

BLACKROCK MUNIVEST FUND, INC.

Form N-Q

July 24, 2017

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 52nd Street, New York, NY 10055

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

Date of fiscal year end: 08/31/2017

Date of reporting period: 05/31/2017

Item 1 Schedule of Investments

Schedule of Investments May 31, 2017 (Unaudited)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Municipal Bonds | | |
| Alabama 3.0% | | |
| City of Selma Alabama IDB, RB, Gulf Opportunity Zone, International Paper Co. Project, Series A: 5.80%, 5/01/34 | \$ 1,850 | \$ 2,054,573 |
| 5.38%, 12/01/35 | 1,000 | 1,117,040 |
| Lower Alabama Gas District, RB, Series A, 5.00%, 9/01/46 | 5,555 | 6,907,587 |
| State of Alabama Docks Department, Refunding RB, 6.00%, 10/01/20 (a) | 7,610 | 8,817,555 |
| | | 18,896,755 |
| Alaska 0.5% | | |
| City of Anchorage Alaska Electric Revenue, Refunding RB, Series A, 5.00%, 12/01/41 | 3,000 | 3,398,130 |
| Arizona 4.0% | | |
| Arizona IDA, Refunding RB, Basis Schools, Inc. Projects, Series A, 5.38%, 7/01/50 (b) | 2,500 | 2,596,500 |
| City of Phoenix Arizona Civic Improvement Corp., Refunding RB, Junior Lien, Series A, 5.00%, 7/01/40 | 2,000 | 2,179,140 |
| City of Phoenix Arizona IDA, RB, Candeo School, Inc. Project: 6.63%, 7/01/33 | 2,245 | 2,534,807 |
| 6.88%, 7/01/44 | 3,440 | 3,899,240 |
| City of Phoenix Arizona IDA, Refunding RB (b): Basis Schools, Inc. Projects, 5.00%, 7/01/35 | 600 | 616,026 |
| Basis Schools, Inc. Projects, 5.00%, 7/01/45 | 760 | 774,136 |
| Basis Schools, Inc. Projects, Series A, 5.00%, 7/01/35 | 1,125 | 1,155,049 |
| Legacy Traditional School Projects, 5.00%, 7/01/45 | 700 | 711,137 |
| County of Maricopa Arizona Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 6/01/35 | 3,300 | 3,598,980 |
| Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37 | 5,725 | 6,954,959 |
| | | 25,019,974 |
| California 6.3% | | |
| California Health Facilities Financing Authority, RB: St. Joseph Health System, Series A, 5.75%, 7/01/39 | 5,000 | 5,423,400 |
| Municipal Bonds | | |
| California (continued) | | |
| California Health Facilities Financing Authority, RB (continued): Sutter Health, Series B, 6.00%, 8/15/42 | \$ 5,600 | \$ 6,406,512 |
| California Health Facilities Financing Authority, Refunding RB, Dignity Health, Series A, 6.00%, 7/01/19 (a) | 1,055 | 1,165,564 |
| City of Los Angeles California Department of Airports, Refunding ARB, Los Angeles International Airport, Series A, 5.25%, 5/15/39 | 1,200 | 1,294,008 |
| Los Angeles Community College District, GO, Refunding, Election of 2008, Series A, 6.00%, 8/01/19 (a) | 9,585 | 10,632,161 |
| Oakland Unified School District/Alameda County, GO, Series A, 5.00%, 8/01/40 | 1,000 | 1,156,410 |
| Poway Unified School District, GO, Refunding, CAB, School Facilities Improvement District No. 2007-1, Election of 2008, Series B, 0.00%, 8/01/46 (c) | 10,000 | 2,975,100 |
| State of California, GO, Various Purposes, 6.50%, 4/01/33 | 9,675 | 10,658,367 |
| | | 39,711,522 |
| Colorado 0.8% | | |
| Centerra Metropolitan District No. 1, Tax Allocation Bonds, 5.00%, 12/01/47 | 1,025 | 1,037,741 |
| Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33 | 2,500 | 2,643,450 |
| Copperleaf Metropolitan District No. 2, GO, Refunding, 5.75%, 12/01/45 | 1,000 | 1,044,740 |
| Regional Transportation District, COP, Refunding, Series A, 5.38%, 6/01/31 | 385 | 424,358 |
| | | 5,150,289 |
| Connecticut 1.9% | | |
| Connecticut State Health & Educational Facility Authority, RB, Yale University, Series Z3, 5.05%, 7/01/42 | 12,000 | 12,042,480 |

