

Nuveen Core Equity Alpha Fund
Form N-Q
May 29, 2009

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: 3/31/2009

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, 2009

| Shares | Description (1) | Value |
|---------|---|-----------|
| | Common Stocks 98.9% | |
| | Aerospace & Defense 1.2% | |
| 2,800 | Boeing Company | \$ 99,624 |
| 1,100 | FLIR Systems Inc., (2) | 22,528 |
| 5,000 | General Dynamics Corporation | 207,950 |
| 2,700 | Honeywell International Inc. | 75,222 |
| 20,100 | Lockheed Martin Corporation | 1,387,503 |
| 700 | Precision Castparts Corporation | 41,930 |
| 3,600 | United Technologies Corporation | 154,728 |
| | Total Aerospace & Defense | 1,989,485 |
| | Air Freight & Logistics 0.4% | |
| 10,200 | C.H. Robinson Worldwide, Inc. | 465,222 |
| 2,800 | FedEx Corporation | 124,572 |
| | Total Air Freight & Logistics | 589,794 |
| | Airlines 0.5% | |
| 134,800 | Southwest Airlines Co. | 853,284 |
| | Auto Components 0.1% | |
| 16,900 | Johnson Controls, Inc. | 202,800 |
| | Automobiles 0.1% | |
| 7,300 | Harley-Davidson, Inc. | 97,747 |
| | Beverages 2.6% | |
| 19,200 | Brown-Forman Corporation | 745,536 |

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| | | |
|--------|--|-----------|
| 33,700 | Coca-Cola Company | 1,481,115 |
| 22,200 | Constellation Brands, Inc., Class A, (2) | 264,180 |
| 5,800 | Dr. Pepper Snapple Group, (2) | 98,078 |
| 1,600 | Molson Coors Brewing Company, Class B | 54,848 |
| 2,000 | Pepsi Bottling Group, Inc. | 44,280 |
| 32,000 | PepsiCo, Inc. | 1,647,360 |

Total Beverages 4,335,397

Biotechnology 1.6%

| | | |
|--------|----------------------------|---------|
| 19,900 | Amgen Inc., (2) | 985,448 |
| 13,700 | Celgene Corporation, (2) | 608,280 |
| 6,200 | Cephalon, Inc., (2) | 422,220 |
| 1,000 | Genzyme Corporation, (2) | 59,390 |
| 11,900 | Gilead Sciences, Inc., (2) | 551,208 |

Total Biotechnology 2,626,546

Building Products 0.5%

| | | |
|--------|------------------|---------|
| 23,600 | Fastenal Company | 758,858 |
|--------|------------------|---------|

Capital Markets 0.4%

| | | |
|--------|----------------------------|---------|
| 10,200 | Charles Schwab Corporation | 158,100 |
| 1,700 | Franklin Resources, Inc. | 91,579 |
| 5,100 | State Street Corporation | 156,978 |
| 7,100 | T. Rowe Price Group Inc. | 204,906 |

Total Capital Markets 611,563

Chemicals 1.1%

| | | |
|--------|-------------------------------------|---------|
| 21,100 | E.I. Du Pont de Nemours and Company | 471,163 |
| 2,400 | Ecolab Inc. | 83,352 |
| 26,400 | PPG Industries, Inc. | 974,160 |
| 1,500 | Praxair, Inc. | 100,935 |
| 1,800 | Rohm and Haas Company | 141,912 |
| 2,800 | Sigma-Aldrich Corporation | 105,812 |

Total Chemicals 1,877,334

Commercial Banks 3.9%

| | | |
|---------|-----------------------------|---------|
| 131,100 | Bank of America Corporation | 894,102 |
|---------|-----------------------------|---------|

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| | | |
|---------|------------------------------------|-----------|
| 34,800 | BB&T Corporation | 588,816 |
| 700 | Comerica Incorporated | 12,817 |
| 8,008 | First Horizon National Corporation | 86,006 |
| 1,500 | Goldman Sachs Group, Inc. | 159,030 |
| 51,505 | JPMorgan Chase & Co. | 1,369,003 |
| 1,000 | KeyCorp. | 7,870 |
| 4,100 | M&T Bank Corporation | 185,484 |
| 19,700 | Morgan Stanley | 448,569 |
| 3,800 | Northern Trust Corporation | 227,316 |
| 12,600 | PNC Financial Services Group, Inc. | 369,054 |
| 24,800 | U.S. Bancorp | 362,328 |
| 118,850 | Wells Fargo & Company | 1,692,424 |
| 4,700 | Zions Bancorporation | 46,201 |

