

Nuveen Core Equity Alpha Fund
Form N-Q
May 28, 2010

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549
FORM N-Q
QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED MANAGEMENT
INVESTMENT COMPANY

Investment Company Act file number 811-22003

Nuveen Core Equity Alpha Fund

(Exact name of registrant as specified in charter)

333 West Wacker Drive, Chicago, Illinois 60606

(Address of principal executive offices) (Zip code)

Kevin J. McCarthy Vice President and Secretary

333 West Wacker Drive, Chicago, Illinois 60606

(Name and address of agent for service)

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

Date of fiscal year end: 12/31

Date of reporting period: 3/31/2010

Form N-Q is to be used by management investment companies, other than small business investment companies registered on Form N-5 (§§ 239.24 and 274.5 of this chapter), to file reports with the Commission, not later than 60 days after the close of the first and third fiscal quarters, pursuant to rule 30b1-5 under the Investment Company Act of 1940 (17 CFR 270.30b1-5). The Commission may use the information provided on Form N-Q in its regulatory, disclosure review, inspection, and policymaking roles.

A registrant is required to disclose the information specified by Form N-Q, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-Q 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 the 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. § 3507.

Item 1. Schedule of Investments**Portfolio of Investments (Unaudited)****Nuveen Core Equity Alpha Fund (JCE)***March 31, 2010*

| Shares | Description (1) | Value |
|---|---------------------------------|--------------|
| Common Stocks 98.5% | | |
| Aerospace & Defense 2.1% | | |
| 2,500 | Boeing Company | \$ 181,525 |
| 3,900 | General Dynamics Corporation | 301,080 |
| 19,400 | Goodrich Corporation | 1,368,088 |
| 16,800 | Honeywell International Inc. | 760,536 |
| 200 | ITT Industries, Inc. | 10,722 |
| 400 | Lockheed Martin Corporation | 33,288 |
| 1,200 | Northrop Grumman Corporation | 78,684 |
| 5,400 | Precision Castparts Corporation | 684,234 |
| 11,000 | Rockwell Collins, Inc. | 688,490 |
| 5,800 | United Technologies Corporation | 426,938 |
| | Total Aerospace & Defense | 4,533,585 |
| Air Freight & Logistics 0.2% | | |
| 3,900 | FedEx Corporation | 364,260 |
| Airlines 0.2% | | |
| 36,600 | Southwest Airlines Co. | 483,852 |
| Auto Components 0.3% | | |
| 20,600 | Johnson Controls, Inc. | 679,594 |
| Automobiles 0.3% | | |
| 56,000 | Ford Motor Company, (2) | 703,920 |
| 1,600 | Harley-Davidson, Inc. | 44,912 |
| | Total Automobiles | 748,832 |

Beverages 3.1%

| | | |
|--------|--|-----------|
| 39,700 | Coca-Cola Company | 2,183,500 |
| 51,800 | Coca-Cola Enterprises Inc. | 1,432,788 |
| 11,300 | Constellation Brands, Inc., Class A, (2) | 185,772 |
| 29,700 | Dr. Pepper Snapple Group, (2) | 1,044,549 |
| 9,700 | Molson Coors Brewing Company, Class B | 407,982 |
| 23,874 | PepsiCo, Inc. | 1,579,504 |
| | Total Beverages | 6,834,095 |

Biotechnology 0.4%

| | | |
|-------|--------------------------|---------|
| 7,600 | Amgen Inc., (2) | 454,176 |
| 6,100 | Celgene Corporation, (2) | 377,956 |
| | Total Biotechnology | 832,132 |

Capital Markets 2.4%

| | | |
|--------|--------------------------------|-----------|
| 7,000 | Ameriprise Financial, Inc. | 317,520 |
| 10,200 | Bank of New York Company, Inc. | 314,976 |
| 3,600 | Federated Investors Inc. | 94,968 |
| 13,100 | Franklin Resources, Inc. | 1,452,790 |
| 12,900 | Goldman Sachs Group, Inc. | 2,201,127 |
| 5,300 | Invesco LTD | 116,123 |
| 1,300 | Legg Mason, Inc. | 37,271 |
| 5,400 | Morgan Stanley | 158,166 |
| 3,700 | State Street Corporation | 167,018 |
| 4,900 | T. Rowe Price Group Inc. | 269,157 |
| | Total Capital Markets | 5,129,116 |

Chemicals 2.0%

| | | |
|--------|---|-----------|
| 18,800 | Air Products & Chemicals Inc. | 1,390,260 |
| 3,300 | CF Industries Holdings, Inc. | 300,894 |
| 6,500 | Dow Chemical Company | 192,205 |
| 26,300 | E.I. Du Pont de Nemours and Company | 979,412 |
| 7,200 | Eastman Chemical Company | 458,496 |
| 900 | International Flavors & Fragrances Inc. | 42,903 |
| 12,700 | PPG Industries, Inc. | 830,580 |
| 1,100 | Praxair, Inc. | 91,300 |
| 900 | Sigma-Aldrich Corporation | 48,294 |
| | Total Chemicals | 4,334,344 |

