

BLACKROCK MUNIVEST FUND INC  
Form N-Q  
July 28, 2011  
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: 08/31/2011

Date of reporting period: 05/31/2011

Item 1 Schedule of Investments

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Schedule of Investments May 31, 2011 (Unaudited)

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

Municipal Bonds	Par (000)	Value
<b>Alabama 3.5%</b>		
Alabama State Docks Department, Refunding RB, 6.00%, 10/01/40	\$ 7,610	\$ 7,739,751
Camden IDB Alabama, RB, Weyerhaeuser Co. Project, Series A, 6.13%, 12/01/13 (a)	2,550	2,886,804
Prattville IDB Alabama, RB, International Paper Co. Project, Series A, AMT, 4.75%, 12/01/30	3,475	3,025,439
Selma IDB, RB, Gulf Opportunity Zone, International Paper, 5.80%, 5/01/34	1,850	1,849,889
Selma IDB Alabama, Refunding RB, International Paper Co. Project, Series B, 5.50%, 5/01/20	5,000	5,041,900
		<u>20,543,783</u>
<b>Arizona 3.1%</b>		
Maricopa County IDA Arizona, RB, Arizona Charter Schools Project, Series A, 6.75%, 7/01/29	4,100	2,725,147
Maricopa County Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 6/01/35	3,300	3,277,197
Phoenix Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/40	2,000	1,897,240
Pima County IDA, RB, Arizona Charter School Project, Series E, 7.25%, 7/01/31	2,005	1,960,329
Pima County IDA, Refunding RB: Arizona Charter Schools Project, Series I, 6.10%, 7/01/13 (a)(b)	110	121,585
Arizona Charter Schools Project, Series I, 6.30%, 7/01/13 (a)(b)	230	255,169
Arizona Charter Schools, Series I, 6.10%, 7/01/24 (b)	380	348,844
Arizona Charter Schools, Series I, 6.30%, 7/01/31 (b)	755	660,685
Charter Schools II, Series A, 6.75%, 7/01/21	920	917,608
Arizona Charter Schools Project II, Series O, 5.00%, 7/01/26	1,455	1,163,302
Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37	5,000	4,400,650
	<b>Par (000)</b>	<b>Value</b>

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**Arizona (concluded)**

State of Arizona, COP, Department of Administration, Series A (AGM), 5.25%, 10/01/28	\$	400	\$	408,632
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18,136,388

**California 11.2%**

California HFA, RB, Home Mortgage, Series K, AMT, 5.50%, 2/01/42	3,350	3,404,772
California Health Facilities Financing Authority, Refunding RB: Catholic Healthcare West, Series A, 6.00%, 7/01/34	1,055	1,086,914
State Joseph Health System, Series A, 5.75%, 7/01/39	5,000	5,057,650
Sutter Health, Series B, 6.00%, 8/15/42	5,600	5,853,064
California State Public Works Board, RB: Department of Corrections, Series C, 5.50%, 6/01/22	5,000	5,134,850
Department of Mental Health, Coalinga, Series A, 5.13%, 6/01/29	10,435	10,062,992
Department of Correction, Series C, 5.50%, 6/01/23	6,000	6,133,980
California Statewide Communities Development Authority, RB, Health Facility, Memorial Health Services, Series A, 6.00%, 10/01/23	4,240	4,378,351
Golden State Tobacco (ARS) Securitization Corp. California, RB, Asset-Backed, Series A-3, 7.88%, 6/01/13 (a)	10,725	12,237,976
Los Angeles Department of Airports, RB, Series A, 5.25%, 5/15/39	1,200	1,217,892
State of California, GO, Various Purpose, 6.50%, 4/01/33	9,700	10,825,685
		65,394,126

**Colorado 1.1%**

Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33	2,500	2,699,225
Colorado Health Facilities Authority, Refunding RB, Evangelical Lutheran, Series A, 5.25%, 6/01/34	3,000	2,673,360

**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.

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

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BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2011

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## Schedule of Investments (continued)

