

BLACKROCK MUNIVEST FUND INC
Form N-Q
July 29, 2010
UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM N-Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED MANAGEMENT INVESTMENT COMPANY

Investment Company Act file number 811-05611

Name of Fund: BlackRock MuniVest Fund, Inc. (MVF)

Fund Address: 100 Bellevue Parkway, Wilmington, DE 19809

Name and address of agent for service: Anne F. Ackerley, Chief Executive Officer, BlackRock MuniVest Fund, Inc., 55 East 52nd Street, New York, NY 10055.

Registrant's telephone number, including area code: (800) 882-0052, Option 4

Date of fiscal year end: 08/31/2010

Date of reporting period: 05/31/2010

Item 1 – Schedule of Investments

Schedule of Investments May 31, 2010 (Unaudited)

BlackRock MuniVest Fund, Inc. (MVF)
(Percentages shown are based on Net Assets)

| Municipal Bonds | Par (000) | Value |
|--|--------------|-------------------|
| Alabama 2.6% | | |
| Camden IDB Alabama, RB, Weyerhaeuser Co. Project, Series A, 6.13%, 12/01/13 (a) | \$ 2,550 | \$ 2,976,360 |
| Prattville IDB Alabama, RB, International Paper Co. Project, Series A, AMT, 4.75%, 12/01/30 | 6,500 | 5,562,310 |
| Selma IDB Alabama, RB, Gulf Opportunity Zone, International Paper, 5.80%, 5/01/34 | 1,850 | 1,870,350 |
| Selma IDB Alabama, Refunding RB, International Paper Co. Project, Series B, 5.50%, 5/01/20 | 5,000 | 5,071,900 |
| | | <u>15,480,920</u> |
| Arizona 2.1% | | |
| Maricopa County IDA Arizona, RB, Arizona Charter Schools Project, Series A, 6.75%, 7/01/29 | 4,100 | 2,830,107 |
| Maricopa County Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 6/01/35 | 3,400 | 3,415,946 |
| Pima County IDA, RB, Arizona Charter Schools Project, Series E, 7.25%, 7/01/31 | 2,025 | 2,033,525 |
| Pima County IDA, Refunding RB: Arizona Charter Schools Project, Series I, 6.10%, 7/01/24 (b) | 490 | 460,869 |
| Arizona Charter Schools Project, Series I, 6.30%, 7/01/31 (b) | 985 | 902,014 |
| Arizona Charter Schools Project, Series O, 5.00%, 7/01/26 | 1,545 | 1,260,983 |
| Charter Schools II, Series A, 6.75%, 7/01/21 | 925 | 926,702 |
| State of Arizona, COP, Department of Administration, Series A (AGM), 5.25%, 10/01/28 | 750 | 794,820 |
| | | <u>12,624,966</u> |
| California 10.4% | | |
| California HFA, RB, Home Mortgage, Series K, AMT, 5.50%, 2/01/42 | 4,115 | 4,192,568 |

Municipal Bonds

Par
(000)

Value

California (concluded)

| | | |
|--|----------|-------------------|
| California Health Facilities Financing Authority, Refunding RB, Series A: Catholic Healthcare West, 6.00%, 7/01/34 | \$ 1,055 | \$ 1,138,461 |
| St. Joseph Health System, 5.75%, 7/01/39 | 5,000 | 5,215,350 |
| California State Public Works Board, RB: Department of Corrections, Series C, 5.50%, 6/01/22 | 5,000 | 5,127,950 |
| Department of Corrections, Series C, 5.50%, 6/01/23 | 6,000 | 6,135,660 |
| Department of Mental Health, Coalinga, Series A, 5.13%, 6/01/29 | 10,460 | 10,132,811 |
| California Statewide Communities Development Authority, RB, Health Facility, Memorial Health Services, Series A, 6.00%, 10/01/23 | 5,240 | 5,470,560 |
| Golden State Tobacco Securitization Corp. California, RB, ARS, Asset-Backed, Series A-3, 7.88%, 6/01/13 (a) | 10,725 | 12,768,970 |
| Los Angeles Department of Airports, RB, Series A, 5.25%, 5/15/39 | 1,200 | 1,252,272 |
| State of California, GO, Various Purpose, 6.50%, 4/01/33 | 9,700 | 10,959,545 |
| | | <u>62,394,147</u> |