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par (000) | Value |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| Delaware 0.4% | | |
| County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Power LLC Project, 6.00%, 10/01/40 | \$ 2,500 | \$ 2,699,350 |
| District of Columbia 0.2% | | |
| Metropolitan Washington DC Airports Authority, Refunding RB, Dulles Toll Road, 1st Senior Lien, Series A: | | |
| 5.00%, 10/01/39 | 415 | 445,374 |
| 5.25%, 10/01/44 | 650 | 700,069 |
| | | 1,145,443 |
| Florida 8.8% | | |
| Celebration Pointe Community Development District, Special Assessment Bonds, County of Alachua Florida (b): | | |
| 5.00%, 5/01/32 | 905 | 920,539 |
| 5.00%, 5/01/48 | 2,270 | 2,276,946 |
| County of Miami-Dade Florida, GO, Building Better Communities Program (a): | | |
| Series B, 6.38%, 7/01/18 | 4,630 | 4,904,189 |
| Series B-1, 5.63%, 7/01/18 | 5,000 | 5,255,750 |
| County of Miami-Dade Florida, Refunding RB, Transit System Sales Surtax, 5.00%, 7/01/42 | 3,750 | 4,189,200 |
| County of Miami-Dade Florida Aviation, Refunding ARB, Miami International Airport: | | |
| Series A, AMT (AGC), 5.00%, 10/01/40 | 10,000 | 10,100,700 |
| Series A-1, 5.38%, 10/01/41 | 10,290 | 11,369,112 |
| County of Miami-Dade Florida Educational Facilities Authority, Refunding RB, University of Miami, Series A, 5.00%, 4/01/45 | 4,625 | 5,194,199 |
| County of Miami-Dade Florida Expressway Authority, RB, Toll System, Series A (AGM), 5.00%, 7/01/35 | 8,900 | 9,789,822 |
| Lakewood Ranch Stewardship District, Special Assessment Bonds, Lakewood National & Polo Run Projects: | | |
| 4.63%, 5/01/27 | 255 | 261,005 |
| 5.25%, 5/01/37 | 470 | 481,666 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Florida (continued) | | |
| Lakewood Ranch Stewardship District, Special Assessment Bonds, Lakewood National & Polo Run Projects (continued): | | |
| 5.38%, 5/01/47 | \$ 770 | \$ 790,505 |
| | | 55,533,633 |
| Georgia 0.8% | | |
| City of Atlanta Georgia Department of Aviation, Refunding GARB, Series B, AMT, 5.00%, 1/01/29 | 1,070 | 1,180,445 |
| DeKalb Georgia Private Hospital Authority, Refunding RB, Children s Healthcare, 5.25%, 11/15/39 | 3,335 | 3,637,918 |
| | | 4,818,363 |
| Hawaii 0.9% | | |
| State of Hawaii Harbor System, RB, Series A, 5.50%, 7/01/35 | 5,000 | 5,517,550 |
| Illinois 9.7% | | |
| City of Chicago Illinois Transit Authority, RB, Sales Tax Receipts, 5.25%, 12/01/36 | 2,110 | 2,285,341 |
| City of Chicago Illinois Wastewater Transmission, Refunding RB, 2nd Lien, Series C, 5.00%, 1/01/39 | 1,000 | 1,088,700 |
| City of Chicago Illinois Waterworks, Refunding RB, 2nd Lien (AGM), 5.25%, 11/01/33 | 1,330 | 1,384,357 |
| County of Cook Illinois Community College District No. 508, GO, University & College Improvements, 5.25%, 12/01/31 | 5,000 | 5,402,150 |
| Illinois Finance Authority, RB: | | |
| Advocate Health Care Network, Series D, 6.50%, 11/01/18 (a) | 9,700 | 10,462,323 |
| Memorial Health System, Series A, 5.25%, 7/01/44 | 1,785 | 1,918,322 |
| Illinois Finance Authority, Refunding RB: | | |
| Northwestern Memorial Hospital, Series A, 6.00%, 8/15/39 | 9,000 | 9,914,490 |
| OSF Healthcare System, 6.00%, 5/15/20 (a) | 3,205 | 3,652,161 |
| OSF Healthcare System, 6.00%, 5/15/39 | 1,455 | 1,609,710 |
| Presence Health Network, Series C, 4.00%, 2/15/41 | 2,205 | 2,045,204 |