Commercial Banks 2.3%

| | | |
|---------|---|------------------|
| 3,300 | BB&T Corporation | 106,887 |
| 3,800 | Comerica Incorporated | 144,552 |
| 86,500 | Fifth Third Bancorp. | 1,175,535 |
| 14 | First Horizon National Corporation, (2) | 200 |
| 118,800 | Huntington BancShares Inc. | 637,956 |
| 1,900 | M&T Bank Corporation | 150,822 |
| 1,900 | Marshall and Ilsley Corporation | 15,295 |
| 8,700 | PNC Financial Services Group, Inc. | 519,390 |
| 15,900 | Regions Financial Corporation | 124,815 |
| 9,400 | SunTrust Banks, Inc. | 251,826 |
| 5,700 | U.S. Bancorp | 147,516 |
| 51,150 | Wells Fargo & Company | 1,591,788 |
| 1,500 | Zions Bancorporation | 32,730 |
| | Total Commercial Banks | 4,899,312 |

Commercial Services & Supplies 0.4%

| | | |
|--------|---|----------------|
| 10,600 | Avery Dennison Corporation | 385,946 |
| 200 | Iron Mountain Inc., (2) | 5,480 |
| 20,100 | R.R. Donnelley & Sons Company | 429,135 |
| 2,000 | Republic Services, Inc. | 58,040 |
| 1,600 | Waste Management, Inc. | 55,088 |
| | Total Commercial Services & Supplies | 933,689 |

Communications Equipment 3.2%

| | | |
|---------|---------------------------------------|------------------|
| 112,400 | Cisco Systems, Inc., (2) | 2,925,772 |
| 8,500 | Harris Corporation | 403,665 |
| 8,400 | Juniper Networks Inc., (2) | 257,712 |
| 207,600 | Motorola, Inc. | 1,457,352 |
| 35,700 | QUALCOMM, Inc. | 1,499,043 |
| 44,500 | Tellabs Inc., (2) | 336,865 |
| | Total Communications Equipment | 6,880,409 |

Computers & Peripherals 8.4%

| | | |
|--------|--|-----------|
| 18,900 | Apple, Inc., (2) | 4,440,177 |
| 78,700 | Dell Inc., (2) | 1,181,287 |
| 32,700 | EMC Corporation, (2) | 589,908 |
| 56,900 | Hewlett-Packard Company | 3,024,235 |
| 36,600 | International Business Machines Corporation (IBM) | 4,693,950 |
| 8,500 | Lexmark International, Inc., Class A, (2) | 306,680 |

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| | | |
|--------|--|-------------------|
| 49,900 | Network Appliance Inc., (2) | 1,624,744 |
| 11,700 | QLogic Corporation, (2) | 237,510 |
| 1,300 | SanDisk Corporation, (2) | 45,019 |
| 37,800 | Teradata Corporation, (2) | 1,092,042 |
| 25,200 | Western Digital Corporation, (2) | 982,548 |
| | Total Computers & Peripherals | 18,218,100 |

Construction & Engineering 0.0%

| | | |
|-------|-------------------|--------|
| 1,600 | Fluor Corporation | 74,416 |
|-------|-------------------|--------|

Consumer Finance 1.1%

| | | |
|--------|-----------------------------------|------------------|
| 25,300 | American Express Company | 1,043,878 |
| 9,200 | Capital One Financial Corporation | 380,972 |
| 35,500 | Discover Financial Services | 528,950 |
| 36,200 | SLM Corporation, (2) | 453,224 |
| | Total Consumer Finance | 2,407,024 |

Containers & Packaging 0.5%

| | | |
|--------|---|------------------|
| 7,500 | Ball Corporation | 400,350 |
| 5,100 | Owens-Illinois, Inc., (2) | 181,254 |
| 23,000 | Sealed Air Corporation | 484,840 |
| | Total Containers & Packaging | 1,066,444 |

Diversified Consumer Services 0.2%

| | | |
|-------|--|----------------|
| 6,300 | Devry, Inc. | 410,760 |
| 7,400 | H & R Block Inc. | 131,720 |
| | Total Diversified Consumer Services | 542,480 |

Diversified Financial Services 2.3%

| | | |
|--------|--------------------------------------|-----------|
| 71,500 | Bank of America Corporation | 1,276,275 |
| 41,300 | Citigroup Inc. | 167,265 |
| 2,600 | CME Group, Inc. | 821,886 |
| 1,000 | Intercontinental Exchange, Inc., (2) | 112,180 |
| 53,905 | JPMorgan Chase & Co. | 2,412,249 |
| 400 | Moody's Corporation | 11,900 |
| 4,400 | New York Stock Exchange Euronext | 130,284 |

