the survey.**

We hope you find the information useful. We welcome any comments, questions or suggestions for future surveys.

Sincerely,

Michael Nicholas
Chief Executive Officer, Bond Dealers of America

I. *Executive Summary*

COMPENSATION POLICY HIGHLIGHTS

- **Compensation Data for 49 Positions from Senior Executive to Entry-Level Provided**
  Data on 49 positions (one more than last year) are provided including medians, averages, maximum and minimum levels of compensation across departments at the national level, and by middle-market fixed-income dealer primary geographic region, FTE (full-time equivalent) and fixed-income revenue peer groups to the extent there were sufficient responses to tabulate meaningful compensation statistical trends. The following compensation measures are included: 2011 bonus, 2012 bonus, 2012 salary, 2012 commission, 2012 total compensation and comparison of median salary and bonus by position, when available, from 2007 to 2012 for bonus data and 2008-2012 for base salary, respectively. With year-over-year fluctuations, bonus and salary levels have grown since the depths of the financial crisis in 2008.

- **Chief/Senior Fixed-Income Business Executive Total Compensation (Compensation by Position Section III)**
  As described above, compensation metrics are provided for positions within twelve departments at middle-market fixed-income dealer businesses including sales, trading, compliance, operations and technology, research, risk management, public finance, investment banking and accounting as well as compensation for executive "C-suite" positions. Median executive level total compensation in 2012 was $886,000 for the head of the broker-dealer, or senior broker-dealer executive (maximum of $3.2 million), $1,000,000 for the head of fixed-income (maximum of $2.245 million), and $392,000 (maximum of $910,000 million) for the chief financial officer (CFO) compared to $516,898 for the head of the broker-dealer (maximum of $3.9 million), $426,858 for the head of fixed-income (maximum of $3.1 million), and $361,351 (maximum of $1.8 million) for the chief financial officer (CFO) in 2011 or as reported in last year's survey.[4]

- **Average Bonus Trends Up from 2011, Higher than 2007 Pre-Financial Crisis Year Levels. Trends Reflect Market Conditions, Revenue Trends, Industry Profitability (Bonus Trends By Position, 2007-2012 Section III-A); Higher Fixed-Income Revenues Expected in 2012, Likely to Affect 2013 Bonus**
  Bonus trends from 2007 to 2012 are presented for all positions to the extent that the statistical comparison was meaningful. Reflecting business conditions, the average median bonus across departments decreased by 33% from 2007 to 2008, increased by 16% from 2008 to 2009 and 71% higher between 2008-2012 and 19% between 2007-12. It is the first time the average bonus was higher than the pre-crisis 2007 in the five-year survey history. Between 2011 and 2012, the average median bonus rose in every department, and increased in 35 of 45 positions where such comparisons are meaningful. The average departmental bonus rose in 2012 compared to 2011, as well as on a position-level basis

[4] Year-to-year comparisons are meaningful but qualified by the fact that the responding firms may differ year over year, that is, some of the firms that responded in 2013 survey may not have participated in 2012 and *vice versa.* The majority of the firms that participated in 2013 also participated in the 2012 BDA Fixed-Income Dealer Compensation Survey.

regardless of department, by over 50% recovering from 2011. Taking into account the 2010-11 declines, the departmental average median increase was 28% 2010-12 on a position by basis by 19%.

With a forecast of stronger revenue trends across sectors in 2013 according to the survey, it is reasonable to expect a directionally similar bonus performance in executive-level bonus trends in next year's survey covering year-end 2013. Keep in mind that the survey responding firms may change slightly from survey to survey year, and this is the fifth year of the BDA Compensation Survey. [5]

As would be expected, salary trends were less volatile than the more discretionary bonus, flat in 2012 but a 12% over the last two years. The average median salary by department increased in 10 of 12 departments surveyed in 2012. The average median position increase was 12% in 2012 after being essentially in 2011.