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

Municipal Bonds	Par (000)	Value
<b>Colorado (concluded)</b>		
Colorado Housing & Finance Authority, Refunding RB, S/F Program, Senior Series A-2, AMT:		
6.60%, 5/01/28	\$ 340	\$ 344,502
7.50%, 4/01/31	130	134,749
Regional Transportation District, COP, Series A, 5.38%, 6/01/31	385	397,331
		<u>6,249,167</u>
<b>Connecticut 0.4%</b>		
Mohegan Tribe of Indians of Connecticut, RB, Public Improvement, Priority Distribution, 6.25%, 1/01/31	2,810	2,236,339
<b>Delaware 0.3%</b>		
County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Project, 6.00%, 10/01/40	1,500	1,499,850
<b>District Of Columbia 0.2%</b>		
Metropolitan Washington Airports Authority, RB, First Senior Lien, Series A:		
5.00%, 10/01/39	415	411,244
5.25%, 10/01/44	650	649,948
		<u>1,061,192</u>
<b>Florida 5.9%</b>		
County of Miami-Dade Florida, GO, Building Better Communities Program:		
Series B, 6.38%, 7/01/28	4,630	5,202,685
Series B-1, 5.63%, 7/01/38	5,000	5,190,300
County of Miami-Dade Florida, Refunding RB, Miami International Airport:		
AMT (AGC), 5.00%, 10/01/40	10,000	8,801,300
Series A-1, 5.38%, 10/01/41	10,290	10,055,902
Hillsborough County IDA, RB, H. Lee Moffitt Cancer Center Project, Series A, 5.25%, 7/01/37	5,500	4,986,135
		<u>34,236,322</u>

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<b>Georgia 2.1%</b>		
DeKalb County Hospital Authority Georgia, RB, Dekalb Medical Center Inc. Project, 6.13%, 9/01/40	3,570	3,342,341
DeKalb Private Hospital Authority, Refunding RB, Childrens Healthcare, 5.25%, 11/15/39	3,335	3,337,168
Municipal Electric Authority of Georgia, RB, Series W: 6.60%, 1/01/18	250	277,790
6.60%, 1/01/18 (c)	4,540	5,241,339
		12,198,638

<b>Hawaii 0.9%</b>		
Hawaii State Harbor, RB, Series A, 5.50%, 7/01/35	5,000	5,081,900

Municipal Bonds	Par (000)	Value
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<b>Idaho 0.00%</b>		
Idaho Housing & Finance Association, Refunding RB, S/F Mortgage, Senior Series E-2, AMT, 6.90%, 1/01/27	\$ 50	\$ 50,065

<b>Illinois 11.4%</b>		
City of Chicago Illinois, ARB, General, Third Lien, Series B-2, AMT (NPFGC), 6.00%, 1/01/27	17,080	17,356,013
Illinois Finance Authority, RB: Community Rehabilitation Providers Facilities, Series A, 6.50%, 7/01/22	1,060	1,006,237
Advocate Health Care Network, Series D, 6.50%, 11/01/38	9,700	10,417,994
Community Rehabilitation Providers Facilities, Series A, 6.50%, 7/01/12 (a)	1,080	1,162,879
Illinois Finance Authority, Refunding RB, Series A: Northwestern Memorial Hospital, Series A, 6.00%, 8/15/39	9,000	9,499,770
OSF Healthcare System, Series A, 6.00%, 5/15/39	5,140	5,125,968
Railsplitter Tobacco Settlement Authority, RB, 6.00%, 6/01/28	2,645	2,652,882
Regional Transportation Authority, RB: Series A (AMBAC), 7.20%, 11/01/20	3,290	3,951,553
Series C (NPFGC), 7.75%, 6/01/20	4,000	4,907,960
Village of Hodgkins Illinois, RB, MBM Project, AMT, 6.00%, 11/01/23	10,000	10,001,800
		66,083,056

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**Indiana 4.7%**

Indiana Health & Educational Facilities Financing Authority, RB, Clarian Health Obligation, Series A, 5.25%, 2/15/40	8,980	8,164,706
Indiana Transportation Finance Authority, RB, Series A, 6.80%, 12/01/16	7,280	8,245,983
Indianapolis Local Public Improvement Bond Bank, Refunding RB, Series D, 6.75%, 2/01/14	10,210	10,951,552
		<u>27,362,241</u>

**Kansas 0.3%**

Sedgwick & Shawnee Counties Kansas, RB, Mortgage-Backed Securities Program, Series A-4, AMT (Ginnie Mae), 5.95%, 12/01/33	1,665	1,739,842
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**Kentucky 1.2%**