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par (000) | Value |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| Illinois (continued) | | |
| Illinois Finance Authority, Refunding RB (continued): | | |
| Presence Health Network, Series C, 5.00%, 2/15/41 | \$ 3,600 | \$ 3,880,980 |
| Railsplitter Tobacco Settlement Authority, RB, 6.00%, 6/01/28 | 2,645 | 3,028,393 |
| Regional Transportation Authority, RB: | | |
| Series A (AMBAC), 7.20%, 11/01/20 | 1,595 | 1,774,326 |
| Series C (NPFGC), 7.75%, 6/01/20 | 2,230 | 2,451,305 |
| Village of Hodgkins Illinois, RB, Metropolitan Biosolids Management LLC Project, AMT, 6.00%, 11/01/23 | 10,000 | 10,016,400 |
| | | 60,914,162 |
| Indiana 2.3% | | |
| City of Valparaiso Indiana, RB, Exempt Facilities, Pratt Paper LLC Project, AMT, 6.75%, 1/01/34 | 2,250 | 2,681,662 |
| Indiana Finance Authority, RB, Baptist Healthcare System Obligated Group, Series A, 5.00%, 8/15/51 | 4,920 | 5,311,534 |
| Indiana Finance Authority, Refunding RB, Deaconess Health System, Series A, 5.00%, 3/01/39 | 3,000 | 3,376,680 |
| State of Indiana Finance Authority, RB, Private Activity Bond, Ohio River Bridges, Series A, AMT, 5.00%, 7/01/40 | 2,640 | 2,826,094 |
| | | 14,195,970 |
| Iowa 0.9% | | |
| Iowa Finance Authority, Refunding RB, Midwestern Disaster Area, Iowa Fertilizer Co. Project, 5.25%, 12/01/25 | 4,500 | 4,649,985 |
| Iowa Tobacco Settlement Authority, Refunding RB, Asset-Backed, CAB, Series B, 5.60%, 6/01/34 | 1,000 | 1,000,040 |
| | | 5,650,025 |
| Kansas 1.0% | | |
| City of Lenexa Kansas, Refunding RB, Lakeview Village, Inc., Series A, 5.00%, 5/15/43 | 1,965 | 2,014,538 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Kansas (continued) | | |
| Wyandotte County-Kansas City Unified Government Utility System, RB, Series A, 5.00%, 9/01/40 | \$ 3,700 | \$ 4,202,349 |
| | | 6,216,887 |
| Kentucky 2.8% | | |
| County of Owen Kentucky, RB, Kentucky American Water Co. Project, Series B, 5.63%, 9/01/39 | 1,000 | 1,073,600 |
| Kentucky Economic Development Finance Authority, Refunding RB, Hospital Facilities, St. Elizabeth Medical Center, Inc., Series A, 5.50%, 5/01/19 (a) | 8,000 | 8,681,680 |
| Lexington-Fayette Urban County Airport Board, Refunding GARB, Series A, 5.00%, 7/01/19 (a) | 7,000 | 7,578,830 |
| | | 17,334,110 |
| Louisiana 3.3% | | |
| Louisiana Local Government Environmental Facilities & Community Development Authority, RB, Westlake Chemical Corp. Project, Series A-1, 6.50%, 11/01/35 | 2,615 | 2,985,415 |
| Parish of St. Charles Louisiana, RB, Valero Energy Corp., 4.00%, 12/01/40 (d) | 2,210 | 2,351,197 |
| Tobacco Settlement Financing Corp., Refunding RB, Asset-Backed, Series A: | | |
| 5.25%, 5/15/31 | 3,420 | 3,679,817 |
| 5.25%, 5/15/32 | 4,375 | 4,764,113 |
| 5.25%, 5/15/33 | 4,750 | 5,149,855 |
| 5.25%, 5/15/35 | 1,500 | 1,637,205 |
| | | 20,567,602 |
| Maine 1.0% | | |
| Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39 | 5,000 | 5,331,500 |

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par (000) | Value |
|----------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| Maine (continued) | | |
| Portland Housing Development Corp., Refunding RB, Senior Living, Retirement Facilities, Series A, 6.00%, 2/01/34 | \$ 1,190 | \$ 1,191,666 |
| | | 6,523,166 |
| Maryland 3.2% | | |
| City of Baltimore Maryland, Refunding RB, East Baltimore Research Park, Series A, 4.50%, 9/01/33 (e) | 545 | 558,451 |
| County of Howard Maryland Housing Commission, RB, M/F Housing, Woodfield Oxford Square Apartments, 5.00%, 12/01/42 | 4,935 | 5,603,989 |
| Maryland Health & Higher Educational Facilities Authority, Refunding RB: | | |
| Charlestown Community Project, 6.25%, 1/01/21 (a) | 2,000 | 2,357,820 |
| Meritus Medical Center Issue, 5.00%, 7/01/40 | 6,350 | 6,982,523 |
| University of Maryland Medical System, 5.00%, 7/01/19 (a) | 1,990 | 2,154,135 |
| University of Maryland Medical System, 5.13%, 7/01/19 (a) | 2,100 | 2,278,605 |
| University of Maryland Medical System, 5.00%, 7/01/34 | 110 | 115,615 |
| | | 20,051,138 |
| Massachusetts 3.0% | | |
| Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A, 7.00%, 3/01/19 | 740 | 770,954 |
| Massachusetts Development Finance Agency, RB, Emerson College Issue, Series A: | | |
| 5.00%, 1/01/47 | 845 | 938,694 |
| 5.25%, 1/01/42 | 1,895 | 2,166,288 |
| Massachusetts HFA, RB, M/F Housing, Series A, AMT, 5.20%, 12/01/37 | 2,865 | 2,869,154 |
| Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42 | 5,070 | 5,403,048 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Massachusetts (continued) | | |
| Massachusetts Water Resources Authority, RB, Series A, 6.50%, 7/15/19 (f) | \$ 6,685 | \$ 6,984,087 |
| | | 19,132,225 |
| Michigan 2.4% | | |
| City of Detroit Michigan Water Supply System Revenue, RB, 2nd Lien, Series B (AGM): | | |
| 6.25%, 7/01/19 (a) | 2,495 | 2,766,007 |
| 6.25%, 7/01/36 | 5 | 5,457 |
| Michigan State Hospital Finance Authority, Refunding RB, McLaren Health Care, Series A, 5.75%, 5/15/18 (a) | 7,285 | 7,623,097 |
| Royal Oak Michigan Hospital Finance Authority, Refunding RB, William Beaumont Hospital, Series V, 8.25%, 9/01/18 (a) | 4,100 | 4,471,460 |
| | | 14,866,021 |
| Minnesota 0.2% | | |
| City of Cologne Minnesota Charter School, LRB, Cologne Academy Project, Series A, 5.00%, 7/01/45 | 1,500 | 1,529,505 |
| Mississippi 4.5% | | |
| County of Lowndes Mississippi, Refunding RB, Solid Waste Disposal & Pollution Control, Weyerhaeuser Co. Project: | | |
| Series A, 6.80%, 4/01/22 | 9,160 | 10,701,262 |
| Series B, 6.70%, 4/01/22 | 4,500 | 5,240,385 |
| Mississippi Business Finance Corp., Refunding RB, System Energy Resource, Inc. Project, 5.88%, 4/01/22 | 9,305 | 9,396,375 |
| Mississippi Development Bank, Refunding RB, Municipal Energy Agency Of Mississippi, Series A (AGM), 4.00%, 3/01/41 | 3,000 | 3,112,080 |
| | | 28,450,102 |
| Nebraska 1.1% | | |
| Central Plains Nebraska Energy Project, RB, Gas Project No. 3, 5.00%, 9/01/42 | 6,200 | 6,666,798 |
| New Hampshire 0.7% | | |
| New Hampshire Housing Finance Authority, Refunding RB, S/F Housing, Acquisition, Series H, AMT, 5.15%, 1/01/40 | 4,170 | 4,174,128 |