Total Commercial Banks 6,449,020

Commercial Services & Supplies 1.7%

| | | |
|--------|--------------------------------|-----------|
| 3,100 | Cintas Corporation | 76,632 |
| 6,700 | Dun and Bradstreet Inc. | 515,900 |
| 8,600 | Pitney Bowes Inc. | 200,810 |
| 17,035 | Republic Services, Inc. | 292,150 |
| 6,200 | Robert Half International Inc. | 110,546 |
| 2,100 | Stericycle Inc., (2) | 100,233 |
| 62,600 | Waste Management, Inc. | 1,602,560 |

Total Commercial Services & Supplies 2,898,831

Communications Equipment 2.1%

| | | |
|---------|--------------------------|-----------|
| 108,900 | Cisco Systems, Inc., (2) | 1,826,253 |
| 11,000 | Motorola, Inc. | 46,530 |
| 40,000 | QUALCOMM, Inc. | 1,556,400 |

Total Communications Equipment 3,429,183

Computers & Peripherals 4.5%

| | | |
|--------|---|-----------|
| 13,600 | Apple, Inc., (2) | 1,429,632 |
| 32,800 | Dell Inc., (2) | 310,944 |
| 2,000 | EMC Corporation, (2) | 22,800 |
| 69,000 | Hewlett-Packard Company | 2,212,140 |
| 31,700 | International Business Machines Corporation (IBM) | 3,071,413 |
| 3,700 | Lexmark International, Inc., Class A, (2) | 62,419 |
| 500 | McAfee Inc., (2) | 16,750 |
| 3,500 | Network Appliance Inc., (2) | 51,940 |
| 16,400 | SanDisk Corporation, (2) | 207,460 |

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| | | |
|--------|--|-----------|
| | Total Computers & Peripherals | 7,385,498 |
| | Construction & Engineering 0.3% | |
| 13,400 | Fluor Corporation | 462,970 |
| | Construction Materials 0.3% | |
| 11,200 | Vulcan Materials Company | 496,048 |
| | Consumer Finance 0.7% | |
| 21,800 | Capital One Financial Corporation | 266,832 |
| 51,700 | Discover Financial Services | 326,227 |
| 53,800 | SLM Corporation, (2) | 266,310 |
| 18,000 | Western Union Company | 226,260 |
| | Total Consumer Finance | 1,085,629 |
| | Containers & Packaging 0.5% | |
| 7,900 | Ball Corporation | 342,860 |
| 17,600 | Bemis Company, Inc. | 369,072 |
| 1,200 | Owens-Illinois, Inc., (2) | 17,328 |
| 3,200 | Pactiv Corporation, (2) | 46,688 |
| 1,200 | Sealed Air Corporation | 16,560 |
| | Total Containers & Packaging | 792,508 |
| | Diversified Consumer Services 0.8% | |
| 900 | Apollo Group, Inc., (2) | 70,497 |
| 64,600 | H & R Block Inc. | 1,175,074 |
| | Total Diversified Consumer Services | 1,245,571 |
| | Diversified Financial Services 0.6% | |
| 21,500 | Citigroup Inc. | 54,395 |
| 100 | CME Group, Inc. | 24,639 |
| 23,200 | Leucadia National Corporation, (2) | 345,448 |
| 22,800 | Moody's Corporation | 522,576 |
| | Total Diversified Financial Services | 947,058 |

Diversified Telecommunication Services 4.9%

| | | |
|---------|--|-----------|
| 226,600 | AT&T Inc. | 5,710,320 |
| 15,800 | CenturyTel, Inc. | 444,296 |
| 15,100 | Embarq Corporation | 571,535 |
| 62,600 | Frontier Communications Corporation | 449,468 |
| 30,500 | Verizon Communications Inc. | 921,100 |
| 10,000 | Windstream Corporation | 80,600 |
| | Total Diversified Telecommunication Services | 8,177,319 |

