

BLACKROCK MUNIVEST FUND INC  
Form N-Q  
July 24, 2009  
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: Donald C. Burke, Chief Executive Officer, BlackRock MuniVest Fund, Inc., 800 Scudders Mill Road, Plainsboro, NJ, 08536. Mailing address: P.O. Box 9011, Princeton, NJ, 08543-9011

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

Date of fiscal year end: 08/31/2009

Date of reporting period: 05/31/2009

Item 1 – Schedule of Investments

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**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
<b>Alabama - 2.1%</b>	Camden, Alabama, IDB, Exempt Facilities Revenue Bonds (Weyerhaeuser Company), Series A, 6.125%, 12/01/13 (a)	\$ 2,550	\$ 2,990,589
	Prattville, Alabama, IDB, Environmental Improvement Revenue Bonds (International Paper Company Projects), AMT, Series A, 4.75%, 12/01/30	6,500	4,120,090
	Selma, Alabama, IDB, Environmental Improvement Revenue Refunding Bonds (International Paper Company Project), Series B, 5.50%, 5/01/20	5,000	4,337,000
			11,447,679
<b>Arizona - 2.0%</b>	Maricopa County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project 1), Series A, 6.75%, 7/01/29	4,100	2,764,958
	Phoenix, Arizona, Civic Improvement Corporation, Water System Revenue Refunding Bonds, Junior Lien, Series A, 5%, 7/01/34	3,500	3,549,700
	Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project), Series E, 7.25%, 7/01/31	2,025	1,575,653
	Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project), Series I, 6.10%, 7/01/24	490	357,186
	Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project), Series I, 6.30%, 7/01/31	985	681,975
	Pima County, Arizona, IDA, Education Revenue Refunding Bonds (Arizona Charter Schools Project), Series O, 5%, 7/01/26	1,545	955,490
	Pima County, Arizona, IDA, Education Revenue Refunding Bonds (Arizona Charter Schools Project II), Series A, 6.75%, 7/01/21	940	763,064
			10,648,026
<b>California - 13.8%</b>	California HFA, Home Mortgage Revenue Bonds, AMT, Series K, 5.50%, 2/01/42	5,000	4,859,350
	California Health Facilities Financing Authority, Revenue Refunding Bonds (Catholic Healthcare West), Series A, 6%, 7/01/34	1,055	1,070,076
	California State, GO, 5.50%, 4/01/30	10	10,008
	California State, GO, 6.50%, 4/01/33	9,700	10,543,900
	California State Public Works Board, Lease Revenue Bonds (Department of Corrections), Series C, 5.50%, 6/01/22	5,000	4,983,900
	California State Public Works Board, Lease Revenue Bonds (Department of Corrections), Series C, 5.50%, 6/01/23	6,000	5,912,520
	California State Public Works Board, Lease Revenue Bonds (Department of Mental Health - Coalinga State Hospital), Series A, 5.125%, 6/01/29	11,075	10,086,889

**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 list below.

<b>AMT</b>	Alternative Minimum Tax (subject to)
<b>EDA</b>	Economic Development Authority
<b>GO</b>	General Obligation Bonds
<b>HFA</b>	Housing Finance Agency
<b>IDA</b>	Industrial Development Authority
<b>IDB</b>	Industrial Development Board
<b>IDR</b>	Industrial Development Revenue Bonds
<b>PCR</b>	Pollution Control Revenue Bonds
<b>S/F</b>	Single-Family

