

Nuveen Core Equity Alpha Fund
Form N-CSR
March 06, 2015

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM N-CSR

**CERTIFIED SHAREHOLDER REPORT OF REGISTERED
MANAGEMENT INVESTMENT COMPANIES**

Investment Company Act file number 811-22003

Nuveen Core Equity Alpha Fund
(Exact name of registrant as specified in charter)

Nuveen Investments
333 West Wacker Drive
Chicago, IL 60606
(Address of principal executive offices) (Zip code)

Kevin J. McCarthy

Nuveen Investments

333 West Wacker Drive

Chicago, IL 60606
(Name and address of agent for service)

Registrant's telephone number, including area code: (312) 917-7700

Date of fiscal year end: December 31

Date of reporting period: December 31, 2014

Form N-CSR is to be used by management investment companies to file reports with the Commission not later than 10 days after the transmission to stockholders of any report that is required to be transmitted to stockholders under Rule 30e-1 under the Investment Company Act of 1940 (17 CFR 270.30e-1). The Commission may use the information provided on Form N-CSR in its regulatory, disclosure review, inspection, and policymaking roles.

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A registrant is required to disclose the information specified by Form N-CSR, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-CSR unless the Form displays a currently valid Office of Management and Budget (OMB) control number. Please direct comments concerning the accuracy of the information collection burden estimate and any suggestions for reducing the burden to Secretary, Securities and Exchange Commission, 450 Fifth Street, NW, Washington, DC 20549-0609. The OMB has reviewed this collection of information under the clearance requirements of 44 U.S.C. ss. 3507.

ITEM 1. REPORTS TO SHAREHOLDERS

Closed-End Funds

Nuveen Investments

Closed-End Funds

Annual Report December 31, 2014

JCE

Nuveen Core Equity Alpha Fund

NUVEEN INVESTMENTS ACQUIRED BY TIAA-CREF

On October 1, 2014, TIAA-CREF completed its previously announced acquisition of Nuveen Investments, Inc., the parent company of your fund's investment adviser, Nuveen Fund Advisors, LLC ("NFAL") and the Nuveen affiliates that act as sub-advisers to the majority of the Nuveen Funds. TIAA-CREF is a national financial services organization with approximately \$851 billion in assets under management as of December 31, 2014 and is a leading provider of retirement services in the academic, research, medical and cultural fields. Nuveen is operating as a separate subsidiary within TIAA-CREF's asset management business.

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Chairman's Letter

to Shareholders

Dear Shareholders,

A pattern of divergence has emerged in the past year. Steady and moderate growth in the U.S. economy helped sustain the stock market's bull run another year. U.S. bonds also performed well, amid subdued inflation, interest rates that remained unexpectedly low and concerns about the economic well-being of the rest of the world. The stronger domestic economy enabled the U.S. Federal Reserve (Fed) to gradually reduce its large scale bond purchases, known as quantitative easing (QE), without disruption to the markets, as well as begin to set expectations for a transition into tightening mode.

The story outside the U.S., however, was different. European growth was stagnating and Japan fell into a recession, contributing to the bouts of volatility in their markets. China's economy decelerated and, despite running well above the rate of other major global economies, investors feared it looked slow by China's standards. Compounding these concerns were a surprisingly steep decline in oil prices, the U.S. dollar's rally and an increase in geopolitical tensions, including the Russia-Ukraine crisis and terrorist attacks across the Middle East and Africa, as well as more recently in Europe.

While a backdrop of healthy economic growth in the U.S. and the continuation of accommodative monetary policy (with the central banks of Japan and potentially Europe stepping in where the Fed has left off) bodes well for the markets, the global outlook has become more uncertain. Indeed, volatility is likely to feature more prominently in the investment landscape going forward. Such conditions underscore the importance of professional investment management. Experienced investment teams have weathered the market's ups and downs in the past and emerged with a better understanding of the sensitivities of their asset class and investment style, particularly in times of turbulence. We recognize the importance of maximizing gains, while striving to minimize volatility.