Electric Utilities 2.3%

| | | |
|--------|-----------------------------------|-----------|
| 4,800 | Ameren Corporation | 111,312 |
| 19,500 | Consolidated Edison, Inc. | 772,395 |
| 3,700 | DTE Energy Company | 102,490 |
| 8,900 | Entergy Corporation | 606,001 |
| 8,200 | FirstEnergy Corp. | 316,520 |
| 7,000 | FPL Group, Inc. | 355,110 |
| 4,300 | Northeast Utilities | 92,837 |
| 11,700 | PG&E Corporation | 447,174 |
| 5,000 | Pinnacle West Capital Corporation | 132,800 |
| 15,100 | PPL Corporation | 433,521 |
| 5,400 | Progress Energy, Inc. | 195,804 |
| 3,200 | Southern Company | 97,984 |
| 18,800 | TECO Energy, Inc. | 209,620 |
| | Total Electric Utilities | 3,873,568 |

Electrical Equipment 0.1%

| | | |
|-------|----------------------------------|---------|
| 8,800 | Cooper Industries, Ltd., Class A | 227,568 |
|-------|----------------------------------|---------|

Electronic Equipment & Instruments 0.7%

| | | |
|--------|--|-----------|
| 2,500 | Agilent Technologies, Inc., (2) | 38,425 |
| 1,800 | Amphenol Corporation, Class A | 51,282 |
| 31,400 | Jabil Circuit Inc. | 174,584 |
| 21,500 | Molex Inc. | 295,410 |
| 13,200 | Thermo Fisher Scientific, Inc., (2) | 470,844 |
| 5,000 | Tyco Electronics, Limited | 55,200 |
| | Total Electronic Equipment & Instruments | 1,085,745 |

Energy Equipment & Services 2.5%

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| | | |
|--------|----------------------------------|-----------|
| 1,700 | Anadarko Petroleum Corporation | 66,113 |
| 13,700 | Baker Hughes Incorporated | 391,135 |
| 21,200 | BJ Services Company | 210,940 |
| 2,300 | Cabot Oil & Gas Corporation | 54,211 |
| 1,700 | Cooper Cameron Corporation, (2) | 37,281 |
| 1,600 | Diamond Offshore Drilling, Inc. | 100,576 |
| 9,500 | ENSCO International Incorporated | 250,800 |
| 19,800 | Halliburton Company | 306,306 |
| 37,900 | Nabors Industries Inc., (2) | 378,621 |
| 17,000 | National-Oilwell Varco Inc., (2) | 488,070 |
| 1,200 | Noble Corporation | 28,908 |
| 34,600 | Schlumberger Limited | 1,405,452 |
| 16,400 | Smith International, Inc. | 352,272 |

Total Energy Equipment & Services 4,070,685

Food & Staples Retailing 3.7%

| | | |
|--------|------------------------------|-----------|
| 600 | Costco Wholesale Corporation | 27,792 |
| 16,000 | CVS Caremark Corporation | 439,840 |
| 75,600 | Kroger Co. | 1,604,232 |
| 22,000 | Sysco Corporation | 501,600 |
| 9,300 | Walgreen Co. | 241,428 |
| 63,900 | Wal-Mart Stores, Inc. | 3,329,190 |

Total Food & Staples Retailing 6,144,082

Food Products 5.3%

| | | |
|--------|-----------------------------------|-----------|
| 29,400 | Campbell Soup Company | 804,384 |
| 3,500 | Dean Foods Company, (2) | 63,280 |
| 35,000 | General Mills, Inc. | 1,745,800 |
| 44,100 | H.J. Heinz Company | 1,457,946 |
| 26,500 | Hershey Foods Corporation | 920,875 |
| 1,500 | Hormel Foods Corporation | 47,565 |
| 18,500 | JM Smucker Company | 689,495 |
| 32,800 | Kellogg Company | 1,201,464 |
| 24,900 | Kraft Foods Inc. | 555,021 |
| 6,000 | McCormick & Company, Incorporated | 177,420 |
| 6,900 | Monsanto Company | 573,390 |
| 29,500 | Sara Lee Corporation | 238,360 |
| 32,800 | Tyson Foods, Inc., Class A | 307,992 |

Total Food Products 8,782,992

Gas Utilities 0.4%

| | | |
|-------|------------|---------|
| 7,700 | Nicor Inc. | 255,871 |
|-------|------------|---------|

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| | | |
|--------|----------------------------|---------|
| 29,600 | Spectra Energy Corporation | 418,544 |
| | Total Gas Utilities | 674,415 |