Colorado 3.1%

| | | |
|--|-------|-----------|
| City of Aurora Colorado, RB, Children s Hospital Association, 5.00%, 12/01/40 | 4,000 | 3,975,200 |
| Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33 | 2,500 | 2,768,300 |
| Colorado Health Facilities Authority, Refunding RB, Series A: Evangelical Lutheran, 5.25%, 6/01/34 | 3,000 | 2,850,900 |
| Sisters of Leavenworth, 5.00%, 1/01/40 | 8,705 | 8,711,181 |

Portfolio Abbreviations

To simplify the listings of portfolio holdings in the Schedule of Investments, the names and descriptions of many of the securities have been abbreviated according to the following list:

| | |
|-------|---|
| AGC | Assured Guaranty Corp. |
| AGM | Assured Guaranty Municipal Corp. |
| AMBAC | American Municipal Bond Assurance Corp. |
| AMT | Alternative Minimum Tax (subject to) |
| ARB | Airport Revenue Bonds |
| ARS | Auction Rate Securities |
| CAB | Capital Appreciation Bonds |
| COP | Certificates of Participation |
| EDA | Economic Development Authority |

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| | |
|-------|--|
| FHA | Federal Housing Administration |
| GNMA | Government National Mortgage Association |
| GO | General Obligation Bonds |
| HDA | Housing Development Authority |
| HFA | Housing Finance Agency |
| HRB | Housing Revenue Bonds |
| IDA | Industrial Development Authority |
| IDB | Industrial Development Board |
| MRB | Mortgage Revenue Bonds |
| NPFGC | National Public Finance Guarantee Corp. |
| RB | Revenue Bonds |
| S/F | Single Family |

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2010

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)
 (Percentages shown are based on Net Assets)

| Municipal Bonds | Par (000) | Value |
|--|--------------|-------------------|
| Colorado (concluded) | | |
| Colorado Housing & Finance Authority, Refunding RB, S/F Program, Senior Series A-2, AMT: | | |
| 6.60%, 5/01/28 | \$ 375 | \$ 386,805 |
| 7.50%, 4/01/31 | 140 | 148,862 |
| | | <u>18,841,248</u> |
| Connecticut 0.4% | | |
| Mohegan Tribe of Indians of Connecticut, RB, Public Improvement, Priority Distribution, 6.25%, 1/01/31 | 2,810 | 2,266,855 |
| District of Columbia 0.2% | | |
| Metropolitan Washington Airports Authority, RB, First Senior Lien, Series A: | | |
| 5.00%, 10/01/39 | 415 | 430,658 |
| 5.25%, 10/01/44 | 650 | 684,372 |
| | | <u>1,115,030</u> |
| Florida 6.7% | | |
| County of Miami-Dade Florida, GO, Building Better Communities Program: | | |
| Series B, 6.38%, 7/01/28 | 4,630 | 5,326,584 |
| Series B-1, 5.63%, 7/01/38 | 5,000 | 5,335,800 |
| County of Miami-Dade Florida, Refunding RB, Miami International Airport: | | |
| AMT (AGC), 5.00%, 10/01/40 | 10,000 | 9,563,500 |
| Series A-1, 5.38%, 10/01/41 | 10,290 | 10,481,394 |
| Hillsborough County IDA, RB, H. Lee Moffitt Cancer Center Project, Series A, 5.25%, 7/01/37 | 6,500 | 6,193,070 |
| Miami-Dade County IDA, RB, Waste Management Inc. Project, Series 1, Mandatory Put Bonds, AMT, 7.00%, 12/01/18 | 3,200 | 3,251,552 |
| | | <u>40,151,900</u> |
| Georgia 3.0% | | |
| De Kalb County Hospital Authority Georgia, RB, DeKalb Medical Center | 3,570 | 3,584,423 |

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| | | |
|--|-------|-----------|
| Inc. Project, 6.13%, 9/01/40 De Kalb Private Hospital Authority, Refunding RB, Children s Healthcare, 5.25%, 11/15/39 | 3,335 | 3,453,126 |
| Gainesville Redevelopment Authority, Refunding RB, Riverside Military Academy, 5.13%, 3/01/37 | 1,100 | 712,635 |
| Monroe County Development Authority Georgia, Refunding RB, Oglethorpe Power Corp.-Scherer, Series A, 6.80%, 1/01/11 | 4,785 | 4,925,009 |

| Municipal Bonds | Par (000) | Value |
|---|--------------|--------------|
| Georgia (concluded) | | |
| Municipal Electric Authority of Georgia, RB, Series W: 6.60%, 1/01/18 | \$ 4,565 | \$ 5,340,365 |
| 6.60%, 1/01/18 (c) | 250 | 285,577 |
| | | 18,301,135 |