**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
	California Statewide Communities Development Authority, Health Facility Revenue Bonds (Memorial Health Services), Series A, 6%, 10/01/23	\$ 5,240	\$ 5,363,664
	Chula Vista, California, IDR (San Diego Gas and Electric Company), AMT, Series B, 5%, 12/01/27	1,250	1,130,850
	Golden State Tobacco Securitization Corporation of California, Tobacco Settlement Revenue Bonds, Series A-3, 7.875%, 6/01/13 (a)	10,725	12,987,653
	Golden State Tobacco Securitization Corporation of California, Tobacco Settlement Revenue Bonds, Series A-4, 7.80%, 6/01/13 (a)	3,750	4,530,938
	Golden State Tobacco Securitization Corporation of California, Tobacco Settlement Revenue Bonds, Series A-5, 7.875%, 6/01/13 (a)	1,425	1,725,632
	Los Angeles, California, Community College District, GO, Refunding (Election of 2008), Series A, 6%, 8/01/33	9,585	10,315,089
			<u>73,520,469</u>
<b>Colorado - 1.1%</b>	Colorado HFA, Revenue Refunding Bonds (S/F Program), AMT, Senior Series A-2, 6.60%, 5/01/28	400	403,588
	Colorado HFA, Revenue Refunding Bonds (S/F Program), AMT, Senior Series A-2, 7.50%, 4/01/31	160	171,142
	Colorado Health Facilities Authority Revenue Bonds (Catholic Health Initiatives), Series D, 6.25%, 10/01/33	2,500	2,703,575
	Colorado Health Facilities Authority Revenue Bonds (Lutheran Medical Center), Series A, 5.25%, 6/01/34	3,000	2,602,620
			<u>5,880,925</u>
<b>Connecticut - 0.3%</b>	Mohegan Tribe Indians Gaming Authority, Connecticut, Public Improvement Revenue Refunding Bonds (Priority Distribution), 6.25%, 1/01/31	2,810	1,826,500
<b>District of Columbia - 1.5%</b>	District of Columbia, Water and Sewer Authority, Public Utility Revenue Refunding Bonds, Senior Lien, Series A, 5.50%, 10/01/39	7,500	7,776,525
<b>Florida - 6.8%</b>	Hillsborough County, Florida, IDA, Hospital Revenue Bonds (H. Lee Moffitt Cancer Center Project), Series A, 5.25%, 7/01/37	6,500	5,598,385
	Miami-Dade County, Florida, Aviation Revenue Refunding Bonds (Miami International Airport), AMT, 5%, 10/01/40 (b)(c)	10,000	8,549,000
	Miami-Dade County, Florida, GO (Building Better Communities Program), Series B, 6.375%, 7/01/28	4,630	5,179,905
	Miami-Dade County, Florida, GO (Building Better Communities Program), Series B-1, 5.625%, 7/01/38	5,000	5,040,400
		3,200	3,287,040

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	Miami-Dade County, Florida, IDA, Solid Waste Disposal Revenue Bonds (Waste Management, Inc. Project), Series 1, 7%, 12/01/18		
	Orange County, Florida, Health Facilities Authority, Hospital Revenue Bonds (Adventist Health System), 5.625%, 11/15/12 (a)	7,600	8,518,384
			<u>36,173,114</u>
<b>Georgia - 3.0%</b>	Gainesville, Georgia, Redevelopment Authority, Educational Facilities Revenue Refunding Bonds (Riverside Military Academy), 5.125%, 3/01/37	1,100	552,453
	Georgia Municipal Electric Authority, Power Revenue Refunding Bonds, Series W, 6.60%, 1/01/18	4,585	5,292,786