And, the same is true for investors like you. Maintaining an appropriate time horizon, diversification and relying on practiced investment teams are among your best strategies for achieving your long-term investment objectives. Additionally, I encourage you to communicate with your financial consultant if you have questions about your investment in a Nuveen Fund. On behalf of the other members of the Nuveen Fund Board, we look forward to continuing to earn your trust in the months and years ahead.

William J. Schneider
Chairman of the Board
February 23, 2015

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Portfolio Managers'

Comments

Nuveen Core Equity Alpha Fund (JCE)

The equity portion of the Fund is managed by INTECH Investment Management LLC (INTECH), an independently managed subsidiary of Janus Capital Group Inc. The portfolio management team is led by Dr. Adrian Banner, CEO/CIO, Joseph Runnels, CFA, Vassilios Papathanakos, PhD, and Phillip Whitman, PhD.

The Fund also employs a call option strategy managed by Nuveen Asset Management, LLC (NAM), an affiliate of Nuveen Investments. Keith Hembre, CFA, and David Friar oversee this program.

Here the INTECH team members, along with the NAM team discuss economic and market conditions, their management strategies and the performance of the Fund for the twelve-month reporting period ended December 31, 2014.

What factors affected the U.S. economy and the financial markets during the twelve-month reporting period ended December 31, 2014?

During this reporting period, the U.S. economy continued to expand at a moderate pace. The Federal Reserve (Fed) maintained efforts to bolster growth and promote progress toward its mandates of maximum employment and price stability by holding the benchmark fed funds rate at the record low level of zero to 0.25% that it established in December 2008. At its October 2014 meeting, the Fed announced that it would end its bond-buying stimulus program as of November 1, 2014, after tapering its monthly asset purchases of mortgage-backed and longer-term Treasury securities from the original \$85 billion per month to \$15 billion per month over the course of seven consecutive meetings (December 2013 through September 2014). In making the announcement, the Fed cited substantial improvement in the outlook for the labor market since the inception of the current asset purchase program as well as sufficient underlying strength in the broader economy to support ongoing progress toward maximum employment in a context of price stability. The Fed also reiterated that it would continue to look at a wide range of factors, including labor market conditions, indicators of inflationary pressures and readings on financial developments, in determining future actions. Additionally, the Fed stated that it would likely maintain the current target range for the fed funds rate for a considerable time after the end of the asset purchase program, especially if projected inflation continues to run below the Fed's 2% longer-run goal. However, if economic data shows faster progress toward the Fed's employment and inflation objectives than currently anticipated, the Fed indicated that the first increase in the fed funds rate since 2006 could occur sooner than expected.

In the fourth quarter of 2014, the U.S. economy, as measured by the U.S. gross domestic product (GDP), grew at a 2.6% annual rate, compared with 4.6% in the second quarter and 5.0% in the third quarter of 2014. The decline in real GDP growth rate from the third quarter to the fourth quarter primarily reflects an upturn in imports, a downturn in federal government spending, and decline in exports. These were partly offset by an upturn in consumer spending. The Consumer Price Index (CPI) rose 0.8% year-over-year as of December 2014, while the core CPI (which excludes food and energy) increased 1.6% during the same period, below the Fed's unofficial longer term inflation objective of 2.0%. As of December 31, 2014, the national unemployment rate was 5.6%, the lowest level since July 2008, down from the 6.7% reported in December 2013. The housing market continued to post gains, although price growth has shown signs of

Certain statements in this report are forward-looking statements. Discussions of specific investments are for illustration only and are not intended as recommendations of individual investments. The forward-looking statements and other views expressed herein are those of the portfolio managers as of the date of this report. Actual future results or occurrences may differ significantly from those anticipated in any forward-looking statements and the views expressed herein are subject to change at any time, due to numerous market and other factors. The Fund disclaims any obligation to update publicly or revise any forward-looking statements or views expressed herein.