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| | | |
|---|---------------------------------------|-----------|
| Total Diversified Financial Services | | 4,932,039 |
| | | |
| Diversified Telecommunication Services | 3.4% | |
| 241,500 | AT&T Inc. | 6,240,360 |
| 21,728 | CenturyTel, Inc. | 770,475 |
| 11,200 | Verizon Communications Inc. | 347,424 |
| 5,700 | Windstream Corporation | 62,073 |
| Total Diversified Telecommunication Services | | 7,420,332 |
| | | |
| Electric Utilities | 0.5% | |
| 2,200 | American Electric Power Company, Inc. | 75,196 |
| 17,800 | FPL Group, Inc. | 860,274 |
| 9,000 | Pepco Holdings, Inc. | 154,350 |
| Total Electric Utilities | | 1,089,820 |
| | | |
| Electrical Equipment | 0.5% | |
| 18,100 | Rockwell Automation, Inc. | 1,020,116 |
| | | |
| Electronic Equipment & Instruments | 1.0% | |
| 45,400 | Agilent Technologies, Inc., (2) | 1,561,306 |
| 6,700 | Amphenol Corporation, Class A | 282,673 |
| 8,300 | Corning Incorporated | 167,743 |
| 4,300 | FLIR Systems Inc., (2) | 121,260 |
| 3,500 | Molex Inc. | 73,010 |
| Total Electronic Equipment & Instruments | | 2,205,992 |
| | | |
| Energy Equipment & Services | 2.1% | |
| 2,800 | Baker Hughes Incorporated | 131,152 |
| 31,600 | BJ Services Company | 676,240 |
| 10,600 | Cooper Cameron Corporation, (2) | 454,316 |
| 2,700 | Diamond Offshore Drilling, Inc. | 239,787 |
| 6,600 | FMC Technologies Inc., (2) | 426,558 |
| 28,200 | Halliburton Company | 849,666 |
| 2,000 | Helmerich & Payne Inc. | 76,160 |
| 1,800 | Nabors Industries Inc., (2) | 35,334 |
| 3,300 | National-Oilwell Varco Inc., (2) | 133,914 |
| 1,900 | Rowan Companies Inc. | 55,309 |

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| | | |
|--------|-----------------------------------|-----------|
| 22,300 | Schlumberger Limited | 1,415,158 |
| | Total Energy Equipment & Services | 4,493,594 |

Food & Staples Retailing 1.7%

| | | |
|--------|--------------------------------|-----------|
| 4,000 | Costco Wholesale Corporation | 238,840 |
| 19,100 | CVS Caremark Corporation | 698,296 |
| 26,900 | Walgreen Co. | 997,721 |
| 22,300 | Wal-Mart Stores, Inc. | 1,239,880 |
| 13,100 | Whole Foods Market, Inc., (2) | 473,565 |
| | Total Food & Staples Retailing | 3,648,302 |

Food Products 2.2%

| | | |
|--------|---|-----------|
| 8,800 | Archer-Daniels-Midland Company | 254,320 |
| 5,800 | Campbell Soup Company | 205,030 |
| 9,300 | ConAgra Foods, Inc. | 233,151 |
| 10,400 | General Mills, Inc. | 736,216 |
| 2,400 | H.J. Heinz Company | 109,464 |
| 1,500 | Hormel Foods Corporation | 63,015 |
| 10,000 | JM Smucker Company | 602,600 |
| 9,800 | Kellogg Company | 523,614 |
| 10,600 | Kraft Foods Inc. | 320,544 |
| 16,300 | Mead Johnson Nutrition Company, Class A Shares | 848,089 |
| 25,400 | Sara Lee Corporation | 353,822 |
| 27,200 | Tyson Foods, Inc., Class A | 520,880 |
| | Total Food Products | 4,770,745 |

Gas Utilities 0.3%

| | | |
|--------|---------------------|---------|
| 10,500 | EQT Corporation | 430,500 |
| 1,300 | Nicor Inc. | 54,496 |
| 3,700 | ONEOK, Inc. | 168,905 |
| 1,200 | Questar Corporation | 51,840 |
| | Total Gas Utilities | 705,741 |

Health Care Equipment & Supplies 2.1%

| | | |
|--------|------------------------------------|---------|
| 1,200 | Baxter International, Inc. | 69,840 |
| 37,900 | Boston Scientific Corporation, (2) | 273,638 |
| 7,600 | CareFusion Corporation, (2) | 200,868 |
| 1,400 | DENTSPLY International Inc. | 48,790 |

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| | | |
|--------|-------------------------------|-----------|
| 22,000 | Hospira Inc., (2) | 1,246,300 |
| 3,400 | Intuitive Surgical, Inc., (2) | 1,183,642 |
| 10,100 | Medtronic, Inc. | 454,803 |
| 4,200 | Saint Jude Medical Inc., (2) | 172,410 |
| 2,200 | Stryker Corporation | 125,884 |
| 2,100 | Varian Medical Systems, Inc. | 116,193 |
| 13,200 | Zimmer Holdings, Inc., (2) | 781,440 |

