

BLACKROCK MUNIVEST FUND INC  
Form N-Q  
July 26, 2012  
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: 08/31/2012

Date of reporting period: 05/31/2012

Item 1 – Schedule of Investments

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Schedule of Investments May 31, 2012 (Unaudited)

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

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Alabama 3.0%</b>		
Alabama State Docks Department, Refunding RB, 6.00%, 10/01/40	\$ 7,610	\$ 8,673,345
Camden IDB Alabama, RB, Weyerhaeuser Co. Project, Series A, 6.13%, 12/01/13 (a)	2,550	2,772,946
Selma IDB Alabama, RB: Gulf Opportunity Zone, International Paper, 5.80%, 5/01/34	1,850	2,007,972
International Paper Co., Series A, 5.38%, 12/01/35	1,000	1,072,230
Selma IDB Alabama, Refunding RB, International Paper Co. Project, Series B, 5.50%, 5/01/20	5,000	5,208,600
		19,735,093
<b>Alaska 0.1%</b>		
Northern Tobacco Securitization Corp., RB, Asset-Backed Series A, 5.00%, 6/01/46	1,250	938,788
<b>Arizona 4.0%</b>		
Maricopa County IDA, RB, Arizona Charter Schools Project, Series A, 6.75%, 7/01/29	4,100	2,853,149
Maricopa County Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 6/01/35	3,300	3,621,090
Phoenix Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/40	2,000	2,158,400
Pima County IDA, RB: Arizona Charter School Project, Series E, 7.25%, 7/01/31	1,995	1,996,257
Charter Schools, Series I, 6.75%, 7/01/21	645	645,425
Pima County IDA, Refunding RB: Arizona Charter, Series I, 6.10%, 7/01/13 (a)(b)	110	116,436
Arizona Charter, Series I, 6.30%, 7/01/13 (a)(b)	230	243,952
Arizona Charter, Series I, 6.10%, 7/01/13 (b)	370	390,354
Arizona Charter, Series I, 6.30%, 7/01/13 (b)	740	782,550
Charter Schools, 6.75%, 7/01/12	255	256,395
Salt River Project Agricultural Improvement & Power Distribution, Refunding RB, Electrical System, Series A, 5.00%, 12/01/31	7,000	8,288,140
Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37	5,000	5,109,050
		26,461,198

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	Par (000)	Value
<b>Municipal Bonds</b>		
<b>California 11.5%</b>		
California Health Facilities Financing Authority, RB:		
Scripps Health, Series A, 5.00%, 11/15/40	\$ 2,800	\$ 3,046,204
Stanford Hospital and Clinics, Series A, 5.00%, 8/15/51	3,750	4,064,737
Sutter Health, Series B, 6.00%, 8/15/42	5,600	6,621,384
California Health Facilities Financing Authority, Refunding RB:		
Catholic Healthcare West, Series A, 6.00%, 7/01/34	1,055	1,232,135
State Joseph Health System, Series A, 5.75%, 7/01/39	5,000	5,696,850
California HFA, RB, Home Mortgage, Series K, AMT, 5.50%, 2/01/42	2,515	2,606,144
California State Public Works Board, RB, Department of Mental Health, Coalinga, Series A:		
5.50%, 12/01/13 (a)	6,000	6,465,000
5.13%, 6/01/29	10,435	10,763,911
California Statewide Communities Development Authority, RB:		
Health Facility, Memorial Health Services, Series A, 6.00%, 4/01/13 (a)		
	4,240	4,443,902
Kaiser Permanente, Series A, 5.00%, 4/01/42	4,170	4,506,060
Golden State Tobacco Securitization Corp. California, RB, Asset-Backed, Series A-3, 7.88%, 6/01/13 (a)		
	10,725	11,528,195
Los Angeles Department of Airports, RB, Series A, 5.25%, 5/15/39	1,200	1,335,684
Poway Unified School District, GO, CAB, School Facilities Improvement District No. 2007-1, Election of 2008, Series B, 5.26%, 8/01/46 (c)		
	15,000	2,549,250
State of California, GO, Various Purpose, 6.50%, 4/01/33	9,700	11,796,364
		76,655,820
<b>Colorado 1.0%</b>		
Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33		
	2,500	2,935,425
Colorado Health Facilities Authority, Refunding RB, Evangelical Lutheran, Series A, 5.25%, 6/01/34		
	3,000	3,052,920
Colorado Housing & Finance Authority, Refunding RB, S/F Program, Senior Series A-2, AMT:		
6.60%, 5/01/28	205	210,353
7.50%, 4/01/31	120	120,346
Regional Transportation District, COP, Series A, 5.38%, 6/01/31		
	385	432,705
		6,751,749