Refer to the Glossary of Terms Used in this Report for further definition of the terms used within this section.

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Portfolio Managers' Comments (continued)

deceleration in recent months. The average home price in the S&P/Case-Shiller Index of 20 major metropolitan areas rose 4.7% for the twelve months ended November 2014 (most recent data available at the time this report was prepared).

As investor sentiment and risk aversion fluctuated throughout the reporting period, U.S. equities across the risk spectrum posted generally positive returns supported by solid corporate earnings, positive economic reports and continued accommodative monetary policy. During the first few months of this reporting period, the financial markets were unsettled in the aftermath of widespread uncertainty about the future of the Fed's quantitative easing program. Also contributing to investor concern was Congress's failure to reach agreement on the Fiscal 2014 federal budget, which had triggered sequestration, or automatic spending cuts and a 16-day federal government shutdown in October 2013. As we moved into 2014, investors quickly shook off these issues and the current bull market in the U.S. entered its sixth year. Then, midway through the first calendar quarter, investors grew concerned about the dampening effects of severe winter weather on near-term growth, firmer language from the Fed regarding potential stimulus withdrawal and mounting tensions with Russia over its territorial assertions in Ukraine. The stock market experienced a rather quick and dramatic rotation away from higher growth, higher price/earnings ratio stocks that had performed so well in 2013 and into more defensive, value-oriented stocks. As we moved into the spring and summer months, equity markets again hit new highs as U.S. data improved and policy uncertainty was reduced. Market volatility declined to levels near historical lows prompting some concern from market analysts and policymakers who believed that investors may be growing overly complacent. As conditions improved on the domestic front, however, global growth was called into question as China and the emerging markets slowed, while Europe slipped back into a recession. The U.S. dollar strengthened dramatically, which weighed on the prices of all commodities. Oil prices experienced a dramatic decline from their early June high of approximately \$105/barrel and ended the reporting period at approximately \$65/barrel (source: West Texas Intermediate). The S&P 500® Index ended the reporting period up 13.69%, marking the sixth consecutive year of positive returns for the U.S. equity market.

What key strategies were used to manage the Fund during this twelve month reporting period ended December 31, 2014?

The investment objective of the Fund is to provide an attractive level of total return, primarily through long-term capital appreciation and secondarily through income and gains. The Fund invests in a portfolio of common stocks selected from the stocks comprising the S&P 500® Index, using a proprietary mathematical process designed by INTECH and also employs risk reduction techniques. Typically, the Fund's equity portfolio will hold 150 - 450 stocks included in the S&P 500® Index.

The Fund also employs an option strategy that seeks to enhance the Fund's risk-adjusted performance over time by means of attempting to reduce volatility of the Fund's returns relative to the returns of the S&P 500® Index. The Fund expects to write (sell) call options on a custom basket of equities with a notional value of up to 50% of the value of the equity portfolio.

The goal of the Fund's equity portfolio is to produce long-term returns in excess of the S&P 500® Index with an equal or lesser amount of risk. The continued market uncertainty during this reporting period reconfirmed the importance of disciplined risk management like INTECH's investment process. The firm's core risk controls are focused on minimizing the volatility of excess returns relative to the S&P 500® Index, so that any excess return is as consistent as possible and any relative underperformance is limited in magnitude and duration. We believe this helps minimize tracking error in relation to the S&P 500® Index during periods of short-term market instability.

INTECH seeks to generate excess returns by harnessing the natural volatility of stock prices to build a potentially more efficient portfolio than the S&P 500[®] Index. INTECH's investment process focuses solely on relative volatility and correlation. Specifically, the process searches for stocks with high relative volatility and low correlation, attempting to increase the potential for trading profits at time of rebalancing. The actual positioning of the portfolio from a sector and stock specific standpoint is a residual of the process, and the rationale for over and underweight positions is a function of the stocks' relative volatility and correlation characteristics in aggregate.