| | | |
|---|-----|---------|
| Idaho 0.0% | | |
| Idaho Housing & Finance Association, Refunding RB, S/F Mortgage, Senior Series E-2, AMT, 6.90%, 1/01/27 | 135 | 135,244 |

| | | |
|--|--------|------------|
| Illinois 10.0% | | |
| City of Chicago Illinois, ARB, General, Third Lien, Series B-2, AMT (NPFGC), 6.00%, 1/01/27 | 17,080 | 17,782,159 |
| City of Chicago Illinois, RB, Series C, AMT (GNMA), 7.00%, 3/01/32 | 60 | 61,668 |
| Illinois Finance Authority, RB: Advocate Health Care Network, Series D, 6.50%, 11/01/38 | 9,700 | 10,788,631 |
| Community Rehabilitation Providers Facilities, Series A, 6.50%, 7/01/22 | 2,140 | 2,155,836 |
| Illinois Finance Authority, Refunding RB, Northwestern Memorial Hospital, Series A, 6.00%, 8/15/39 | 9,000 | 9,823,860 |
| Regional Transportation Authority, RB: Series A (AMBAC), 7.20%, 11/01/20 | 3,500 | 4,301,570 |
| Series C (NPFGC), 7.75%, 6/01/20 | 4,000 | 5,145,560 |
| Village of Hodgkins Illinois, RB, MBM Project, AMT, 6.00%, 11/01/23 | 10,000 | 10,006,100 |
| | | 60,065,384 |

| | | |
|---|-------|-----------|
| Indiana 5.7% | | |
| Indiana Finance Authority, Refunding RB, Duke Energy Indiana Inc., Series C, 4.95%, 10/01/40 | 2,380 | 2,374,645 |
| Indiana Health & Educational Facilities Financing Authority, RB, Clarian Health Obligation, Series A, 5.25%, 2/15/40 | 8,980 | 8,729,279 |

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| | | |
|---|--------|-------------------|
| Indiana Transportation Finance Authority, RB, Series A, 6.80%, 12/01/16 | 8,195 | 9,332,220 |
| Indianapolis Local Public Improvement Bond Bank, Refunding RB, Series D, 6.75%, 2/01/14 | 12,875 | 14,096,580 |
| | | <u>34,532,724</u> |
| Kansas 0.4% | | |
| Sedgwick & Shawnee Counties Kansas, RB, Mortgage-Backed Securities Program, Series A-4, AMT (GNMA), 5.95%, 12/01/33 | 2,145 | 2,233,503 |

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)
(Percentages shown are based on Net Assets)

| Municipal Bonds | Par (000) | Value |
|--|--------------|-------------------|
| Kentucky 1.9% | | |
| Kentucky Economic Development Finance Authority, Refunding RB, Owensboro Medical Health System, Series A, 6.38%, 6/01/40 | \$ 2,000 | \$ 2,049,760 |
| Kentucky Housing Corp., Refunding RB, Series L, AMT, 5.25%, 1/01/38 | 7,235 | 7,429,115 |
| Louisville & Jefferson County Metropolitan Sewer District, RB, Series A (AGC), 4.25%, 5/15/38 | 1,940 | 1,887,329 |
| | | <u>11,366,204</u> |
| Maine 1.2% | | |
| Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39 | 5,000 | 5,139,550 |
| Portland New Public Housing Authority Maine, Refunding RB, Senior Living, Series A: | | |
| 5.70%, 8/01/21 | 775 | 782,401 |
| 6.00%, 2/01/34 | 1,190 | 1,151,932 |
| | | <u>7,073,883</u> |
| Maryland 1.5% | | |
| Maryland Community Development Administration, RB, AMT, 5.10%, 9/01/37 | 1,835 | 1,848,414 |
| Maryland Community Development Administration, Refunding RB, Residential, Series D, AMT, 4.90%, 9/01/42 | 3,250 | 3,152,402 |
| Maryland Health & Higher Educational Facilities Authority, Refunding RB, University of Maryland Medical System: | | |
| 5.00%, 7/01/34 | 2,100 | 2,115,162 |
| 5.13%, 7/01/39 | 2,100 | 2,129,610 |
| | | <u>9,245,588</u> |
| Massachusetts 7.2% | | |
| Boston Water & Sewer Commission, RB, 9.25%, 1/01/11 (c) | 985 | 1,033,137 |
| Massachusetts Bay Transportation Authority, Refunding RB, General | 3,010 | 3,701,818 |

