

BLACKROCK MUNIVEST FUND, INC.

Form N-Q

July 23, 2018

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: 08/31/2018

Date of reporting period: 05/31/2018

Item 1 Schedule of Investments

Schedule of Investments (unaudited)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

(Percentages shown are based on Net Assets)

<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Municipal Bonds 119.3%		
Alabama 1.9%		
City of Selma Alabama IDB, RB, Gulf Opportunity Zone, International Paper Co. Project, Series A:		
5.80%, 05/01/34	\$ 1,850	\$ 1,984,551
5.38%, 12/01/35	1,000	1,106,860
State of Alabama Docks Department, Refunding RB, 6.00%, 10/01/20 ^(a)	7,610	8,305,173
		11,396,584
Alaska 0.5%		
City of Anchorage Alaska Electric Revenue, Refunding RB, Series A, 5.00%, 12/01/41	3,000	3,321,690
Arizona 4.0%		
Arizona IDA, Refunding RB, Basis Schools, Inc. Projects, Series A, 5.38%, 07/01/50 ^(b)	2,500	2,619,050
City of Phoenix Arizona Civic Improvement Corp., Refunding RB, Junior Lien, Series A, 5.00%, 07/01/20 ^(a)	2,000	2,128,900
City of Phoenix Arizona IDA, RB, Candeo School, Inc. Project:		
6.63%, 07/01/33	2,245	2,508,810
6.88%, 07/01/44	3,440	3,815,098
City of Phoenix Arizona IDA, Refunding RB ^(b) :		
Basis Schools, Inc. Projects, 5.00%, 07/01/35	600	620,928
Basis Schools, Inc. Projects, 5.00%, 07/01/45	760	780,467
Basis Schools, Inc. Projects, Series A, 5.00%, 07/01/35	1,125	1,164,240
Legacy Traditional School Projects, 5.00%, 07/01/45	700	718,417
County of Maricopa Arizona Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 06/01/35	3,300	3,466,551
Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37	5,725	6,840,745
		24,663,206
California 6.2%		
California Health Facilities Financing Authority, RB:		
St. Joseph Health System, Series A, 5.75%, 07/01/39	5,000	5,218,000
Sutter Health, Series B, 6.00%, 08/15/20 ^(a)	5,600	6,123,376
<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
California (continued)		
California Health Facilities Financing Authority, Refunding RB, Dignity Health, Series A, 6.00%, 07/01/19 ^(a)	\$ 1,055	\$ 1,105,893
City of Los Angeles California Department of Airports, Refunding ARB, Los Angeles International Airport, Series A, 5.25%, 05/15/39	1,200	1,239,048
Los Angeles Community College District California, GO, Refunding, Election of 2008, Series A, 6.00%, 08/01/19 ^(a)	9,585	10,081,695

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Oakland Unified School District/Alameda County, GO, Series A, 5.00%, 08/01/40	1,000	1,135,520
Poway Unified School District, GO, Refunding, CAB, School Facilities Improvement District No. 2007-1, Election of 2008, Series B, 0.00%, 08/01/46 ^(c)	10,000	3,161,200
State of California, GO, Various Purposes: 6.50%, 04/01/19 ^(a)	5,240	5,456,098
6.50%, 04/01/33	4,435	4,610,759
		38,131,589
Colorado 0.9%		
Centerra Metropolitan District No. 1, Tax Allocation Bonds, 5.00%, 12/01/47 ^(b)	1,025	1,046,812
Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33	2,500	2,539,850
Copperleaf Metropolitan District No. 2, GO, Refunding, 5.75%, 12/01/45	1,000	1,051,290
Serenity Ridge Metropolitan District No 2, GO, Series A, 5.13%, 12/01/43	1,000	1,025,250
		5,663,202
Connecticut 1.0%		
State of Connecticut, GO, Series A, 5.00%, 04/15/38	3,325	3,693,876

