

BLACKROCK MUNIVEST FUND, INC.

Form N-Q

July 23, 2014

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: John M. Perlowski, Chief Executive Officer, BlackRock MuniVest Fund, Inc.,  
55 East 52<sup>nd</sup> Street, New York, NY 10055

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

Date of fiscal year end: 08/31/2014

Date of reporting period: 05/31/2014

Item 1 Schedule of Investments

## Schedule of Investments May 31, 2014 (Unaudited)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|   | Par<br>(000) | Value        |
|---|--------------|--------------|
| <b>Municipal Bonds</b>  |              |              |
| <b>Alabama 2.6%</b>   |              |              |
| City of Selma Alabama IDB, RB, Gulf Opportunity Zone, International Paper Co. Project, Series A:<br>5.80%, 5/01/34                                      | \$ 1,850     | \$ 2,039,273 |
| 5.38%, 12/01/35   | 1,000        | 1,074,620    |
| County of Jefferson Alabama Sewer, Refunding RB, Senior Lien, Series A (AGM), 5.25%, 10/01/48   | 5,000        | 5,311,550    |
| State of Alabama Docks Department, Refunding RB, 6.00%, 10/01/40  | 7,610        | 8,799,291    |
|   |              | 17,224,734   |
| <b>Alaska 0.1%</b>  |              |              |
| Northern Tobacco Securitization Corp., Refunding RB, Tobacco Settlement, Asset-Backed, Series A, 5.00%,<br>6/01/46                                      | 1,250        | 938,675      |
| <b>Arizona 3.2%</b>   |              |              |
| City of Phoenix Arizona Civic Improvement Corp., Refunding RB, Junior Lien, Series A, 5.00%, 7/01/40  | 2,000        | 2,104,820    |
| City of Phoenix Arizona IDA, RB, Candeo School, Inc. Project:<br>6.63%, 7/01/33   | 2,245        | 2,379,520    |
| 6.88%, 7/01/44  | 3,440        | 3,642,685    |
| County of Maricopa Arizona IDA, RB, Arizona Charter Schools Project, Series A, 6.75%, 7/01/29   | 3,600        | 3,330,756    |
| County of Maricopa Arizona Pollution Control Corp., Refunding RB, Southern California Edison Co., Series<br>A, 5.00%, 6/01/35                           | 3,300        | 3,530,868    |
| Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37   | 5,000        | 5,553,950    |
|   |              | 20,542,599   |
| <b>California 7.8%</b>  |              |              |
| California Health Facilities Financing Authority, RB:<br>St. Joseph Health System, Series A, 5.75%, 7/01/39   | 5,000        | 5,785,850    |
| Sutter Health, Series B, 6.00%, 8/15/42   | 5,600        | 6,740,664    |
| California Health Facilities Financing Authority, Refunding RB, Catholic Healthcare West, Series A,<br>6.00%, 7/01/34                                   | 1,055        | 1,197,910    |
|   | <b>Par</b>   |              |
| <b>Municipal Bonds</b>  |              |              |
| <b>California (concluded)</b>   |              |              |
| California HFA, RB, S/F Housing, Home Mortgage, Series K, AMT, 5.50%, 2/01/42   | \$ 1,120     | \$ 1,143,285 |
| City of Los Angeles California Department of Airports, Refunding ARB, Los Angeles International Airport,<br>Series A, 5.25%, 5/15/39                    | 1,200        | 1,367,112    |
| Los Angeles Community College District California, GO, Refunding, Election of 2008, Series A,<br>6.00%, 8/01/33   | 9,585        | 11,446,311   |
| Poway Unified School District, GO, Refunding, CAB, School Facilities Improvement District No. 2007-1,<br>Election of 2008, Series B, 0.00%, 8/01/46 (a) | 10,000       | 2,138,800    |
| San Diego Community College District California, GO, Election of 2006, 5.00%, 8/01/43   | 4,285        | 4,795,944    |
| State of California, GO, Various Purposes, 6.50%, 4/01/33   | 9,675        | 11,847,231   |
| State of California Public Works Board, LRB, Department of Mental Health, Coalinga, Series A, 5.13%,<br>6/01/14 (b)                                     | 4,000        | 4,000,560    |
|   |              | 50,463,667   |
| <b>Colorado 1.0%</b>  |              |              |
| Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33  | 2,500        | 2,882,600    |
| Colorado Health Facilities Authority, Refunding RB, Evangelical Lutheran, Series A, 5.25%, 6/01/34  | 3,000        | 3,002,790    |
| Regional Transportation District, COP, Refunding, Series A, 5.38%, 6/01/31  | 385          | 423,889      |
|   |              | 6,309,279    |
| <b>Delaware 0.4%</b>  |              |              |
| County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Power LLC Project, 6.00%, 10/01/40  | 2,500        | 2,732,200    |
| <b>District of Columbia 0.2%</b>  |              |              |
| Metropolitan Washington Airports Authority, Refunding RB, 1st Senior Lien, Series A:<br>5.00%, 10/01/39   | 415          | 437,597      |

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BLACKROCK MUNIVEST FUND, INC.