- **Senior Trader Bonus is Higher Than Base Salary Across Fixed-Income Asset Classes; Senior Trader Compensation Generally Higher for Senior Traders in 2012, Reversing a Recent Trend (National Bonus Trends By Positions Trader Compensation – Section IV)[6]**
  The average median 2012 salary across fixed-income asset classes was $140,375 (above the $112,000 in 2011, $120,142 in 2010, $129,000 in 2009 and the first year's survey of $125,000) and bonus $278,397 (higher by 25% than 2011 and the ending three consecutive years of declining average median bonus trend)[7] for all senior traders with dispersion above and below that average depending on the market sector – municipal, corporate, money market, securitization and Federal agency/government. Where sufficient data were available for the market sector, data were provided for mid-level and entry level traders, as well. There was sufficient reporting to compute data for most sectors at the mid-level trader classification, and for entry-level municipal and corporate traders.

  For the third consecutive year, a statistically meaningful number of firms reported paying traders commissions as well as bonus and salary. The average median senior trader level commission across markets among the firms that paid commissions was $263,574 compared to $361,151 in 2011 and $240,507 in 2010. Frequently, firms paying commissions did not pay salaries. (Note that only firms paying a commission were included in the trader commission metrics, and not all firms were included in the commission statistical calculations.)

[5] Note that any discrepancy between the multi-year table bonus comparison (Section III-A) and this year's Compensation Survey (Section III) results would reflect differences in 2011-12 bonus data as reported in this year's Compensation Survey, and the Section III-A which reflects bonus data from the entire survey history period encompassing the four previous surveys. The multi-year comparisons are based on Section III-A table results. The same comment holds for the multi-year salary table found in Section III-B.
[6] There may be a small number of firms that provided aggregate trader compensation by position data but did not provide a response to this section in which trader compensation is segmented by market sector, which would explain any small discrepancies in trader data between the two sections (Sections III and IV).
[7] Comparisons between this year and previous years' survey results should be made with care. The survey populations (or firms responding to the survey among years) differ slightly year-to-year. That is, a small number of some firms that participated this year did not participate last year and *vice versa*.

Average median total senior level trader compensation was $441,000 ranging from $267,500 for money market traders to $500,000 for MBS/ABS traders. Average median total senior level trader compensation in 2011 was $394,090, ranging from $176,000 in the money market sector to $447.759 in the municipal sector in 2011. Average median total senior level trader compensation in 2010 was $495,688, ranging from $240,000 in the money market sector to $685,000 in the ABS/MBS sector in 2011.[8](See Methodology Annex for the definition of "total" compensation.)

- **Range of Payouts on Trades: Higher for Secondary than Primary Market Trades; Payout Rates Marginally Higher Compared to Last Year (Compensation Policies – Section V)**
  Responses indicate a wide range of compensation practices on payouts to sales professionals from net transaction/trade revenues[9] but typically were between 25% and 40% in the 2012 and 2013 surveys. Average compensation to institutional sales professionals on all trades (primary and secondary market) was typically concentrated in the 30% to 40% range in both 2012 and 2013 surveys with responses in most sectors clustered in the 30% to 35% range. Retail trade compensation to sales professionals similarly was concentrated in the 30% to 40% range across fixed-income market sectors in the 2013 survey as was the case in 2012. Retail payouts were more concentrated in the 35% to 40% in this year's survey for all trades with distinctions between the primary and secondary market and among market sectors.

  Secondary market trade payouts
  Firms reported a range of institutional secondary market ("off the run") trade payouts from below 30% to 50% but with the most typical responses between 35% to 40% across market sectors in this year's survey. Retail secondary market trade payouts were concentrated between 30% and 40% with taxable market payouts typically 30% to 34% and municipal trade payouts 35% to 40%.

  Primary market trade payouts: Taxable
  The middle-market dealer firms responded to primary or new issue market retail trade payouts with a wide range of responses from below 20% to 50%. About 60% of the firms indicated government/agency trade payouts between 30% and 40%. Half of the corporate bond primary market responses were above 30% and half below 30%. Roughly 60% of the securitization market new issue payouts were above 35%, and the balance below 35%, excluding those that responded that the payout is "variable," dependent on production.