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

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<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Connecticut (continued)		
State of Connecticut Health & Educational Facility Authority, Refunding RB, Sacred Heart University Issue, Series I-1, 5.00%, 07/01/42	\$ 2,000	\$ 2,259,700
		5,953,576
Delaware 0.4%		
County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Power LLC Project, 6.00%, 10/01/40	2,500	2,641,875
District of Columbia 0.2%		
Metropolitan Washington Airports Authority, Refunding RB, Dulles Toll Road, 1st Senior Lien, Series A:		
5.00%, 10/01/39	415	429,305
5.25%, 10/01/44	650	674,252
		1,103,557
Florida 5.7%		
Celebration Pointe Community Development District, Special Assessment Bonds, County of Alachua Florida ^(b) :		
5.00%, 05/01/32	905	967,735
5.00%, 05/01/48	2,270	2,371,106
County of Miami-Dade Florida, Refunding RB, Transit System Sales Surtax, 5.00%, 07/01/42	3,750	4,067,063
County of Miami-Dade Florida Aviation, Refunding ARB, Miami International Airport, Series A-1, 5.38%, 10/01/41	10,290	11,028,616
County of Miami-Dade Florida Educational Facilities Authority, Refunding RB, University of Miami, Series A, 5.00%, 04/01/45	4,625	5,116,637
County of Miami-Dade Florida Expressway Authority, Refunding RB, Series A (AGM), 5.00%, 07/01/35	8,900	9,410,059
Lakewood Ranch Stewardship District, Special Assessment Bonds, Lakewood National & Polo Run Projects:		
4.63%, 05/01/27	255	263,706
5.25%, 05/01/37	470	499,873
5.38%, 05/01/47	770	817,809
		34,542,604
Georgia 0.8%		
City of Atlanta Georgia Department of Aviation, Refunding GARB, Series B, AMT, 5.00%, 01/01/29	1,070	1,140,984
	<i>Par (000)</i>	<i>Value</i>
Georgia (continued)		
	\$ 3,335	\$ 3,479,072

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DeKalb Georgia Private Hospital Authority, Refunding RB, Children's Healthcare, 5.25%,
11/15/39

4,620,056

Hawaii 0.9%

State of Hawaii Harbor System, RB, Series A,
5.50%, 07/01/35

5,000 5,338,050

Illinois 12.3%

Chicago Board of Education, GO, Series H,
5.00%, 12/01/36

865 888,684

Chicago Board of Education, GO, Refunding, Dedicated Revenues:

Series D, 5.00%, 12/01/25

1,560 1,623,227

Series F, 5.00%, 12/01/23

1,180 1,232,923

Series G, 5.00%, 12/01/34

865 886,686

City of Chicago Illinois O'Hare International Airport, GARB, Senior Lien, Series D, AMT,
5.00%, 01/01/42

1,450 1,596,334

City of Chicago Illinois Transit Authority, RB, Sales Tax Receipts, 5.25%, 12/01/36

2,110 2,265,549

City of Chicago Illinois Wastewater Transmission, Refunding RB, 2nd Lien, Series C,
5.00%, 01/01/39

1,000 1,074,630

County of Cook Illinois Community College District No. 508, GO, University & College
Improvements, 5.25%, 12/01/31

5,000 5,282,700

Illinois Finance Authority, RB:

Advocate Health Care Network, Series D, 6.50%, 11/01/18^(a)

9,700 9,887,598

Memorial Health System, Series A, 5.25%, 07/01/44

1,785 1,930,781

Illinois Finance Authority, Refunding RB:

Northwestern Memorial Hospital, Series A, 6.00%, 08/15/19^(a)

9,000 9,455,310

OSF Healthcare System, 6.00%, 05/15/20^(a)

3,205 3,451,144

OSF Healthcare System, 6.00%, 05/15/39

1,000 1,065,760

Presence Health Network, Series C, 5.00%, 02/15/41

3,600 4,076,712

Illinois State Toll Highway Authority, RB, Series A,
5.00%, 01/01/42

7,990 9,132,410

Metropolitan Pier & Exposition Authority, RB, McCormick Place Expansion Project Bonds,
Series A:

0.00%, 12/15/56^(c)

8,755 1,241,284

5.00%, 06/15/57

425 446,696

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

(Percentages shown are based on Net Assets)