## Schedule of Investments (continued)

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

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Connecticut 0.3%</b>		
Mohegan Tribe of Indians of Connecticut, RB, Public Improvement, Priority Distribution, 6.25%, 1/01/31	\$ 1,885	\$ 1,752,051
<b>Delaware 0.3%</b>		
County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Project, 6.00%, 10/01/40	1,500	1,665,000
<b>District of Columbia 0.2%</b>		
Metropolitan Washington Airports Authority, RB, First Senior Lien, Series A:		
5.00%, 10/01/39	415	449,354
5.25%, 10/01/44	650	709,793
		1,159,147
<b>Florida 5.0%</b>		
County of Miami-Dade Florida, GO, Building Better Communities Program:		
Series B, 6.38%, 7/01/28	4,630	5,549,796
Series B-1, 5.63%, 7/01/38	5,000	5,609,500
County of Miami-Dade Florida, Refunding RB, Miami International Airport:		
(AGC) AMT, 5.00%, 10/01/40	10,000	10,329,900
Series A-1, 5.38%, 10/01/41	10,290	11,484,463
		32,973,659
<b>Georgia 2.1%</b>		
City of Atlanta Georgia, Refunding RB, General, Series B, AMT, 5.00%, 1/01/29	1,070	1,158,371
DeKalb County Hospital Authority Georgia, RB, Dekalb Medical Center, Inc. Project, 6.13%, 9/01/40	3,570	3,947,706
DeKalb Private Hospital Authority, Refunding RB, Children s Healthcare, 5.25%, 11/15/39	3,335	3,632,782
Municipal Electric Authority of Georgia, RB, Series W:		
6.60%, 1/01/18	4,530	5,092,264
6.60%, 1/01/18 (d)	250	266,130
		14,097,253
<b>Hawaii 0.9%</b>		
Hawaii State Harbor, RB, Series A, 5.50%, 7/01/35	5,000	5,605,150
<b>Illinois 12.0%</b>		
Chicago Board of Education Illinois, GO, Series A, 5.50%, 12/01/39	6,670	7,624,343
Chicago Transit Authority, RB, Sales Tax Receipts Revenue, Third Lien, 5.25%, 12/01/36	2,110	2,375,375