  In the 2012 survey, primary or new issue market retail trade payouts were typically in the 30% to 34% range. In general, payouts for institutional primary market trades in the government and ABS/MBS markets were typically in the 30% to 40%, though with some

[8] More generally, apparent inconsistencies between the sum of the average commission, bonus and salary relative to average total compensation reflects the inclusion of all firms in the "total" compensation calculation but only those firms that pay commissions (bonus) in the commission (bonus) averages. As noted above, some firms will pay a bonus (more frequently) or a commission but not both a bonus and commission. See the Methodology annex for a fuller explanation.
[9] A small number of firms used alternative metrics for payout based on a firm-wide calculation of profits and individual production volume rather than on a transaction basis and are excluded from this calculation.

reporting lower payouts. The majority of the firms reported primary market institutional corporate bond trade payouts below 30%.

Primary Market Trade payouts: Municipal
2013 survey: Institutional competitive municipal bond sale payouts were reported as between 30% and 40% by 82% of the firms with the balance of the firms reporting lower payouts. In the negotiated sales segment, about 57% reported institutional municipal sales between 30% and 40% with the balance of the firms of the firms reporting less than 30% payouts.

In the 2012 survey: Institutional competitive municipal bond sale payouts were reported as between 30% and 40% by 80% of the firms though with some firms reporting lower payouts. By contrast, there was about the same number of firms reporting institutional negotiated municipal sales above 30% and below 30%.

Public Finance Banker Payouts
There was a wide range of practices regarding public finance banker payouts (less than 5% to 50% with greater dispersion in competitive sales) with a median in the 25% range for negotiated municipal bond sales and lower (13%) for competitive sales. Among firms that do not distinguish between competitive and negotiated sales, the average payout was in the 28% range with responses ranging from 20% to 50%.[10] Taking all of the responses together, the median was 22% payout for bankers. For traders, the median competitive primary market municipal payout was in the 5% for the negotiated sector and competitive sales. Including all responses including those firms that did not distinguish between competitive and negotiated payout practices, the median was in the 25% range. The median was 11% for all responses regardless of type of municipal bond sale.

- **Diverse Policies Regarding Trader Bonus Pay (Compensation Policies – Section V)**
Of those reporting such information in 2012 (this year's survey), virtually all middle-market firms paid institutional traders cash bonuses, about a third paid an equity bonus, and 17% paid undisclosed "other" forms of bonus. Retail trader bonuses were paid a cash bonus at virtually all firms and 10% paid an equity bonus. (Fewer firms reported retail trader bonus information than institutional trader bonus information.) About58% of the cash bonuses are paid annually and balance pay bonuses either on a quarterly (8%), semiannual (17%) or "other" basis (17%).

Of those reporting such information in 2011 (last year's survey), about 70% paid institutional traders cash bonuses (with the balance paying bonuses in equity or undisclosed "other" forms) and all of the firms that paid retail traders bonuses paid the bonus in cash. About70% of the cash bonuses are paid annually and balance pay bonuses either on a quarterly, semiannual or "other" basis.

Of those reporting such information for 2010, about 67% paid institutional traders cash bonuses (with the balance paying bonuses in equity or undisclosed "other" forms) and all of the firms that paid retail traders bonuses paid the bonus in cash. About 60% of the cash

[10] There were insufficient responses to report results on the taxable investment banking side.

bonuses were paid annually, and the balance pay bonuses either on a quarterly, semiannual or "other" basis with the non-annual responses.

- **Most Firms' Sales Professionals are Paid Commission Only But More Firms Report Paying Sales Professionals Both Commissions and Salary/Bonus (Compensation Policies – Section V)**
  Dealer firms paid their sales force on a commission only basis in 2013 at approximately 62% (compared to 70% in 2012) of the reporting middle-market fixed income dealer firms and a combination of salary/bonus and commission is paid at 15% (15% in 2012). That is, 77% (85% in 2012) of the firms paid their sales force commissions, and 25% of the dealer firms paid their sales force salary/bonus only.

  By contrast, dealer firms paid their sales force on a commission only basis at 87% of the reporting middle-market fixed income dealer firms in 2011, and a combination of salary/bonus and commission is paid at 13%. In 2010, 77% reported paying on a commission-only basis (and 23% salary and bonus only) and 90% reported paying commission-only in 2009.