<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Illinois (continued)		
Metropolitan Pier & Exposition Authority, Refunding RB, McCormick Place Expansion Project Bonds, Series B, 0.00%, 12/15/54 ^(c)	\$ 12,215	\$ 1,923,985
Railsplitter Tobacco Settlement Authority, RB, 6.00%, 06/01/21 ^(a)	2,645	2,949,942
Regional Transportation Authority, RB:		
Series A (AMBAC), 7.20%, 11/01/20	1,235	1,325,365
Series C (NPFGC), 7.75%, 06/01/20	1,545	1,635,691
State of Illinois, GO, Series D, 5.00%, 11/01/28	1,965	2,097,087
Village of Hodgkins Illinois, RB, Metropolitan Biosolids Management LLC Project, AMT, 6.00%, 11/01/23	10,000	10,012,800
		75,483,298
Indiana 1.7%		
City of Valparaiso Indiana, RB, Exempt Facilities, Pratt Paper LLC Project, AMT, 6.75%, 01/01/34	2,250	2,639,768
County of Allen Indiana, RB, StoryPoint Fort Wayne Project, Series A-1 ^(b) :		
6.63%, 01/15/34	700	750,428
6.75%, 01/15/43	570	611,051
State of Indiana Finance Authority, RB, Private Activity Bond, Ohio River Bridges, Series A, AMT, 5.00%, 07/01/40	2,640	2,828,945
State of Indiana Finance Authority, Refunding RB, Deaconess Health System, Series A, 5.00%, 03/01/39	3,000	3,321,150
		10,151,342
Iowa 1.0%		
Iowa Finance Authority, Refunding RB, Midwestern Disaster Area, Iowa Fertilizer Co. Project, 5.25%, 12/01/25	4,500	4,813,740
Iowa Tobacco Settlement Authority, Refunding RB, Asset-Backed, CAB, Series B, 5.60%, 06/01/34	1,000	1,009,700
		5,823,440
Kansas 1.0%		
City of Lenexa Kansas, Refunding RB, Lakeview Village, Inc., Series A, 5.00%, 05/15/43	1,965	2,090,249
	<i>Par (000)</i>	<i>Value</i>
<i>Security</i>		
Kansas (continued)		
Wyandotte County-Kansas City Unified Government Utility System, RB, Series A, 5.00%, 09/01/40	\$ 3,700	\$ 4,134,898
		6,225,147
Kentucky 2.7%		
County of Owen Kentucky, RB, Kentucky American Water Co. Project, Series B, 5.63%, 09/01/39	1,000	1,043,320

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Kentucky Economic Development Finance Authority, Refunding RB, Hospital Facilities, St. Elizabeth Medical Center, Inc., Series A, 5.50%, 05/01/19 ^(a)	8,000	8,267,600
Lexington-Fayette Urban County Airport Board, Refunding GARB, Series A, 5.00%, 07/01/19 ^(a)	7,000	7,244,930
		16,555,850
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	2,877,284
Parish of St. Charles Louisiana, RB, Valero Energy Corp., 4.00%, 12/01/40 ^(d)	2,210	2,341,230
Tobacco Settlement Financing Corp., Refunding RB, Asset-Backed, Series A: 5.25%, 05/15/31	3,420	3,681,527
5.25%, 05/15/32	4,375	4,765,994
5.25%, 05/15/33	4,750	5,135,795
5.25%, 05/15/35	1,500	1,624,140
		20,425,970
Maine 1.0%		
Maine Health & Higher Educational Facilities Authority, RB, Series A: 5.00%, 07/01/19 ^(a)	1,560	1,612,884
5.00%, 07/01/39	3,440	3,535,770
Portland Housing Development Corp., Refunding RB, Senior Living, Retirement Facilities, Series A, 6.00%, 02/01/34	1,190	1,191,642
		6,340,296
Maryland 3.2%		
City of Baltimore Maryland, Refunding RB, East Baltimore Research Park, Series A, 4.50%, 09/01/33	545	567,994

Schedule of Investments (unaudited) (continued)

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Maryland (continued)		
County of Howard Maryland Housing Commission, RB, M/F Housing, Woodfield Oxford Square Apartments, 5.00%, 12/01/42	\$ 4,935	\$ 5,553,898
Maryland Health & Higher Educational Facilities Authority, Refunding RB:		
Charlestown Community Project, 6.25%, 01/01/21 ^(a)	2,000	2,206,420
Meritus Medical Center Issue, 5.00%, 07/01/40	6,350	6,830,885
University of Maryland Medical System, 5.00%, 07/01/19 ^(a)	1,990	2,057,461
University of Maryland Medical System, 5.13%, 07/01/19 ^(a)	2,100	2,173,983
		19,390,641
Massachusetts 2.1%		
Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A, 7.00%, 03/01/19	370	384,574
Massachusetts Development Finance Agency, RB, Emerson College Issue, Series A:		
5.00%, 01/01/47	845	923,112
5.25%, 01/01/42	1,895	2,112,034
Massachusetts Development Finance Agency, Refunding RB, Emerson College, Series A, 5.00%, 01/01/40	2,180	2,412,257
Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42	2,610	2,653,509
Massachusetts Water Resources Authority, RB, Series A, 6.50%, 07/15/19 ^(c)	3,965	4,031,097
		12,516,583
Michigan 1.1%		
City of Detroit Michigan Water Supply System Revenue, RB, 2nd Lien, Series B (AGM), 6.25%, 07/01/19 ^(a)	2,495	2,612,639
Royal Oak Hospital Finance Authority Michigan, Refunding RB, William Beaumont Hospital, Series V, 8.25%, 09/01/18 ^(a)	4,100	4,165,395
		6,778,034
Minnesota 0.7%		
City of Cologne Minnesota Charter School, LRB, Cologne Academy Project, Series A, 5.00%, 07/01/45	1,500	1,510,095
	<i>Par (000)</i>	<i>Value</i>
Minnesota (continued)		
County of St. Paul Minnesota Housing & Redevelopment Authority, Refunding RB, Fairview Health Services, Series A, 4.00%, 11/15/43	\$ 1,940	\$ 2,011,101
Housing & Redevelopment Authority of The City of Saint Paul Minnesota, RB, Great River School Project, Series A, 5.50%, 07/01/52 ^(b)	695	716,496
		4,237,692
Mississippi 4.6%		