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City of Chicago Illinois, RB, General, Third Lien, Series B-2, AMT (NPFGC), 6.00%, 1/01/27	17,080	18,164,067
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	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Illinois (concluded)</b>		
Illinois Finance Authority, RB:		
Advocate Health Care Network, Series D, 6.50%, 11/01/38	\$ 9,700	\$ 11,304,574
Community, 6.50%, 7/01/22	1,060	966,296
Community Rehabilitation, 6.50%, 7/01/12 (a)	1,080	1,096,492
Northwestern Memorial Hospital, Series A, 6.00%, 8/15/39	9,000	10,440,180
Illinois Finance Authority, Refunding RB, OSF Healthcare System, Series A, 6.00%, 5/15/39	5,060	5,725,238
Railsplitter Tobacco Settlement Authority, RB, 6.00%, 6/01/28	2,645	3,035,085
Regional Transportation Authority, RB: Series A (AMBAC), 7.20%, 11/01/20	3,040	3,686,578
Series C (NPFGC), 7.75%, 6/01/20	4,000	5,006,720
Village of Hodgkins Illinois, RB, MBM Project, AMT, 6.00%, 11/01/23	10,000	10,011,500
		79,436,448
<b>Indiana 2.5%</b>		
Indiana Health & Educational Facilities Financing Authority, RB, Clarian Health Obligation, Series A, 5.25%, 2/15/40	8,980	9,365,601
Indianapolis Local Public Improvement Bond Bank, Refunding RB, Series D, 6.75%, 2/01/14	7,120	7,511,031
		16,876,632
<b>Iowa 0.1%</b>		
Iowa Tobacco Settlement Authority, RB, Asset-Backed, Series C, 5.63%, 6/01/46	1,000	808,420
<b>Kansas 0.2%</b>		
Sedgwick & Shawnee Counties Kansas, RB, Mortgage-Backed Securities Program, Series A-4, AMT (Ginnie Mae), 5.95%, 12/01/33	1,370	1,418,950
<b>Kentucky 1.2%</b>		
County of Owen Kentucky, RB, Kentucky American Water Co., Series B, 5.63%, 9/01/39	1,000	1,063,770
Kentucky Economic Development Finance Authority, RB, Owensboro Medical Health System, Series A: 6.38%, 6/01/40	2,000	2,307,680
6.50%, 3/01/45	4,000	4,640,280
		8,011,730



## Schedule of Investments (continued)

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

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Louisiana 0.8%</b>		
Louisiana Local Government Environmental Facilities & Community Development Authority, RB, Westlake Chemical Corp., Series A-1, 6.50%, 11/01/35	\$ 2,615	\$ 2,976,968
Parish of St. Charles Louisiana Gulf Opportunity Zone, RB, Valero Project, Series 2010, 4.00%, 12/01/40 (e)	2,210	2,261,228
		5,238,196
<b>Maine 1.0%</b>		
Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39	5,000	5,343,750
Portland New Public Housing Authority Maine, Refunding RB, Senior Living, Series A, 6.00%, 2/01/34	1,190	1,218,917
		6,562,667
<b>Maryland 1.8%</b>		
Maryland Community Development Administration, RB, AMT, 5.10%, 9/01/37	1,835	1,899,739
Maryland Community Development Administration, Refunding RB, Residential, Series D, 4.90%, 9/01/42	3,250	3,317,372
Maryland Health & Higher Educational Facilities Authority, Refunding RB: Charlestown Community, 6.25%, 1/01/41	2,000	2,243,800
University of Maryland Medical System, 5.00%, 7/01/34	2,100	2,243,052
University of Maryland Medical System, 5.13%, 7/01/39	2,100	2,259,159
		11,963,122
<b>Massachusetts 5.8%</b>		
Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A, 7.00%, 3/01/19	3,010	3,635,117
Massachusetts Development Finance Agency, RB, Wellesley College, Series J, 5.00%, 7/01/42	2,800	3,213,168
Massachusetts HFA, RB: S/F, Series 130, AMT, 5.00%, 12/01/32	2,500	2,579,175
Series A, AMT, 5.20%, 12/01/37	2,865	2,966,879
Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42	6,550	7,000,902
	16,000	19,401,920



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Massachusetts Water Resources  
Authority, RB, Series A, 6.50%,  
7/15/19