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| | | |
|---|--------|------------|
| Transportation System, Series A, 7.00%, 3/01/19 | | |
| Massachusetts HFA, HRB, Series A, AMT, 5.20%, 12/01/37 | 3,000 | 3,021,000 |
| Massachusetts HFA, RB, S/F, Series 130, AMT, 5.00%, 12/01/32 | 2,500 | 2,499,975 |
| Massachusetts HFA, Refunding HRB, Series D, AMT, 4.85%, 6/01/40 | 3,000 | 2,847,420 |
| Massachusetts School Building Authority, RB, Series A (AGM), 5.00%, 8/15/37 | 10,000 | 10,454,800 |

| Municipal Bonds | Par (000) | Value |
|---|--------------|-------------------|
| Massachusetts (concluded) | | |
| Massachusetts Water Resources Authority, RB, Series A, 6.50%, 7/15/19 (c) | \$ 16,000 | \$ 19,531,840 |
| | | <u>43,089,990</u> |

| | | |
|---|-------|-------------------|
| Michigan 5.3% | | |
| City of Detroit Michigan, RB, Second Lien, Series B (AGM): 6.25%, 7/01/36 | 2,500 | 2,739,325 |
| 7.00%, 7/01/36 | 1,250 | 1,444,625 |
| Michigan State Hospital Finance Authority, Refunding RB: Henry Ford Health System, Series A, 5.25%, 11/15/46 | 7,950 | 7,341,428 |
| Hospital, Crittenton, Series A, 5.63%, 3/01/27 | 1,900 | 1,892,685 |
| Hospital, Oakwood Obligation Group, Series A, 5.00%, 7/15/25 | 905 | 892,574 |
| Hospital, Sinai Hospital, 6.70%, 1/01/26 | 1,000 | 957,390 |
| McLaren Health Care, 5.75%, 5/15/38 | 7,285 | 7,481,258 |
| Trinity Health, Series A, 6.00%, 12/01/20 | 4,200 | 4,283,832 |
| Royal Oak Hospital Finance Authority Michigan, Refunding RB, William Beaumont Hospital, 8.25%, 9/01/39 | 4,100 | 4,893,924 |
| | | <u>31,927,041</u> |

| | | |
|--|--------|------------|
| Mississippi 5.3% | | |
| County of Lowndes Mississippi, Refunding RB, Weyerhaeuser Co. Project: Series A, 6.80%, 4/01/22 | 9,160 | 9,846,359 |
| Series B, 6.70%, 4/01/22 | 4,500 | 4,799,250 |
| Mississippi Business Finance Corp., Refunding RB, System Energy Resource Inc. Project: 5.88%, 4/01/22 | 15,000 | 15,038,100 |
| 5.90%, 5/01/22 | 2,250 | 2,255,715 |

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31,939,424

Nevada 0.9%

| | | |
|---|-------|-----------|
| County of Clark Nevada, RB, Series B, 5.75%, 7/01/42 | 5,000 | 5,317,950 |
|---|-------|-----------|

New Hampshire 0.4%

| | | |
|--|-------|-----------|
| New Hampshire Health & Education Facilities Authority, Refunding RB, Elliot Hospital, Series B, 5.60%, 10/01/22 | 2,525 | 2,534,696 |
|--|-------|-----------|

New Jersey 5.8%

| | | |
|--|-------|-----------|
| New Jersey EDA, RB, Cigarette Tax: 5.50%, 6/15/24 | 9,080 | 9,006,997 |
| 5.75%, 6/15/29 | 2,885 | 2,878,278 |
| 5.75%, 6/15/34 | 3,695 | 3,642,790 |

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2010

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)
 (Percentages shown are based on Net Assets)

| Municipal Bonds | Par (000) | Value |
|---|--------------|-------------------|
| New Jersey (concluded) | | |
| New Jersey EDA, Refunding RB, School Facilities Construction, Series AA, 5.25%, 12/15/33 | \$ 10,000 | \$ 10,728,900 |
| New Jersey State Housing & Mortgage Finance Agency, RB, Series AA, 6.38%, 10/01/28 | 1,520 | 1,684,510 |
| Tobacco Settlement Financing Corp. New Jersey, RB, 7.00%, 6/01/13 (a) | 5,980 | 7,024,526 |
| | | <u>34,966,001</u> |
| New York 3.5% | | |
| Metropolitan Transportation Authority, RB, Series 2008-C: 6.25%, 11/15/23 | 3,245 | 3,828,127 |
| 6.50%, 11/15/28 | 14,925 | 17,476,279 |
| | | <u>21,304,406</u> |
| North Carolina 0.7% | | |
| City of Charlotte North Carolina, Refunding RB, Series A, 5.50%, 7/01/34 | 800 | 854,904 |
| Gaston County Industrial Facilities & Pollution Control Financing Authority North Carolina, RB, Exempt Facilities, National Gypsum Co. Project, AMT, 5.75%, 8/01/35 | 4,105 | 3,137,082 |
| | | <u>3,991,986</u> |
| Ohio 3.5% | | |
| Buckeye Tobacco Settlement Financing Authority, RB, Asset-Backed, Senior Series A-2, 6.50%, 6/01/47 | 15,970 | 12,573,500 |
| Ohio Higher Educational Facility Commission, Refunding RB, Kenyon College Project, 5.25%, 7/01/44 | 8,000 | 8,310,880 |
| | | <u>20,884,380</u> |
| Pennsylvania 1.0% | | |
| Lycoming County Authority, Refunding RB, Susquehanna Health System Project, Series A, 5.75%, 7/01/39 | 3,950 | 4,011,225 |