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Because INTECH's process does not forecast the direction of stock prices, we anticipate equity holdings that are overweight or underweight relative to the index may potentially beat the benchmark in approximately equal proportions over time.

How did the Fund perform during this twelve-month reporting period ended December 31, 2014?

The table in the Performance Overview and Holding Summaries section of this report provides total return performance for the Fund for the one-year, five-year and since inception periods ended December 31, 2014. For the twelve-month reporting period ended December 31, 2014, the Fund's shares at net asset value (NAV) outperformed the JCE Blended Index, but lagged the S&P 500® Index.

Since INTECH uses a purely portfolio-theoretic methodology, the investment process does not specifically select stocks or overweight sectors in response to market conditions or expectations or based on their potential for future performance, but combines securities based on how their stock prices move relative to one another in order to capture a rebalancing premium. Rebalancing requires buying some of a stock after a negative relative return and selling some of a stock after a positive relative return. This produces a buy low or sell high trading profit, on average, as stocks move up and down relative to the benchmark.

The U.S. equity market as measured by the S&P 500® Index posted a positive return of 13.69% for the year, marking the sixth consecutive year of positive returns for the U.S. equity market. Relative volatility, which refers to stocks moving relative one another, was relatively stable during 2014, increasing slightly from historically low levels in the fourth quarter. In addition, an overall increase in market diversity during the reporting period reflected a change in the distribution of capital in which smaller stocks outperformed larger stocks, on average, which benefited the Fund's portfolio. Due to their volatility and correlation characteristics, the Fund tends to overweight the smaller stocks within the investment universe as they provide more relative volatility capture potential. The Fund's underweight to mega cap stocks and overweight to smaller cap stocks had an overall positive impact on the portfolio's relative performance during the reporting period.

From a sector perspective, an overweight allocation to the utilities sector, which was the best performing sector, benefited the Fund. The Fund's active positioning within the consumer staples sector also contributed to the positive relative performance. Additionally, an overweight to some strong performing industrials, including Southwest Airlines Co. and Northrop Grumman Corporation, as well as consumer staples, including The Kroger Company and Constellation Brands, Inc. were among the top contributors during the reporting period.

As mentioned previously, the Fund continued to write call options on a basket of stocks and on stock indexes, while investing in a portfolio of equities, to enhance returns while foregoing some upside potential of its equity portfolio. The notional value underlying these options averaged 40% of the Fund's assets. Since the performance of the underlying equities was very positive during this period, the call options reduced performance, as would be expected for the strategy in periods of strong equity performance.

The Fund also purchased equity index futures contracts to gain equity market exposure where the portfolio holds cash. During the reporting period, this had a small positive effect on performance.

Share

Information

DISTRIBUTION INFORMATION

The following information regarding the Fund's distributions is current as of December 31, 2014. The Fund's distribution level may vary over time based on the Fund's investment activities and portfolio investment value changes.

The Fund has a managed distribution program. The goal of this program is to provide shareholders with relatively consistent and predictable cash flow by systematically converting the Fund's expected long-term return potential into regular distributions. As a result, regular distributions throughout the year are likely to include a portion of expected long-term gains (both realized and unrealized), along with net investment income.

Important points to understand about a managed distribution program are:

- The Fund seeks to establish a relatively stable distribution rate that roughly corresponds to the projected total return from its investment strategy over an extended period of time. However, you should not draw any conclusions about the Fund's past or future investment performance from its current distribution rate.
- Actual returns will differ from projected long-term returns (and therefore the Fund's distribution rate), at least over shorter time periods. Over a specific timeframe, the difference between actual returns and total distributions will be reflected in an increasing (returns exceed distributions) or a decreasing (distributions exceed returns) Fund net asset value.
- Each distribution is expected to be paid from some or all of the following sources:
 - net investment income (regular interest and dividends),
 - realized capital gains, and
 - unrealized gains, or, in certain cases, a return of principal (non-taxable distributions).
- A non-taxable distribution is a payment of a portion of the Fund's capital. When the Fund's returns exceed distributions, it may represent portfolio gains generated, but not realized as a taxable capital gain. In periods when the Fund's returns fall short of distributions, the shortfall will represent a portion of your original principal, unless the shortfall is offset during other time periods over the life of your investment (previous or subsequent) when the Fund's total return exceeds distributions.
- Because distribution source estimates are updated during the year based on the Fund's performance and forecast for its current fiscal year (which is the calendar year for the Fund), estimates on the nature of your distributions provided at the time the distributions are paid may differ from both the tax information reported to you in your Fund's IRS Form 1099 statement provided at year end, as well as the ultimate economic sources of distributions over the life of your investment.

The following table provides information regarding the Fund's distributions and total return performance for the fiscal year ended December 31, 2014. This information is intended to help you better understand whether the Fund's returns for the specified time period were sufficient to meet its distributions.

As of December 31, 2014		JCE
Inception date		3/27/07
Fiscal year (calendar year) ended December 31, 2014:		
Per share distribution:		
From net investment income	\$	0.16
From long-term capital gains		2.01
From short-term capital gains		0.34
Return of capital		0.00
Total per share distribution	\$	2.51
Current distribution rate*		6.94%
Average annual total returns:		
1-Year on NAV		12.08%
5-Year on NAV		15.87%
Since inception on NAV		8.36%

* Current distribution rate is based on the Fund's current annualized quarterly distribution divided by the Fund's current market price. The Fund's quarterly distributions to its shareholders may be comprised of ordinary income, net realized capital gains and, if at the end of the fiscal year the Fund's cumulative net ordinary income and net realized gains are less than the amount of the Fund's distributions, a return of capital for tax purposes.

SHARE REPURCHASES

During August 2014, the Fund's Board of Trustees reauthorized an open-market share repurchase program, allowing the Fund to repurchase an aggregate of up to approximately 10% of its outstanding shares.

As of December 31, 2014, and since the inception of the Fund's repurchase program, the Fund has cumulatively repurchased and retired shares as shown in the accompanying table.

	JCE
Shares Cumulatively Repurchased and Retired	449,800
Shares Authorized for Repurchase	1,600,000

During the current reporting period, the Fund did not repurchase any of its outstanding shares.

OTHER SHARE INFORMATION

As of December 31, 2014, and during the current reporting period, the Fund's share price was trading at a premium/(discount) to its NAV as shown in the accompanying table.

	JCE
NAV	\$ 17.49
Share Price	\$ 17.47
Premium/(Discount) to NAV	(0.11)%
12-Month Average Premium/(Discount) to NAV	(3.64)%

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Risk

Considerations

Fund shares are not guaranteed or endorsed by any bank or other insured depository institution, and are not federally insured by the Federal Deposit Insurance Corporation. Shares of closed-end funds are subject to investment risks, including the possible loss of principal invested. Past performance is no guarantee of future results. Fund common shares are subject to a variety of risks, including:

Investment, Market and Price Risk. An investment in common shares is subject to investment risk, including the possible loss of the entire principal amount that you invest. Your investment in common shares represents an indirect investment in the corporate securities owned by the Fund, which generally trade in the over-the-counter markets. Shares of closed-end investment companies like the Fund frequently trade at a discount to their NAV. Your common shares at any point in time may be worth less than your original investment, even after taking into account the reinvestment of Fund dividends and distributions.

Tax Risk. The tax treatment of Fund distributions may be affected by new IRS interpretations of the Internal Revenue Code and future changes in tax laws and regulations. This is particularly true for funds employing a managed distribution program.

Common Stock Risk. Common stock returns often have experienced significant volatility.

Call Option Risk. The value of call options sold (written) by the Fund will fluctuate. The Fund may not participate in any appreciation of its equity portfolio as fully as it would if the Fund did not sell call options. In addition, the Fund will continue to bear the risk of declines in the value of the equity portfolio.