38,797,161

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Michigan 3.9%</b>		
City of Detroit Michigan, RB, Second Lien, Series B (AGM):		
6.25%, 7/01/36	\$ 2,500	\$ 2,888,900
7.00%, 7/01/36	1,250	1,504,925
Michigan State Hospital Finance Authority, Refunding RB:		
Henry Ford Health System, Series A, 5.25%, 11/15/46		
	7,950	8,265,536
McLaren Health Care, 5.75%, 5/15/38		
	7,285	8,056,044
Royal Oak Hospital Finance Authority Michigan, Refunding RB, William Beaumont Hospital, 8.25%, 9/01/39		
	4,100	5,240,087
		25,955,492
<b>Minnesota 0.5%</b>		
Tobacco Securitization Authority Minnesota, Refunding RB, Tobacco Settlement, Series B, 5.25%, 3/01/31		
	3,000	3,341,130
<b>Mississippi 4.9%</b>		
County of Lowndes Mississippi, Refunding RB, Weyerhaeuser Co. Project:		
Series A, 6.80%, 4/01/22	9,160	10,430,767
Series B, 6.70%, 4/01/22	4,500	5,073,615
Mississippi Business Finance Corp., Refunding RB, System Energy Resource, Inc. Project:		
5.88%, 4/01/22	15,000	15,039,900
5.90%, 5/01/22	2,250	2,256,007
		32,800,289
<b>Nebraska 1.6%</b>		
Central Plains Energy Project Nebraska, RB, Gas Project No. 3, Series 2012, 5.00%, 9/01/42		
	6,200	6,334,354
Omaha Nebraska Public Power District, Series B, 5.00%, 2/01/36		
	4,000	4,554,000
		10,888,354
<b>Nevada 0.9%</b>		
County of Clark Nevada, RB, Series B, 5.75%, 7/01/42		
	5,000	5,661,600
<b>New Hampshire 0.4%</b>		
New Hampshire Health & Education Facilities Authority, Refunding RB, Elliot Hospital, Series B, 5.60%, 10/01/22		
	2,300	2,465,991
<b>New Jersey 6.1%</b>		
New Jersey EDA, RB, Cigarette Tax (a):		
5.50%, 6/15/12	7,080	7,094,585
5.75%, 6/15/14	3,695	4,092,323



## Schedule of Investments (continued)

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

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>New Jersey (concluded)</b>		
New Jersey EDA, Refunding RB: Cigarette Tax, Series 2012, 5.00%, 6/15/25	\$ 990	\$ 1,095,079
School Facilities Construction, Series AA, 5.25%, 12/15/33	10,000	11,155,900
New Jersey State Housing & Mortgage Finance Agency, RB, Series AA, 6.38%, 10/01/28	1,300	1,424,865
New Jersey Transportation Trust Fund Authority, RB, Transportation System, 5.50%, 6/15/31	8,000	9,345,280
Tobacco Settlement Financing Corp. New Jersey, RB, 7.00%, 6/01/13 (a)	5,980	6,381,617
		40,589,649
<b>New York 4.0%</b>		
Metropolitan Transportation Authority, RB, Series 2008C: 6.25%, 11/15/23	3,245	4,131,534
6.50%, 11/15/28	14,925	19,119,074
Port Authority of New York & New Jersey, RB, JFK International Air Terminal, 6.00%, 12/01/36	3,165	3,548,313
		26,798,921
<b>North Carolina 0.6%</b>		
Gaston County Industrial Facilities & Pollution Control Financing Authority North Carolina, RB, Exempt Facilities, National Gypsum Co. Project, 5.75%, 8/01/35	4,105	3,605,339
<b>Ohio 0.5%</b>		
Buckeye Tobacco Settlement Financing Authority, RB, Senior, Series A-2, 6.50%, 6/01/47	1,125	939,330
County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/37	1,915	2,354,971
		3,294,301
<b>Oregon 0.7%</b>		
City of Tigard Washington County Oregon, RB, Water System, Series 2012: 5.00%, 8/01/37	2,000	2,265,680
5.00%, 8/01/42	2,335	2,636,612
		4,902,292
<b>Pennsylvania 0.9%</b>		
Chester County IDA, RB, Aqua Pennsylvania Inc. Project, Series A, AMT (NPFGC), 5.00%, 2/01/40	540	563,684
Delaware River Port Authority Pennsylvania, RB, Series D, 5.00%,	195	211,220