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|   | Par        |               |
|---|------------|---------------|
|   | (000)      | Value         |
| <b>Municipal Bonds</b>  |            |               |
| <b>District of Columbia (concluded)</b>   |            |               |
| Metropolitan Washington Airports Authority, Refunding RB, 1st Senior Lien, Series A (concluded):<br>5.25%, 10/01/44   | \$ 650     | \$ 690,261    |
|   |            | 1,127,858     |
| <b>Florida 7.2%</b>   |            |               |
| County of Miami-Dade Florida, GO, Building Better Communities Program:  |            |               |
| Series B, 6.38%, 7/01/28  | 4,630      | 5,456,825     |
| Series B-1, 5.63%, 7/01/38  | 5,000      | 5,675,100     |
| County of Miami-Dade Florida, Refunding RB, Transit System Sales Surtax, 5.00%, 7/01/42                               | 3,750      | 4,066,088     |
| County of Miami-Dade Florida Aviation, Refunding ARB, Miami International Airport:                                    |            |               |
| Series A, AMT (AGC), 5.00%, 10/01/40  | 10,000     | 10,271,100    |
| Series A-1, 5.38%, 10/01/41   | 10,290     | 11,627,083    |
| County of Miami-Dade Florida Expressway Authority, RB, Toll System, Series A (AGM), 5.00%,<br>7/01/35                 | 8,900      | 9,515,079     |
|   |            | 46,611,275    |
| <b>Georgia 1.8%</b>   |            |               |
| City of Atlanta Georgia Department of Aviation, Refunding GARB, Series B, AMT, 5.00%, 1/01/29                         | 1,070      | 1,167,595     |
| County of DeKalb Georgia Hospital Authority, Refunding RB, DeKalb Medical Center, Inc. Project,<br>6.13%, 9/01/40     | 3,570      | 3,756,639     |
| DeKalb Private Hospital Authority, Refunding RB, Children's Healthcare, 5.25%, 11/15/39                               | 3,335      | 3,749,907     |
| Municipal Electric Authority of Georgia, Refunding RB, Series W, 6.60%, 1/01/18                                       | 2,510      | 2,742,351     |
|   |            | 11,416,492    |
| <b>Hawaii 0.9%</b>  |            |               |
| State of Hawaii Harbor System, RB, Series A, 5.50%, 7/01/35   | 5,000      | 5,596,050     |
| <b>Illinois 13.5%</b>   |            |               |
| City of Chicago Illinois, GARB, O'Hare International Airport, 3rd Lien, Series B-2, AMT (NPFGC),<br>6.00%, 1/01/27    | 605        | 607,735       |
|   | <b>Par</b> |               |
|   | (000)      | Value         |
| <b>Municipal Bonds</b>  |            |               |
| <b>Illinois (continued)</b>   |            |               |
| City of Chicago Illinois, GO, Refunding, Series A, 5.00%, 1/01/36   | \$ 15,000  | \$ 15,460,350 |
| City of Chicago Illinois, Refunding RB, Sales Tax Receipts, Series A, 5.00%, 1/01/41                                  | 4,640      | 4,832,931     |
| City of Chicago Illinois Board of Education, GO, Series A, 5.50%, 12/01/39  | 3,390      | 3,577,331     |
| City of Chicago Illinois Midway Airport, Refunding ARB, 2nd Lien, Series A, AMT, 5.00%, 1/01/41<br>(c)                | 1,740      | 1,827,818     |
| City of Chicago Illinois Transit Authority, RB, Sales Tax Receipts, 5.25%, 12/01/36                                   | 2,110      | 2,302,348     |
| City of Chicago Illinois Waterworks, Refunding RB, 2nd Lien, Water Project (AGM), 5.25%, 11/01/33                     | 1,330      | 1,416,091     |
| County of Cook Illinois Community College District No. 508, GO, University & College<br>Improvements, 5.25%, 12/01/31 | 5,000      | 5,531,700     |
| Illinois Finance Authority, RB:   |            |               |
| Advocate Health Care Network, Series D, 6.50%, 11/01/38   | 9,700      | 11,304,768    |
| Community Rehabilitation Providers Facilities, Series A, 6.50%, 7/01/22   | 575        | 575,103       |
| Disposal Waste Management, Inc., Series A, AMT, 5.05%, 8/01/29  | 1,000      | 1,032,420     |
| Memorial Health System, Series A, 5.25%, 7/01/44  | 1,785      | 1,909,986     |
| Illinois Finance Authority, Refunding RB, Series A:   |            |               |
| Northwestern Memorial Hospital, 6.00%, 8/15/39  | 9,000      | 10,466,820    |
| OSF Healthcare System, 6.00%, 5/15/39   | 4,990      | 5,627,023     |
| Railsplitter Tobacco Settlement Authority, RB, 6.00%, 6/01/28   | 2,645      | 3,097,295     |
| Regional Transportation Authority, RB:  |            |               |
| Series A (AMBAC), 7.20%, 11/01/20   | 2,500      | 2,936,300     |
| Series C (NPFGC), 7.75%, 6/01/20  | 4,000      | 4,875,480     |

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BLACKROCK MUNIVEST FUND, INC.