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County of Lowndes Mississippi, Refunding RB, Solid Waste Disposal & Pollution Control, Weyerhaeuser Co. Project:		
Series A, 6.80%, 04/01/22	9,160	10,429,851
Series B, 6.70%, 04/01/22	4,500	5,107,635
Mississippi Business Finance Corp., Refunding RB, System Energy Resource, Inc. Project, 5.88%, 04/01/22	9,305	9,323,796
Mississippi Development Bank, Refunding RB, Municipal Energy Agency Of Mississippi, Series A (AGM), 4.00%, 03/01/41	3,000	3,082,350
		27,943,632
Montana 0.3%		
Montana State Board of Housing, RB, S/F, Series B-2:		
3.38%, 12/01/37	835	832,044
3.50%, 12/01/42	355	356,296
3.60%, 12/01/47	550	552,002
		1,740,342
Nebraska 1.1%		
Central Plains Nebraska Energy Project, RB, Gas Project No. 3, 5.00%, 09/01/42	6,200	6,780,630
Nevada 1.3%		
City of Carson City Nevada, Refunding RB, Carson Tahoe Regional Healthcare Project, 5.00%, 09/01/42	1,150	1,265,104
County of Clark Nevada, GO, Stadium Improvement, Series A: 5.00%, 06/01/36	4,080	4,799,222

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

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<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Nevada (continued)		
5.00%, 06/01/37	\$ 1,500	\$ 1,763,010
		7,827,336
New Jersey 10.3%		
Casino Reinvestment Development Authority, Refunding RB, 5.25%, 11/01/44	1,400	1,497,202
New Jersey EDA, RB:		
Continental Airlines, Inc. Project, Series A, AMT, 5.63%, 11/15/30	1,530	1,734,469
Goethals Bridge Replacement Project, AMT, Private Activity Bond, 5.38%, 01/01/43	10,000	10,931,300
Goethals Bridge Replacement Project, AMT, Private Activity Bond, 5.13%, 01/01/34	1,050	1,146,831
School Facilities Construction, Series UU, 5.00%, 06/15/40	3,390	3,571,873
New Jersey EDA, Refunding RB, School Facilities Construction:		
5.25%, 06/15/19 ^(a)	2,650	2,744,844
Series AA, 5.25%, 06/15/19 ^(a)	700	725,053
Series AA, 5.25%, 12/15/33	6,650	6,838,261
New Jersey Transportation Trust Fund Authority, RB:		
CAB, Transportation System, Series A, 0.00%, 12/15/38 ^(c)	7,260	2,797,133
Transportation Program, Series AA, 5.25%, 06/15/33	8,750	9,338,262
Transportation Program, Series AA, 5.25%, 06/15/41	780	838,734
Transportation Program, Series AA, 5.00%, 06/15/44	4,450	4,671,699
Transportation System, Series B, 5.50%, 06/15/31	8,000	8,496,400
Tobacco Settlement Financing Corp., Refunding RB:		
Series A, 5.25%, 06/01/46	4,050	4,552,362
Sub-Series B, 5.00%, 06/01/46	3,050	3,273,169
		63,157,592
New York 8.6%		
Build NYC Resource Corp., Refunding RB, Pratt Paper, Inc. Project, AMT, 5.00%, 01/01/35 ^(b)	2,145	2,312,868
City of New York New York, GO, Sub-Series F-1, 5.00%, 04/01/36	2,070	2,419,954
City of New York New York Water & Sewer System, Refunding RB, 2nd General Resolution, Series FF-2, 5.50%, 06/15/40	4,150	4,304,754
	<i>Par (000)</i>	<i>Value</i>
New York (continued)		
Erie Tobacco Asset Securitization Corp., Refunding RB, Asset-Backed, Series A, 5.00%, 06/01/45	\$ 4,435	\$ 4,434,645
Metropolitan Transportation Authority, RB, Series C:		
6.25%, 11/15/18 ^(a)	2,595	2,649,002
6.25%, 11/15/18 ^(a)	25	25,520
6.50%, 11/15/18 ^(a)	11,135	11,376,518
6.50%, 11/15/18 ^(a)	925	945,063
6.25%, 11/15/23	625	638,006