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**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
	Georgia Municipal Electric Authority, Power Revenue Refunding Bonds, Series W, 6.60%, 1/01/18 (d)	\$ 250	\$ 290,073
	Main Street Natural Gas, Inc., Georgia, Gas Project Revenue Bonds, Series A, 6.375%, 7/15/38 (e)(f)	3,270	1,324,350
	Milledgeville-Baldwin County, Georgia, Development Authority Revenue Bonds (Georgia College and State University Foundation), 5.625%, 9/01/14 (a)	3,000	3,582,810
	Monroe County, Georgia, Development Authority, PCR, Refunding (Oglethorpe Power Corporation-Scherer), Series A, 6.80%, 1/01/11	4,785	5,093,967
			<u>16,136,439</u>
<b>Idaho - 0.0%</b>	Idaho Housing Agency, S/F Mortgage Revenue Refunding Bonds, AMT, Series E-2, 6.90%, 1/01/27	160	160,216
<b>Illinois - 14.1%</b>	Chicago, Illinois, O Hare International Airport, General Airport Revenue Bonds, Third Lien, AMT, Series B-2, 6%, 1/01/27 (g)	17,080	17,119,626
	Chicago, Illinois, O Hare International Airport, General Airport Revenue Refunding Bonds, Third Lien, AMT, Series A, 5.75%, 1/01/19 (g)	5,000	5,034,300
	Chicago, Illinois, S/F Mortgage Revenue Bonds, AMT, Series C, 7%, 3/01/32 (h)(i)(j)	60	61,857
	Hodgkins, Illinois, Environmental Improvement Revenue Bonds (Metro Biosolids Management LLC Project), AMT, 6%, 11/01/23	10,000	9,970,800
	Illinois Development Finance Authority Revenue Bonds (Community Rehabilitation Providers Facilities), Series A, 6.50%, 7/01/22	2,140	2,079,352
	Illinois Development Finance Authority, Revenue Refunding Bonds (Community Rehabilitation Providers Facilities), Series A, 6%, 7/01/15	370	369,604
	Illinois State Finance Authority Revenue Bonds (Advocate Health Care Network), Series D, 6.50%, 11/01/38	9,700	10,310,033
	Illinois State Finance Authority Revenue Bonds (Community Rehabilitation Providers Facilities), 4.625%, 7/01/27	2,695	1,918,759
	Illinois State Finance Authority, Revenue Refunding Bonds (Northwestern Memorial Hospital), Series A, 6%, 8/15/39	9,000	9,340,020
	Illinois State Toll Highway Authority Revenue Bonds, Series B, 5.50%, 1/01/33	7,000	7,266,350
	Kane and De Kalb Counties, Illinois, Community Unit School District Number 302, GO, 5.75%, 2/01/14 (a)(k)	30	35,258
	McLean and Woodford Counties, Illinois, Community Unit School District Number 005, GO, Refunding, 6.25%, 12/01/14 (l)	1,005	1,109,580
	Regional Transportation Authority, Illinois, Revenue Bonds, Series A, 7.20%, 11/01/20 (m)	3,500	4,356,240
	Regional Transportation Authority, Illinois, Revenue Bonds, Series C, 7.75%, 6/01/20 (g)(k)	4,000	5,181,560
		395	427,102

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Will County, Illinois, School District Number 122 (New Lenox Elementary), GO, Series A, 6.50%, 11/01/10 (a)(l)		
Will County, Illinois, School District Number 122 (New Lenox Elementary), GO, Series A, 6.50%, 11/01/13 (l)	505	539,537

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75,119,978

**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
<b>Indiana - 6.4%</b>	Indiana Health and Educational Facilities Financing Authority, Hospital Revenue Bonds (Clarian Health Obligation), Series A, 5.25%, 2/15/40	\$ 8,980	\$ 7,662,275
	Indiana Transportation Finance Authority, Highway Revenue Bonds, Series A, 6.80%, 12/01/16	8,195	9,458,505
	Indianapolis, Indiana, Local Public Improvement Bond Bank, Revenue Refunding Bonds, Series D, 6.75%, 2/01/14	15,335	17,041,786
			34,162,566
<b>Kansas - 0.5%</b>	Sedgwick and Shawnee Counties, Kansas, S/F Mortgage Revenue Bonds (Mortgage-Backed Securities Program), AMT, Series A-4, 5.95%, 12/01/33 (i)(j)	2,695	2,722,327
<b>Kentucky - 1.6%</b>	Louisville and Jefferson Counties, Kentucky, Metropolitan Sewer District, Sewer and Drain System Revenue Bonds, Series A, 5%, 5/15/38 (k)(n)	2,330	2,335,382
	Louisville and Jefferson County, Kentucky, Metropolitan Government Health System, Revenue Refunding Bonds (Norton Healthcare, Inc.), 5.25%, 10/01/36	6,795	5,989,860
			8,325,242
<b>Louisiana - 3.5%</b>	Louisiana Public Facilities Authority, Hospital Revenue Bonds (Franciscan Missionaries of Our Lady Health System, Inc.), Series A, 5%, 8/15/33	8,720	7,786,611
	Louisiana Public Facilities Authority, Hospital Revenue Bonds (Franciscan Missionaries of Our Lady Health System, Inc.), Series A, 5.25%, 8/15/36	11,660	10,877,031
			18,663,642
<b>Maine - 0.3%</b>	Portland, Maine, Housing Development Corporation, Senior Living Revenue Bonds (Avesta Housing Development Corporation Project), Series A, 5.70%, 8/01/21	775	663,710
	Portland, Maine, Housing Development Corporation, Senior Living Revenue Bonds (Avesta Housing Development Corporation Project), Series A, 6%, 2/01/34	1,190	922,750
			1,586,460
<b>Maryland - 0.5%</b>	Maryland State Community Development Administration, Department of Housing and Community Development, Residential Revenue Refunding Bonds, AMT, Series D, 4.90%, 9/01/42	3,250	2,903,745
<b>Massachusetts - 9.6%</b>	Boston, Massachusetts, Water and Sewer Commission Revenue Bonds, 9.25%, 1/01/11 (d)	2,035	2,213,754