Health Care Equipment & Supplies 2.3%

| | | |
|--------|--|-----------|
| 30,500 | Baxter International, Inc. | 1,562,210 |
| 22,200 | Boston Scientific Corporation, (2) | 176,490 |
| 7,000 | Cardinal Health, Inc. | 220,360 |
| 25,700 | Covidien Limited | 854,268 |
| 6,100 | DENTSPLY International Inc. | 163,785 |
| 7,400 | Medtronic, Inc. | 218,078 |
| 700 | Saint Jude Medical Inc., (2) | 25,431 |
| 8,500 | Stryker Corporation | 289,340 |
| 7,200 | Varian Medical Systems, Inc., (2) | 219,168 |
| | Total Health Care Equipment & Supplies | 3,729,130 |

Health Care Providers & Services 2.0%

| | | |
|--------|--|-----------|
| 3,000 | CIGNA Corporation | 52,770 |
| 13,200 | Davita Inc., (2) | 580,140 |
| 5,400 | Express Scripts, Inc., (2) | 249,318 |
| 1,400 | Humana Inc., (2) | 36,512 |
| 28,200 | Medco Health Solutions, Inc., (2) | 1,165,788 |
| 22,100 | Quest Diagnostics Incorporated | 1,049,308 |
| 4,100 | Wellpoint Inc., (2) | 155,677 |
| | Total Health Care Providers & Services | 3,289,513 |

Health Care Technology 0.2%

| | | |
|--------|-------------------------|---------|
| 28,400 | IMS Health Incorporated | 354,148 |
|--------|-------------------------|---------|

Hotels, Restaurants & Leisure 1.4%

| | | |
|--------|-------------------------------------|-----------|
| 10,500 | Darden Restaurants, Inc. | 359,730 |
| 32,300 | McDonald's Corporation | 1,762,611 |
| 8,500 | Starbucks Corporation, (2) | 94,435 |
| 6,000 | Wyndham Worldwide Corporation | 25,200 |
| | Total Hotels, Restaurants & Leisure | 2,241,976 |

Household Durables 0.6%

| | | |
|-------|----------------------------|---------|
| 4,500 | Black & Decker Corporation | 142,020 |
|-------|----------------------------|---------|

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| | | |
|--------|--------------------------------------|-----------|
| 1,200 | Centex Corporation | 9,000 |
| 2,900 | Harman International Industries Inc. | 39,237 |
| 30,800 | Leggett and Platt Inc. | 400,092 |
| 10,300 | Lennar Corporation, Class A | 77,353 |
| 12,400 | Pulte Corporation | 135,532 |
| 8,100 | Snap-on Incorporated | 203,310 |
| 2,000 | Stanley Works | 58,240 |
| 200 | Whirlpool Corporation | 5,918 |
| | Total Household Durables | 1,070,702 |

Household Products 2.8%

| | | |
|--------|----------------------------|-----------|
| 4,500 | Clorox Company | 231,660 |
| 12,900 | Colgate-Palmolive Company | 760,842 |
| 4,700 | Kimberly-Clark Corporation | 216,717 |
| 73,700 | Procter & Gamble Company | 3,470,533 |
| | Total Household Products | 4,679,752 |

Industrial Conglomerates 3.4%

| | | |
|---------|--------------------------------|-----------|
| 9,400 | 3M Co. | 467,368 |
| 481,200 | General Electric Company | 4,864,932 |
| 7,700 | Genuine Parts Company | 229,922 |
| | Total Industrial Conglomerates | 5,562,222 |

Insurance 2.4%

| | | |
|--------|---|-----------|
| 4,800 | AFLAC Incorporated | 92,928 |
| 1,000 | Allstate Corporation | 19,150 |
| 3,000 | Assurant Inc. | 65,340 |
| 2,700 | Chubb Corporation | 114,264 |
| 42,600 | Hartford Financial Services Group, Inc. | 334,410 |
| 34,500 | Lincoln National Corporation | 230,805 |
| 60,500 | Loews Corporation | 1,337,050 |
| 41,700 | Marsh & McLennan Companies, Inc. | 844,425 |
| 2,000 | MBIA Inc., (2) | 9,160 |
| 6,900 | MetLife, Inc. | 157,113 |
| 3,700 | Principal Financial Group, Inc. | 30,266 |
| 29,900 | Progressive Corporation, (2) | 401,856 |
| 12,900 | Prudential Financial, Inc. | 245,358 |
| 1,700 | Torchmark Corporation | 44,591 |
| 9,800 | Unum Group | 122,500 |
| | Total Insurance | 4,049,216 |