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6.50%, 11/15/28	2,865	2,925,194
New York Counties Tobacco Trust IV, Refunding RB, Series A: Settlement Pass-Through Turbo, 6.25%, 06/01/41 ^(b)	3,500	3,648,645
Tobacco Settlement Pass-Through Bonds, 5.00%, 06/01/38	3,675	3,675,000
New York Liberty Development Corp., Refunding RB, 3 World Trade Center Project, Class 2 ^(b) :		
5.15%, 11/15/34	460	504,569
5.38%, 11/15/40	1,145	1,258,916
New York Transportation Development Corp., Refunding ARB, American Airlines, Inc., AMT, 5.00%, 08/01/31	3,070	3,237,469
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	3,470,391
TSASC, Inc., Refunding RB, Series A, 5.00%, 06/01/41	1,785	1,936,939
Westchester Tobacco Asset Securitization, Refunding RB, Tobacco Settlement Bonds, Sub-Series C, 5.13%, 06/01/51	2,740	2,826,611
		52,590,064
Ohio 4.2%		
Buckeye Tobacco Settlement Financing Authority, RB, Asset-Backed, Senior Turbo Term, Series A-2:		
5.75%, 06/01/34	950	942,115
5.88%, 06/01/47	2,525	2,524,924
County of Allen Ohio Hospital Facilities Revenue, Refunding RB, Catholic Healthcare Partners, Series A, 5.25%, 06/01/20 ^(a)	2,875	3,061,789
County of Butler Port Authority, RB, StoryPoint Fairfield Project, Series A-1 ^(b) :		
6.38%, 01/15/43	675	706,556
6.50%, 01/15/52	390	409,083

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<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Ohio (continued)		
County of Franklin Ohio, RB, Health Care Facilities Improvement, OPRS Communities Obligation Group, Series A, 6.13%, 07/01/40	\$ 1,690	\$ 1,847,660
County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/21 ^(a)	1,915	2,194,456
County of Montgomery Ohio, RB, Catholic Health Initiatives, Series D-2, 5.45%, 10/01/38	7,430	8,149,447
County of Montgomery Ohio, Refunding RB, Catholic Health: 5.50%, 05/01/19 ^(a)	1,910	1,973,889
Series A, 5.50%, 05/01/34	3,560	3,655,871
		25,465,790
Oklahoma 1.0%		
Oklahoma Development Finance Authority, RB: OU Medicine Project, Series B, 5.25%, 08/15/48	2,205	2,477,053
Provident Oklahoma Education Resources, Inc., Cross Village Student Housing Project, Series A, 5.25%, 08/01/57	3,275	3,531,432
		6,008,485
Pennsylvania 7.5%		
Allentown Neighborhood Improvement Zone Development Authority, RB, City Center Project, 5.00%, 05/01/42 ^(b)	1,725	1,851,805
Altoona Area School District, GO (BAM): 5.00%, 12/01/36	365	409,446
5.00%, 12/01/42	735	819,312
County of Delaware Pennsylvania IDA, Refunding RB, Covanta Project, 5.00%, 07/01/43	5,000	5,059,700
County of Montgomery Higher Education & Health Authority, Refunding RB, Thomas Jeferson University, Series A, 5.00%, 09/01/48	3,330	3,741,388
County of Montgomery Pennsylvania IDA, Refunding RB, Whitemarsh Continuing Care Retirement Community, 5.25%, 01/01/40	4,170	4,197,439
County of Westmoreland Pennsylvania Municipal Authority, Refunding RB, (BAM), 5.00%, 08/15/36	4,385	5,016,878
Pennsylvania Economic Development Financing Authority, RB, PA Bridges Finco LP, 5.00%, 12/31/38	2,565	2,814,549
	<i>Par (000)</i>	<i>Value</i>
Pennsylvania (continued)		
Pennsylvania HFA, RB, S/F Housing Mortgage, Series 118-B, 4.05%, 10/01/40	\$ 3,850	\$ 3,951,525
Pennsylvania Housing Finance Agency, RB, S/F, Series 125B, 3.65%, 10/01/42	7,925	7,948,458
Pennsylvania Turnpike Commission, RB: Series A-1, 5.00%, 12/01/41	440	491,515
Sub-Series B-1, 5.25%, 06/01/47	2,130	2,415,420
Springfield School District, Delaware County, GO ^(f) : 5.00%, 03/01/40	2,955	3,430,075
5.00%, 03/01/43	3,385	3,919,965