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|   | Par          |               |
|---|--------------|---------------|
|   | (000)        | Value         |
| <b>Municipal Bonds</b>  |              |               |
| <b>Illinois (concluded)</b>   |              |               |
| Village of Hodgkins Illinois, RB, Metropolitan Biosolids Management LLC Project, AMT, 6.00%, 11/01/23   | \$ 10,000    | \$ 10,012,900 |
|   |              | 87,394,399    |
| <b>Indiana 3.3%</b>   |              |               |
| City of Valparaiso Indiana, RB, Exempt Facilities, Pratt Paper LLC Project, AMT, 6.75%, 1/01/34   | 2,250        | 2,499,750     |
| Indiana Finance Authority, RB, Private Activity Bond, Ohio River Bridges East End Crossing Project, Series A, AMT: 5.00%, 7/01/40                       | 2,640        | 2,743,435     |
| 5.00%, 7/01/44  | 1,525        | 1,573,251     |
| 5.00%, 7/01/48  | 5,000        | 5,146,950     |
| Indiana Health & Educational Facilities Financing Authority, RB, Clarian Health Obligation, Series A, 5.25%, 2/15/40                                    | 8,980        | 9,177,919     |
|   |              | 21,141,305    |
| <b>Iowa 1.3%</b>  |              |               |
| Iowa Finance Authority, Refunding RB, Midwestern Disaster Area, Iowa Fertilizer Co. Project, 5.25%, 12/01/25  | 4,500        | 4,687,920     |
| Iowa Tobacco Settlement Authority, Refunding RB, Asset-Backed, Series C, 5.63%, 6/01/46   | 4,500        | 3,855,690     |
|   |              | 8,543,610     |
| <b>Kentucky 2.8%</b>  |              |               |
| County of Owen Kentucky, RB, Kentucky American Water Co. Project, Series B, 5.63%, 9/01/39  | 1,000        | 1,078,200     |
| Kentucky Economic Development Finance Authority, Refunding RB, Hospital Facilities, St. Elizabeth Medical Center, Inc., Series A, 5.50%, 5/01/39        | 8,000        | 9,022,400     |
| Lexington-Fayette Urban County Airport Board, Refunding GARB, Series A, 5.00%, 7/01/27  | 7,000        | 7,935,690     |
|   |              | 18,036,290    |
|   | <b>Par</b>   |               |
|   | <b>(000)</b> | <b>Value</b>  |
| <b>Municipal Bonds</b>  |              |               |
| <b>Louisiana 3.1%</b>   |              |               |
| Louisiana Local Government Environmental Facilities & Community Development Authority, RB, Westlake Chemical Corp. Project, Series A-1, 6.50%, 11/01/35 | \$ 2,615     | \$ 3,034,734  |
| Parish of St. Charles Louisiana, RB, Valero Energy Corp., 4.00%, 12/01/40 (d)   | 2,210        | 2,385,783     |
| Tobacco Settlement Financing Corp., Refunding RB, Asset-Backed, Series A: 5.25%, 5/15/31  | 3,420        | 3,696,781     |
| 5.25%, 5/15/32  | 4,375        | 4,686,019     |
| 5.25%, 5/15/33  | 4,750        | 5,064,497     |
| 5.25%, 5/15/35  | 1,500        | 1,600,395     |
|   |              | 20,468,209    |
| <b>Maine 1.0%</b>   |              |               |
| Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39  | 5,000        | 5,286,800     |
| Portland Housing Development Corp., Refunding RB, Senior Living, Retirement Facilities, Series A, 6.00%, 2/01/34  | 1,190        | 1,208,540     |
|   |              | 6,495,340     |
| <b>Maryland 1.8%</b>  |              |               |
| Maryland Community Development Administration, HRB, Series H, AMT, 5.10%, 9/01/37   | 1,835        | 1,867,351     |
| Maryland Community Development Administration, Refunding HRB, Residential, Series D, AMT, 4.90%, 9/01/42  | 3,250        | 3,280,583     |
| Maryland Health & Higher Educational Facilities Authority, Refunding RB: Charlestown Community Project, 6.25%, 1/01/41                                  | 2,000        | 2,203,480     |
| University of Maryland Medical System, 5.00%, 7/01/34   | 2,100        | 2,211,510     |

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|  |       |            |
|--|-------|------------|
| University of Maryland Medical System, 5.13%, 7/01/39  | 2,100 | 2,208,675  |
|  |       | 11,771,599 |
| <b>Massachusetts 5.6%</b>  |       |            |
| Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A,<br>7.00%, 3/01/19 | 3,010 | 3,351,846  |

BLACKROCK MUNIVEST FUND, INC.