Internet & Catalog Retail 0.3%

| | | |
|-------|-----------------------|---------|
| 7,100 | Amazon.com, Inc., (2) | 521,424 |
|-------|-----------------------|---------|

Internet Software & Services 0.1%

| | | |
|-----|---------------------------|---------|
| 500 | Google Inc., Class A, (2) | 174,030 |
|-----|---------------------------|---------|

IT Services 1.6%

| | | |
|--------|---|-----------|
| 11,900 | Affiliated Computer Services, Inc., (2) | 569,891 |
| 31,000 | Automatic Data Processing, Inc. | 1,089,960 |
| 17,100 | Computer Sciences Corporation, (2) | 629,964 |
| 4,800 | Convergys Corporation, (2) | 38,784 |
| 2,400 | Iron Mountain Inc., (2) | 53,208 |
| 10,500 | Paychex, Inc. | 269,535 |
| | Total IT Services | 2,651,342 |

Leisure Equipment & Products 0.4%

| | | |
|--------|------------------------------------|---------|
| 23,300 | Hasbro, Inc. | 584,131 |
| 2,800 | Mattel, Inc. | 32,284 |
| | Total Leisure Equipment & Products | 616,415 |

Life Sciences Tools & Services 0.1%

| | | |
|--------|------------------|---------|
| 11,500 | Perkinelmer Inc. | 146,855 |
|--------|------------------|---------|

Machinery 2.2%

| | | |
|--------|---|-----------|
| 38,000 | Caterpillar Inc. | 1,062,480 |
| 23,300 | Cummins Inc. | 592,985 |
| 36,700 | Dover Corporation | 968,146 |
| 1,600 | Flowserve Corporation | 89,792 |
| 13,000 | Illinois Tool Works, Inc. | 401,050 |
| 7,361 | Ingersoll Rand Company Limited, Class A | 101,582 |
| 11,000 | ITT Industries, Inc. | 423,170 |
| 200 | PACCAR Inc. | 5,152 |
| 1,600 | Pall Corporation | 32,688 |
| | Total Machinery | 3,677,045 |

Media 2.4%

| | | |
|---------|--|-----------|
| 167,600 | Comcast Corporation, Class A | 2,286,064 |
| 16,400 | DIRECTV Group, Inc., (2) | 373,756 |
| 14,800 | McGraw-Hill Companies, Inc. | 338,476 |
| 1,100 | Scripps Networks Interactive, Class A Shares | 24,761 |
| 292 | Time Warner Cable, Class A | 7,242 |
| 1,166 | Time Warner Inc. | 22,504 |
| 47,700 | Walt Disney Company | 866,232 |
| | Total Media | 3,919,035 |

Metals & Mining 0.2%

| | | |
|--------|--------------------------------------|---------|
| 13,600 | AK Steel Holding Corporation | 96,832 |
| 500 | Alcoa Inc. | 3,670 |
| 2,800 | CONSOL Energy Inc. | 70,672 |
| 900 | Freeport-McMoRan Copper & Gold, Inc. | 34,299 |
| 7,400 | United States Steel Corporation | 156,362 |
| | Total Metals & Mining | 361,835 |

Multiline Retail 1.2%

| | | |
|--------|--------------------------------|-----------|
| 5,700 | Big Lots, Inc., (2) | 118,446 |
| 21,000 | Family Dollar Stores, Inc. | 700,770 |
| 5,800 | J.C. Penney Company, Inc. | 116,406 |
| 21,600 | Kohl's Corporation, (2) | 914,112 |
| 2,500 | Sears Holding Corporation, (2) | 114,275 |
| 700 | Target Corporation | 24,073 |
| | Total Multiline Retail | 1,988,082 |

Multi-Utilities 0.2%

| | | |
|-------|--|---------|
| 5,900 | Integrus Energy Group, Inc. | 153,636 |
| 2,300 | Public Service Enterprise Group Incorporated | 67,781 |
| 2,700 | Scana Corporation | 83,403 |
| | Total Multi-Utilities | 304,820 |