		46,067,475
Puerto Rico 1.1%		
Children s Trust Fund, Refunding RB, Tobacco Settlement Asset-Backed Bonds:		
5.50%, 05/15/39	3,555	3,533,030
5.63%, 05/15/43	3,400	3,375,078
		6,908,108
Rhode Island 1.5%		
Tobacco Settlement Financing Corp., Refunding RB, Series B:		
4.50%, 06/01/45	6,820	6,946,988
5.00%, 06/01/50	2,000	2,065,460
		9,012,448
South Carolina 1.3%		
State of South Carolina Public Service Authority, RB, Series E, 5.50%, 12/01/53	750	812,273
State of South Carolina Public Service Authority, Refunding RB, Series E, 5.25%, 12/01/55	6,450	7,019,664
		7,831,937
Texas 12.2%		
Central Texas Regional Mobility Authority, RB, Senior Lien, Series A:		
5.00%, 01/01/40	1,215	1,329,902
5.00%, 01/01/45	3,500	3,812,690
Central Texas Regional Mobility Authority, Refunding RB, Senior Lien:		
5.75%, 01/01/21 ^(a)	1,000	1,090,740
6.00%, 01/01/21 ^(a)	4,300	4,717,014
Series A, 5.00%, 01/01/43	6,925	7,457,532

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

(Percentages shown are based on Net Assets)

<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Texas (continued)		
City of Houston Texas Airport System, Refunding ARB, United Airlines, Inc. Terminal E Project, AMT, 5.00%, 07/01/29	\$ 2,665	\$ 2,895,656
County of Harris Texas Cultural Education Facilities Finance Corp., RB, 1st Mortgage, Brazos Presbyterian Homes, Inc. Project, Series B, 7.00%, 01/01/23 ^(a)	850	1,026,222
County of Harris Texas Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B ^(a) : 7.13%, 12/01/18	3,500	3,593,625
7.25%, 12/01/18	5,400	5,547,744
County of Tarrant Texas Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare, 6.00%, 08/15/20 ^(a)	4,630	5,037,533
County of Tarrant Texas Cultural Education Facilities Finance Corp., Refunding RB, Trinity Terrace Project, 5.00%, 10/01/44	3,500	3,709,755
La Vernia Higher Education Finance Corp., RB, KIPP, Inc., Series A, 6.25%, 08/15/19 ^(a)	925	972,832
Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40	1,100	1,174,514
New Hope Cultural Education Facilities Corp., RB, Collegiate Housing Tarleton State University Project, 5.00%, 04/01/35	500	541,245
New Hope Cultural Education Facilities Corp., Refunding RB, 1st Mortgage, Morningside Ministries Project, 6.25%, 01/01/33	1,600	1,777,328
North Texas Education Finance Corp., ERB, Uplift Education, Series A, 5.13%, 12/01/42	1,000	1,048,270
North Texas Tollway Authority, Refunding RB: 1st Tier System, Series A, 6.25%, 01/01/19 ^(a)	2,845	2,918,885
1st Tier System, Series A, 6.25%, 01/01/39	655	670,707
1st Tier-Series A, 5.00%, 01/01/43	5,145	5,903,476
Series A, 5.00%, 01/01/38	5,000	5,517,250
Texas Private Activity Bond Surface Transportation Corp., RB, Senior Lien: LBJ Infrastructure Group LLC, 7.00%, 06/30/40	8,000	8,737,680
	<i>Par (000)</i>	<i>Value</i>
<i>Security</i>		
Texas (continued)		
NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39	\$ 4,710	\$ 5,031,457
		74,512,057
Vermont 0.9%		
University of Vermont & State Agricultural College, Refunding RB, 5.00%, 10/01/43	4,995	5,719,075
Virginia 4.3%		
Ballston Quarter Community Development Authority, Tax Allocation Bonds, Series A: 5.38%, 03/01/36	430	450,894
5.50%, 03/01/46	1,475	1,547,496
City of Portsmouth Virginia, GO, Refunding Series D, 5.00%, 07/15/20 ^(a)	3,030	3,225,617
County of Fairfax Virginia IDA, Refunding RB, Health Care-Inova Health, 5.50%, 05/15/19 ^(a)	735	760,629

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Tobacco Settlement Financing Corp., Refunding RB, Senior Series B-1, 5.00%, 06/01/47	3,665	3,664,927
Virginia Small Business Financing Authority, RB, AMT:		
Senior Lien, Elizabeth River Crossings OpCo LLC Project, 6.00%, 01/01/37	2,150	2,397,357
Senior Lien, Elizabeth River Crossings OpCo LLC Project, 5.50%, 01/01/42	5,140	5,598,437
Transform 66 P3 Project, 5.00%, 12/31/49	7,895	8,666,894
		26,312,251
Washington 3.8%		
Port of Seattle Washington, ARB, Intermediate Lien, Series C, AMT:		
5.00%, 05/01/37	4,905	5,584,539
5.00%, 05/01/42	1,295	1,469,035
State of Washington, COP, Series B:		
5.00%, 07/01/36	1,725	2,014,852
5.00%, 07/01/38	2,300	2,682,122
Washington Health Care Facilities Authority, RB, Catholic Health Initiatives, Series A,		
5.75%, 01/01/45	4,010	4,404,263

