

NUVEEN MISSOURI PREMIUM INCOME MUNICIPAL FUND
Form N-Q
October 29, 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 811-7616

Nuveen Missouri Premium Income Municipal Fund
(Exact name of registrant as specified in charter)

Nuveen Investments
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: 5/31

Date of reporting period: 8/31/10

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 Missouri Premium Income Municipal Fund (NOM) | | | |
| August 31, 2010 | | | |
| Principal Amount (000) | Description (1) | Optional Call Provisions (2) Ratings | Value (3)Value |
| | Consumer Staples – 3.4% (2.2% of Total Investments) | | |
| \$ 1,000 | Missouri Development Finance Board, Solid Waste Disposal Revenue Bonds, Procter and Gamble Inc., Series 1999, 5.200%, 3/15/29 (Alternative Minimum Tax) Education and Civic Organizations – 1.9% (1.3% of Total Investments) | No Opt. Call | AA–\$ 1,095,980 |
| 250 | Lincoln University, Missouri, Auxiliary System Revenue Bonds, Series 2007, 5.125%, 6/01/37 – AGC Insured | 6/17 at 100.00 | AAA 261,285 |
| 365 | Missouri Health and Educational Facilities Authority, Revenue Bonds, Webster University, Series 2001, 5.500%, 4/01/18 – NPMFG Insured | 4/11 at 100.00 | A3 369,979 |
| 615 | Total Education and Civic Organizations | | 631,264 |
| 760 | Health Care – 28.6% (18.5% of Total Investments) | | |
| | Cape Girardeau County Industrial Development Authority, Missouri, Health Facilities Revenue Bonds, Southeast Missouri Hospital Association, Series 2007, 5.000%, 6/01/27 | 6/17 at 100.00 | N/R 738,940 |
| 930 | Cass County, Missouri, Hospital Revenue Bonds, Series 2007, 5.625%, 5/01/38 | 11/16 at 100.00 | N/R 884,318 |
| 480 | Clinton County Industrial Development Authority, Missouri, Revenue Bonds, Cameron Regional Medical Center, Series 2007, 5.000%, 12/01/37 | 12/17 at 100.00 | N/R 359,184 |
| 750 | Joplin Industrial Development Authority, Missouri, Health Facilities Revenue Bonds, Freeman Health System, Series 2004, 5.500%, 2/15/29 | 2/15 at 102.00 | BBB+ 759,315 |
| 500 | Missouri Health & Educational Facilities Authority, St. Luke’s Episcopal– Presbyterian Hospitals Revenue Bonds, Series 2001, 5.250%, 12/01/26 – AGM Insured | 6/11 at 101.00 | AAA 510,460 |
| 2,000 | Missouri Health and Educational Facilities Authority, Health Facility Revenue Bonds, St. Lukes’s Health System, Series 2010A, 5.000%, 11/15/30 | 11/20 at 100.00 | A+ 2,069,380 |
| 1,500 | Missouri Health and Educational Facilities Authority, Revenue Bonds, BJC Health System, Series 2003: 5.125%, 5/15/25 | 5/13 at 100.00 | AA 1,547,835 |