Total Health Care Equipment & Supplies 4,673,808

Health Care Providers & Services 3.6%

| | | |
|--------|-----------------------------------|-----------|
| 1,800 | Aetna Inc. | 63,198 |
| 15,200 | AmerisourceBergen Corporation | 439,584 |
| 4,200 | Cardinal Health, Inc. | 151,326 |
| 32,100 | CIGNA Corporation | 1,174,218 |
| 26,300 | Coventry Health Care, Inc., (2) | 650,136 |
| 3,100 | Davita Inc., (2) | 196,540 |
| 6,200 | Express Scripts, Inc., (2) | 630,912 |
| 6,000 | Humana Inc., (2) | 280,620 |
| 19,600 | McKesson HBOC Inc. | 1,288,112 |
| 11,300 | Medco Health Solutions, Inc., (2) | 729,528 |
| 17,700 | Patterson Companies, Inc., (2) | 549,585 |
| 90,400 | Tenet Healthcare Corporation, (2) | 517,088 |
| 7,500 | UnitedHealth Group Incorporated | 245,025 |
| 14,500 | Wellpoint Inc., (2) | 933,510 |

Total Health Care Providers & Services 7,849,382

Hotels, Restaurants & Leisure 1.4%

| | | |
|--------|---|-----------|
| 1,700 | Carnival Corporation | 66,096 |
| 4,500 | Darden Restaurants, Inc. | 200,430 |
| 6,500 | International Game Technology | 119,925 |
| 10,618 | Marriott International, Inc., Class A | 334,679 |
| 4,400 | McDonald's Corporation | 293,568 |
| 70,100 | Starbucks Corporation, (2) | 1,701,327 |
| 1,900 | Starwood Hotels & Resorts Worldwide, Inc. | 88,616 |
| 6,900 | Wyndham Worldwide Corporation | 177,537 |

Total Hotels, Restaurants & Leisure 2,982,178

Household Durables 0.7%

| | | |
|--------|---|---------|
| 9,100 | Harman International Industries Inc., (2) | 425,698 |
| 8,000 | Leggett and Platt Inc. | 173,120 |
| 1,300 | Lennar Corporation, Class A | 22,373 |
| 26,000 | Newell Rubbermaid Inc. | 395,200 |

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| | | |
|-------|--------------------------|-----------|
| 4,187 | Black & Decker Inc. | 240,376 |
| 2,500 | Whirlpool Corporation | 218,125 |
| | Total Household Durables | 1,474,892 |

Household Products 1.2%

| | | |
|--------|----------------------------|-----------|
| 5,900 | Colgate-Palmolive Company | 503,034 |
| 1,300 | Kimberly-Clark Corporation | 81,744 |
| 32,200 | Procter & Gamble Company | 2,037,294 |
| | Total Household Products | 2,622,072 |

Independent Power Producers & Energy Traders 1.1%

| | | |
|---------|--|-----------|
| 127,400 | AES Corporation, (2) | 1,401,400 |
| 17,300 | Constellation Energy Group | 607,403 |
| 14,600 | NRG Energy Inc., (2) | 305,140 |
| | Total Independent Power Producers & Energy Traders | 2,313,943 |

Industrial Conglomerates 2.0%

| | | |
|---------|--------------------------------|-----------|
| 11,600 | 3M Co. | 969,412 |
| 177,500 | General Electric Company | 3,230,500 |
| 4,500 | Textron Inc. | 95,535 |
| | Total Industrial Conglomerates | 4,295,447 |

Insurance 2.1%

| | | |
|--------|---------------------------------------|---------|
| 6,700 | AFLAC Incorporated | 363,743 |
| 4,900 | Allstate Corporation | 158,319 |
| 9,900 | American International Group, (2) | 337,986 |
| 1,500 | Assurant Inc. | 51,570 |
| 1 | Berkshire Hathaway Inc., Class B, (2) | 121,800 |
| 331 | Berkshire Hathaway Inc., Class B, (2) | 26,900 |
| 52,400 | Genworth Financial Inc., Class A | 961,016 |
| 1,500 | Lincoln National Corporation | 46,050 |
| 21,200 | Loews Corporation | 790,336 |
| 7,600 | Marsh & McLennan Companies, Inc. | 185,592 |
| 4,500 | Principal Financial Group, Inc. | 131,445 |
| 6,900 | Progressive Corporation, (2) | 131,721 |
| 2,000 | Prudential Financial, Inc. | 121,000 |
| 3,700 | Travelers Companies, Inc. | 199,578 |
| 48,600 | XL Capital Ltd, Class A | 918,540 |

| | |
|-----------------|-----------|
| Total Insurance | 4,545,596 |
|-----------------|-----------|

Internet & Catalog Retail 1.5%

| | | |
|---------------------------------|---------------------------------|-----------|
| 9,000 | Amazon.com, Inc., (2) | 1,221,570 |
| 29,000 | Expedia, Inc., (2) | 723,840 |
| 5,200 | Priceline.com Incorporated, (2) | 1,326,000 |
| Total Internet & Catalog Retail | | 3,271,410 |

Internet Software & Services 2.3%

| | | |
|------------------------------------|---------------------------|-----------|
| 64,900 | eBay Inc., (2) | 1,749,055 |
| 4,900 | Google Inc., Class A, (2) | 2,778,349 |
| 26,500 | Yahoo! Inc., (2) | 438,045 |
| Total Internet Software & Services | | 4,965,449 |