County of Owen Kentucky, RB, Kentucky American Water Co., Series B, 5.63%, 9/01/39	1,000	979,810
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Schedule of Investments May 31, 2011 (Unaudited)

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

Municipal Bonds	Par (000)	Value
<b>Kentucky (concluded)</b>		
Kentucky Economic Development Finance Authority, RB, Owensboro Medical Health System, Series A, 6.50%, 3/01/45	\$ 4,000	\$ 3,967,040
Kentucky Economic Development Finance Authority, Refunding RB, Owensboro Medical Health System, Series A, 6.38%, 6/01/40	2,000	1,962,440
		<u>6,909,290</u>
<b>Louisiana 0.5%</b>		
Louisiana Local Government Environmental Facilities & Community Development Authority, RB, Westlake Chemical Corp., Series A-1, 6.50%, 11/01/35	2,615	2,678,963
<b>Maine 1.2%</b>		
Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39	5,000	4,969,900
Portland New Public Housing Authority Maine, Refunding RB, Senior Living, Series A: 5.70%, 8/01/21	775	779,340
6.00%, 2/01/34	1,190	1,114,459
		<u>6,863,699</u>
<b>Maryland 1.8%</b>		
Maryland Community Development Administration, RB, AMT, 5.10%, 9/01/37	1,835	1,770,536
Maryland Community Development Administration, Refunding RB, Residential, Series D, 4.90%, 9/01/42	3,250	2,960,230
Maryland Health & Higher Educational Facilities Authority, Refunding RB: Charlestown Community, 6.25%, 1/01/41	2,000	1,978,580
University of Maryland Medical System, 5.00%, 7/01/34	2,100	2,000,460
University of Maryland Medical System, 5.13%, 7/01/39	2,100	1,965,159



10,674,965

**Massachusetts 6.4%**

Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A, 7.00%, 3/01/19	3,010	3,678,611
Massachusetts HFA, HRB, Series A, AMT, 5.20%, 12/01/37	3,000	2,823,480
Massachusetts HFA, RB, S/F, Series 130, AMT, 5.00%, 12/01/32	2,500	2,379,825
Massachusetts HFA, Refunding HRB, Series D, AMT, 4.85%, 6/01/40	3,000	2,683,140

**Municipal Bonds****Par  
(000)****Value****Massachusetts (concluded)**

Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42	\$ 6,550	\$ 6,063,532
Massachusetts Water Resources Authority, RB, Series A, 6.50%, 7/15/19 (c)	16,000	19,509,760
		<u>37,138,348</u>

**Michigan 4.3%**

City of Detroit Michigan, RB, Second Lien, Series B (AGM): 6.25%, 7/01/36	2,500	2,712,500
7.00%, 7/01/36	1,250	1,426,988
Lansing Board of Water & Light, RB, Series A, 5.50%, 7/01/41 (d)	1,660	1,733,057
Michigan State Hospital Finance Authority, Refunding RB: Henry Ford Health System, Series A, 5.25%, 11/15/46	7,950	6,769,663
McLaren Health Care, 5.75%, 5/15/38	7,285	7,401,487
Royal Oak Hospital Finance Authority Michigan, Refunding RB, William Beaumont Hospital, 8.25%, 9/01/39	4,100	4,705,406
		<u>24,749,101</u>

**Mississippi 5.4%**

County of Lowndes Mississippi, Refunding RB, Weyerhaeuser Co. Project: Series A, 6.80%, 4/01/22	9,160	9,621,847
Series B, 6.70%, 4/01/22	4,500	4,693,140
Mississippi Business Finance Corp., Refunding RB, System Energy Resource Inc. Project: 5.88%, 4/01/22	15,000	14,870,700
5.90%, 5/01/22	2,250	2,231,685
		<u>31,417,372</u>

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<b>Nevada 0.9%</b>		
County of Clark Nevada, RB, Series B, 5.75%, 7/01/42	5,000	5,151,550
<b>New Hampshire 0.4%</b>		
New Hampshire Health & Education Facilities Authority, Refunding RB, Elliot Hospital, Series B, 5.60%, 10/01/22	2,400	2,480,160
<b>New Jersey 5.7%</b>		
New Jersey EDA, RB, Cigarette Tax: 5.50%, 6/15/24	9,080	8,586,775
5.75%, 6/15/29	2,885	2,694,705
5.75%, 6/15/34	3,695	3,345,823
New Jersey EDA, Refunding RB, School Facilities Construction, Series AA, 5.25%, 12/15/33	10,000	9,989,097