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| 1,155 | 5.250%, 5/15/32 | 5/13 at 100.00 | AA | 1,182,073 |
| 425 | Missouri Health and Educational Facilities Authority, Revenue Bonds, Lake Regional Health System, Series 1996, 6.500%, 2/15/21 | 2/11 at 100.00 | BBB+ | 425,519 |
| 500 | Missouri Health and Educational Facilities Authority, Revenue Bonds, Lake Regional Health System, Series 2003, 5.700%, 2/15/34 | 2/14 at 100.00 | BBB+ | 511,125 |
| 350 | St. Louis County Industrial Development Authority, Missouri, Healthcare Facilities Revenue Bonds, Ranken-Jordan Project, Refunding Series 2007, 5.000%, 11/15/27 | 11/16 at 100.00 | N/R | 315,651 |
| 9,350 | Total Health Care Housing/Multifamily – 3.3% (2.1% of Total Investments) | | | 9,303,800 |
| 390 | Jefferson County Industrial Development Authority, Missouri, Multifamily Housing Revenue Bonds, Lakewood Apartments Project, Series 2001B, 5.750%, 11/01/34 (Mandatory put 11/01/16) (Alternative Minimum Tax) | 12/11 at 100.00 | N/R | 391,076 |
| 165 | Missouri Housing Development Commission, Multifamily Housing Revenue Bonds, Series 2001II, 5.250%, 12/01/16 | 12/11 at 100.00 | AA | 169,407 |
| 500 | St. Charles County Industrial Development Authority, Missouri, FHA-Insured Multifamily Housing Revenue Bonds, Ashwood Apartments, Series 1998A, 5.600%, 4/01/30 – AGM Insured (Alternative Minimum Tax) | 10/10 at 100.00 | AAA | 500,315 |
| 1,055 | Total Housing/Multifamily Housing/Single Family – 4.0% (2.6% of Total Investments) | | | 1,060,798 |
| 60 | Missouri Housing Development Commission, Single Family Mortgage Revenue Bonds, Homeownership Loan Program, Series 2000B-1, 6.250%, 3/01/31 (Alternative Minimum Tax) | 9/10 at 100.00 | AAA | 61,615 |
| 490 | Missouri Housing Development Commission, Single Family Mortgage Revenue Bonds, Homeownership Loan Program, Series 2007A-1, 4.700%, 9/01/27 (Alternative Minimum Tax) | 9/16 at 100.00 | AAA | 495,875 |
| 755 | Missouri Housing Development Commission, Single Family Mortgage Revenue Bonds, Homeownership Loan Program, Series 2007C-1, 4.800%, 9/01/38 (Alternative Minimum Tax) | 3/17 at 100.00 | AAA | 757,091 |
| 1,305 | Total Housing/Single Family Long-Term Care – 8.3% (5.3% of Total Investments) | | | 1,314,581 |
| 1,750 | Cole County Industrial Development Authority, Missouri, Revenue Bonds, Lutheran Senior Services – Heisinger Project, Series 2004, 5.500%, 2/01/35 | 2/14 at 100.00 | N/R | 1,759,100 |
| 475 | Lees Summit Industrial Development Authority, Missouri, Revenue Bonds, John Knox Village Obligated Group, Series 2007A, 5.125%, 8/15/32 | 8/17 at 100.00 | N/R | 438,786 |
| 500 | St. Louis County Industrial Development Authority, Missouri, Revenue Bonds, Friendship Village | 9/17 at 100.00 | N/R | 494,375 |

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| | of West County, Series 2007A, 5.500%, 9/01/28 | | | |
| 2,725 | Total Long-Term Care Materials – 2.2% (1.4% of Total Investments) | | | 2,692,261 |
| 750 | Sugar Creek, Missouri, Industrial Development Revenue Bonds, Lafarge North America Inc., Series 2003A, 5.650%, 6/01/37 (Alternative Minimum Tax) | 6/13 at 101.00 | BBB– | 725,048 |
| 1,500 | Tax Obligation/General – 30.2% (19.6% of Total Investments) Camdenton Reorganized School District R3, Camden County, Missouri, General Obligation Bonds, Series 2005, 5.250%, 3/01/24 – AGM Insured (4) | No Opt. Call | AAA | 1,717,140 |
| 1,685 | Independence School District, Jackson County, Missouri, General Obligation Bonds, Series 2010, 5.000%, 3/01/27 | 3/20 at 100.00 | AA+ | 1,934,009 |
| 500 | Jackson County School District R-7, Lees Summit, Missouri, General Obligation Refunding and Improvement Bonds, Series 2002, 5.250%, 3/01/18 – AGM Insured | 3/12 at 100.00 | AAA | 531,010 |
| 500 | Missouri School Boards Association, Lease Participation Certificates, Clay County School District 53 Liberty, Series 2007, 5.250%, 3/01/27 – AGM Insured | 3/17 at 100.00 | AAA | 553,080 |
| 1,630 | North Kansas City School District, Missouri, General Obligation Bonds, Series 2003A, 5.000%, 3/01/23 | 3/13 at 100.00 | AA+ | 1,777,629 |
| 1,000 | Puerto Rico, General Obligation and Public Improvement Bonds, Series 2002A, 5.500%, 7/01/20 – NPFIC Insured | No Opt. Call | A | 1,123,500 |
| 1,800 | Ritenour Consolidated School District, St. Louis County, Missouri, General Obligation Bonds, Series 1995, 7.375%, 2/01/12 – FGIC Insured | No Opt. Call | Aa2 | 1,906,974 |
| 270 | St. Louis County Pattonville School District R3, Missouri, General Obligation Bonds, Series 2004, 5.250%, 3/01/20 – AGM Insured | 3/14 at 100.00 | AAA | 304,004 |
| 8,885 | Total Tax Obligation/General Tax Obligation/Limited – 21.2% (13.7% of Total Investments) | | | 9,847,346 |
| 600 | Chesterfield, Missouri, Certificates of Participation, Series 2005, 5.000%, 12/01/24 – FGIC Insured | 12/15 at 100.00 | Aa1 | 638,346 |
| 80 | Cottleville, Missouri, Certificates of Participation, Series 2006, 5.250%, 8/01/31 | 8/14 at 100.00 | N/R | 72,899 |
| 335 | Fenton, Missouri, Tax Increment Revenue Bonds, Gravois Bluffs Redevelopment Project, Series 2006, 4.500%, 4/01/21 | 4/14 at 100.00 | N/R | 338,112 |
| 315 | Fulton, Missouri, Tax Increment Revenue Bonds, Fulton Commons Redevelopment Project, Series 2006, 5.000%, 6/01/28 | 6/16 at 100.00 | N/R | 263,589 |
| 475 | Kansas City Tax Increment Financing District, Missouri, Tax Increment Revenue Bonds, Briarcliff West Project, Series 2006A, 5.400%, 6/01/24 | 6/14 at 102.00 | N/R | 425,135 |
| 360 | Missouri Development Finance Board, Infrastructure Facilities Revenue Bonds, Branson Landing Project, Series 2005A, 5.000%, 6/01/35 | 6/15 at 100.00 | A | 346,615 |
| 415 | | | A | 420,972 |