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1/01/40

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Pennsylvania (concluded)</b>		
Pennsylvania Economic Development Financing Authority, Refunding RB, Aqua Pennsylvania, Inc. Project, Series A, AMT, 5.00%, 12/01/34	\$ 2,780	\$ 3,020,387
Philadelphia Authority for Industrial Development, RB:		
Arbor House, Inc. Project, Series E, 6.10%, 7/01/33	1,000	1,017,880
Rieder House Project, Series A, 6.10%, 7/01/33	1,355	1,379,228
		6,192,399
<b>Puerto Rico 2.7%</b>		
Puerto Rico Electric Power Authority, Refunding RB, Series A, 5.00%, 7/01/42	925	934,453
Puerto Rico Sales Tax Financing Corp., RB, First Sub-Series A, 6.38%, 8/01/39	13,000	15,206,490
Puerto Rico Sales Tax Financing Corp., Refunding RB, CAB, Series A (NPFGC), 5.68%, 8/01/41 (c)	10,000	1,979,600
		18,120,543
<b>South Carolina 0.9%</b>		
County of Georgetown South Carolina, Refunding RB, International Paper Co. Project, Series A, AMT, 5.55%, 12/01/29	1,000	1,026,000
County of Richland South Carolina, Refunding RB, International Paper Co. Project, AMT, 6.10%, 4/01/23	5,000	5,212,900
		6,238,900
<b>Texas 13.0%</b>		
Brazos River Authority, Refunding RB, Texas Utility Co., Series A, AMT, 7.70%, 4/01/33	3,055	434,604
Brazos River Harbor Navigation District, Refunding RB, Dow Chemical Co. Project, Series A-7, AMT, 6.63%, 5/15/33	11,460	11,596,260
Central Texas Regional Mobility Authority, RB, Senior Lien: 5.75%, 1/01/31	1,000	1,117,570
6.00%, 1/01/41	4,300	4,816,602
City of Houston Texas, RB, Senior Lien, Series A, 5.50%, 7/01/34	8,335	9,337,951
Gulf Coast Waste Disposal Authority, Refunding RB, Series A, AMT, 6.10%, 8/01/24	4,000	4,025,880
Harris County Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B: 7.13%, 12/01/31	3,500	4,218,375
7.25%, 12/01/35	5,400	6,484,752



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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>Texas (concluded)</b>		
Houston Industrial Development Corp., RB, Senior, Air Cargo, AMT, 6.38%, 1/01/23	\$ 1,690	\$ 1,690,270
La Vernia Higher Education Finance Corp., RB, KIPP, Inc., 6.25%, 8/15/39	925	1,042,392
Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40	3,600	3,753,972
Matagorda County Navigation District No. 1 Texas, Refunding RB, CenterPoint Energy Project, 5.60%, 3/01/27 (f)	9,355	9,862,041
North Texas Education Finance Corporation, ERB, 5.13%, 12/01/42	1,000	1,036,830
North Texas Tollway Authority, Refunding RB, First Tier, Series A, 6.25%, 1/01/39	3,500	3,988,635
Tarrant County Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare, 6.00%, 8/15/45	5,000	5,811,000
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	11,894,400
NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39	4,710	5,517,435
		86,628,969
<b>Vermont 0.1%</b>		
Vermont Educational & Health Buildings Financing Agency, RB, Developmental & Mental Health, Series A, 6.38%, 6/15/22	420	425,246
<b>Virginia 2.9%</b>		
City of Norfolk Virginia, Refunding RB, Series B (AMBAC), 5.50%, 2/01/31 (a)	3,550	3,553,124
City of Portsmouth Virginia, GO, Refunding, Series D, 5.00%, 7/15/34	3,105	3,530,416
Fairfax County EDA, Refunding RB, Goodwin House, Inc.: 5.13%, 10/01/37	2,000	2,039,560
5.13%, 10/01/42	6,015	6,114,127
Virginia HDA, Refunding RB, Sub-Series A3, AMT, 5.05%, 7/01/26	1,325	1,404,328
Virginia Small Business Financing Authority, RB, Senior Lien, Elizabeth	2,620	2,877,677

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River Crossing Operation LLC Project,  
Series 2012, AMT, 6.00%, 1/01/37