Oil, Gas & Consumable Fuels 10.2%

| | | |
|--------|-------------------------------|-----------|
| 4,000 | Apache Corporation | 256,360 |
| 18,600 | Chesapeake Energy Corporation | 317,316 |
| 51,600 | Chevron Corporation | 3,469,584 |
| 39,000 | ConocoPhillips | 1,527,240 |

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| 3,000 | Devon Energy Corporation | 134,070 |
| 6,700 | El Paso Corporation | 41,875 |
| 1,400 | EOG Resources, Inc. | 76,664 |
| 128,500 | Exxon Mobil Corporation | 8,750,850 |
| 6,300 | Hess Corporation | 341,460 |
| 6,800 | Marathon Oil Corporation | 178,772 |
| 20,200 | Massey Energy Company | 204,424 |
| 100 | Murphy Oil Corporation | 4,477 |
| 14,100 | Occidental Petroleum Corporation | 784,665 |
| 9,800 | Peabody Energy Corporation | 245,392 |
| 20,500 | Pioneer Natural Resources Company | 337,635 |
| 8,200 | Southwestern Energy Company, (2) | 243,458 |
| 2,400 | Tesoro Corporation | 32,328 |
| 350 | XTO Energy, Inc. | 10,717 |
| | Total Oil, Gas & Consumable Fuels | 16,957,287 |

Personal Products 0.2%

| | | |
|--------|--------------------------------------|---------|
| 2,700 | Avon Products, Inc. | 51,921 |
| 13,100 | Estee Lauder Companies Inc., Class A | 322,915 |
| | Total Personal Products | 374,836 |

Pharmaceuticals 6.4%

| | | |
|--------|--------------------------------|------------|
| 40,100 | Abbott Laboratories | 1,912,770 |
| 59,200 | Bristol-Myers Squibb Company | 1,297,664 |
| 2,200 | Eli Lilly and Company | 73,502 |
| 70,400 | Johnson & Johnson | 3,703,040 |
| 58,200 | King Pharmaceuticals Inc., (2) | 411,474 |
| 41,900 | Merck & Co. Inc. | 1,120,825 |
| 6,200 | Mylan Laboratories Inc., (2) | 83,142 |
| 56,300 | Pfizer Inc. | 766,806 |
| 28,300 | Schering-Plough Corporation | 666,465 |
| 14,100 | Wyeth | 606,864 |
| | Total Pharmaceuticals | 10,642,552 |

Real Estate 1.2%

| | | |
|--------|---|---------|
| 7,299 | Apartment Investment & Management Company, Class A | 39,999 |
| 2,022 | AvalonBay Communities, Inc. | 95,155 |
| 4,700 | Boston Properties, Inc. | 164,641 |
| 16,900 | Equity Residential | 310,115 |
| 13,300 | Health Care Property Investors Inc. | 237,405 |
| 2,100 | Health Care REIT, Inc. | 64,239 |

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|--------|----------------------------|---------|
| 2,200 | Kimco Realty Corporation | 16,764 |
| 2,700 | Plum Creek Timber Company | 78,489 |
| 43,900 | ProLogis | 285,350 |
| 8,300 | Public Storage, Inc. | 458,575 |
| 2,504 | Simon Property Group, Inc. | 86,739 |
| 2,700 | Ventas Inc. | 61,047 |
| 3,631 | Vornado Realty Trust | 120,694 |

| | |
|-------------------|-----------|
| Total Real Estate | 2,019,212 |
|-------------------|-----------|

Road & Rail 4.0%

| | | |
|--------|--|-----------|
| 26,200 | Burlington Northern Santa Fe Corporation | 1,575,930 |
| 59,200 | CSX Corporation | 1,530,320 |
| 53,300 | Norfolk Southern Corporation | 1,798,875 |
| 12,500 | Ryder System, Inc. | 353,875 |
| 34,700 | Union Pacific Corporation | 1,426,517 |

| | |
|-------------------|-----------|
| Total Road & Rail | 6,685,517 |
|-------------------|-----------|