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| | Missouri Development Finance Board, Infrastructure Facilities Revenue Bonds, City of Independence, Crackerneck Creek Project, Series 2006C, 5.000%, 3/01/28 | 3/16 at 100.00 | | |
| 450 | Monarch-Chesterfield Levee District, St. Louis County, Missouri, Levee District Improvement Bonds, Series 1999, 5.750%, 3/01/19 – NPFPG Insured | 9/10 at 101.00 | A | 456,260 |
| 500 | Osage Beach, Missouri, Tax Increment Revenue Bonds, Prewitts Point Transportation Development District, Series 2006, 5.000%, 5/01/23 | 5/12 at 102.00 | N/R | 433,160 |
| 600 | Riverside, Missouri, L-385 Levee Redevelopment Plan Tax Increment Revenue Bonds, Series 2004, 5.250%, 5/01/20 | 5/15 at 100.00 | A | 629,520 |
| 2,000 | Springfield Public Building Corporation, Missouri, Lease Revenue Bonds, Jordan Valley Park Projects, Series 2000A, 6.125%, 6/01/21 – AMBAC Insured | 12/10 at 100.00 | N/R | 2,003,460 |
| | St. Joseph Industrial Development Authority, Missouri, Tax Increment Bonds, Shoppes at North Village Project, Series 2005A: | | | |
| 340 | 5.375%, 11/01/24 | 11/14 at 100.00 | N/R | 323,932 |
| 400 | 5.500%, 11/01/27 | 11/14 at 100.00 | N/R | 376,672 |
| 200 | St. Joseph Industrial Development Authority, Missouri, Tax Increment Bonds, Shoppes at North Village Project, Series 2005B, 5.500%, 11/01/27 | 11/14 at 100.00 | N/R | 188,336 |
| 7,070 | Total Tax Obligation/Limited Transportation – 16.7% (10.8% of Total Investments) | | | 6,917,008 |
| 500 | Kansas City, Missouri, Passenger Facility Charge Revenue Bonds, Kansas City International Airport, Series 2001, 5.000%, 4/01/23 – AMBAC Insured (Alternative Minimum Tax) | 4/11 at 101.00 | A | 507,215 |
| 1,000 | St. Louis Land Clearance Redevelopment Authority, Missouri, Revenue Refunding and Improvement Bonds, LCRA Parking Facilities, Series 1999C, 7.000%, 9/01/19 | 9/10 at 101.00 | N/R | 1,003,710 |
| 1,000 | St. Louis, Missouri, Airport Revenue Bonds, Lambert-St. Louis International Airport, Series 2005, 5.500%, 7/01/18 – NPFPG Insured | No Opt. Call | A | 1,134,110 |
| 2,500 | St. Louis, Missouri, Airport Revenue Bonds, Lambert-St. Louis International Airport, Series 2007A, 5.000%, 7/01/21 – AGM Insured | 7/17 at 100.00 | AAA | 2,802,650 |
| 5,000 | Total Transportation U.S. Guaranteed – 23.1% (14.9% of Total Investments) (5) | | | 5,447,685 |
| 685 | Fenton, Missouri, Tax Increment Refunding and Improvement Revenue Bonds, Gravois Bluffs Redevelopment Project, Series 2002, 6.125%, 10/01/21 (Pre-refunded 10/01/12) | 10/12 at 100.00 | N/R (5) | 759,829 |
| 2,500 | Missouri Health and Educational Facilities Authority, Revenue Bonds, SSM Healthcare System, Series 2001A, 5.250%, 6/01/28 (Pre-refunded 6/01/11) – AMBAC Insured | 6/11 at 101.00 | AA– (5) | 2,616,300 |