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|  | Par          |              |
|--|--------------|--------------|
|  | (000)        | Value        |
| <b>Municipal Bonds</b>   |              |              |
| <b>Massachusetts (concluded)</b>   |              |              |
| Massachusetts HFA, RB, AMT:  |              |              |
| M/F Housing, Series A, 5.20%, 12/01/37   | \$ 2,865     | \$ 2,907,087 |
| S/F Housing, Series 130, 5.00%, 12/01/32   | 2,500        | 2,563,775    |
| Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42  | 6,550        | 6,746,303    |
| Massachusetts School Building Authority, RB, Dedicated Sales Tax, Senior, Series A, 5.00%, 5/15/43               | 4,500        | 5,037,210    |
| Massachusetts Water Resources Authority, RB, Series A, 6.50%, 7/15/19 (e)  | 13,855       | 15,738,864   |
|  |              | 36,345,085   |
| <b>Michigan 3.9%</b>   |              |              |
| City of Detroit Michigan Water Supply System, RB, 2nd Lien, Series B (AGM):                                      |              |              |
| 6.25%, 7/01/36   | 2,500        | 2,551,650    |
| 7.00%, 7/01/36   | 1,250        | 1,347,612    |
| Michigan State Hospital Finance Authority, Refunding RB, Series A:   |              |              |
| Henry Ford Health System, 5.25%, 11/15/46  | 7,950        | 8,062,731    |
| McLaren Health Care, 5.75%, 5/15/38  | 7,285        | 8,212,818    |
| Royal Oak Hospital Finance Authority, Refunding RB, William Beaumont Hospital, Series V, 8.25%, 9/01/18 (b)      | 4,100        | 5,341,685    |
|  |              | 25,516,496   |
| <b>Mississippi 4.8%</b>  |              |              |
| County of Lowndes Mississippi, Refunding RB, Solid Waste Disposal & Pollution Control, Weyerhaeuser Co. Project: |              |              |
| Series A, 6.80%, 4/01/22   | 9,160        | 10,904,064   |
| Series B, 6.70%, 4/01/22   | 4,500        | 5,310,090    |
| Mississippi Business Finance Corp., Refunding RB, System Energy Resource, Inc. Project, 5.88%, 4/01/22           | 15,000       | 15,008,250   |
|  |              | 31,222,404   |
| <b>Montana 0.2%</b>  |              |              |
| State of Montana Board of Regents, RB, 5.00%, 11/15/43   | 1,430        | 1,588,044    |
|  | <b>Par</b>   |              |
|  | <b>(000)</b> | <b>Value</b> |
| <b>Municipal Bonds</b>   |              |              |
| <b>Nebraska 1.0%</b>   |              |              |
| Central Plains Energy Project Nebraska, RB, Gas Project No. 3, 5.00%, 9/01/42                                    | \$ 6,200     | \$ 6,467,778 |
| <b>Nevada 0.9%</b>   |              |              |
| County of Clark Nevada Airport System, ARB, Series B, 5.75%, 7/01/42   | 5,000        | 5,822,450    |
| <b>New Hampshire 0.8%</b>  |              |              |
| New Hampshire Housing Finance Authority, Refunding RB, S/F Housing, Acquisition, Series H, AMT, 5.15%, 1/01/40   | 5,240        | 5,317,290    |
| <b>New Jersey 7.7%</b>   |              |              |
| New Jersey EDA, RB:  |              |              |
| Cigarette Tax, 5.75%, 6/15/14 (b)  | 3,695        | 3,703,609    |
| Continental Airlines, Inc. Project, Series A, AMT, 5.63%, 11/15/30   | 1,530        | 1,623,116    |
| Private Activity Bond, The Goethals Bridge Replacement Project, AMT, 5.13%, 1/01/34                              | 1,050        | 1,122,282    |
| Private Activity Bond, The Goethals Bridge Replacement Project, AMT, 5.38%, 1/01/43                              | 10,000       | 10,682,100   |
| New Jersey EDA, Refunding RB, School Facilities Construction, Series AA, 5.25%, 12/15/33                         | 10,000       | 10,913,300   |
| New Jersey Housing & Mortgage Finance Agency, RB, S/F Housing, Series AA, 6.38%, 10/01/28                        | 670          | 698,100      |
| New Jersey Transportation Trust Fund Authority, RB:  |              |              |
| CAB, Transportation System, Series A, 0.00%, 12/15/38 (a)  | 7,260        | 2,150,267    |
| Transportation Program, Series AA, 5.25%, 6/15/33  | 8,750        | 9,870,087    |
| Transportation System, Series B, 5.50%, 6/15/31  | 8,000        | 9,162,560    |
|  |              | 49,925,421   |
| <b>New York 4.6%</b>   |              |              |
|  | 4,150        | 4,743,824    |

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City of New York New York Municipal Water Finance Authority, Refunding RB, Water & Sewer System, 2nd General Resolution, Series FF-2, 5.50%, 6/15/40