IT Services 3.2%

| | | |
|-------------------|--|-----------|
| 100 | Automatic Data Processing, Inc. | 4,447 |
| 37,000 | Cognizant Technology Solutions Corporation, Class A, (2) | 1,886,260 |
| 16,500 | Computer Sciences Corporation, (2) | 899,085 |
| 35,200 | Fidelity National Information Services | 825,088 |
| 11,600 | Fiserv, Inc., (2) | 588,816 |
| 3,400 | MasterCard, Inc. | 863,600 |
| 31,400 | Total System Services Inc. | 491,724 |
| 12,000 | Visa Inc. | 1,092,360 |
| 15,000 | Western Union Company | 254,400 |
| Total IT Services | | 6,905,780 |

Leisure Equipment & Products 0.1%

| | | |
|-------|--------------|---------|
| 5,300 | Mattel, Inc. | 120,522 |
|-------|--------------|---------|

Life Sciences Tools & Services 1.4%

| | | |
|--------|-------------------------------------|-----------|
| 26,000 | Life Technologies Corporation, (2) | 1,359,020 |
| 2,300 | Millipore Corporation, (2) | 242,880 |
| 19,400 | Perkinelmer Inc. | 463,660 |
| 7,700 | Thermo Fisher Scientific, Inc., (2) | 396,088 |
| 9,500 | Waters Corporation, (2) | 641,630 |

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Total Life Sciences Tools & Services 3,103,278

Machinery 1.1%

| | | |
|--------|-----------------------------|-----------|
| 16,900 | Caterpillar Inc. | 1,062,165 |
| 900 | Deere & Company | 53,514 |
| 800 | Dover Corporation | 37,400 |
| 4,800 | Eaton Corporation | 363,696 |
| 2,300 | Flowsolve Corporation | 253,621 |
| 8,500 | Illinois Tool Works, Inc. | 402,560 |
| 1,300 | Pall Corporation | 52,637 |
| 1,800 | Parker Hannifin Corporation | 116,532 |
| | Total Machinery | 2,342,125 |

Media 4.4%

| | | |
|--------|---|-----------|
| 35,400 | Comcast Corporation, Class A | 666,228 |
| 3,700 | DIRECTV Group, Inc., (2) | 125,097 |
| 5,800 | Discovery Communications Inc., Class A Shares, (2) | 195,982 |
| 13,400 | Gannett Company Inc. | 221,368 |
| 19,600 | Interpublic Group Companies, Inc., (2) | 163,072 |
| 21,500 | McGraw-Hill Companies, Inc. | 766,475 |
| 2,900 | Meredith Corporation | 99,789 |
| 3,900 | New York Times, Class A | 43,407 |
| 60,700 | News Corporation, Class A | 874,687 |
| 17,700 | Omnicom Group, Inc. | 686,937 |
| 17,900 | Scripps Networks Interactive, Class A Shares | 793,865 |
| 25,100 | Time Warner Cable, Class A, (2) | 1,338,081 |
| 28,966 | Time Warner Inc. | 905,767 |
| 52,100 | Viacom Inc., Class B, (2) | 1,791,198 |
| 25,200 | Walt Disney Company | 879,732 |
| | Total Media | 9,551,685 |

Metals & Mining 0.2%

| | | |
|-------|--------------------------------------|---------|
| 3,500 | Freeport-McMoRan Copper & Gold, Inc. | 292,390 |
| 1,300 | Newmont Mining Corporation | 66,209 |
| 1,500 | Nucor Corporation | 68,070 |
| | Total Metals & Mining | 426,669 |

Multiline Retail 1.1%

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| | | |
|--------|--------------------------------|------------------|
| 3,000 | Big Lots, Inc., (2) | 109,260 |
| 800 | Family Dollar Stores, Inc. | 29,288 |
| 12,500 | J.C. Penney Company, Inc. | 402,125 |
| 21,000 | Kohl's Corporation, (2) | 1,150,380 |
| 5,200 | Macy's, Inc. | 113,204 |
| 5,000 | Nordstrom, Inc. | 204,250 |
| 1,700 | Sears Holding Corporation, (2) | 184,331 |
| 5,600 | Target Corporation | 294,560 |
| | Total Multiline Retail | 2,487,398 |

Multi-Utilities 0.5%

| | | |
|--------|--|------------------|
| 6,000 | CenterPoint Energy, Inc. | 86,160 |
| 600 | CMS Energy Corporation | 9,276 |
| 1,900 | DTE Energy Company | 84,740 |
| 3,400 | Integrus Energy Group, Inc. | 161,092 |
| 14,500 | NiSource Inc. | 229,100 |
| 1,000 | PG&E Corporation | 42,420 |
| 3,900 | Public Service Enterprise Group Incorporated | 115,128 |
| 4,600 | Sempra Energy | 229,540 |
| 6,600 | TECO Energy, Inc. | 104,874 |
| | Total Multi-Utilities | 1,062,330 |

Office Electronics 0.0%

| | | |
|-------|-------------------|--------|
| 7,896 | Xerox Corporation | 76,986 |
|-------|-------------------|--------|