Semiconductors & Equipment 2.8%

| | | |
|--------|------------------------------------|---------|
| 45,300 | Altera Corporation | 795,015 |
| 20,200 | Analog Devices, Inc. | 389,254 |
| 24,300 | Broadcom Corporation, Class A, (2) | 485,514 |
| 37,700 | Intel Corporation | 567,385 |
| 36,700 | Linear Technology Corporation | 843,366 |
| 16,800 | Microchip Technology Incorporated | 355,992 |
| 31,500 | National Semiconductor Corporation | 323,505 |
| 9,100 | NVIDIA Corporation, (2) | 89,726 |
| 10,200 | QLogic Corporation, (2) | 113,424 |
| 34,600 | Xilinx, Inc. | 662,936 |

| | |
|----------------------------------|-----------|
| Total Semiconductors & Equipment | 4,626,117 |
|----------------------------------|-----------|

Software 2.7%

| | | |
|--------|---|-----------|
| 9,400 | Adobe Systems Incorporated, (2) | 201,066 |
| 1,700 | Cognizant Technology Solutions Corporation, Class A, (2) | 35,343 |
| 41,700 | Compuware Corporation, (2) | 274,803 |
| 4,000 | Intuit, Inc., (2) | 108,000 |
| 81,600 | Microsoft Corporation | 1,498,992 |
| 98,100 | Oracle Corporation | 1,772,667 |
| 42,900 | Symantec Corporation, (2) | 640,926 |

| | |
|----------------|-----------|
| Total Software | 4,531,797 |
|----------------|-----------|

Specialty Retail 1.7%

| | | |
|--------|-------------------------------|-----------|
| 800 | AutoZone, Inc., (2) | 130,096 |
| 3,700 | Bed Bath and Beyond Inc., (2) | 91,575 |
| 24,900 | Home Depot, Inc. | 586,644 |
| 44,500 | Limited Brands, Inc. | 387,150 |
| 20,900 | Lowe's Companies, Inc. | 381,425 |
| 27,900 | RadioShack Corporation | 239,103 |
| 6,600 | Sherwin-Williams Company | 343,002 |
| 19,300 | Staples, Inc. | 349,523 |
| 2,900 | Tiffany & Co. | 62,524 |
| 7,100 | TJX Companies, Inc. | 182,044 |
| | Total Specialty Retail | 2,753,086 |

Textiles, Apparel & Luxury Goods 0.9%

| | | |
|--------|--|-----------|
| 5,400 | Coach, Inc., (2) | 90,180 |
| 8,000 | Nike, Inc., Class B | 375,120 |
| 9,100 | Polo Ralph Lauren Corporation | 384,475 |
| 10,000 | VF Corporation | 571,100 |
| | Total Textiles, Apparel & Luxury Goods | 1,420,875 |

Thrifts & Mortgage Finance 0.4%

| | | |
|--------|----------------------------------|---------|
| 55,700 | Hudson City Bancorp, Inc. | 651,133 |
| 2,800 | People's United Financial, Inc. | 50,316 |
| | Total Thrifts & Mortgage Finance | 701,449 |

Tobacco 0.4%

| | | |
|--------|-----------------------------|---------|
| 17,900 | Philip Morris International | 636,882 |
|--------|-----------------------------|---------|

Trading Companies & Distributors 0.4%

| | | |
|--------|---------------------|---------|
| 10,600 | W.W. Grainger, Inc. | 743,908 |
|--------|---------------------|---------|

Total Common Stocks (cost \$200,637,533) 163,602,558

| Principal Amount (000) | Description (1) | Coupon Maturity Rating (3) | Value |
|-------------------------------|------------------------|-----------------------------------|--------------|
|-------------------------------|------------------------|-----------------------------------|--------------|

U.S. Government and Agency Obligations 3.6%

| | | | | | | | |
|----|-------|-------------------------|--------|---------|-----|----|-----------|
| \$ | 6,000 | U.S. Treasury Bills (4) | 0.000% | 8/27/09 | Aaa | \$ | 5,992,968 |
|----|-------|-------------------------|--------|---------|-----|----|-----------|

| | | | | | | | |
|---|--|--|--|--|--|--|------------------|
| Total U.S. Government and Agency Obligations | | | | | | | |
| (cost \$5,990,627) | | | | | | | 5,992,968 |

| Principal Amount (000) | Description (1) | Coupon | Maturity | Value |
|--|---|---------------|-----------------|------------------|
| Short-Term Investments 3.0% | | | | |
| \$ 4,993 | Repurchase Agreement with State Street Bank, dated 3/31/09, repurchase price \$4,992,958, collateralized by \$5,100,000 U.S. Treasury Bills, 0.000%, due 8/27/09, value \$5,093,880 | 0.100% | 4/01/09 | \$ 4,992,944 |
| Total Short-Term Investments (cost \$4,992,944) | | | | 4,992,944 |