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|   | Par<br>(000) | Value        |
|---|--------------|--------------|
| <b>Municipal Bonds</b>  |              |              |
| <b>New York (concluded)</b>   |              |              |
| Metropolitan Transportation Authority, RB, Series C:<br>6.25%, 11/15/23   | \$ 3,245     | \$ 3,875,828 |
| 6.50%, 11/15/28   | 14,925       | 17,943,880   |
| Port Authority of New York & New Jersey, ARB, Special Project, JFK International Air Terminal LLC<br>Project, Series 8, 6.00%, 12/01/36                                   | 3,165        | 3,543,502    |
|   |              | 30,107,034   |
| <b>North Carolina 0.6%</b>  |              |              |
| County of Gaston North Carolina Industrial Facilities & Pollution Control Financing Authority, RB,<br>Exempt Facilities, National Gypsum Co. Project, AMT, 5.75%, 8/01/35 | 4,105        | 4,085,214    |
| <b>Ohio 3.8%</b>  |              |              |
| Buckeye Tobacco Settlement Financing Authority, RB, Asset-Backed, Senior Turbo Term, Series A-2,<br>6.50%, 6/01/47  | 1,125        | 989,426      |
| County of Allen Ohio Hospital Facilities, Refunding RB, Catholic Healthcare Partners, Series A,<br>5.25%, 6/01/38   | 2,875        | 3,112,906    |
| County of Franklin Ohio, RB, Health Care Facilities Improvement, OPRS Communities Obligation<br>Group,<br>Series A, 6.13%, 7/01/40  | 1,690        | 1,808,148    |
| County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/37   | 1,915        | 2,311,558    |
| County of Montgomery Ohio, RB, Catholic Health Initiatives, Series D-2, 5.45%, 10/01/38   | 9,230        | 10,299,019   |
| County of Montgomery Ohio, Refunding RB, Catholic Health, Series A, 5.50%, 5/01/34  | 5,470        | 6,239,793    |
|   |              | 24,760,850   |
| <b>Pennsylvania 1.3%</b>  |              |              |
| City of Philadelphia Pennsylvania IDA, RB:<br>Arbor House, Inc. Project, Series E, 6.10%, 7/01/33   | 980          | 988,732      |
| Retirement Facilities, Rieder House Project, Series A, 6.10%, 7/01/33   | 1,315        | 1,326,717    |
| Commonwealth of Pennsylvania, GO, 1st Series, 5.00%, 6/15/29  | 5,000        | 5,899,450    |
|   | <b>Par</b>   |              |
| <b>Municipal Bonds</b>  |              |              |
| <b>Pennsylvania (concluded)</b>   |              |              |
| Delaware River Port Authority, RB, Series D, 5.00%, 1/01/40   | \$ 195       | \$ 208,086   |
|   |              | 8,422,985    |
| <b>South Carolina 0.2%</b>  |              |              |
| County of Georgetown South Carolina, Refunding RB, International Paper Co. Project, Series A, AMT,<br>5.55%, 12/01/29   | 1,000        | 1,024,440    |
| <b>Texas 12.7%</b>  |              |              |
| Brazos River Authority, Refunding RB, Texas Utility Co., Series A, AMT, 7.70%, 4/01/33 (f)(g)   | 3,055        | 160,388      |
| Central Texas Regional Mobility Authority, Refunding RB, Senior Lien:<br>5.75%, 1/01/31   | 1,000        | 1,115,720    |
| 6.00%, 1/01/41  | 4,300        | 4,767,195    |
| Series A, 5.00%, 1/01/43  | 6,925        | 7,290,017    |
| City of Houston Texas Airport System, Refunding RB, United Airlines, Inc. Terminal E Project, AMT<br>(c):<br>4.75%, 7/01/24   | 3,330        | 3,376,820    |
| 5.00%, 7/01/29  | 2,665        | 2,695,621    |
| County of Harris Texas Cultural Education Facilities Finance Corp., RB, 1st Mortgage, Brazos<br>Presbyterian Homes, Inc. Project, Series B, 7.00%, 1/01/43                | 850          | 954,201      |
| County of Harris Texas Health Facilities Development Corp., Refunding RB, Memorial Hermann<br>Healthcare System,<br>Series B (b):<br>7.13%, 12/01/18                      | 3,500        | 4,431,210    |
| 7.25%, 12/01/18   | 5,400        | 6,866,316    |
|   | 5,000        | 6,020,650    |

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|   |       |           |
|---|-------|-----------|
| County of Tarrant Texas Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare, 6.00%, 8/15/45 |       |           |
| La Vernia Higher Education Finance Corp., RB, KIPP, Inc., Series A, 6.25%, 8/15/39                                | 925   | 1,031,578 |
| Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40                       | 3,600 | 3,816,864 |
| New Hope Cultural Education Facilities Corp., HRB, University & College Revenue (AGM), 5.00%, 4/01/46             | 680   | 726,220   |

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2014

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|  | Par<br>(000) | Value              |
|--|--------------|--------------------|
| <b>Municipal Bonds</b>   |              |                    |
| <b>Texas (concluded)</b>   |              |                    |
| New Hope Cultural Education Facilities Corp., Refunding RB, 1st Mortgage, Morningside Ministries Project, 6.25%, 1/01/33               | \$ 1,600     | \$ 1,716,224       |
| North Texas Education Finance Corp., ERB, Uplift Education, Series A, 5.13%, 12/01/42  | 1,000        | 1,049,840          |
| North Texas Tollway Authority, Refunding RB, 1st Tier, Series A, 6.25%, 1/01/39  | 3,500        | 4,009,705          |
| Texas Private Activity Bond Surface Transportation Corp., RB, Senior Lien:   |              |                    |
| LBJ Infrastructure Group LLC, LBJ Freeway Managed Lanes Project, 7.00%, 6/30/40  | 10,000       | 11,902,400         |
| NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39  | 4,710        | 5,522,710          |
| Texas State University System, Refunding RB (AGM), 5.00%, 3/15/30  | 5,660        | 6,034,126          |
| Texas Transportation Commission, Refunding RB, Central Texas Turnpike System, 1st Tier, Series A, 4.00%, 8/15/38                       | 9,375        | 8,953,969          |
|  |              | 82,441,774         |
| <b>Vermont 0.0%</b>  |              |                    |
| Vermont Educational & Health Buildings Financing Agency, RB, Developmental & Mental Health, Series A, 6.38%, 6/15/22                   | 30           | 30,567             |
| <b>Virginia 4.7%</b>   |              |                    |
| City of Portsmouth Virginia, GO, Refunding, Series D, 5.00%, 7/15/34   | 3,105        | 3,489,834          |
| County of Fairfax Virginia EDA, Refunding RB, Goodwin House, Inc.:<br>5.13%, 10/01/37  | 2,000        | 2,067,620          |
| 5.13%, 10/01/42  | 6,015        | 6,188,052          |
| Virginia Commonwealth Transportation Board, RB, Capital Projects, 5.00%, 5/15/32   | 8,000        | 8,982,000          |
| Virginia HDA, Refunding RB, S/F Housing, Sub-Series A-3, AMT, 5.05%, 7/01/26   | 1,325        | 1,378,450          |
|  | <b>Par</b>   |                    |
|  | <b>(000)</b> | <b>Value</b>       |
| <b>Municipal Bonds</b>   |              |                    |
| <b>Virginia (concluded)</b>  |              |                    |
| Virginia Small Business Financing Authority, RB, Senior Lien, Elizabeth River Crossings OpCo LLC Project, AMT:<br>6.00%, 1/01/37       | \$ 2,620     | \$ 2,893,161       |
| 5.50%, 1/01/42   | 5,140        | 5,467,058          |
|  |              | 30,466,175         |
| <b>Washington 4.5%</b>   |              |                    |
| Energy Northwest, Refunding RB, Series B, 7.13%, 7/01/16   | 14,320       | 16,312,055         |
| Washington Health Care Facilities Authority, RB, Catholic Health Initiatives, Series A, 5.75%, 1/01/45                                 | 4,010        | 4,537,355          |
| Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36                      | 7,000        | 8,107,050          |
|  |              | 28,956,460         |
| <b>West Virginia 0.4%</b>  |              |                    |
| West Virginia Hospital Finance Authority, Refunding RB, Improvement, Charleston Area Medical Center, Inc.,<br>Series A, 5.63%, 9/01/32 | 2,500        | 2,684,450          |
| <b>Wisconsin 1.0%</b>  |              |                    |
| Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health, Inc.,<br>Series C, 5.25%, 4/01/39     | 6,100        | 6,554,023          |
| <b>Wyoming 1.3%</b>  |              |                    |
| County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, Remarketing, 5.25%, 7/15/26                                       | 4,500        | 4,932,945          |
| Wyoming Community Development Authority, Refunding RB, Series 2 & 3, 4.05%, 12/01/38   | 3,250        | 3,244,995          |
|  |              | 8,177,940          |
| <b>Total Municipal Bonds 112.0%</b>  |              | <b>726,730,461</b> |



## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|  | Par          |               |
|--|--------------|---------------|
|  | (000)        | Value         |
| <b>Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts (h)</b>  |              |               |
| <b>Arizona 0.6%</b>  |              |               |
| City of Phoenix Arizona Civic Improvement Corp., Refunding RB, Water System, Junior Lien, Series A, 5.00%, 7/01/34                                 | \$ 3,500     | \$ 3,944,920  |
| <b>California 3.5%</b>   |              |               |
| University of California, RB, General, Series O, 5.25%, 5/15/39  | 20,000       | 22,916,600    |
| <b>Connecticut 2.0%</b>  |              |               |
| Connecticut State Health & Educational Facility Authority, RB, Yale University, Series Z-3, 5.05%, 7/01/42   | 12,000       | 13,188,360    |
| <b>District of Columbia 1.3%</b>   |              |               |
| District of Columbia Water & Sewer Authority, Refunding RB, Senior Lien, Series A, 5.50%, 10/01/39   | 7,495        | 8,477,920     |
| <b>Florida 2.4%</b>  |              |               |
| County of Miami-Dade Florida Water & Sewer System, RB (AGM), 5.00%, 10/01/39   | 14,747       | 15,820,068    |
| <b>Illinois 3.0%</b>   |              |               |
| State of Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/38   | 10,000       | 11,591,100    |
| State of Illinois Toll Highway Authority, RB, Senior Priority, Series B, 5.50%, 1/01/33  | 6,999        | 7,783,346     |
|  |              | 19,374,446    |
| <b>Kentucky 1.6%</b>   |              |               |
| County of Louisville & Jefferson Kentucky Metropolitan Government Parking Authority, RB, River City, Inc., 1st Mortgage, Series A, 5.38%, 12/01/39 | 9,195        | 10,540,596    |
| <b>Maryland 0.8%</b>   |              |               |
| State of Maryland Transportation Authority, RB, Transportation Facilities Project (AGM), 5.00%, 7/01/41  | 4,710        | 5,226,310     |
| <b>Nevada 2.9%</b>   |              |               |
| County of Clark Nevada Water Reclamation District, GO, Limited Tax, Series B, 5.75%, 7/01/34   | 15,789       | 18,544,415    |
|  | <b>Par</b>   |               |
| <b>Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts (h)</b>  |              |               |
|  | <b>(000)</b> | <b>Value</b>  |
| <b>New York 5.7%</b>   |              |               |
| City of New York New York Municipal Water Finance Authority, Refunding RB, Water & Sewer System, 2nd General Resolution, Series DD, 5.00%, 6/15/37 | \$ 24,199    | \$ 25,958,753 |
| New York Liberty Development Corp., Refunding RB, 4 World Trade Center Project, 5.75%, 11/15/51 (i)  | 10,000       | 11,214,600    |
|  |              | 37,173,353    |
| <b>North Carolina 3.0%</b>   |              |               |
| North Carolina Capital Facilities Finance Agency, Refunding RB:  |              |               |
| Duke University Project, Series A, 5.00%, 10/01/41   | 12,678       | 13,632,363    |
| Wake Forest University, 5.00%, 1/01/38   | 5,000        | 5,602,800     |
|  |              | 19,235,163    |
| <b>Ohio 2.2%</b>   |              |               |
| Ohio Higher Educational Facility Commission, RB, Cleveland Clinic Health, Series A, 5.25%, 1/01/33   | 4,400        | 4,849,064     |
| State of Ohio, RB, Cleveland Clinic Health Obligated Group, Series B, 5.50%, 1/01/34   | 8,500        | 9,574,655     |
|  |              | 14,423,719    |
| <b>Oregon 2.1%</b>   |              |               |
| State of Oregon Housing & Community Services Department, HRB, M/F Housing, Series A, AMT, 4.95%, 7/01/30   | 13,000       | 13,552,883    |
| <b>South Carolina 0.4%</b>   |              |               |
| State of South Carolina Housing Finance & Development Authority, Refunding RB, S/F Housing, Series B-1, 5.55%, 7/01/39                             | 2,339        | 2,400,534     |
| <b>Texas 7.9%</b>  |              |               |
| City of Houston Texas, Refunding RB, Airport System, Senior Lien, Series A, 5.50%, 7/01/34   | 8,333        | 9,449,389     |
| City of Houston Texas Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40  | 10,000       | 11,239,984    |