Oil, Gas & Consumable Fuels 7.5%

| | | |
|---------|--|-------------------|
| 8,800 | Anadarko Petroleum Corporation | 640,904 |
| 1,400 | Chesapeake Energy Corporation | 33,096 |
| 38,100 | Chevron Corporation | 2,889,123 |
| 12,700 | ConocoPhillips | 649,859 |
| 154,400 | Exxon Mobil Corporation | 10,341,711 |
| 1,400 | Murphy Oil Corporation | 78,666 |
| 500 | Noble Energy, Inc. | 36,500 |
| 12,200 | Occidental Petroleum Corporation | 1,031,388 |
| 2,400 | Pioneer Natural Resources Company | 135,168 |
| 1,700 | Range Resources Corporation | 79,679 |
| 2,000 | Southwestern Energy Company, (2) | 81,440 |
| 11,700 | Spectra Energy Corporation | 263,601 |
| 2,100 | Williams Companies, Inc. | 48,510 |
| 1,600 | XTO Energy, Inc. | 75,488 |
| | Total Oil, Gas & Consumable Fuels | 16,385,133 |

Paper & Forest Products 0.4%

| | | |
|--------|-------------------------------|---------|
| 7,200 | International Paper Company | 177,192 |
| 30,300 | MeadWestvaco Corporation | 774,165 |
| | Total Paper & Forest Products | 951,357 |

Personal Products 0.7%

| | | |
|--------|--------------------------------------|-----------|
| 31,500 | Avon Products, Inc. | 1,066,905 |
| 6,200 | Estee Lauder Companies Inc., Class A | 402,194 |
| | Total Personal Products | 1,469,099 |

Pharmaceuticals 4.8%

| | | |
|---------|----------------------------------|------------|
| 4,200 | Abbott Laboratories | 221,256 |
| 4,900 | Allergan, Inc. | 320,068 |
| 15,300 | Bristol-Myers Squibb Company | 408,510 |
| 10,600 | Forest Laboratories, Inc., (2) | 332,416 |
| 50,200 | Johnson & Johnson | 3,273,040 |
| 22,400 | King Pharmaceuticals Inc., (2) | 263,424 |
| 69,532 | Merck & Company Inc. | 2,597,020 |
| 31,200 | Mylan Laboratories Inc., (2) | 708,552 |
| 112,590 | Pfizer Inc. | 1,930,919 |
| 10,500 | Watson Pharmaceuticals Inc., (2) | 438,585 |
| | Total Pharmaceuticals | 10,493,790 |

Professional Services 0.1%

| | | |
|-------|-----------------------------|---------|
| 400 | Equifax Inc. | 14,320 |
| 9,700 | Monster Worldwide Inc., (2) | 161,117 |
| | Total Professional Services | 175,437 |

Real Estate 0.3%

| | | |
|-------|--|---------|
| 2,800 | Apartment Investment & Management Company, Class A | 51,548 |
| 1,100 | AvalonBay Communities, Inc. | 94,985 |
| 900 | Health Care REIT, Inc. | 40,707 |
| 950 | Host Hotels & Resorts Inc. | 13,918 |
| 2,520 | Simon Property Group, Inc. | 211,428 |
| 4,500 | Ventas Inc. | 213,660 |

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Total Real Estate 626,246

Real Estate Management & Development 0.1%

12,000 CB Richard Ellis Group, Inc., Class A, (2) 190,200

Road & Rail 0.6%

16,400 CSX Corporation 834,760
 5,300 Norfolk Southern Corporation 296,217
 2,400 Ryder System, Inc. 93,024
 1,800 Union Pacific Corporation 131,940

Total Road & Rail 1,355,941

Semiconductors & Equipment 3.7%

32,300 Advanced Micro Devices, Inc., (2) 299,421
 400 Altera Corporation 9,724
 32,600 Analog Devices, Inc. 939,532
 3,400 Applied Materials, Inc. 45,832
 21,000 Broadcom Corporation, Class A, (2) 696,780
 75,700 Intel Corporation 1,685,082
 31,300 KLA-Tencor Corporation 967,796
 1,000 Linear Technology Corporation 28,280
 25,600 LSI Logic Corporation, (2) 156,672
 22,500 Microchip Technology Incorporated 633,600
 8,900 Micron Technology, Inc., (2) 92,471
 19,000 National Semiconductor Corporation 274,550
 8,100 Novellus Systems, Inc., (2) 202,500
 1,400 NVIDIA Corporation, (2) 24,332
 70,900 Texas Instruments Incorporated 1,734,923
 8,900 Xilinx, Inc. 226,950

Total Semiconductors & Equipment 8,018,445

Software 4.4%

26,100 Adobe Systems Incorporated, (2) 923,157
 3,700 Autodesk, Inc. 108,854
 10,100 BMC Software, Inc., (2) 383,800
 13,000 Citrix Systems, (2) 617,110
 1,200 Intuit, Inc., (2) 41,208
 4,900 McAfee Inc., (2) 196,637
 126,000 Microsoft Corporation 3,688,020
 81,400 Oracle Corporation 2,091,166
 26,800 Red Hat, Inc., (2) 784,436

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| | | |
|-------|---------------------------|-----------|
| 8,500 | Salesforce.com, Inc., (2) | 632,825 |
| 1,100 | Symantec Corporation, (2) | 18,612 |
| | Total Software | 9,485,825 |