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2011

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## Schedule of Investments (continued)

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

Municipal Bonds	Par (000)	Value
<b>New Jersey (concluded)</b>		
New Jersey State Housing & Mortgage Finance Agency, RB, Series AA, 6.38%, 10/01/28	\$ 1,445	\$ 1,549,141
Tobacco Settlement Financing Corp. New Jersey, RB, 7.00%, 6/01/13 (a)	5,980	6,746,516
		<u>33,300,863</u>
<b>New York 4.1%</b>		
Metropolitan Transportation Authority, RB, Series 2008C: 6.25%, 11/15/23	3,245	3,759,852
6.50%, 11/15/28	14,925	17,174,645
Port Authority of New York & New Jersey, RB, JFK International Air Terminal, 6.00%, 12/01/36	3,165	3,174,527
		<u>24,109,024</u>
<b>North Carolina 1.3%</b>		
Gaston County Industrial Facilities & Pollution Control Financing Authority North Carolina, RB, Exempt Facilities, National Gypsum Co. Project, AMT, 5.75%, 8/01/35	4,105	3,161,219
North Carolina Medical Care Commission, RB, Novant Health Obligation, Series A, 4.75%, 11/01/43	5,000	4,154,450
		<u>7,315,669</u>
<b>Ohio 3.0%</b>		
County of Butler Ohio, RB, UC Health, 5.50%, 11/01/40	4,000	3,422,640
County of Franklin Ohio, GO, Various Purpose, 5.00%, 12/01/31	4,000	4,185,000
County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/37	1,915	2,099,204
Ohio Higher Educational Facility Commission, Refunding RB, Kenyon College Project, 5.25%, 7/01/44	8,000	7,815,520
		<u>17,522,364</u>

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<b>Pennsylvania 1.6%</b>		
Chester County IDA, RB, Aqua Pennsylvania Inc. Project, Series A, AMT (NPFGC), 5.00%, 2/01/40	540	519,296
Delaware River Port Authority, RB, Series D, 5.00%, 1/01/40	195	194,403
Lycoming County Authority, Refunding RB, Susquehanna Health System Project, Series A, 5.75%, 7/01/39	3,950	3,636,172
Pennsylvania Economic Development Financing Authority, Refunding RB, Aqua Pennsylvania Inc. Project, Series A, AMT, 5.00%, 12/01/34	2,780	2,757,232
Philadelphia Authority for Industrial Development, RB: Arbor House Inc. Project, Series E, 6.10%, 7/01/33	1,000	935,630
	<b>Par (000)</b>	<b>Value</b>
<b>Municipal Bonds</b>		
<b>Pennsylvania (concluded)</b>		
Philadelphia Authority for Industrial Development, RB (concluded): Rieder House Project, Series A, 6.10%, 7/01/33	\$ 1,355	\$ 1,267,779
		<u>9,310,512</u>
<b>Puerto Rico 2.7%</b>		
Puerto Rico Sales Tax Financing Corp., RB, First Sub-Series A, 6.38%, 8/01/39	13,000	13,721,630
Puerto Rico Sales Tax Financing Corp., Refunding RB, CAB, Series A (NPFGC), 5.69%, 8/01/41 (e)	15,000	2,075,550
		<u>15,797,180</u>
<b>South Carolina 1.0%</b>		
County of Georgetown South Carolina, Refunding RB, International Paper Co. Project, Series A, AMT, 5.55%, 12/01/29	1,000	979,070
County of Richland South Carolina, Refunding RB, International Paper Co. Project, AMT, 6.10%, 4/01/23	5,000	5,036,100
		<u>6,015,170</u>
<b>Texas 12.9%</b>		
Brazos River Authority, Refunding RB, Texas Utility Co., Series, AMT, 7.70%, 4/01/33	3,055	1,224,627
Brazos River Harbor Navigation District, Refunding RB, Dow Chemical Co. Project, Series A-7, AMT, 6.63%, 5/15/33	11,460	11,572,079
	8,335	8,646,062