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Massachusetts Bay Transportation Authority, Revenue Refunding Bonds (General Transportation System), Series A, 7%, 3/01/19	3,010	3,677,016
Massachusetts State, HFA, Housing Revenue Bonds, AMT, Series A, 5.20%, 12/01/37	3,000	2,809,860
Massachusetts State, HFA, Housing Revenue Refunding Bonds, AMT, Series D, 4.85%, 6/01/40	3,000	2,615,280

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**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
	Massachusetts State, HFA, S/F Housing Revenue Bonds, AMT, Series 130, 5%, 12/01/32	\$ 2,500	\$ 2,311,400
	Massachusetts State Water Resource Authority Revenue Bonds, Series A, 6.50%, 7/15/19 (d)	30,000	36,655,500
	Massachusetts State Water Resource Authority, Revenue Refunding Bonds, Series A, 6%, 8/01/10 (a)(k)	1,000	1,070,600
			51,353,410
<b>Michigan - 7.4%</b>	Detroit, Michigan, Water Supply System Revenue Bonds, Second Lien, Series B, 6.25%, 7/01/36 (l)	2,500	2,637,600
	Detroit, Michigan, Water Supply System Revenue Bonds, Second Lien, Series B, 7%, 7/01/36 (l)	1,250	1,395,675
	Macomb County, Michigan, Hospital Finance Authority, Hospital Revenue Bonds (Mount Clemens General Hospital), Series B, 5.75%, 11/15/13 (a)	3,715	4,331,764
	Macomb County, Michigan, Hospital Finance Authority, Hospital Revenue Bonds (Mount Clemens General Hospital), Series B, 5.875%, 11/15/13 (a)	4,250	4,978,238
	Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Crittenton Hospital), Series A, 5.625%, 3/01/27	1,900	1,722,445
	Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Oakwood Obligated Group), Series A, 5%, 7/15/25	2,000	1,727,980
	Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Henry Ford Health System), Series A, 5.25%, 11/15/46	7,950	6,225,248
	Michigan State Hospital Finance Authority, Revenue Refunding Bonds (McLaren Health Care Corporation), 5.75%, 5/15/38	7,285	6,864,874
	Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Sinai Hospital), 6.70%, 1/01/26	1,000	734,500
	Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Trinity Health Credit Group), Series A, 6%, 12/01/20	4,200	4,326,294
	Royal Oak, Michigan, Hospital Finance Authority, Hospital Revenue Refunding Bonds (William Beaumont Hospital), 8.25%, 9/01/39	4,100	4,613,812
			39,558,430
<b>Minnesota - 0.3%</b>	Saint Cloud, Minnesota, Health Care Revenue Refunding Bonds (Saint Cloud Hospital Obligation Group), Series A, 6.25%, 5/01/17 (l)	1,405	1,466,132
<b>Mississippi - 6.4%</b>	Lowndes County, Mississippi, Solid Waste Disposal and PCR, Refunding (Weyerhaeuser Company Project), Series A, 6.80%, 4/01/22	9,160	8,758,517