Specialty Retail 2.9%

| | | |
|--------|----------------------------------|-----------|
| 4,300 | Abercrombie & Fitch Co., Class A | 196,252 |
| 3,800 | AutoNation Inc., (2) | 68,704 |
| 400 | AutoZone, Inc., (2) | 69,236 |
| 9,800 | Bed Bath and Beyond Inc., (2) | 428,848 |
| 4,600 | Best Buy Co., Inc. | 195,684 |
| 13,500 | Gap, Inc. | 311,985 |
| 16,000 | Home Depot, Inc. | 517,600 |
| 33,200 | Limited Brands, Inc. | 817,384 |
| 4,100 | Office Depot, Inc., (2) | 32,718 |
| 9,000 | O Reilly Automotive Inc., (2) | 375,390 |
| 4,300 | RadioShack Corporation | 97,309 |
| 7,100 | Ross Stores, Inc. | 379,637 |
| 9,700 | Staples, Inc. | 226,883 |
| 15,300 | Tiffany & Co. | 726,597 |
| 33,800 | TJX Companies, Inc. | 1,437,176 |
| 11,900 | Urban Outfitters, Inc., (2) | 452,557 |
| | Total Specialty Retail | 6,333,960 |

Textiles, Apparel & Luxury Goods 0.9%

| | | |
|--------|--|-----------|
| 24,900 | Coach, Inc. | 984,048 |
| 1,200 | Nike, Inc., Class B | 88,200 |
| 9,700 | Polo Ralph Lauren Corporation | 824,888 |
| 200 | VF Corporation | 16,030 |
| | Total Textiles, Apparel & Luxury Goods | 1,913,166 |

Tobacco 0.9%

| | | |
|--------|-----------------------------|-----------|
| 3,900 | Altria Group, Inc. | 80,028 |
| 6,200 | Lorillard Inc. | 466,488 |
| 23,800 | Philip Morris International | 1,241,408 |
| 4,700 | Reynolds American Inc. | 253,706 |
| | Total Tobacco | 2,041,630 |

Trading Companies & Distributors 0.1%

| | | |
|-------|---------------------|---------|
| 1,800 | W.W. Grainger, Inc. | 194,616 |
|-------|---------------------|---------|

Wireless Telecommunication Services 0.0%

| | | | | | |
|--------|--------------------------------|--|--|--|--------|
| 15,300 | Sprint Nextel Corporation, (2) | | | | 58,140 |
|--------|--------------------------------|--|--|--|--------|

| | | | | | |
|--|---|--|--|--|--------------------|
| | Total Common Stocks (cost \$186,639,920) | | | | 214,012,300 |
|--|---|--|--|--|--------------------|

| Principal Amount (000) | Description (1) | Coupon | Maturity | Rating (3) | Value |
|--|---|---------------|-----------------|-------------------|-----------------------|
| Short-Term Investments - 3.8% | | | | | |
| U.S. Government and Agency Obligations - 1.8% | | | | | |
| \$ 2,000 | U.S. Treasury Bills, (4) | 0.000% | 7/29/10 | AAA | \$ 1,999,042 |
| 2,000 | U.S. Treasury Bills, (4) | 0.000% | 9/09/10 | AAA | 1,998,166 |
| 4,000 | Total U.S. Government and Agency Obligations | | | | 3,997,208 |
| Repurchase Agreements - 2.0% | | | | | |
| 4,285 | Repurchase Agreement with State Street Bank, dated 3/31/10, repurchase price \$4,284,988, collateralized by \$4,375,000 U.S. Treasury Bills, 0.000%, due 9/02/10, value \$4,371,063 | 0.000% | 4/01/10 | N/A | 4,284,988 |
| \$ 8,285 | Total Short-Term Investments (cost \$8,282,157) | | | | 8,282,196 |
| | Total Investments (cost \$194,922,077) | | | | 222,294,496 |
| | 102.3% | | | | |
| | Other Assets Less Liabilities (2.3)% | | | | (5,085,277) |
| | Net Assets 100% | | | | \$ 217,209,219 |

Investments in Derivatives**Call Options Written outstanding at March 31, 2010:**

| Number of Contracts | Type | Notional Amount (5) | Expiration Date | Strike Price | Value |
|----------------------------|------------------------|----------------------------|------------------------|---------------------|--------------|
| (449,283) | Custom Basket 4 NASDAQ | \$ (43,817,996) | 4/15/10 | \$ 102.0 | \$ (357,292) |

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| | | | | | |
|------------|--------------------------------------|---------------------|---------|-------|----------------------|
| (438,180) | Custom Basket 2 NASDAQ | (44,928,321) | 4/29/10 | 102.0 | (1,081,200) |
| | Total Call Options Written | | | | |
| (887,463) | (premiums received \$862,061) | (88,746,317) | | | \$(1,438,492) |

Futures Contracts outstanding at March 31, 2010:

| Type | Contract Position | Number of Contract | | Expiration | Value at March 31, 2010 | Unrealized Appreciation (Depreciation) |
|---------------|-------------------|--------------------|----------|------------|-------------------------|--|
| | | Contracts | Contract | | | |
| S&P 500 Index | Long | 125 | | 6/10 | \$7,282,500 | \$121,500 |

Fair Value Measurements

In determining the value of the Fund's investments, various inputs are used. These inputs are summarized in the three broad levels listed below:

Level 1 Quoted prices in active markets for identical securities.