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City of Houston Texas, RB, Senior Lien, Series A, 5.50%, 7/01/34		
Gulf Coast Waste Disposal Authority, Refunding RB, Series A, AMT, 6.10%, 8/01/24	4,000	4,022,200
Harris County Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B: 7.13%, 12/01/31	3,500	3,859,240
7.25%, 12/01/35	5,400	5,943,078
Houston Industrial Development Corp., RB, Senior, Air Cargo, AMT, 6.38%, 1/01/23	1,785	1,659,229
La Vernia Higher Education Finance Corp., RB, KIPP Inc., 6.25%, 8/15/39	925	928,423
Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40	3,600	3,232,980
Matagorda County Navigation District No. 1 Texas, Refunding RB, CenterPoint Energy Project, 5.60%, 3/01/27 (f)	9,355	9,416,837
North Texas Tollway Authority, Refunding RB, First Tier, Series A, 6.25%, 1/01/39	3,500	3,625,685

## Schedule of Investments (continued)

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

Municipal Bonds	Par (000)	Value
<b>Texas (concluded)</b>		
Tarrant County Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare, 6.00%, 8/15/45	\$ 5,000	\$ 5,181,850
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	10,598,400
NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39	4,710	4,934,761
		<u>74,845,451</u>
<b>U. S. Virgin Islands 1.3%</b>		
United States Virgin Islands, Refunding RB, Sr Secured-Hovensa Coker Project, AMT, 6.50%, 7/01/21	8,000	7,842,800
<b>Vermont 0.2%</b>		
Vermont Educational & Health Buildings Financing Agency, RB, Developmental & Mental Health, Series A, 6.38%, 6/15/22	1,000	939,300
<b>Virginia 2.8%</b>		
Chesterfield County IDA, Refunding RB, Virginia Electric & Power Co., Series A, 5.88%, 6/01/17	1,425	1,457,134
City of Norfolk Virginia, Refunding RB, Series B (AMBAC), 5.50%, 2/01/31	3,550	3,445,949
City of Portsmouth Virginia, GO, Refunding, Series D, 5.00%, 7/15/34	3,105	3,260,250
Fairfax County EDA, Refunding RB, Goodwin House Inc.: 5.13%, 10/01/37	2,000	1,774,480
5.13%, 10/01/42	6,015	5,236,900
Virginia HDA, Refunding RB, Sub-Series A3, AMT, 5.05%, 7/01/26	1,325	1,332,181
		<u>16,506,894</u>
<b>Washington 4.8%</b>		

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Energy Northwest, Refunding RB, Series B, 7.13%, 7/01/16	14,320	18,199,717
Seattle Housing Authority Washington, HRB, Replacement Housing Projects, 6.13%, 12/01/32	2,230	2,042,435
Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36	7,000	7,469,210
		27,711,362

**West Virginia 0.4%**

West Virginia Hospital Finance Authority, Refunding RB, Charleston, Series A, 5.63%, 9/01/32	2,500	2,473,775
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	<b>Par (000)</b>	<b>Value</b>
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**Wisconsin 1.5%**

City of Milwaukee Wisconsin, RB, Senior, Air Cargo, AMT, 6.50%, 1/01/25	\$ 1,485	\$ 1,388,430
Wisconsin Health & Educational Facilities Authority, MRB, Hudson Memorial Hospital (FHA), 5.70%, 1/15/29	4,500	4,539,600
Wisconsin Health & Educational Facilities Authority, RB, Synergyhealth Inc., 6.00%, 11/15/32	3,040	3,079,642
		9,007,672

**Wyoming 0.8%**

County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, 5.25%, 7/15/26	4,500	4,735,800
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<b>Total Municipal Bonds 111.3%</b>		647,175,790
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**Municipal Bonds Transferred to Tender  
Option Bond Trusts (g)**

**Arizona 0.6%**

Phoenix Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/34	3,500	3,634,190
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**California 5.4%**

Los Angeles Community College District California, GO, Election of 2008, Series A, 6.00%, 8/01/33	9,586	10,510,511
University of California, RB, Series O, 5.25%, 5/15/39	20,000	20,588,800

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31,099,311

**Connecticut 2.1%**

Connecticut State Health & Educational  
Facility Authority, RB, Yale University,  
Series Z-3, 5.05%, 7/01/42