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2014

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## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

|   | Par           |                |
|---|---------------|----------------|
|   | (000)         | Value          |
| <b>Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts (h)</b>   |               |                |
| <b>Texas (concluded)</b>  |               |                |
| County of Harris Texas Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27 (e) | \$ 20,970     | \$ 26,854,392  |
| Texas Department of Housing & Community Affairs, RB, S/F Mortgage, Series B, AMT (Ginnie Mae), 5.25%, 9/01/32                     | 3,407         | 3,498,204      |
|   |               | 51,041,969     |
| <b>Virginia 1.2%</b>  |               |                |
| County of Fairfax Virginia IDA, Refunding RB, Health Care, Inova Health System, Series A, 5.50%, 5/15/35                          | 2,099         | 2,345,776      |
| Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40                                    | 5,002         | 5,377,639      |
|   |               | 7,723,415      |
| <b>Washington 4.3%</b>  |               |                |
| Central Puget Sound Regional Transit Authority, RB, Series A:<br>5.00%, 11/01/34  | 5,000         | 5,513,600      |
| 5.00%, 11/01/36   | 6,000         | 6,616,320      |
| (AGM), 5.00%, 11/01/32  | 14,007        | 15,441,383     |
|   |               | 27,571,303     |
| <b>Total Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts 44.9%</b>   |               | 291,155,974    |
| <b>Total Long-Term Investments</b>  |               | 1,017,886,435  |
| <b>(Cost \$925,668,995) 156.9%</b>  |               |                |
| <b>Short-Term Securities</b>  |               |                |
|   | <b>Shares</b> | <b>Value</b>   |
| FFI Institutional Tax-Exempt Fund, 0.03% (j)(k)   | 16,035,751    | \$ 16,035,751  |
| <b>Total Short-Term Securities</b>  |               | 16,035,751     |
| <b>(Cost \$16,035,751) 2.5%</b>   |               |                |
| <b>Total Investments (Cost \$941,704,746*) 159.4%</b>   |               | 1,033,922,186  |
| <b>Other Assets Less Liabilities 0.6%</b>   |               | 3,986,804      |
| <b>Liability for TOB Trust Certificates, Including Interest Expense and Fees Payable (22.4%)</b>                                  |               | (145,356,569)  |
| <b>VMTP Shares, at Liquidation Value (37.6%)</b>  |               | (243,800,000)  |
| <b>Net Assets Applicable to Common Shares 100.0%</b>  |               | \$ 648,752,421 |

\* As of May 31, 2014, gross unrealized appreciation and depreciation based on cost for federal income tax purposes were as follows:

|                               |                |
|-------------------------------|----------------|
| Tax cost                      | \$ 798,988,963 |
| Gross unrealized appreciation | \$ 96,055,044  |
| Gross unrealized depreciation | (6,447,502)    |
| Net unrealized appreciation   | \$ 89,607,542  |

## Notes to Schedule of Investments

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(a) Zero-coupon bond.

(b) U.S. 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.

(c) When-issued security. Unsettled when-issued transactions were as follows:

| Counterparty                   | Value        | Unrealized<br>Appreciation |
|--------------------------------|--------------|----------------------------|
| Barclays Bank PLC              | \$ 1,827,818 | \$ 4,367                   |
| Citigroup Global Markets, Inc. | \$ 6,072,441 | \$ 158,642                 |

(d) Variable rate security. Rate shown is as of report date.

(e) Security is collateralized by municipal or U.S. Treasury obligations.

(f) Non-income producing security.

(g) Issuer filed for bankruptcy and/or is in default of principal and/or interest payments.

## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

- (h) Represent bonds transferred to a TOB. In exchange for which the Fund acquired residual interest certificates. These bonds serve as collateral in a financing transaction.
- (i) All or a portion of security is subject to a recourse agreement, which may require the Fund to pay the liquidity provider in the event there is a shortfall between the TOB trust certificates and proceeds received from the sale of the security contributed to the TOB trust. In the case of a shortfall, the aggregate maximum potential amount the Fund could ultimately be required to pay under the agreement, which expires on November 15, 2019 is \$5,295,486.
- (j) Investments in issuers considered to be an affiliate of the Fund during the period ended May 31, 2014, for purposes of Section 2(a)(3) of the Investment Company Act of 1940, as amended, were as follows:

| Affiliate                         | Shares Held<br>at August 31, | Net       | Shares Held<br>at May 31, | Income   |
|-----------------------------------|------------------------------|-----------|---------------------------|----------|
|                                   | 2013                         | Activity  | 2014                      |          |
| FFI Institutional Tax-Exempt Fund | 6,144,050                    | 9,891,701 | 16,035,751                | \$ 2,406 |