19,519,232

	Par (000)	Value
<b>Municipal Bonds</b>		
<b>Washington 4.3%</b>		
Energy Northwest, Refunding RB, Series B, 7.13%, 7/01/16	\$ 14,320	\$ 17,921,909
Seattle Housing Authority Washington, RB, Replacement Housing Projects, 6.13%, 12/01/32	2,175	2,179,807
Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36	7,000	8,310,960
		28,412,676
<b>West Virginia 0.4%</b>		
West Virginia Hospital Finance Authority, Refunding RB, Charleston, Series A, 5.63%, 9/01/32	2,500	2,705,900
<b>Wisconsin 1.4%</b>		
City of Milwaukee Wisconsin, RB, Senior, Air Cargo, AMT, 6.50%, 1/01/25	1,475	1,475,295
Wisconsin Health & Educational Facilities Authority, RB: Hudson Memorial Hospital (FHA), 5.70%, 1/15/29	4,500	4,521,105
SynergyHealth, Inc., 6.00%, 11/15/32	3,040	3,123,509
		9,119,909
<b>Wyoming 0.8%</b>		
County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, 5.25%, 7/15/26	4,500	5,095,080
<b>Total Municipal Bonds 105.3%</b>		<b>699,670,446</b>

**Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts (g)**

<b>Arizona 0.6%</b>		
Phoenix Arizona Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/34	3,500	4,054,995
<b>California 5.1%</b>		
Los Angeles Community College District California, GO, Election of 2008, Election of 2008, Series A, 6.00%, 8/01/33	9,586	11,447,837
University of California, RB, Series O, 5.25%, 5/15/39	20,000	22,525,000
		33,972,837
<b>Connecticut 2.1%</b>		
Connecticut State Health & Educational Facility Authority, RB, Yale University, Series Z-3, 5.05%, 7/01/42	12,000	13,704,360





## 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 (g)</b>		
<b>District of Columbia 1.3%</b>		
District of Columbia Water & Sewer Authority, RB, Series A, 5.50%, 10/01/39	\$ 7,495	\$ 8,499,120
<b>Florida 3.9%</b>		
County of Miami-Dade Florida, RB, Water & Sewer System (AGM), 5.00%, 10/01/39	14,747	16,198,775
Miami-Dade County Expressway Authority, RB, Series A (AGC), 5.00%, 7/01/35	8,900	9,734,197
		25,932,972
<b>Illinois 4.0%</b>		
City of Chicago Illinois, RB, Sales Tax Revenue, Series A, 5.00%, 1/01/41	4,640	5,118,894
City of Chicago Illinois, Refunding RB, Second Lien (AGM), 5.25%, 11/01/33	1,330	1,475,980
Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/38	10,000	12,306,800
Illinois State Toll Highway Authority, RB, Series B, 5.50%, 1/01/33	6,999	7,680,726
		26,582,400
<b>Kentucky 5.1%</b>		
Kentucky Economic Development Finance Authority, Refunding RB, St. Elizabeth, Series A, 5.50%, 5/01/39	8,003	8,869,080
Kentucky Housing Corp., Refunding RB, Series L, AMT, 5.25%, 1/01/38	6,460	6,699,020
Lexington-Fayette Urban County Airport Board, Refunding RB, Series A, 5.00%, 7/01/27	7,001	7,874,461
Louisville & Jefferson County Metropolitan Government Parking Authority, RB, Series A, 5.38%, 12/01/39	9,195	10,633,098
		34,075,659
<b>Maryland 0.8%</b>		
Maryland State Transportation Authority, RB, Transportation Facility Project (AGM), 5.00%, 7/01/41	4,710	5,169,696
<b>Nevada 2.9%</b>		
Clark County Water Reclamation District, GO, Series B, 5.75%, 7/01/34	15,789	19,341,904
<b>New York 7.9%</b>		
New York City Municipal Water Finance Authority, RB, Water & Sewer System, Series DD, 5.00%, 6/15/37	24,199	26,309,895
New York City Municipal Water Finance Authority, Refunding RB, Series FF-2,	4,154	4,785,740