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|-----------|---|--------------------|---------|--------------|
| 900 | Missouri Health and Educational Facilities Authority, Revenue Bonds, St. Anthony's Medical Center, Series 2000, 6.250%, 12/01/30 (Pre-refunded 12/01/10) | 12/10 at 101.00 | N/R (5) | 921,996 |
| 1,380 | Springfield Center City Development Corporation, Missouri, Lease Revenue Bonds, Jordan Valley Park Parking Garage, Series 2002D, 5.000%, 11/01/22 (Pre-refunded 11/01/11) – AMBAC Insured | 11/11 at 100.00 | Aa3 (5) | 1,453,720 |
| 80 | St. Louis County Pattonville School District R3, Missouri, General Obligation Bonds, Series 2004, 5.250%, 3/01/20 (Pre-refunded 3/01/14) – AGM Insured | 3/14 at 100.00 | AAA | 92,781 |
| 500 | St. Louis County, Missouri, GNMA Collateralized Mortgage Revenue Bonds, Series 1993D, 5.650%, 7/01/20 (Alternative Minimum Tax) (ETM) | No Opt. Call | AAA | 603,095 |
| 1,000 | St. Louis Municipal Finance Corporation, Missouri, Leasehold Revenue Bonds, Carnahan Courthouse, Series 2002A, 5.750%, 2/15/16 (Pre-refunded 2/15/12) – FGIC Insured | 2/12 at 100.00 | N/R (5) | 1,078,940 |
| 7,045 | Total U.S. Guaranteed Utilities – 1.7% (1.1% of Total Investments) | | | 7,526,661 |
| 530 | Puerto Rico Electric Power Authority, Power Revenue Bonds, Series 2010XX, 5.250%, 7/01/40 | 7/20 at 100.00 | A3 | 555,689 |
| 2,965 | Water and Sewer – 10.0% (6.5% of Total Investments) Missouri Environmental Improvement and Energy Resources Authority, Water Facility Revenue Bonds, Missouri-American Water Company, Series 2006, 4.600%, 12/01/36 – AMBAC Insured (Alternative Minimum Tax) (UB) | 12/16 at 100.00 | AA+ | 2,882,425 |
| 350 | Missouri Environmental Improvement and Energy Resources Authority, Water Pollution Control Revenue Bonds, State Revolving Fund Program – Kansas City Project, Series 1997C, 6.750%, 1/01/12 | No Opt. Call | Aaa | 378,759 |
| 3,315 | Total Water and Sewer | | | 3,261,184 |
| \$ 48,645 | Total Investments (cost \$49,017,011) – 154.6% | | | 50,379,305 |
| | Floating Rate Obligations – (6.8)% | | | (2,225,000) |
| | Other Assets Less Liabilities – 1.3% | | | 423,286 |
| | Auction Rate Preferred Shares, at Liquidation Value – (49.1)% (6) | | | (16,000,000) |
| | | | | \$ |
| | Net Assets Applicable to Common Shares – 100% | | | 32,577,591 |

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 methodologies 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 August 31, 2010:

| | Level 1 | Level 2 | Level 3 | Total |
|-----------------|---------|--------------|----------------|-------|
| Investments: | | | | |
| Municipal Bonds | \$ — | \$50,379,305 | \$ -50,379,305 | |

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 taxable market discount, timing differences in recognizing certain gains and losses on investment transactions and the treatment of investments in inverse floating rate securities reflected as financing transactions, if any. 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 August 31, 2010, the cost of investments was \$46,767,147.

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

| | |
|---|-------------|
| Gross unrealized: | |
| Appreciation | \$2,040,315 |
| Depreciation | (653,018) |
| Net unrealized appreciation (depreciation) of investments | \$1,387,297 |

- (1) All percentages shown in the Portfolio of Investments are based on net assets applicable to Common shares unless otherwise noted.
 - (2) Optional Call Provisions: Dates (month and year) and prices of the earliest optional call or redemption. There may be other call provisions at varying prices at later dates. Certain mortgage-backed securities may be subject to periodic principal paydowns.
 - (3) Ratings: Using the highest of Standard & Poor's Group ("Standard & Poor's"), Moody's Investor Service, Inc. ("Moody's") or Fitch, Inc. ("Fitch") rating. Ratings below BBB by Standard & Poor's, Baa by Moody's or BBB by Fitch are considered to be below investment grade. Holdings designated N/R are not rated by any of these national rating agencies.
 - (4) Investment, or portion of investment, has been pledged as collateral for inverse floating rate transactions.
 - (5) Backed by an escrow or trust containing sufficient U.S. Government or U.S. Government agency securities, which ensure the timely payment of principal and interest. Such investments are normally considered to be equivalent to AAA rated securities.
 - (6) Auction Rate Preferred Shares, at Liquidation Value as a percentage of Total Investments is 31.8%.
N/R Not rated.
- (ETM) Escrowed to maturity.
- (UB) Underlying bond of an inverse floating rate trust reflected as a financing transaction.
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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: See 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 Missouri Premium Income Municipal Fund

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

Date October 29, 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 October 29, 2010

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

Date October 29, 2010