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BLACKROCK MUNIVEST FUND, INC.

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par (000) | Value |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| New Jersey 8.7% | | |
| Casino Reinvestment Development Authority, Refunding RB, 5.25%, 11/01/44 | \$ 1,400 | \$ 1,428,364 |
| New Jersey EDA, RB: | | |
| Continental Airlines, Inc. Project, Series A, AMT, 5.63%, 11/15/30 | 1,530 | 1,720,516 |
| Goethals Bridge Replacement Project, AMT, Private Activity Bond, 5.38%, 1/01/43 | 10,000 | 11,181,500 |
| Goethals Bridge Replacement Project, AMT, Private Activity Bond, 5.13%, 1/01/34 | 1,050 | 1,139,555 |
| School Facilities Construction, Series UU, 5.00%, 6/15/40 | 3,390 | 3,452,308 |
| New Jersey EDA, Refunding RB, School Facilities Construction: | | |
| 5.25%, 6/15/19 (a) | 2,650 | 2,881,478 |
| Series AA, 5.25%, 6/15/19 (a) | 700 | 761,145 |
| Series AA, 5.25%, 12/15/33 | 6,650 | 6,787,721 |
| New Jersey Housing & Mortgage Finance Agency, RB, S/F Housing, Series AA, 6.38%, 10/01/28 | 50 | 51,558 |
| New Jersey Transportation Trust Fund Authority, RB: | | |
| CAB, Transportation System, Series A, 0.00%, 12/15/38 (c) | 7,260 | 2,348,029 |
| Transportation Program, Series AA, 5.25%, 6/15/33 | 8,750 | 9,173,587 |
| Transportation Program, Series AA, 5.25%, 6/15/41 | 780 | 818,548 |
| Transportation Program, Series AA, 5.00%, 6/15/44 | 4,450 | 4,526,451 |
| Transportation System, Series B, 5.50%, 6/15/31 | 8,000 | 8,458,560 |
| | | 54,729,320 |
| New York 7.6% | | |
| Build NYC Resource Corp., Refunding RB, Pratt Paper, Inc. Project, AMT, 5.00%, 1/01/35 (b) | 2,145 | 2,308,749 |
| City of New York New York Municipal Water Finance Authority, Refunding RB, Water & Sewer System, Series FF-2, 5.50%, 6/15/40 | 4,150 | 4,512,046 |
| Counties of New York Tobacco Trust IV, Refunding RB, Settlement Pass-Through Turbo, Series A, 6.25%, 6/01/41 (b) | 3,500 | 3,645,495 |
| | Par (000) | Value |
| Municipal Bonds | | |
| New York (continued) | | |
| Erie Tobacco Asset Securitization Corp., Refunding RB, Asset-Backed, Series A, 5.00%, 6/01/45 | \$ 4,435 | \$ 4,409,853 |
| Metropolitan Transportation Authority, RB, Series C: | | |
| 6.25%, 11/15/18 (a) | 25 | 26,946 |
| 6.25%, 11/15/18 (a) | 2,595 | 2,796,969 |
| 6.50%, 11/15/18 (a) | 925 | 1,000,332 |
| 6.50%, 11/15/18 (a) | 11,135 | 12,041,834 |
| 6.25%, 11/15/23 | 625 | 673,844 |
| 6.50%, 11/15/28 | 2,865 | 3,098,813 |
| New York Liberty Development Corp., Refunding RB, 3 World Trade Center Project, Class 2 (b): | | |
| 5.15%, 11/15/34 | 460 | 499,206 |
| 5.38%, 11/15/40 | 1,145 | 1,248,691 |
| New York Transportation Development Corp., ARB, LaGuardia Airport Terminal B Redevelopment Project, Series A, AMT, 5.25%, 1/01/50 | | |
| | 1,225 | 1,348,014 |
| New York Transportation Development Corp., Refunding RB, American Airlines, Inc., AMT: | | |
| 5.00%, 8/01/26 | 1,285 | 1,383,290 |
| 5.00%, 8/01/31 | 3,070 | 3,269,888 |
| Port Authority of New York & New Jersey, ARB, Special Project, JFK International Air Terminal LLC Project, Series 8, 6.00%, 12/01/36 | | |
| | 3,165 | 3,571,766 |
| TSASC, Inc., Refunding RB, Series A, 5.00%, 6/01/41 | 1,785 | 1,967,141 |
| | | 47,802,877 |
| Ohio 3.4% | | |
| County of Allen Ohio Hospital Facilities, Refunding RB, Catholic Healthcare Partners, Series A, 5.25%, 6/01/38 | 2,875 | 3,119,490 |
| County of Franklin Ohio, RB, Health Care Facilities Improvement, OPRS Communities Obligation Group, Series A, 6.13%, 7/01/40 | 1,690 | 1,877,438 |
| County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/37 | 1,915 | 2,274,273 |
| County of Montgomery Ohio, RB, Catholic Health Initiatives, Series D-2, 5.45%, 10/01/38 | 7,430 | 8,227,090 |