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5.50%, 6/15/40		
New York City Transitional Finance Authority, RB, 5.00%, 2/01/42	8,898	10,031,085
	<b>Par</b>	
	<b>(000)</b>	<b>Value</b>
<b>Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts (g)</b>		
<b>New York (concluded)</b>		
New York State Liberty Development Corp., Refunding RB, World Trade Center Project, 5.75%, 11/15/51	\$ 10,000	\$ 11,502,300
		52,629,020
<b>North Carolina 2.9%</b>		
North Carolina Capital Facilities Finance Agency, Refunding RB: Duke University Project, Series A, 5.00%, 10/01/41	12,678	13,857,814
Wake Forest University, 5.00%, 1/01/38	5,000	5,505,350
		19,363,164
<b>Ohio 3.6%</b>		
County of Allen Ohio, Refunding RB, Catholic Healthcare, Series A, 5.25%, 6/01/38	2,870	3,127,898
County of Montgomery Ohio, Refunding RB, Catholic Healthcare, Series A, 5.50%, 5/01/34	5,470	6,151,015
Ohio Higher Educational Facility Commission, Refunding RB, Hospital, Cleveland Clinic Health, Series A, 5.25%, 1/01/33	4,400	4,822,356
State of Ohio, RB, Cleveland Clinic Health, Series B, 5.50%, 1/01/34	8,500	9,550,090
		23,651,359
<b>Oregon 2.0%</b>		
Oregon State Housing & Community Services Department, HRB, Series A, AMT, 4.95%, 7/01/30	13,000	13,635,682
<b>South Carolina 0.5%</b>		
South Carolina State Housing Finance & Development Authority, Refunding RB, Series B-1, 5.55%, 7/01/39	3,069	3,271,524
<b>Texas 7.8%</b>		
Harris County Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27	20,970	27,618,748
Houston Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40	10,000	11,421,174
Texas Department of Housing & Community Affairs, MRB, Series B, AMT (Ginnie Mae), 5.25%, 9/01/32	6,276	6,559,662
Texas State University Systems, Refunding RB (AGM), 5.00%, 3/15/30	5,667	6,336,994
		51,936,578
<b>Virginia 2.6%</b>		
Fairfax County IDA Virginia, Refunding RB, Health Care, Inova Health System, Series A, 5.50%, 5/15/35	2,099	2,365,442



## 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 (g)</b>		
<b>Virginia (concluded)</b>		
Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40	\$ 5,002	\$ 5,429,856
Virginia State Commonwealth Transportation Board, RB, Capital Projects, 5.00%, 5/15/32	8,001	9,283,892
		17,079,190
<b>Washington 4.2%</b>		
Central Puget Sound Regional Transit Authority, RB, Series A: 5.00%, 11/01/34	5,000	5,563,525
5.00%, 11/01/36	6,000	6,676,230
(AGM), 5.00%, 11/01/32	14,007	15,822,595
		28,062,350
<b>Wisconsin 1.0%</b>		
Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health Inc., 5.25%, 4/01/39	6,099	6,672,232
<b>Total Municipal Bonds Transferred to Tender Option Bond (TOB) Trusts 58.3%</b>		387,635,042
<b>Total Long-Term Investments (Cost \$984,669,484) 163.6%</b>		1,087,305,488
<b>Short-Term Securities</b>		
	<b>Shares</b>	
FFI Institutional Tax-Exempt Fund, 0.03% (h)(i)	142,624	142,624
<b>Total Short-Term Securities (Cost \$142,624) 0.0%</b>		142,624
<b>Total Investments (Cost - \$984,812,108*) 163.6%</b>		1,087,448,112
<b>Other Assets Less Liabilities 2.0%</b>		13,412,822
<b>Liability for TOB Trust Certificates, Including Interest Expense and Fees Payable (28.9)%</b>		(192,302,440)
<b>VMTP Shares, at Liquidation Value (36.7)%</b>		(243,800,000)
<b>Net Assets Applicable to Common Shares 100.0%</b>		\$ 664,758,494

\* As of May 31, 2012, gross unrealized appreciation and gross unrealized depreciation based on cost for federal income tax purposes were as follows:

Tax cost	\$ 794,889,145
Gross unrealized appreciation	\$ 107,279,303
Gross unrealized depreciation	(6,930,508)
Net unrealized appreciation	\$ 100,348,795