- **Dealer Firms Indicate Bonus Metrics Trends Focused on a Combination of Objective and Subjective Criteria, a Shift From More Diverse Practices Across the Middle-Market Firms Weighted Towards Objective and Measurable Criteria (Compensation Policies – Section V)**
  The majority of firms pay bonuses across professions in the sales, trading, investment banking and public finance groups based on measurable objective criteria or a combination of subjective and objective criteria in 2012 as in 2011. However, there was a shift to basing a bonus on a combination of quantifiable or objective criteria and subjective criteria from basing a bonus solely on objective or subjective criteria with most of the shift being from objective criteria to a combination. In fact, most of the firms reported, across all professional categories, that they based on bonuses on a combination of subjective and objective criteria. It should be kept in mind that, while the survey responding middle-market firms are generally year over year, certain firms enter and exit the survey population from year to year.

  In this year's survey, 17% of the firms base the bonus solely on objective and 9% on subjective criteria (74% on a combination of objective and subjective criteria) across all professional categories, e.g. sales, trading, public finance etc. Nearly half (48%) based bonuses exclusively on objective and measurable criteria across professions in last year's survey.

- **Most Firms Have Deferred Compensation Programs (Deferred Compensation/Retirement Programs – Section V)**
  Virtually all firms (91% in 2011, 2012 and 2013) have deferred compensation retirement programs and those that do not have such programs generally offer profit sharing. The deferred compensation is generally based on a formula rather than a fixed amount. This year the formulas were typically (but not always) tied to employee contribution levels (e.g. 50% or 100%), generally up to a maximum employer contribution level.

- **Staffing Growth for 2013 (Revenue & Staffing Trends – Section VI)**
  Unlike much of the financial services industry, middle-market fixed-income dealer staffing was either increasing or flat across market functional and departmental areas in 2013. These trends are consistent with the reported average higher FTE levels among survey respondents than in last year's survey. Despite reported financial staffing cuts especially at some large global banks, the majority of the dealer firms expected the staffing level to stay the same for 2013. The survey responses indicated the greatest proportion of planned staffing increases in revenue generating areas or profit centers. The exceptions to a stable employment outlook were institutional sales (62%) and where the majority expected increased staffing for the second consecutive survey, and 54% expect public finance headcount to increase. About 38% of the firms expect increased staffing in institutional trading and 27% in retail sales. Reflective of the increased regulatory requirements, 38% of the firms expect compliance staffing increases. There was no indication of a net decline in any department among the survey participants except in institutional trading where only 8% expected a decline.

- **Revenue Trends: Firms Reported More or Stable Revenue Across Most Sectors in 2012; Higher or Stable Revenues Expected to Gain in 2013 with Expectations Weakest in the Municipal Sector which Accounts For Half of Revenues (Revenue & Staffing Trends – Section VI)**
  Although the revenue mix diverges among the middle-market firm participants, the average response was that the municipal bond products account for half (50% of total fixed-income revenues), followed by corporate bonds and MBS.

  The majority of the firms reported revenue increases in most product sectors in 2012 in MBS/ABS, corporate bond and municipal sectors. More (45% vs. 36%) indicate a revenue decline in U.S. governments/agencies.

  The consensus was for continued upward trend in 2013, although with more moderation. About 30% expect increased revenues and 27% expect stable revenue trend in the municipal bond sector with 46% expecting a decline. The most bullish expectations, based on corporate issuers looking to lock in rates reduced the exposure to a potential rate hike and the securitization sector rebound combined with agency MBS trends are: corporate bond sector with 73% expect increased revenues, and 10% expect stable revenues; and MBS/ABS with 60% see a revenue increase and 20% see stable revenues. The middle-market firms expect U.S. government/agency sector revenues to increase based on 36% of the response and be stable based on 45% of the responses. Of course, revenue fixed-income revenue outlook is sensitive to interest rate outlook, and the survey was taken prior to the spike in rates at mid-year following Fed policy statements.

- **Operations and Technology Expenses Trending Lower Longer Term (Operations & Expense Trends – Section VII)**
  Middle-market firms have generally reduced operating expenses significantly as a percentage of fixed-income revenues between 2007 and 2012 though with some year-over-year fluctuations, according to most of the survey's statistical measurements. The technology expense to revenue ratio has increased slightly over the time period, perhaps

reflecting increased technology investment at middle-market dealer firms. In 2012, technology and operating expense ratios were relatively flat, down slightly, while market data expense (Bloomberg and other vendors) ratios were higher. Most firms (90+%) do not outsource the technology function.