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par (000) | Value |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Municipal Bonds | | |
| Ohio (continued) | | |
| County of Montgomery Ohio, Refunding RB, Catholic Health: 5.50%, 5/01/19 (a) | \$ 1,910 | \$ 2,074,279 |
| Series A, 5.50%, 5/01/34 | 3,560 | 3,746,936 |
| | | 21,319,506 |
| Oklahoma 0.6% | | |
| Oklahoma Development Finance Authority, RB, Provident Oklahoma Education Resources, Inc., Cross Village Student Housing Project, Series A, 5.25%, 8/01/57 | 3,275 | 3,586,518 |
| Pennsylvania 3.1% | | |
| County of Delaware Pennsylvania IDA, Refunding RB, Covanta Project, 5.00%, 7/01/43 | 5,000 | 5,035,100 |
| County of Montgomery Pennsylvania IDA, Refunding RB, Whitmarsh Continuing Care Retirement Community, 5.25%, 1/01/40 | 4,170 | 4,213,952 |
| Delaware River Port Authority, RB, Series D, 5.00%, 1/01/40 | 195 | 211,555 |
| Geisinger Authority Pennsylvania, Refunding RB, Health System, Series A-1, 4.00%, 2/15/47 | 2,775 | 2,844,514 |
| Pennsylvania Economic Development Financing Authority, RB, Pennsylvania Bridge Finco LP, 5.00%, 12/31/38 | 2,565 | 2,862,104 |
| Pennsylvania HFA, RB, S/F Housing Mortgage, Series 118-B, 4.05%, 10/01/40 | 3,850 | 3,977,820 |
| Pennsylvania Turnpike Commission, RB, Series A-1, 5.00%, 12/01/41 | 440 | 495,642 |
| | | 19,640,687 |
| Puerto Rico 1.1% | | |
| Children s Trust Fund, Refunding RB, Tobacco Settlement Asset-Backed Bonds: 5.50%, 5/15/39 | 3,555 | 3,572,420 |
| Municipal Bonds | | |
| Puerto Rico (continued) | | |
| Children s Trust Fund, Refunding RB, Tobacco Settlement Asset-Backed Bonds (continued): 5.63%, 5/15/43 | \$ 3,400 | \$ 3,402,210 |
| | | 6,974,630 |
| Rhode Island 1.7% | | |
| Rhode Island Health & Educational Building Corp., Refunding RB, Hospital Financing, LifeSpan Obligation Group, 5.00%, 5/15/39 | 1,425 | 1,543,617 |
| Tobacco Settlement Financing Corp., Refunding RB, Series B: 4.50%, 6/01/45 | 6,820 | 6,902,317 |
| 5.00%, 6/01/50 | 2,000 | 2,063,860 |
| | | 10,509,794 |
| South Carolina 1.1% | | |
| State of South Carolina Public Service Authority, Refunding RB, Series E, 5.25%, 12/01/55 | 6,450 | 7,190,589 |
| Texas 10.9% | | |
| Central Texas Regional Mobility Authority, RB, Senior Lien, Series A: 5.00%, 1/01/40 | 1,215 | 1,377,980 |
| 5.00%, 1/01/45 | 3,500 | 3,950,835 |
| Central Texas Regional Mobility Authority, Refunding RB, Senior Lien: 5.75%, 1/01/21 (a) | 1,000 | 1,160,250 |
| 6.00%, 1/01/21 (a) | 4,300 | 5,026,700 |
| Series A, 5.00%, 1/01/43 | 6,925 | 7,572,349 |
| City of Houston Texas Airport System, Refunding ARB, United Airlines, Inc. Terminal E Project, AMT, 5.00%, 7/01/29 | 2,665 | 2,862,743 |
| County of Harris Texas Cultural Education Facilities Finance Corp., RB, 1st Mortgage, Brazos Presbyterian Homes, Inc. Project, Series B, 7.00%, 1/01/23 (a) | 850 | 1,094,213 |
| County of Harris Texas Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B (a): 7.13%, 12/01/18 | 3,500 | 3,823,785 |
| 7.25%, 12/01/18 | 5,400 | 5,909,598 |