Investments in Derivatives

Futures Contracts outstanding at March 31, 2009:

| Type | Contract Position | Number of Contracts | Contract Expiration | Unrealized Value at March 31, 2009 (Depreciation) | Appreciation |
|---------------|--------------------------|----------------------------|----------------------------|--|---------------------|
| S&P 500 Index | Long | 150 | 6/09 | \$5,961,000 | \$580,425 |

Fair Value Measurements

During the current fiscal period, the Fund adopted the provisions of Statement of Financial Accounting Standards No. 157 (SFAS No. 157) Fair Value Measurements. SFAS No. 157 defines fair value, establishes a framework for measuring fair value in generally accepted accounting principles, and expands disclosure about 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, 2009:

| | Level 1 | Level 2 | Level 3 | Total |
|--|----------------|----------------|----------------|--------------|
|--|----------------|----------------|----------------|--------------|

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| | | | | |
|----------------------|-----------------------|--------------------|-----------|--------------------|
| Investments | \$ 174,588,470 | \$ | \$ | \$ 174,588,470 |
| Derivatives* | 580,425 | | | 580,425 |
| Call options written | | (6,011,654) | | (6,011,654) |
| Total | \$ 175,168,895 | (6,011,654) | \$ | 169,157,241 |

* Represents net unrealized appreciation (depreciation). Derivatives may include outstanding futures, forward and swap contracts.

Derivative Instruments and Hedging Activities

During the current fiscal period, the Fund adopted the provisions of Statement of Financial Accounting Standards No. 161 (SFAS No. 161) Disclosures about Derivative Instruments and Hedging Activities . This standard is intended to enhance financial statement disclosures for derivative instruments and hedging activities and enable investors to better understand: a) how and why a fund uses derivative instruments; b) how derivative instruments are accounted for; and c) how derivative instruments affect a fund's financial position, results of operations and cash flows, if any. The Fund records derivative instruments at fair value with changes in fair value recognized in the Statement of Operations. Even though the Fund's investments in derivatives may represent economic hedges, they are considered to be non-hedge transactions for SFAS No. 161 disclosure purposes.

The table below presents the fair value of all derivative instruments held by the Fund as of March 31, 2009, the location of these instruments on the Statement of Assets and Liabilities, and the primary underlying risk exposure.

| Underlying Risk | Derivative Instrument | Location on the Statement of Assets and Liabilities | | | |
|-----------------|-----------------------|---|------------|--------------------------------|--------------|
| | | Asset Derivatives | | Liability Derivatives | |
| | | Location | Fair Value | Location | Fair Value |
| Equity Price | Options | | \$ | Call options written, at value | \$ 6,011,654 |
| Equity Price | Futures | Receivable for variation margin on futures contracts* | 580,425 | | |
| Total | | | \$ 580,425 | | \$ 6,011,654 |

* Represents cumulative appreciation (depreciation) of futures contracts as reported in the Portfolio of Investments and not the current day's variation margin presented in 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, 2009, the cost of investments (excluding call options written) was \$217,625,284.

Gross unrealized appreciation and gross unrealized depreciation of investments at March 31, 2009, were as follows:

| | |
|---|-----------------|
| Gross unrealized: | |
| Appreciation | \$ 3,719,526 |
| Depreciation | (46,756,340) |
| Net unrealized appreciation (depreciation) of investments | \$ (43,036,814) |

- (1) All percentages shown in the Portfolio of Investments are based on net assets.
 - (2) Non-income producing.
 - (3) Ratings: Using the higher of Standard & Poor's Group (Standard & Poor's) or Moody's Investor Service, Inc. (Moody's) rating. Ratings below BBB by Standard & Poor's or Baa by Moody's are considered to be below investment grade.
 - (4) Investment, or portion of investment, has been pledged to collateralize the net payment obligations for call options written and investments in derivatives.
 - (5) For disclosure purposes, Notional Amount is calculated by multiplying the Number of Contracts by \$100.
-

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 29, 2009

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 29, 2009

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

Date May 29, 2009