Level 2 Other significant observable inputs (including quoted prices for similar securities, interest rates, prepayment speeds, credit risk, etc.).

Level 3 Significant unobservable inputs (including management's assumptions in determining the fair value of investments).

The inputs or methodology used for valuing securities are not an indication of the risk associated with investing in those securities. The following is a summary of the Fund's fair value measurements as of March 31, 2010:

| | Level 1 | Level 2 | Level 3 | Total |
|------------------------|----------------|----------------|---------|----------------|
| Investments: | | | | |
| Common Stocks | \$ 214,012,300 | \$ | \$ | \$ 214,012,300 |
| Short-Term Investments | 8,282,196 | | | 8,282,196 |
| Derivatives: | | | | |
| Call Options Written | | (1,438,492) | | (1,438,492) |
| Futures Contracts* | 121,500 | | | 121,500 |
| Total | \$ 222,415,996 | \$ (1,438,492) | \$ | \$ 220,977,504 |

* Represents net unrealized appreciation (depreciation).

Derivative Instruments and Hedging Activities

The Fund records derivative instruments at fair value, with changes in fair value recognized on the Statement of Operations, when applicable. Even though the Fund's investments in derivatives may represent economic hedges, they are considered to be non-hedge transactions for financial reporting purposes.

The table below presents the fair value of all derivative instruments held by the Fund as of March 31, 2010, the location of these instruments on the Statement of Assets and Liabilities, and the primary underlying risk exposure.

Location on the Statements of Assets Liabilities

| Underlying Risk Exposure | Derivative Instrument | Location | Asset Derivatives | Liability Derivatives |
|--------------------------|-----------------------|----------|-------------------|-----------------------|
| | | | Value | Location Value |

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| | | | | |
|--------------|-------------------|---|------------|--|
| Equity Price | Futures Contracts | Receivable for variation margin on futures contracts* | \$ 121,500 | \$ |
| | Options | | | Call 1,438,492 options written, at value |
| Equity Price | | | | |
| Total | | | \$ 121,500 | \$ 1,438,492 |

* Value represents cumulative unrealized appreciation (depreciation) of futures contracts as reported on the Portfolio of Investments and not the deposits with brokers, if any, or the receivable or payable for variation margin presented on the Statement of Assets and Liabilities.

Income Tax Information

The following information is presented on an income tax basis. Differences between amounts for financial statement and federal income tax purposes are primarily due to timing differences in recognizing certain gains and losses on investment transactions and the recognition of unrealized gain or loss for tax (mark-to-market) on futures contracts. To the extent that differences arise that are permanent in nature, such amounts are reclassified within the capital accounts on the Statement of Assets and Liabilities presented in the annual report, based on their federal tax basis treatment; temporary differences do not require reclassification. Temporary and permanent differences do not impact the net asset value of the Fund.

At March 31, 2010, the cost of investments was \$196,487,187.

Gross unrealized appreciation and gross unrealized depreciation of investments at March 31, 2010, were as follows:

| | |
|-------------------|---------------|
| Gross unrealized: | |
| Appreciation | \$ 32,044,097 |
| Depreciation | (6,236,788) |

| | |
|---|---------------|
| Net unrealized appreciation (depreciation) of investments | \$ 25,807,309 |
|---|---------------|

- (1) All percentages shown in the Portfolio of Investments are based on net assets.
-

Item 2. Controls and Procedures.

- a. The registrant's principal executive and principal financial officers, or persons performing similar functions, have concluded that the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940, as amended (the 1940 Act) (17 CFR 270.30a-3(c))) are effective, as of a date within 90 days of the filing date of this report that includes the disclosure required by this paragraph, based on their evaluation of the controls and procedures required by Rule 30a-3(b) under the 1940 Act (17 CFR 270.30a-3(b)) and Rule 13a-15(b) or 15d-15(b) under the Securities Exchange Act of 1934 (17 CFR 240.13a-15(b) or 240.15d-15(b)).
- b. There were no changes in the registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the 1940 Act (17 CFR 270.30a-3(d))) that occurred during the registrant's last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

Item 3. Exhibits.

File as exhibits as part of this Form a separate certification for each principal executive officer and principal financial officer of the registrant as required by Rule 30a-2(a) under the 1940 Act (17 CFR 270.30a-2(a)), exactly as set forth below: EX-99 CERT Attached hereto.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.
(Registrant) Nuveen Core Equity Alpha Fund

By (Signature and Title) /s/ Kevin J. McCarthy
Kevin J. McCarthy
Vice President and Secretary

Date May 28, 2010

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By (Signature and Title) /s/ Gifford R. Zimmerman
Gifford R. Zimmerman
Chief Administrative Officer (principal executive officer)

Date May 28, 2010

By (Signature and Title) /s/ Stephen D. Foy
Stephen D. Foy
Vice President and Controller (principal financial officer)

Date May 28, 2010