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

(Percentages shown are based on Net Assets)

<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
Washington (continued)		
Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36	\$ 7,000	\$ 7,096,040
		23,250,851
West Virginia 0.4%		
West Virginia Hospital Finance Authority, Refunding RB, Improvement, Charleston Area Medical Center, Inc., Series A, 5.63%, 09/01/32	2,500	2,592,950
Wisconsin 1.0%		
Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health, Inc., Obligated Group: Series C, 5.25%, 04/01/19 ^(a)	6,100	6,279,584
Wyoming 1.3%		
County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, Remarketing, 5.25%, 07/15/26	4,500	4,677,165
State of Wyoming Municipal Power Agency, Inc., Refunding RB, Series A (BAM), 5.00%, 01/01/42	1,120	1,263,842
Wyoming Community Development Authority, Refunding RB, Series 2 & 3, 4.05%, 12/01/38	2,215	2,241,137
		8,182,144
Total Municipal Bonds 119.3% (Cost \$695,973,730)		729,487,033
Municipal Bonds Transferred to Tender Option Bond Trusts^(g)		
Arizona 0.6%		
City of Phoenix Civic Improvement Corp., Refunding RB, Water System, Junior Lien, Series A, 5.00%, 07/01/19 ^(a)	3,500	3,620,505
California 6.2%		
Sacramento Area Flood Control Agency, Refunding, Consolidated Capital Assessment District No. 2 Bonds, 5.00%, 10/01/47	14,998	17,222,775
University of California, RB, General, Series O ^(a) :		
5.25%, 05/15/19	5,675	5,881,627
5.25%, 05/15/19	11,090	11,493,787
<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
California (continued)		

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5.25%, 05/15/19	\$ 3,235	\$ 3,352,786
		37,950,975
District of Columbia 1.2%		
District of Columbia Water & Sewer Authority, Refunding RB, Senior Lien, Series A, 5.50%, 10/01/18 ^(a)	7,495	7,587,903
Florida 2.6%		
County of Miami-Dade Florida Water & Sewer System, RB, (AGM), 5.00%, 10/01/20 ^(a)	14,747	15,795,362
Illinois 3.7%		
State of Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 07/01/18 ^(a)	10,000	10,035,500
State of Illinois Toll Highway Authority, RB, Series B, 5.00%, 01/01/40	10,976	12,352,562
		22,388,062
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	9,666,612
Maryland 1.7%		
City of Baltimore Maryland Water Utility Fund, RB, Wastewater Project, Series A, 5.00%, 07/01/46	4,898	5,559,849
State of Maryland Transportation Authority, RB, Transportation Facilities Project (AGM), 5.00%, 07/01/41	4,710	4,721,751
		10,281,600
Nevada 2.7%		
County of Clark Nevada Water Reclamation District, GO, Series B, 5.75%, 07/01/19 ^(a)	15,789	16,446,101
New York 5.8%		
City of New York New York Water & Sewer System, Refunding RB, Water & Sewer System, 2nd General Resolution, Series DD: 5.00%, 06/15/18 ^(a)	3,556	3,558,500
5.00%, 06/15/37	20,643	20,658,803

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

(Percentages shown are based on Net Assets)