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Lowndes County, Mississippi, Solid Waste Disposal and PCR, Refunding (Weyerhaeuser Company Project), Series B, 6.70%, 4/01/22	4,500	4,263,615
Mississippi Business Finance Corporation, Mississippi, PCR, Refunding (System Energy Resources Inc. Project), 5.875%, 4/01/22	20,705	19,103,261
Mississippi Business Finance Corporation, Mississippi, PCR, Refunding (System Energy Resources Inc. Project), 5.90%, 5/01/22	2,250	2,079,383
		<hr/>
		34,204,776

**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
<b>Missouri - 0.5%</b>	Missouri State Development Finance Board, Infrastructure Facilities Revenue Refunding Bonds (Branson), Series A, 5.50%, 12/01/32	\$ 2,600	\$ 2,252,510
	Missouri State Housing Development Commission, S/F Mortgage Revenue Bonds (Homeowner Loan), AMT, Series A, 7.50%, 3/01/31 (i)(j)	180	192,535
			2,445,045
<b>Nevada - 3.1%</b>	Clark County, Nevada, Water Reclamation District, GO, Series B, 5.75%, 7/01/34	15,790	16,744,348
<b>New Hampshire - 0.5%</b>	New Hampshire Health and Education Facilities Authority, Revenue Refunding Bonds (Elliot Hospital), Series B, 5.60%, 10/01/22	2,675	2,706,565
<b>New Jersey - 6.7%</b>	New Jersey EDA, Cigarette Tax Revenue Bonds, 5.50%, 6/15/24	9,080	7,668,060
	New Jersey EDA, Cigarette Tax Revenue Bonds, 5.75%, 6/15/29	2,885	2,363,017
	New Jersey EDA, Cigarette Tax Revenue Bonds, 5.75%, 6/15/34	8,695	6,904,873
	New Jersey EDA, School Facilities Construction, Revenue Refunding Bonds, Series AA, 5.25%, 12/15/33	10,000	10,038,500
	New Jersey State Housing and Mortgage Finance Agency Revenue Bonds, Series AA, 6.375%, 10/01/28	1,555	1,698,915
	Tobacco Settlement Financing Corporation of New Jersey, Asset- Backed Revenue Bonds, 7%, 6/01/13 (a)	5,980	7,182,458
			35,855,823
<b>New York - 4.8%</b>	Metropolitan Transportation Authority, New York, Revenue Bonds, Series C, 6.25%, 11/15/23	3,245	3,627,618
	Metropolitan Transportation Authority, New York, Revenue Bonds, Series C, 6.50%, 11/15/28	14,925	16,524,662
	New York City, New York, City Municipal Water Finance Authority, Second General Resolution, Water and Sewer System Revenue Bonds, Series FF-2, 5.50%, 6/15/40	4,150	4,364,057
	New York City, New York, GO, Refunding, Series A, 6.375%, 5/15/14 (g)(k)	965	1,018,606
			25,534,943
<b>North Carolina - 1.3%</b>	Gaston County, North Carolina, Industrial Facilities and Pollution Control Financing Authority, Revenue Bonds (National Gypsum Company Project), AMT, 5.75%, 8/01/35	4,105	1,992,444
	North Carolina Capital Facilities Finance Agency, Educational Facilities Revenue Bonds (Wake Forest University), 5%, 1/01/38	5,000	5,118,400

7,110,844

<b>Ohio - 3.7%</b>	Buckeye Tobacco Settlement Financing Authority, Ohio, Tobacco Settlement Asset-Backed Bonds, Series A-2, 6.50%, 6/01/47	27,500	19,693,575
<b>Pennsylvania - 1.3%</b>	Pennsylvania State Higher Education Assistance Agency Revenue Bonds, Capital Acquisition, 6.125%, 12/15/10 (a)(g) Philadelphia, Pennsylvania, Authority for Industrial Development, Senior Living Revenue Bonds (Arbor House Inc. Project), Series E, 6.10%, 7/01/33	2,440	2,641,080
		1,000	788,580