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| | | |
|---|-------|-----------|
| Philadelphia Authority for Industrial Development, RB: | | |
| Arbor House Inc. Project, Series E, 6.10%, 7/01/33 | 1,000 | 960,510 |
| Rieder House Project, Series A, 6.10%, 7/01/33 | 1,355 | 1,301,491 |
| | | 6,273,226 |

| | | |
|--|--------|------------|
| Puerto Rico 2.8% | | |
| Puerto Rico Sales Tax Financing Corp., RB, First Sub-Series A, 6.38%, 8/01/39 | 13,000 | 14,596,400 |
| Puerto Rico Sales Tax Financing Corp., Refunding RB, CAB, Series A (NPFGC), 5.71%, 8/01/41 (d) | 15,000 | 2,358,600 |
| | | 16,955,000 |

| Municipal Bonds | Par (000) | Value |
|---|--------------|------------|
| South Carolina 1.0% | | |
| County of Georgetown South Carolina, Refunding RB, International Paper Co. Project, Series A, AMT, 5.55%, 12/01/29 | \$ 1,000 | \$ 956,410 |
| County of Richland South Carolina, Refunding RB, International Paper Co. Project, AMT, 6.10%, 4/01/23 | 5,000 | 5,061,150 |
| | | 6,017,560 |

| | | |
|--|--------|------------|
| Texas 12.1% | | |
| Brazos River Authority, Refunding RB, Texas Utility Co., Series, AMT, 7.70%, 4/01/33 | 3,055 | 1,784,670 |
| Brazos River Harbor Navigation District, Refunding RB, Dow Chemical Co. Project, Series A7, AMT, 6.63%, 5/15/33 | 11,460 | 11,659,862 |
| City of Houston Texas, RB, Senior Lien, Series A, 5.50%, 7/01/34 | 8,335 | 8,982,546 |
| Guadalupe-Blanco River Authority, RB, EI du Pont de Nemours & Co. Project, AMT, 6.40%, 4/01/26 | 10,250 | 10,258,815 |
| Gulf Coast Waste Disposal Authority, Refunding RB, Series A, AMT, 6.10%, 8/01/24 | 4,000 | 4,009,080 |
| Harris County Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B: 7.13%, 12/01/31 | 3,500 | 3,945,655 |
| 7.25%, 12/01/35 | 5,400 | 6,101,838 |
| Harris County-Houston Sports Authority, Refunding RB, Senior Lien, Series G (NPFGC), 5.75%, 11/15/20 | 5,130 | 5,214,389 |

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| | | |
|---|-------|------------|
| Houston Industrial Development Corp., RB, Senior, Air Cargo, AMT, 6.38%, 1/01/23 | 1,790 | 1,748,311 |
| La Vernia Higher Education Finance Corp., RB, KIPP Inc., 6.25%, 8/15/39 | 925 | 956,959 |
| Matagorda County Navigation District No. 1 Texas, Refunding RB, CenterPoint Energy Project, 5.60%, 3/01/27 | 9,355 | 9,333,951 |
| North Texas Tollway Authority, Refunding RB, First Tier, Series A, 6.25%, 1/01/39 | 3,500 | 3,856,265 |
| Texas Private Activity Bond Surface Transportation Corp., RB, Senior Lien, Note Mobility, 6.88%, 12/31/39 | 4,710 | 4,950,775 |
| | | 72,803,116 |
| <hr/> | | |
| U.S. Virgin Islands 1.4% | | |
| United States Virgin Islands, Refunding RB, Senior Secured, Hovensa Coker Project, AMT, 6.50%, 7/01/21 | 8,000 | 8,118,960 |
| <hr/> | | |