<i>Security</i>	<i>Par (000)</i>	<i>Value</i>
New York (continued)		
New York Liberty Development Corp., Refunding RB, 4 World Trade Center Project, 5.75%, 11/15/51 ^(h)	\$ 10,000	\$ 11,084,195
		35,301,498
North Carolina 0.8%		
North Carolina Capital Facilities Finance Agency, Refunding RB, Wake Forest University, 5.00%, 01/01/19 ^(a)	5,000	5,095,950
Ohio 1.4%		
State of Ohio, RB, Cleveland Clinic Health Obligated Group, Series B, 5.50%, 01/01/34	8,500	8,684,662
Oregon 0.8%		
State of Oregon Housing & Community Services Department, HRB, M/F Housing, Series A, AMT, 4.95%, 07/01/30	4,663	4,769,092
Pennsylvania 1.9%		
Commonwealth of Pennsylvania, GO, 1st Series, 4.00%, 03/01/38 ^(h)	7,250	7,473,445
County of Westmoreland Pennsylvania Municipal Authority, Refunding RB, (BAM), 5.00%, 08/15/38	3,925	4,412,844
		11,886,289
Texas 5.8%		
City of Houston Texas Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 05/15/20 ^(a)	10,000	10,577,586
	<i>Par (000)</i>	<i>Value</i>
Texas (continued)		
County of Harris Texas Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 07/01/27 ^(e)	\$ 20,970	\$ 25,103,502
		35,681,088
Virginia 3.6%		
County of Fairfax Virginia EDA, RB, Metrorail Parking System Project, 5.00%, 04/01/47 ^(h)	6,960	8,000,311
Virginia Commonwealth Transportation Board, RB, Capital Projects, 5.00%, 05/15/21 ^(a)	7,999	8,703,784
Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40	5,002	5,271,751
		21,975,846
Washington 1.9%		
Washington Health Care Facilities Authority, Refunding RB, Seattle Children's Hospital, Series B, 5.00%, 10/01/38	10,000	11,749,350

Total Municipal Bonds Transferred to Tender Option Bond Trusts	42.3%	
(Cost \$247,999,851)		258,880,895
Total Long-Term Investments	161.6%	
(Cost \$943,973,581)		988,367,928
Other Assets Less Liabilities	0.4%	2,097,941
Liability for TOB Trust Certificates, Including Interest Expense and Fees Payable	(22.1)%	(135,173,860)
VMTP Shares at Liquidation Value	(39.9)%	(243,800,000)
Net Assets Applicable to Common Shares	100.0%	\$ 611,492,009

- (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.
- (c) Zero-coupon bond.
- (d) Variable or floating rate security, which interest rate adjusts periodically based on changes in current interest rates and prepayments on the underlying pool of assets. Rate shown is the rate in effect as of period end.
- (e) Security is collateralized by municipal bonds or U.S. Treasury obligations.
- (f) When-issued security.
- (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 March 1, 2026, is \$12,728,363.

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

During the period ended May 31, 2018, investments in issuers considered to be an affiliate of the Trust for purposes of Section 2(a)(3) of the Investment Company Act of 1940, as amended, were as follows:

	<i>Shares Held at 08/31/17</i>	<i>Net Activity</i>	<i>Shares Held at 05/31/18</i>	<i>Value at 05/31/18</i>	<i>Income</i>	<i>Net Realized Gain (Loss)^(a)</i>	<i>Change in Unrealized Appreciation (Depreciation)</i>
<i>Affiliated</i> BlackRock Liquidity Funds, MuniCash, Institutional Class				\$	\$ 52,854	\$ 154	\$

^(a) Includes net capital gain distributions, if applicable

Derivative Financial Instruments Outstanding as of Period End

Futures Contracts

<i>Description</i>	<i>Number of Contracts</i>	<i>Expiration Date</i>	<i>Notional Amount (000)</i>	<i>Value/ Unrealized Appreciation (Depreciation)</i>
Short Contracts:				
10-Year U.S. Treasury Note	120	09/19/18	\$ 14,453	\$ (89,367)
11-Long U.S. Treasury Bond	158	09/19/18	22,930	(358,267)
5-Year U.S. Treasury Note	40	09/28/18	4,556	(19,894)
				\$ (467,528)

Portfolio Abbreviations

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

Schedule of Investments (unaudited) (continued)

BlackRock MuniVest Fund, Inc. (MVF)

May 31, 2018

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 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 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.

The following tables summarize the Trust's investments and derivative financial instruments categorized in the disclosure hierarchy:

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	<i>Level 1</i>	<i>Level 2</i>	<i>Level 3</i>	<i>Total</i>
Assets:				
Investments:				
Long-Term Investments ^(a)	\$	\$ 988,367,928	\$	\$ 988,367,928
Derivative Financial Instruments ^(b)				
Liabilities:				
Interest rate contracts	\$ (467,528)	\$	\$	\$ (467,528)

(a) See above Schedule of Investments for values in each state or political subdivision

(b) 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 amount for financial reporting purposes. As of period end, such assets and/or liabilities are categorized within the disclosure hierarchy as follows:

	<i>Level 1</i>	<i>Level 2</i>	<i>Level 3</i>	<i>Total</i>
Liabilities:				
TOB Trust Certificates	\$	\$ (134,651,490)	\$	\$ (134,651,490)
VMTP Shares at Liquidation Value		(243,800,000)		(243,800,000)
	\$	\$ (378,451,490)	\$	\$ (378,451,490)

During the period ended May 31, 2018, there were no transfers between levels.

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 19, 2018

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 19, 2018

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

Date: July 19, 2018