**BlackRock MuniVest Fund, Inc.**

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(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
	Philadelphia, Pennsylvania, Authority for Industrial Development, Senior Living Revenue Bonds (Rieder House Project), Series A, 6.10%, 7/01/33	\$ 1,355	\$ 1,068,525
	Sayre, Pennsylvania, Health Care Facilities Authority, Revenue Bonds (Guthrie Healthcare System), Series B, 7.125%, 12/01/11 (a)	1,630	1,981,575
	Sayre, Pennsylvania, Health Care Facilities Authority, Revenue Refunding Bonds (Guthrie Healthcare System), Series A, 6.25%, 12/01/18	410	425,551
			6,905,311
<b>South Carolina - 0.9%</b>	Georgetown County, South Carolina, Environmental Improvement Revenue Refunding Bonds (International Paper Company Project), AMT, Series A, 5.55%, 12/01/29	1,000	732,750
	Richland County, South Carolina, Environmental Improvement Revenue Refunding Bonds (International Paper), AMT, 6.10%, 4/01/23	5,000	4,205,500
			4,938,250
<b>South Dakota - 0.4%</b>	South Dakota State Health and Educational Facilities Authority Revenue Bonds (Sanford Health), 5%, 11/01/40	2,605	2,298,365
<b>Tennessee - 0.5%</b>	Shelby County, Tennessee, Health, Educational and Housing Facility Board, Hospital Revenue Refunding Bonds (Methodist Healthcare), 6.50%, 9/01/12 (a)	2,370	2,740,976
<b>Texas - 13.3%</b>	Brazos River Authority, Texas, PCR, Refunding (TXU Energy Company LLC Project), AMT, Series A, 7.70%, 4/01/33	3,055	1,588,600
	Brazos River, Texas, Harbor Navigation District, Brazoria County Environmental Revenue Refunding Bonds (Dow Chemical Company Project), AMT, Series A-7, 6.625%, 5/15/33	11,460	10,386,771
	Dallas-Fort Worth, Texas, International Airport, Joint Revenue Bonds, AMT, Series B, 6.25%, 11/01/28 (g)	4,500	4,509,765
	Dallas-Fort Worth, Texas, International Airport, Joint Revenue Bonds, AMT, Series C, 6.25%, 11/01/28 (g)	1,500	1,503,255
	Dallas-Fort Worth, Texas, International Airport, Joint Revenue Refunding Bonds, AMT, Sub-Series A-2, 6.10%, 11/01/24 (g)	1,000	1,001,280
	Guadalupe-Blanco River Authority, Texas, Sewage and Solid Waste Disposal Facility Revenue Bonds (E. I. du Pont de Nemours and Company Project), AMT, 6.40%, 4/01/26	10,250	10,238,417
	Gulf Coast Waste Disposal Authority, Texas, Revenue Refunding Bonds (International Paper Company), AMT, Series A, 6.10%, 8/01/24	6,000	4,970,940
	Harris County, Texas, Health Facilities Development Corporation, Hospital Revenue Refunding Bonds (Memorial Hermann Healthcare System), Series B, 7.125%, 12/01/31	3,500	3,768,975

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Harris County, Texas, Health Facilities Development Corporation, Hospital Revenue Refunding Bonds (Memorial Hermann Healthcare System), Series B, 7.25%, 12/01/35	5,400	5,818,716
Harris County-Houston Sports Authority, Texas, Revenue Refunding Bonds, Senior Lien, Series G, 5.75%, 11/15/20 (g)	5,500	5,481,135
Houston, Texas, Industrial Development Corporation Revenue Bonds (Air Cargo), AMT, 6.375%, 1/01/23	1,790	1,438,122