12,000 12,418,320

**District of Columbia 1.4%**

District of Columbia Water & Sewer  
Authority, RB, Series A, 5.50%,  
10/01/39

7,495 7,987,095

**Florida 4.1%**

County of Miami-Dade Florida, RB,  
Water & Sewer System (AGM),  
5.00%, 10/01/39

14,747 14,811,389

Miami-Dade County Expressway  
Authority, RB, Series A (AGC), 5.00%,  
7/01/35

8,900 8,777,002

23,588,391

**Illinois 3.4%**

City of Chicago Illinois, Refunding RB,  
Second Lien (AGM), 5.25%, 11/01/33

1,330 1,355,682

BLACKROCK MUNIVEST FUND, INC.

MAY 31, 2011

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## Schedule of Investments (continued)

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

Municipal Bonds Transferred to Tender Option Bond Trusts (g)	Par (000)	Value
<b>Illinois (concluded)</b>		
Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/38	\$ 10,000	\$ 11,250,900
Illinois State Toll Highway Authority, RB, Series B, 5.50%, 1/01/33	6,999	7,173,015
		<u>19,779,597</u>
<b>Kentucky 5.5%</b>		
Kentucky Economic Development Finance Authority, Refunding RB, St. Elizabeth, Series A, 5.50%, 5/01/39	8,003	8,130,612
Kentucky Housing Corp., Refunding RB, Series L, AMT, 5.25%, 1/01/38	7,160	7,169,952
Lexington-Fayette Urban County Airport Board, Refunding RB, Series A, 5.00%, 7/01/27	7,001	7,342,594
Louisville & Jefferson County Metropolitan Government Parking Authority, RB, Series A, 5.38%, 12/01/39	9,195	9,457,058
		<u>32,100,216</u>
<b>Maryland 0.8%</b>		
Maryland State Transportation Authority, RB, Transportation Facility Project (AGM), 5.00%, 7/01/41	4,710	4,854,173
<b>Nevada 3.0%</b>		
Clark County Water Reclamation District, GO, Series B, 5.75%, 7/01/34	15,789	17,304,823
<b>New York 5.0%</b>		
New York City Municipal Water Finance Authority, RB: Series DD, 5.00%, 6/15/37	24,199	24,658,003
Series FF-2, 5.50%, 6/15/40	4,154	4,428,576
		<u>29,086,579</u>
<b>North Carolina 3.1%</b>		

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North Carolina Capital Facilities Finance Agency, Refunding RB:		
Duke University Project, Series A, 5.00%, 10/01/41	12,678	12,890,964
Wake Forest University, 5.00%, 1/01/38	5,000	5,175,150
		18,066,114
<b>Ohio 3.7%</b>		
County of Allen Ohio, Refunding RB, Catholic Healthcare, Series A, 5.25%, 6/01/38	2,870	2,805,195
County of Montgomery Ohio, Refunding RB, Catholic Healthcare, Series A, 5.50%, 5/01/34	5,470	5,610,798
Ohio Higher Educational Facility Commission, Refunding RB, Hospital, Cleveland Clinic Health, Series A, 5.25%, 1/01/33	4,400	4,451,040
<b>Municipal Bonds Transferred to Tender Option Bond Trusts (g)</b>	<b>Par (000)</b>	<b>Value</b>
<b>Ohio (concluded)</b>		
State of Ohio, RB, Cleveland Clinic Health, Series B, 5.50%, 1/01/34	\$ 8,500	\$ 8,711,225
		21,578,258
<b>Oregon 2.1%</b>		
Oregon State Housing & Community Services Department, HRB, Series A, AMT, 4.95%, 7/01/30	13,000	12,427,214
<b>South Carolina 0.6%</b>		
South Carolina State Housing Finance & Development Authority, Refunding RB, Series B-1, 5.55%, 7/01/39	3,159	3,210,854
<b>Texas 8.3%</b>		
Harris County Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27	20,970	25,428,641
Houston Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40	10,000	10,402,365
Texas Department of Housing & Community Affairs, MRB, Series B, AMT (Ginnie Mae), 5.25%, 9/01/32	6,432	6,366,864
Texas State University Systems, Refunding RB (AGM), 5.00%, 3/15/30	5,667	5,814,164
		48,012,034