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- (a) US government securities, held in escrow, are used to pay interest on this security, as well as to retire the bond in full at the date indicated, typically at a premium to par.
- (b) Security exempt from registration 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) Represents a zero-coupon bond. Rate shown reflects the current yield as of report date.
- (d) Security is collateralized by Municipal or US Treasury obligations.
- (e) Variable rate security. Rate shown is as of report date and maturity shown is the date the principal owed can be recovered through demand.
- (f) Variable rate security. Rate shown is as of report date.
- (g) Securities represent bonds transferred to a TOB in exchange for which the Fund acquired residual interest certificates. These securities serve as collateral in a financing transaction.
- (h) Investments in companies considered to be an affiliate of the Fund during the period, 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, 2011	Net Activity	Shares Held at May 31, 2012	Income
FFI Institutional Tax-Exempt Fund	44,571,921	(44,429,297)	142,624	\$ 715

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

### Portfolio Abbreviations

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

AGC	Assured Guaranty Corp.
AGM	Assured Guaranty Municipal Corp.
AMBAC	American Municipal Bond Assurance Corp.
AMT	Alternative Minimum Tax (subject to)
CAB	Capital Appreciation Bonds
COP	Certificates of Participation
EDA	Economic Development Authority
ERB	Education Revenue Bonds
FHA	Federal Housing Administration
Ginnie Mae	Government National Mortgage Association
GO	General Obligation Bonds
HDA	Housing Development Authority
HFA	Housing Finance Agency
HRB	Housing Revenue Bonds
IDA	Industrial Development Authority
IDB	Industrial Development Board
MRB	Mortgage Revenue Bonds
NPFGC	National Public Finance Guarantee Corp.
RB	Revenue Bonds
S/F	Single-Family



## Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

Financial futures contracts sold as of May 31, 2012 were as follows:

Contracts	Issue	Exchange	Expiration	Notional Value	Unrealized Depreciation
233	10-Year US Treasury Note	Chicago Board of Trade	September 2012	\$ 31,207,438	\$ (273,490)

Fair Value Measurements - Various inputs are used in determining the fair value of investments and derivative financial instruments. These inputs 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 and liabilities

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

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)

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 instruments 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 and other significant accounting policies, please refer to the Fund's most recent financial statements as contained in its semi-annual report.

The following tables summarize the inputs used as of May 31, 2012 in determining the fair valuation of the Fund's investments and derivative financial instruments:

Valuation Inputs	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Investments:				
Long Term Investments <sup>1</sup>		\$ 1,087,305,488		\$ 1,087,305,488
Short-Term Securities	\$ 142,624			142,624
<b>Total</b>	\$ 142,624	\$ 1,087,305,488		\$ 1,087,448,112

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

Valuation Inputs	Level 1	Level 2	Level 3	Total
<b>Derivative Financial Instruments<sup>2</sup></b>				
<b>Liabilities:</b>				

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Interest rate contracts	\$	(273,490)	\$	(273,490)
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<sup>2</sup> Derivative financial instruments are financial futures contracts, which are valued at the unrealized appreciation/depreciation on the instrument.

Certain of the Fund's assets and liabilities are held at carrying amount, which approximates fair value for financial reporting purposes. As of May 31, 2012, such assets and liabilities are categorized within the disclosure hierarchy as follows:

Valuation Inputs	Level 1	Level 2	Level 3	Total		
<b>Assets:</b>						
Cash pledged as collateral for financial futures contracts	\$	513,000		\$	513,000	
<b>Liabilities:</b>						
Bank Overdraft		(2)			(2)	
TOB trust certificates		\$	(192,210,172)		(192,210,172)	
VMTP Shares			(243,800,000)		(243,800,000)	
<b>Total</b>	\$	512,998	\$	(436,010,172)	\$	(435,497,174)

There were no transfers between levels during the period ended May 31, 2012.



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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 25, 2012

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 25, 2012

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

Date: July 25, 2012