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

## Portfolio Abbreviations

|              |   |
|--------------|---|
| <b>AGC</b>   | Assured Guarantee Corp.                 |
| <b>AGM</b>   | Assured Guaranty Municipal Corp.        |
| <b>AMBAC</b> | American Municipal Bond Assurance Corp. |
| <b>AMT</b>   | Alternative Minimum Tax (subject to)    |
| <b>ARB</b>   | Airport Revenue Bonds                   |
| <b>CAB</b>   | Capital Appreciation Bonds              |
| <b>COP</b>   | Certificates of Participation           |
| <b>EDA</b>   | Economic Development Authority          |
| <b>ERB</b>   | Education Revenue Bonds                 |
| <b>GARB</b>  | General Airport Revenue Bonds           |
| <b>GO</b>    | General Obligation Bonds                |
| <b>HDA</b>   | Housing Development Authority           |
| <b>HFA</b>   | Housing Finance Agency                  |
| <b>HRB</b>   | Housing Revenue Bonds                   |
| <b>IDA</b>   | Industrial Development Authority        |
| <b>IDB</b>   | Industrial Development Board            |
| <b>LRB</b>   | Lease Revenue Bonds                     |
| <b>M/F</b>   | Multi-Family                            |
| <b>NPFGC</b> | National Public Finance Guarantee Corp. |
| <b>RB</b>    | Revenue Bonds                           |
| <b>S/F</b>   | Single-Family                           |

Financial futures contracts outstanding as of May 31, 2014 were as follows:

| Contracts Sold | Issue                      | Exchange               | Expiration     | Notional Value | Unrealized Appreciation |
|----------------|----------------------------|------------------------|----------------|----------------|-------------------------|
| (650)          | 10-Year U.S. Treasury Note | Chicago Board of Trade | September 2014 | \$ 81,585,156  | \$ 40,652               |



## Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

**Fair Value Measurements** Various inputs are used in determining the fair value of investments and derivative financial instruments. These inputs to valuation techniques are categorized into a disclosure hierarchy consisting of three broad levels for financial reporting purposes as follows:

**Level 1** unadjusted price quotations in active markets/exchanges for identical assets or liabilities that the Fund has the ability to access

**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)

**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 and derivative financial instruments)

The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). Accordingly, the degree of judgment exercised in determining fair value is greatest for instruments categorized in Level 3. The inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, for disclosure purposes, the fair value hierarchy classification is determined based on the lowest level input that is significant to the fair value measurement in its entirety.

Changes in valuation techniques may result in transfers into or out of an assigned level within the disclosure hierarchy. In accordance with the Fund's policy, transfers between different levels of the fair value disclosure hierarchy are deemed to have occurred as of the beginning of the reporting period. The categorization of a value determined for investments and derivative financial instruments is based on the pricing transparency of the investment and derivative financial instrument and is not necessarily an indication of the risks associated with investing in those securities. For information about the Fund's policy regarding valuation of investments and derivative financial instruments, please refer to the Fund's most recent financial statements as contained in its semi-annual report.

The following tables summarize the Fund's investments and derivative financial instruments categorized in the disclosure hierarchy as of May 31, 2014:

|                                    | Level 1       | Level 2          | Level 3 | Total            |
|------------------------------------|---------------|------------------|---------|------------------|
| <b>Assets:</b>                     |               |                  |         |                  |
| Investments:                       |               |                  |         |                  |
| Long-Term Investments <sup>1</sup> |               | \$ 1,017,886,435 |         | \$ 1,017,886,435 |
| Short-Term Securities              | \$ 16,035,751 |                  |         | 16,035,751       |
| <b>Total</b>                       | \$ 16,035,751 | \$ 1,017,886,435 |         | \$ 1,033,922,186 |

<sup>1</sup> See above Schedule of Investments for values in each state or political subdivision.

|   | Level 1   | Level 2 | Level 3 | Total     |
|---|-----------|---------|---------|-----------|
| <b>Derivative Financial Instruments<sup>2</sup></b> |           |         |         |           |
| <b>Assets:</b>                                      |           |         |         |           |
| Interest rate contracts                             | \$ 40,652 |         |         | \$ 40,652 |

<sup>2</sup> Derivative financial instruments are financial futures contracts, which are valued at the unrealized appreciation/depreciation on the instrument.



## Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

The Fund may hold assets and/or liabilities in which the fair value approximates the carrying amount for financial reporting purposes. As of May 31, 2014, such assets and/or liabilities are categorized within the disclosure hierarchy as follows:

|  | Level 1    | Level 2          | Level 3 | Total            |
|--|------------|------------------|---------|------------------|
| <b>Assets:</b>                               |            |                  |         |                  |
| Cash pledged for financial futures contracts | \$ 888,000 |                  |         | \$ 888,000       |
| <b>Liabilities:</b>                          |            |                  |         |                  |
| TOB trust certificates                       |            | \$ (145,325,681) |         | (145,325,681)    |
| VMTP Shares                                  |            | (243,800,000)    |         | (243,800,000)    |
| <b>Total</b>                                 | \$ 888,000 | \$ (389,125,681) |         | \$ (388,237,681) |

There were no transfers between levels during the period ended May 31, 2014.

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2014

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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 13a-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/ John M. Perlowski  
John M. Perlowski  
Chief Executive Officer (principal executive officer) of  
BlackRock MuniVest Fund, Inc.

Date: July 23, 2014

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/ John M. Perlowski  
John M. Perlowski  
Chief Executive Officer (principal executive officer) of  
BlackRock MuniVest Fund, Inc.

Date: July 23, 2014

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

Date: July 23, 2014