Derivatives Strategy Risk. Derivative securities, such as calls, puts, warrants, swaps and forwards, carry risks different from, and possibly greater than, the risks associated with the underlying investments.

Investment Process Risk. INTECH uses a proprietary mathematical process that strives to identify common stocks with high volatility relative to the index and low correlation to one another. The use of this process may not produce the expected results.

Reinvestment Risk. If market interest rates decline, income earned from the Fund's portfolio may be reinvested at rates below that of the original bond that generated the income.

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JCE**Nuveen Core Equity Alpha Fund****Performance Overview and Holding Summaries as of December 31, 2014**

Refer to Glossary of Terms Used in this Report for further definition of terms used within this section.

Average Annual Total Returns as of December 31, 2014

	Average Annual		Since
	1-Year	5-Year	Inception¹
JCE at NAV	12.08%	15.87%	8.36%
JCE at Share Price	18.31%	18.17%	8.51%
JCE Blended Index	9.62%	11.32%	5.61%
S&P 500® Index	13.69%	15.45%	7.11%

Past performance is not predictive of future results. Current performance may be higher or lower than the data shown. Returns do not reflect the deduction of taxes that shareholders may have to pay on Fund distributions or upon the sale of Fund shares. Returns at NAV are net of Fund expenses, and assume reinvestment of distributions. Comparative index return information is provided for the Fund's shares at NAV only. Indexes are not available for direct investment.

Share Price Performance Weekly Closing Price

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This data relates to the securities held in the Fund's portfolio of investments as of the end of the reporting period. It should not be construed as a measure of performance for the Fund itself. Holdings are subject to change.

Fund Allocation

(% of net assets)

Common Stocks	99.7%
Short-Term Investments	1.4%
Other Assets Less Liabilities	(1.1)%
Net Assets	100%

Top Five Issuers

(% of total investments)²

Anthem Inc.	2.5%
LyondellBasell Industries NV	2.3%
Lockheed Martin Corporation	2.0%
Southwest Airlines Co.	1.9%
Facebook Inc.	1.9%

Portfolio Composition

(% of total investments)²

Health Care Providers & Services	7.9%
Semiconductors & Semiconductor Equipment	5.2%
Road & Rail	5.1%
Chemicals	4.9%
Pharmaceuticals	4.8%
Real Estate Investment Trust	4.7%
Aerospace & Defense	3.4%
Electric Utilities	3.1%
Hotels, Restaurants & Leisure	3.1%
Oil, Gas & Consumable Fuels	3.1%
Specialty Retail	3.1%
Computers & Peripherals	2.8%
Food & Staples Retailing	2.7%
Tobacco	2.5%
Textiles Apparel & Luxury Goods	2.4%
Capital Markets	2.3%
Consumer Finance	2.3%
Diversified Financial Services	2.2%
Food Products	2.2%
Beverages	2.1%
Commercial Services & Supplies	2.1%
Health Care Equipment & Supplies	2.0%
Multi-Utilities	2.0%
Airlines	1.9%

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Internet Software & Services	1.9%
Other	18.8%
Short-Term Investments	1.4%
Total	100%

1 Since inception returns are from 3/27/07.

2 Excluding investments in derivatives.

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Shareholder

Meeting Report

The annual meeting of shareholders was held in the offices of Nuveen Investments on August 5, 2014 for JCE; at this meeting the shareholders were asked to vote to approve a new investment management agreement, to approve new sub-advisory agreements and to elect Board Members.

	JCE Common Shares
To approve a new investment management agreement between each Fund and Nuveen Advisors, LLC.	
For	7,089,765
Against	194,630
Abstain	188,514
Broker Non-Votes	2,097,542
Total	9,570,451
To approve a new sub-advisory agreement between Nuveen Fund Advisors and the Fund's sub-advisor(s) as follows:	