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)
 (Percentages shown are based on Net Assets)

| Municipal Bonds | Par (000) | Value |
|--|--------------|-------------------|
| Vermont 0.2% | | |
| Vermont Educational & Health Buildings Financing Agency, RB, Developmental & Mental Health, Series A, 6.38%, 6/15/22 | \$ 1,000 | \$ 979,830 |
| Virginia 4.3% | | |
| Chesterfield County IDA, Refunding RB, Virginia Electric & Power Co., Series A, 5.88%, 6/01/17 | 1,425 | 1,469,132 |
| City of Norfolk Virginia, Refunding RB, Series B (AMBAC), 5.50%, 2/01/31 | 4,225 | 4,214,311 |
| Fairfax County EDA, Refunding RB, Goodwin House Inc.: 5.13%, 10/01/37 | 2,000 | 1,941,180 |
| 5.13%, 10/01/42 | 7,015 | 6,814,932 |
| Tobacco Settlement Financing Corp. Virginia, Refunding RB, Senior Series B1, 5.00%, 6/01/47 | 15,000 | 9,958,050 |
| Virginia HDA, Refunding RB, Sub-Series A3, AMT, 5.05%, 7/01/26 | 1,325 | 1,355,846 |
| | | <u>25,753,451</u> |
| Washington 4.6% | | |
| Energy Northwest, Refunding RB, Series B, 7.13%, 7/01/16 | 14,320 | 18,040,336 |
| Seattle Housing Authority Washington, HRB, Replacement Housing Projects, 6.13%, 12/01/32 | 2,265 | 2,124,683 |
| Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36 | 7,000 | 7,719,600 |
| | | <u>27,884,619</u> |
| West Virginia 0.4% | | |
| West Virginia Hospital Finance Authority, Refunding RB, Charleston, Series A, 5.63%, 9/01/32 | 2,500 | 2,565,975 |
| Wisconsin 2.1% | | |
| City of Milwaukee Wisconsin, RB, Senior, Air Cargo, AMT, 6.50%, 1/01/25 | 1,605 | 1,572,354 |

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| | | |
|--|-------|------------|
| Wisconsin Health & Educational Facilities Authority, MRB, Hudson Memorial Hospital (FHA), 5.70%, 1/15/29 | 4,500 | 4,568,040 |
| Wisconsin Health & Educational Facilities Authority, RB, SynergyHealth Inc., 6.00%, 11/15/32 | 3,040 | 3,127,978 |
| Wisconsin Housing & EDA, Refunding RB, Series A, AMT, 5.63%, 3/01/31 | 3,390 | 3,523,634 |
| | | 12,792,006 |

| Municipal Bonds | Par (000) | Value |
|---|--------------|--------------|
| Wyoming 0.8% | | |
| County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, 5.25%, 7/15/26 | \$ 4,500 | \$ 4,776,750 |
| Total Municipal Bonds 112.5% | | 676,705,098 |

**Municipal Bonds Transferred to Tender
Option Bond Trusts (e)**

| | | |
|--|--------|------------|
| Arizona 0.6% | | |
| Phoenix Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/34 | 3,500 | 3,674,545 |
| California 5.4% | | |
| Los Angeles Community College District California, GO, Election of 2008, Series A, 6.00%, 8/01/33 | 9,586 | 10,802,526 |
| University of California, RB, Series O, 5.25%, 5/15/39 | 20,000 | 21,477,600 |
| | | 32,280,126 |
| Connecticut 2.1% | | |
| Connecticut State Health & Educational Facility Authority, RB, Yale University, Series Z-3, 5.05%, 7/01/42 | 12,000 | 12,664,680 |
| District of Columbia 1.4% | | |
| District of Columbia Water & Sewer Authority, RB, Series A, 5.50%, 10/01/39 | 7,495 | 8,119,470 |
| Florida 2.5% | | |
| County of Miami-Dade Florida, RB, Water & Sewer System (AGM), 5.00%, 10/01/39 | 14,747 | 15,276,236 |

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Illinois 3.4%

| | | |
|--|--------|-------------------|
| City of Chicago Illinois, Refunding RB, Second Lien (AGM), 5.25%, 11/01/33 | 1,330 | 1,415,133 |
| Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/38 | 10,000 | 11,564,300 |
| Illinois State Toll Highway Authority, RB, Series B, 5.50%, 1/01/33 | 6,999 | 7,627,525 |
| | | <u>20,606,958</u> |