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par | |
|-------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| | (000) | Value |
| Municipal Bonds | | |
| Texas (continued) | | |
| County of Tarrant Texas Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare (a): | | |
| 6.00%, 8/15/20 | \$ 370 | \$ 427,291 |
| 6.00%, 8/15/20 | 4,630 | 5,346,909 |
| County of Tarrant Texas Cultural Education Facilities Finance Corp., Refunding RB, Trinity Terrace Project, 5.00%, 10/01/44 | 875 | 931,805 |
| La Vernia Higher Education Finance Corp., RB, KIPP, Inc., Series A, 6.25%, 8/15/19 (a) | 925 | 1,028,665 |
| Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40 | 1,100 | 1,193,522 |
| New Hope Cultural Education Facilities Corp., RB, Collegiate Housing Tarleton State University Project, 5.00%, 4/01/35 | 500 | 535,395 |
| New Hope Cultural Education Facilities Corp., Refunding RB, 1st Mortgage, Morningside Ministries Project, 6.25%, 1/01/33 | 1,600 | 1,803,200 |
| North Texas Education Finance Corp., ERB, Uplift Education, Series A, 5.13%, 12/01/42 | 1,000 | 1,053,770 |
| North Texas Tollway Authority, Refunding RB, Series A: 5.00%, 1/01/38 | 5,000 | 5,662,750 |
| 1st Tier System, 6.25%, 1/01/19 (a) | 2,845 | 3,081,363 |
| 1st Tier System, 6.25%, 1/01/39 | 655 | 702,206 |
| Texas Private Activity Bond Surface Transportation Corp., RB, Senior Lien: | | |
| LBJ Infrastructure Group LLC, 7.00%, 6/30/40 | 8,000 | 9,080,560 |
| NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39 | 4,710 | 5,305,674 |
| | | 68,931,563 |
| Virginia 4.1% | | |
| Ballston Quarter Community Development Authority, Tax Allocation Bonds, Series A: 5.38%, 3/01/36 | 430 | 431,638 |
| | Par | |
| | (000) | Value |
| Municipal Bonds | | |
| Virginia (continued) | | |
| Ballston Quarter Community Development Authority, Tax Allocation Bonds, Series A (continued): 5.50%, 3/01/46 | \$ 1,475 | \$ 1,482,596 |
| City of Portsmouth Virginia, GO, Refunding Series D: 5.00%, 7/15/20 (a) | 3,030 | 3,397,569 |
| 5.00%, 7/15/34 | 75 | 82,820 |
| County of Fairfax Virginia EDA, Refunding RB, Goodwin House, Inc. (a): 5.13%, 10/01/17 | 2,000 | 2,028,640 |
| 5.13%, 10/01/17 | 6,015 | 6,101,135 |
| County of Fairfax Virginia IDA, Refunding RB, Health Care-Inova Health: 5.50%, 5/15/19 (a) | 735 | 799,687 |
| 5.50%, 5/15/35 | 1,365 | 1,472,849 |
| Tobacco Settlement Financing Corp., Refunding RB, Senior Series B-1, 5.00%, 6/01/47 | 1,895 | 1,852,382 |
| Virginia Small Business Financing Authority, RB, Senior Lien, Elizabeth River Crossings OpCo LLC Project, AMT: 6.00%, 1/01/37 | 2,150 | 2,427,608 |
| 5.50%, 1/01/42 | 5,140 | 5,645,108 |
| | | 25,722,032 |
| Washington 5.1% | | |
| Central Puget Sound Regional Transit Authority, RB, Series A (a): 5.00%, 11/01/17 | 6,000 | 6,104,160 |
| (AGM), 5.00%, 11/01/17 | 14,000 | 14,243,040 |
| Washington Health Care Facilities Authority, RB, Catholic Health Initiatives, Series A, 5.75%, 1/01/45 | 4,010 | 4,408,394 |
| Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36 | 7,000 | 7,426,510 |
| | | 32,182,104 |
| West Virginia 0.4% | | |

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| | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| West Virginia Hospital Finance Authority, Refunding RB, Improvement, Charleston Area Medical Center, Inc., Series A, 5.63%, 9/01/32 | 2,500 | 2,669,225 |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|
| | (000) | Value |
| Municipal Bonds | | |
| Wisconsin 1.0% | | |
| Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health, Inc., Series C, 5.25%, 4/01/19 (a) | \$ 6,100 | \$ 6,570,920 |
| Wyoming 1.4% | | |
| County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, Remarketing, 5.25%, 7/15/26 | 4,500 | 4,893,075 |
| State of Wyoming Municipal Power Agency, Inc., Refunding RB, Series A (BAM), 5.00%, 1/01/42 | 1,120 | 1,279,264 |
| Wyoming Community Development Authority, Refunding RB, Series 2 & 3, 4.05%, 12/01/38 | 2,475 | 2,541,330 |
| | | 8,713,669 |
| Total Municipal Bonds 113.9% | | 716,748,762 |
| | | |
| Municipal Bonds Transferred to Tender Option Bond Trusts (g) | | |
| Arizona 0.6% | | |
| City of Phoenix Arizona Civic Improvement Corp., Refunding RB, Water System, Junior Lien, Series A, 5.00%, 7/01/19 (a) | 3,500 | 3,790,920 |
| California 6.2% | | |
| Sacramento Area Flood Control Agency, Refunding, Consolidated Capital Assessment District No. 2, Series A, 5.00%, 10/01/47 | 14,998 | 17,473,975 |
| University of California, RB, General, Series O (a): | | |
| 5.25%, 5/15/19 | 6,667 | 7,222,466 |
| 5.25%, 5/15/19 | 6,667 | 7,222,467 |
| 5.25%, 5/15/19 | 6,667 | 7,222,467 |
| | | 39,141,375 |
| District of Columbia 1.3% | | |
| District of Columbia Water & Sewer Authority, Refunding RB, Senior Lien, Series A, 5.50%, 10/01/18 (a) | 7,495 | 7,952,995 |
| Florida 2.6% | | |
| County of Miami-Dade Florida Water & Sewer System, (AGC), 5.00%, 10/01/39 | 14,747 | 16,296,715 |
| | Par | |
| Municipal Bonds Transferred to Tender Option Bond Trusts (g) | | |
| | (000) | Value |
| Illinois 4.8% | | |
| State of Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/18 (a) | \$ 10,000 | \$ 10,579,900 |
| State of Illinois Toll Highway Authority, RB, Series B, Senior: 5.00%, 1/01/40 | 10,976 | 12,457,165 |
| Priority, 5.50%, 1/01/18 (a) | 6,999 | 7,189,350 |
| | | 30,226,415 |
| Kentucky 1.6% | | |
| County of Louisville & Jefferson Kentucky Metropolitan Government Parking Authority, RB, River City, Inc., 1st Mortgage, Series A, 5.38%, 12/01/19 (a) | 9,195 | 10,180,520 |
| Maryland 1.7% | | |
| City of Baltimore Maryland, RB, Wastewater Project, Sub-Series A, 5.00%, 7/01/46 | 4,898 | 5,681,491 |
| State of Maryland Transportation Authority, RB, Transportation Facilities Project (AGM), 5.00%, 7/01/41 | 4,710 | 4,910,128 |
| | | 10,591,619 |
| Nevada 2.8% | | |
| County of Clark Nevada Water Reclamation District, GO, Limited Tax, Series B, 5.75%, 7/01/19 (a) | 15,789 | 17,345,627 |
| New York 5.8% | | |
| City of New York New York Municipal Water Finance Authority, Refunding RB, Water & Sewer System, 2nd General Resolution, Series DD: | | |