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**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds	Par (000)	Value
	Mansfield, Texas, Independent School District, GO, Refunding, 6.625%, 2/15/15	\$ 155	\$ 160,912
	Matagorda County, Texas, Navigation District Number 1, Revenue Refunding Bonds (Centerpoint Energy Project), 5.60%, 3/01/27	9,355	8,663,853
	Midway, Texas, Independent School District, GO, Refunding, 6.125%, 8/15/14	5,225	5,520,787
	Port Corpus Christi, Texas, Revenue Refunding Bonds (Celanese Project), Series A, 6.45%, 11/01/30	2,700	2,050,785
	Red River Authority, Texas, PCR, Refunding (Celanese Project), AMT, Series B, 6.70%, 11/01/30	5,000	3,691,700
			70,794,013
<b>Vermont - 0.2%</b>	Vermont Educational and Health Buildings Financing Agency, Developmental and Mental Health Revenue Bonds (Howard Center for Human Services), Series A, 6.375%, 6/15/22	1,000	898,920
<b>Virginia - 1.9%</b>	Chesterfield County, Virginia, IDA, PCR (Virginia Electric and Power Company), Series A, 5.875%, 6/01/17	1,425	1,476,500
	Fairfax County, Virginia, EDA, Residential Care Facilities, Mortgage Revenue Refunding Bonds (Goodwin House, Inc.), 5.125%, 10/01/37	2,000	1,474,520
	Fairfax County, Virginia, EDA, Residential Care Facilities, Mortgage Revenue Refunding Bonds (Goodwin House, Inc.), 5.125%, 10/01/42	7,015	5,042,312
	Fairfax County, Virginia, IDA, Health Care Revenue Refunding Bonds (Inova Health System Project), Series A, 5.50%, 5/15/35	2,100	2,133,747
			10,127,079
<b>Washington - 5.1%</b>	Seattle, Washington, Housing Authority Revenue Bonds (Replacement Housing Project), 6.125%, 12/01/32	2,305	1,840,012
	Washington State Health Care Facilities Authority, Revenue Refunding Bonds (Catholic Health Initiatives), Series D, 6.375%, 10/01/36	7,000	7,421,050
	Washington State Public Power Supply System, Revenue Refunding Bonds (Nuclear Project Number 1), Series B, 7.125%, 7/01/16	14,320	18,024,727
			27,285,789
<b>Wisconsin - 2.8%</b>	Milwaukee, Wisconsin, Revenue Bonds (Air Cargo), AMT, 6.50%, 1/01/25	1,720	1,375,966
	Wisconsin Housing and EDA, Home Ownership Revenue Refunding Bonds, AMT, Series A, 5.625%, 3/01/31	5,730	5,753,837
	Wisconsin State Health and Educational Facilities Authority, Mortgage Revenue Bonds (Hudson Memorial Hospital),	4,500	4,522,635

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	5.70%, 1/15/29 (o)		
	Wisconsin State Health and Educational Facilities Authority		
	Revenue Bonds (SynergyHealth Inc.), 6%, 11/15/32	3,040	3,090,038
			<u>14,742,476</u>
<b>U.S. Virgin Islands - 1.5%</b>	Virgin Islands Government Refinery Facilities, Revenue Refunding Bonds (Hovenssa Coker Project), AMT, 6.50%, 7/01/21	8,000	7,822,960
	<b>Total Municipal Bonds - 129.7%</b>		<b>692,281,883</b>