Kentucky 4.2%

| | | |
|--|-------|-----------|
| Kentucky Economic Development Finance Authority, Refunding RB, St. Elizabeth, Series A, 5.50%, 5/01/39 | 8,003 | 8,352,409 |
| Lexington-Fayette Urban County Airport Board, Refunding RB, Series A, 5.00%, 7/01/27 | 7,001 | 7,497,662 |

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2010

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)
(Percentages shown are based on Net Assets)

| Municipal Bonds Transferred to Tender Option Bond Trusts (e) | Par (000) | Value |
|---|--------------|-------------------|
| Kentucky (concluded) | | |
| Louisville & Jefferson County Metropolitan Government Parking Authority, RB, Series A, 5.38%, 12/01/39 | \$ 9,195 | \$ 9,652,083 |
| | | <u>25,502,154</u> |
| Maryland 0.8% | | |
| Maryland State Transportation Authority, RB, Transportation Facility Project (AGM), 5.00%, 7/01/41 | 4,710 | 4,982,615 |
| Nevada 2.9% | | |
| Clark County Water Reclamation District, GO, Series B, 5.75%, 7/01/34 | 15,789 | 17,597,820 |
| New York 5.0% | | |
| New York City Municipal Water Finance Authority, RB: Series DD, 5.00%, 6/15/37 | 24,199 | 25,323,503 |
| Series FF-2, 5.50%, 6/15/40 | 4,154 | 4,633,002 |
| | | <u>29,956,505</u> |
| North Carolina 3.1% | | |
| North Carolina Capital Facilities Finance Agency, Refunding RB: Duke University Project, Series A, 5.00%, 10/01/41 | 12,678 | 13,201,370 |
| Wake Forest University, 5.00%, 1/01/38 | 5,000 | 5,296,900 |
| | | <u>18,498,270</u> |
| Ohio 3.7% | | |
| County of Allen Ohio, Refunding RB, Catholic Healthcare, Series A, 5.25%, 6/01/38 | 2,870 | 2,939,569 |
| County of Montgomery Ohio, Refunding RB, Catholic Healthcare, Series A, 5.50%, 5/01/34 | 5,470 | 5,859,901 |
| Ohio Higher Educational Facility Commission, Refunding RB, Hospital, Cleveland Clinic Health, Series A, | 4,400 | 4,575,604 |

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| | | |
|--|-------|-------------------|
| 5.25%, 1/01/33 | | |
| State of Ohio, RB, Cleveland Clinic Health, Series B, 5.50%, 1/01/34 | 8,500 | 8,969,625 |
| | | <u>22,344,699</u> |

South Carolina 0.6%

| | | |
|--|-------|-----------|
| South Carolina State Housing Finance & Development Authority, Refunding RB, Series B-1, 5.55%, 7/01/39 | 3,269 | 3,381,059 |
|--|-------|-----------|

Texas 8.3%

| | | |
|--|--------|------------|
| Harris County Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27 (c) | 20,970 | 25,783,034 |
|--|--------|------------|

Municipal Bonds Transferred to Tender Option Bond Trusts (e)

**Par
(000)**

Value

Texas (concluded)

| | | |
|---|-----------|-------------------|
| Houston Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40 | \$ 10,000 | \$ 10,612,604 |
| Texas Department of Housing & Community Affairs, MRB, Series B, AMT (GNMA), 5.25%, 9/01/32 | 7,453 | 7,557,884 |
| Texas State University Systems, Refunding RB (AGM), 5.00%, 3/15/30 | 5,667 | 5,885,719 |
| | | <u>49,839,241</u> |

Virginia 0.4%

| | | |
|---|-------|-----------|
| Fairfax County IDA Virginia, Refunding RB, Health Care, Inova Health System, Series A, 5.50%, 5/15/35 | 2,099 | 2,224,952 |
|---|-------|-----------|

Washington 4.4%

| | | |
|---|--------|-------------------|
| Central Puget Sound Regional Transit Authority, RB, Series A: | | |
| 5.00%, 11/01/34 | 5,500 | 5,770,875 |
| 5.00%, 11/01/36 | 5,500 | 5,770,875 |
| (AGM), 5.00%, 11/01/32 | 14,007 | 14,806,870 |
| | | <u>26,348,620</u> |

Wisconsin 1.0%

| | | |
|--|-------|-----------|
| Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health Inc., 5.25%, 4/01/39 | 6,099 | 6,254,269 |
|--|-------|-----------|

Total Municipal Bonds Transferred to Tender Option Bond Trusts 49.8%

299,552,219

976,257,317

Total Long-Term Investments
 (Cost \$934,831,747) 162.3%

Short-Term Securities

Shares

FII Institutional Tax-Exempt Fund,
 0.25% (f)(g)