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| | | |
|---------------------------------------------------------------------------------------------------------------|--------|------------|
| 5.00%, 6/15/18 (a) | 3,556 | 3,702,870 |
| 5.00%, 6/15/37 | 20,643 | 21,496,928 |
| New York Liberty Development Corp., Refunding RB, 4 World Trade Center Project, 5.75%, 11/15/51 (h) | 10,001 | 11,485,595 |
| | | 36,685,393 |
| North Carolina 0.8% | | |
| North Carolina Capital Facilities Finance Agency, Refunding RB, Wake Forest University, 5.00%, 1/01/19 (a) | 5,000 | 5,321,500 |

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

| | Par | |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|
| | (000) | Value |
| Municipal Bonds Transferred to Tender Option Bond Trusts (g) | | |
| Ohio 2.2% | | |
| Ohio Higher Educational Facility Commission, RB, Cleveland Clinic Health, Series A, 5.25%, 1/01/33 | \$ 4,400 | \$ 4,506,612 |
| State of Ohio, RB, Cleveland Clinic Health Obligated Group, Series B, 5.50%, 1/01/34 | 8,500 | 9,083,950 |
| | | 13,590,562 |
| Oregon 1.1% | | |
| State of Oregon Housing & Community Services Department, HRB, M/F Housing, Series A, AMT, 4.95%, 7/01/30 | 6,792 | 7,073,323 |
| Pennsylvania 0.7% | | |
| County of Westmoreland Pennsylvania Municipal Authority, Refunding RB, (BAM), 5.00%, 8/15/38 | 3,925 | 4,476,732 |
| Texas 7.4% | | |
| City of Houston Texas, Refunding RB, Airport System, Senior Lien, Series A, 5.50%, 7/01/34 | 8,333 | 8,730,788 |
| City of Houston Texas Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40 | 10,000 | 10,970,182 |
| County of Harris Texas Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27 (f) | 20,970 | 26,401,859 |
| Texas Department of Housing & Community Affairs, RB, S/F Mortgage, Series B, AMT, 5.25%, 9/01/32 | 568 | 568,966 |
| | | 46,671,795 |
| Virginia 3.6% | | |
| County of Fairfax Virginia EDA, RB, Metrorail Parking System, 5.00%, 4/01/47 (h) | 6,960 | 8,148,838 |
| Virginia Commonwealth Transportation Board, RB, Capital Projects, 5.00%, 5/15/32 | 7,999 | 9,010,498 |
| | Par | |
| Municipal Bonds Transferred to Tender Option Bond Trusts (g) | | |
| Virginia (continued) | | |
| Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40 | \$ 5,002 | \$ 5,424,967 |
| | | 22,584,303 |
| Washington 1.9% | | |
| Washington Health Care Facilities Authority, Refunding RB, Seattle Children's Hospital, Series B, 5.00%, 10/01/38 | 10,000 | 12,045,800 |
| Total Municipal Bonds Transferred to Tender Option Bond Trusts 45.1% | | 283,975,594 |
| Total Long-Term Investments (Cost \$932,222,182) 159.0% | | 1,000,724,356 |
| Short-Term Securities | | |
| BlackRock Liquidity Funds, MuniCash, Institutional Class, 0.60% (i)(j) | 6,250,916 | 6,252,166 |
| Total Short-Term Securities (Cost \$6,252,166) 1.0% | | 6,252,166 |
| Total Investments (Cost \$938,474,348) 160.0% | | 1,006,976,522 |
| Other Assets Less Liabilities 1.6% | | 10,660,773 |
| Liability for TOB Trust Certificates, Including Interest Expense and Fees Payable (22.9)% | | (144,318,166) |
| VMTP Shares, at Liquidation Value (38.7)% | | (243,800,000) |
| Net Assets Applicable to Common Shares 100.0% | | \$ 629,519,129 |

* As of May 31, 2017, gross unrealized appreciation and depreciation based on cost

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for U.S. federal income tax purposes were as follows:

| | |
|-------------------------------|----------------|
| Tax cost | \$ 796,770,766 |
| Gross unrealized appreciation | \$ 69,152,414 |
| Gross unrealized depreciation | (2,928,716) |
| Net unrealized appreciation | \$ 66,223,698 |

Notes to Schedule of Investments

- (a) 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.
- (b) Security exempt from registration pursuant to Rule 144A under the Securities Act of 1933, as amended. These securities may be resold in transactions exempt from registration to qualified institutional investors.