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**Virginia 1.2%**

Fairfax County IDA Virginia, Refunding RB, Health Care, Inova Health System, Series A, 5.50%, 5/15/35	2,099	2,152,817
Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40	5,002	5,033,568
		<u>7,186,385</u>

**Washington 4.4%**

Central Puget Sound Regional Transit Authority, RB, Series A: 5.00%, 11/01/36	5,500	6,135,180
(AGM), 5.00%, 11/01/32	14,007	14,464,326
Central Puget Sound Regional Transportation Authority, Washington, RB, Series A, 5.00%, 11/01/34	5,500	5,112,650
		<u>25,712,156</u>

**Wisconsin 1.0%**

Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health Inc., 5.25%, 4/01/39	6,099	5,993,088
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<b>Total Municipal Bonds Transferred to Tender Option Bond Trusts 55.7%</b>		324,038,798
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<b>Total Long-Term Investments (Cost \$949,433,656) 167.0%</b>		971,214,588
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## Schedule of Investments (continued)

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

Short-Term Securities	Shares	Value
FFI Institutional Tax-Exempt Fund, 0.11% (h)(i)	16,010,690	\$ 16,010,690
<b>Total Short-Term Securities</b> (Cost \$16,010,690) 2.7%		16,010,690
<b>Total Investments</b> (Cost \$965,444,346*) 169.7%		987,225,278
<b>Other Assets Less Liabilities</b> 2.0%		11,614,183
<b>Liability for Trust Certificates, Including Interest</b>		
<b>Expense and Fees Payable</b> (29.8)%		(173,501,767)
<b>Preferred Shares, at Redemption Value</b> (41.9)%		(243,851,929)
<b>Net Assets Applicable to Common Shares</b> 100.0%		\$ 581,485,765

\* The cost and unrealized appreciation (depreciation) of investments as of May 31, 2011, as computed for federal income tax purposes, were as follows:

Aggregate cost	\$ 792,250,434
Gross unrealized appreciation	\$ 40,402,563
Gross unrealized depreciation	\$ (18,786,620)
Net unrealized appreciation	\$ 21,615,943

- (a) US government securities, held in escrow, are used to pay interest on this security as well as to retire the bond in full at the date indicated, typically at a premium to par.
- (b) Security exempt from registration under Rule 144A of the Securities Act of 1933. These securities may be resold in transactions exempt from registration to qualified institutional investors.
- (c) Security is collateralized by Municipal or US Treasury obligations.
- (d) When-issued security. Unsettled when-issued transactions were as follows:

Counterparty	Value	Unrealized Appreciation
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Merrill Lynch & Co., Inc.	\$	1,733,057	\$	1,527
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- (e) Represents a zero-coupon bond. Rate shown reflects the current yield as of report date.
- (f) Variable rate security. Rate shown is as of report date.
- (g) Securities represent bonds transferred to a tender option bond trust in exchange for which the Fund acquired residual interest certificates. These securities serve as collateral in a financing transaction.
- (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, 2010	Net Activity	Shares Held at May 31, 2011	Income
FFI Institutional Tax-Exempt Fund	4,494,923	11,515,767	16,010,690	\$ 15,442

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

Financial futures contracts sold as of May 31, 2011 were as follows:

Contracts	Issue	Exchange	Expiration	Notional Value	Unrealized Depreciation
460	10-Year U.S. Treasury Note	Chicago Board of Trade	June 2011	\$ 54,988,814	\$ (2,065,562)

Fair Value Measurements - Various inputs are used in determining the fair value of investments and derivative financial instruments. These inputs are summarized in three broad levels for financial reporting purposes as follows:

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

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

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

The inputs or methodologies used for valuing securities are not necessarily an indication of the risk associated with investing in those securities. For information about the Fund's policy regarding valuation of investments and derivative financial instruments and other significant accounting

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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, 2011 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>		\$ 971,214,588		\$ 971,214,588
Short Term Securities	\$ 16,010,690			16,010,690
<b>Total</b>	\$ 16,010,690	\$ 971,214,588	\$	\$ 987,225,278

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

Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

Valuation Inputs	Level 1	Level 2	Level 3	Total
Derivative Financial Instruments <sup>2</sup>				
<b>Liabilities:</b>				
Interest rate contracts	\$ (2,065,562)			\$ (2,065,562)

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

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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 26, 2011

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 26, 2011

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

Date: July 26, 2011