13,511,328

13,511,328

Total Short-Term Securities
 (Cost \$13,511,328) 2.2%

13,511,328

Total Investments

(Cost \$948,343,075*) 164.5%

989,768,645

Other Assets Less Liabilities 1.7%

10,368,234

Liability for Trust Certificates, Including Interest

Expense and Fees Payable (25.7)%

(154,732,820)

Preferred Shares, at Redemption Value (40.5)%

(243,862,908)

Net Assets Applicable to Common Shares 100.0%

\$ 601,541,151

Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

* The cost and unrealized appreciation (depreciation) of investments as of May 31, 2010, as computed for federal income tax purposes, were as follows:

| | |
|-------------------------------|----------------|
| Aggregate cost | \$ 794,200,972 |
| Gross unrealized appreciation | \$ 53,712,803 |
| Gross unrealized depreciation | (12,772,665) |
| Net unrealized appreciation | \$ 40,940,138 |

- (a) US government securities, held in escrow, are used to pay interest on this security as well as to retire the bond in full at the date indicated, typically at a premium to par.
- (b) Security exempt from registration under Rule 144A of the Securities Act of 1933. These securities may be resold in transactions exempt from registration to qualified institutional investors.
- (c) Security is collateralized by Municipal or US Treasury obligations.
- (d) Represents a zero-coupon bond. Rate shown reflects the current yield as of report date.
- (e) Securities represent bonds transferred to a tender option bond trust in exchange for which the Fund acquired residual interest certificates. These securities serve as collateral in a financing transaction.
- (f) Investments in companies considered to be an affiliate of the Fund, for purposes of Section 2(a)(3) of the Investment Company Act of 1940, as amended, were as follows:

| Affiliate | Shares Held at August 31, 2009 | Net Activity | Shares Held at May 31, 2010 | Income |
|--------------------------------------|--------------------------------------|--------------|-----------------------------------|-----------|
| FFI Institutional Tax-Exempt Fund | 4,104,364 | 9,406,964 | 13,511,328 | \$ 16,669 |

- (g) Represents the current yield as of report date.

Fair Value Measurements - Various inputs are used in determining the fair value of investments, which are as follows:

Level 1 price quotations in active markets/exchanges for identical assets and liabilities

Level 2 other observable inputs (including, but not limited to: quoted prices for similar assets or liabilities in markets that are active, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the assets or liabilities (such as interest rates, yield curves, volatilities, prepayment speeds, loss severities, credit risks and default rates) or other market-corroborated inputs)

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Level 3 unobservable inputs based on the best information available in the circumstances, to the extent observable inputs are not available (including the Fund's own assumptions used in determining the fair value of investments)

The inputs or methodologies used for valuing securities are not necessarily an indication of the risk associated with investing in those securities. For information about the Fund's policy regarding valuation of investments and other significant accounting policies, please refer to the Fund's most recent financial statements as contained in its semi-annual report.

The following table summarizes the inputs used as of May 31, 2010 in determining the fair valuation of the Fund's investments:

| Valuation Inputs | Investments in Securities | | | Total |
|------------------------------------|---------------------------|----------------|---------|----------------|
| | Level 1 | Level 2 | Level 3 | |
| Assets: | | | | |
| Long-Term Investments ¹ | | \$ 976,257,317 | | \$ 976,257,317 |
| Short-Term Securities | \$ 13,511,328 | | | 13,511,328 |
| Total | \$ 13,511,328 | \$ 976,257,317 | | \$ 989,768,645 |

¹ See above Schedule of Investments for values in each state or political subdivision.

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Item 2 – Controls and Procedures

2(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")) are effective as of a date within 90 days of the filing of this report based on the evaluation of these controls and procedures required by Rule 30a-3(b) under the 1940 Act and Rule 13(a)-15(b) under the Securities Exchange Act of 1934, as amended.

2(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) 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

Certifications – Attached hereto

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.

BlackRock MuniVest Fund, Inc.

By: /s/ Anne F. Ackerley
Anne F. Ackerley
Chief Executive Officer of
BlackRock MuniVest Fund, Inc.

Date: July 23, 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: /s/ Anne F. Ackerley
Anne F. Ackerley
Chief Executive Officer (principal executive officer) of
BlackRock MuniVest Fund, Inc.

Date: July 23, 2010

By: /s/ Neal J. Andrews
Neal J. Andrews
Chief Financial Officer (principal financial officer) of
BlackRock MuniVest Fund, Inc.

Date: July 23, 2010