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

- (c) Zero-coupon bond.
- (d) Variable rate security. Rate as of period end.
- (e) When-issued security.
- (f) Security is collateralized by municipal bonds or U.S. Treasury obligations.
- (g) Represent bonds transferred to a TOB Trust in exchange of cash and residual certificates received by the Trust. These bonds serve as collateral in a secured borrowing.
- (h) All or a portion of security is subject to a recourse agreement. The aggregate maximum potential amount the Trust could ultimately be required to pay under the agreements, which expire between November 15, 2019 to October 1, 2024, is \$8,954,336.
- (i) During the period ended May 31, 2017, investments in issuers considered to be affiliates of the Trust 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, 2016 | Net Activity | Shares Held at May 31, 2017 | Value at May 31, 2017 | Income | Net | |
|----------------------------------------------------------|--------------------------------------|-----------------|-----------------------------------|-----------------------------|-----------|-------------------------------|-----------------------------------------------------------|
| | | | | | | Realized Gain ¹ | Change in Unrealized Appreciation (Depreciation) |
| BlackRock Liquidity Funds, MuniCash, Institutional Class | 6,852,839 | (601,923) | 6,250,916 | \$ 6,252,166 | \$ 31,015 | \$ 7,182 | |

¹ Includes net capital gain distributions.

- (j) Current yield as of period end.

Derivative Financial Instruments Outstanding as of Period End

Futures Contracts

| Contracts | Issue | Expiration | Notional Value | Unrealized Depreciation |
|-----------|----------------------------|----------------|-------------------|----------------------------|
| Short | | | | |
| (118) | 5-Year U.S. Treasury Note | September 2017 | \$ 13,960,875 | \$ (20,616) |
| (153) | 10-Year U.S. Treasury Note | September 2017 | \$ 19,323,422 | (58,151) |
| (123) | Long U.S. Treasury Bond | September 2017 | \$ 18,918,937 | (153,922) |
| (40) | Ultra U.S. Treasury Bond | September 2017 | \$ 6,605,000 | (79,329) |
| Total | | | | \$ (312,018) |

Portfolio Abbreviations

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

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

Fair Value Hierarchy as of Period End

Various inputs are used in determining the fair value of investments and derivative financial instruments. These inputs to valuation techniques are categorized into a fair value 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 Trust 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 Trust'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. Investments classified within Level 3 have significant unobservable inputs used by the BlackRock Global Valuation Methodologies Committee (the Global Valuation Committee) in determining the price for Fair Valued Investments. Level 3 investments include equity or debt issued by privately held companies or funds. There may not be a secondary market, and/or there are a limited number of investors. Level 3 investments may also be adjusted to reflect illiquidity and/or non-transferability, with the amount of such discount estimated by the Global Valuation Committee in the absence of market information.

Changes in valuation techniques may result in transfers into or out of an assigned level within the hierarchy. In accordance with the Trust's policy, transfers between different levels of the fair value 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 investments and derivative financial instruments and is not necessarily an indication of the risks associated with investing in those securities. For information about the Trust's policy regarding valuation of investments and derivative financial instruments, refer to the Trust's most recent financial statements as contained in its semi-annual report.

| | Level 1 | Level 2 | Level 3 | Total |
|-----------------------------------------------|--------------|------------------|---------|------------------|
| Assets: | | | | |
| Investments: | | | | |
| Long-Term Investments ¹ | | \$ 1,000,724,356 | | \$ 1,000,724,356 |
| Short-Term Securities | \$ 6,252,166 | | | 6,252,166 |
| Total | \$ 6,252,166 | \$ 1,000,724,356 | | \$ 1,006,976,522 |
| Derivative Financial Instruments ² | | | | |
| Liabilities: | | | | |
| Interest rate contracts | \$ (312,018) | | | \$ (312,018) |

¹ See above Schedule of Investments for values in each state or political sub-division.

² Derivative financial instruments are futures contracts, which are valued at the unrealized appreciation (depreciation) on the instrument. The Trust may hold assets and/or liabilities in which the fair value approximates the carrying for financial reporting purposes. As of period end, such assets and/or liabilities are categorized within the disclosure hierarchy as follows:

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| | Level 1 | Level 2 | Level 3 | Total |
|----------------------------------|---------|------------------|---------|------------------|
| Liabilities: | | | | |
| TOB Trust Certificates | | \$ (143,982,058) | | \$ (143,982,058) |
| VMTP Shares at Liquidation Value | | (243,800,000) | | (243,800,000) |
| Total | | \$ (387,782,058) | | \$ (387,782,058) |

During the period ended May 31, 2017, there were no transfers between levels.

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2017

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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 24, 2017

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 24, 2017

By: /s/ Neal J. Andrews

Neal J. Andrews

Chief Financial Officer (principal financial officer) of

BlackRock MuniVest Fund, Inc.

Date: July 24, 2017