**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds Transferred to Tender Option Bond Trusts (p)	Par (000)	Value
<b>Connecticut - 2.3%</b>	Connecticut State Health and Educational Facilities Authority Revenue Bonds (Yale University), Series Z-3, 5.05%, 7/01/42	\$ 12,000	\$ 12,344,520
<b>Illinois - 8.3%</b>	Chicago, Illinois, Water Revenue Refunding Bonds, Second Lien, 5.25%, 11/01/33 (l)	1,330	1,347,276
	Illinois State Finance Authority Revenue Bonds (University of Chicago), Series B, 6.25%, 7/01/38	10,000	11,104,100
	Kane and De Kalb Counties, Illinois, Community Unit School District Number 302, GO, 5.75%, 2/01/18 (k)	2,975	3,496,458
	Kane and De Kalb Counties, Illinois, Community Unit School District Number 302, GO, 5.75%, 2/01/19 (k)	2,710	3,185,009
	Kane and De Kalb Counties, Illinois, Community Unit School District Number 302, GO, 5.75%, 2/01/21 (k)	4,775	5,611,962
	Metropolitan Pier and Exposition Authority, Illinois, Dedicated State Tax Revenue Refunding Bonds (McCormick Place Expansion Project), Series B, 5.75%, 6/15/23 (g)	18,554	19,604,988
			44,349,793
<b>Kentucky - 1.7%</b>	Louisville and Jefferson County, Kentucky, Metropolitan Government Parking Authority Revenue Bonds, Series A, 5.375%, 12/01/39	9,195	9,243,366
<b>Maryland - 0.9%</b>	Maryland State Transportation Authority, Transportation Facilities Projects Revenue Bonds, 5%, 7/01/41 (l)	4,710	4,792,425
<b>Massachusetts - 3.9%</b>	Massachusetts State School Building Authority, Dedicated Sales Tax Revenue Bonds, Series A, 5%, 8/15/30 (l)	20,000	20,524,400
<b>New York - 4.5%</b>	New York City, New York, City Municipal Water Finance Authority, Water and Sewer System, Revenue Refunding Bonds, Series DD, 5%, 6/15/37	24,199	24,053,487
<b>North Carolina - 2.4%</b>	North Carolina Capital Facilities Finance Agency, Revenue Refunding Bonds (Duke University Project), Series A, 5%, 10/01/41	12,678	12,895,528
<b>Ohio - 0.8%</b>	Ohio State Higher Educational Facilities Commission, Hospital Revenue Bonds (University Hospitals Health System), Series A, 5.25%, 1/01/33	4,400	4,417,908
<b>Texas - 7.1%</b>	Harris County, Texas, Health Facilities Development Corporation Revenue Refunding Bonds (School Health Care System), Series B, 5.75%, 7/01/27	20,970	23,999,117
	Texas State Department of Housing and Community Affairs, S/F Mortgage Revenue Bonds, AMT, Series B, 5.25%, 9/01/32 (h)(i)(j)	8,503	8,118,189
		5,667	5,760,922

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Texas State University, System Financing Revenue Refunding  
Bonds, 5%, 3/15/30 (1)

37,878,228

**Washington - 9.9%**

Central Puget Sound Regional Transportation Authority, Washington, Sales and Use Tax Revenue Bonds, Series A, 5%, 11/01/32 (1)	14,007	14,160,168
Central Puget Sound Regional Transportation Authority, Washington, Sales and Use Tax Revenue Bonds, Series A, 5%, 11/01/34	5,000	5,021,975
Central Puget Sound Regional Transportation Authority, Washington, Sales and Use Tax Revenue Bonds, Series A, 5%, 11/01/36	6,000	6,026,370

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**BlackRock MuniVest Fund, Inc.**

Schedule of Investments May 31, 2009 (Unaudited)

(Percentages shown are based on Net Assets)

State	Municipal Bonds Transferred to Tender Option Bond Trusts (p)	Par (000)	Value
	Energy Northwest, Washington, Electric Revenue Refunding Bonds (Columbia Generating), Series A, 5.75%, 7/01/18 (g)	\$ 10,660	\$ 11,574,202
	Energy Northwest, Washington, Electric Revenue Refunding Bonds (Project Number 1), Series B, 6%, 7/01/17 (g)	14,700	16,150,890
			52,933,605
	<b>Total Municipal Bonds Transferred to Tender Option Bond Trusts - 41.8%</b>		223,433,260
	<b>Total Long Term Investments (Cost - \$927,788,059) - 171.5%</b>		915,715,143
	<b>Short-Term Securities</b>	<b>Shares</b>	
<b>Money Market Fund - 2.8%</b>	FFI Institutional Tax-Exempt Fund, 0.45% (q)(r)	14,900,000	14,900,000
	<b>Total Short-Term Securities (Cost - \$14,900,000) - 2.8%</b>		14,900,000
	<b>Total Investments (Cost - \$942,688,059*) - 174.3%</b>		930,615,143
	<b>Liabilities in Excess of Other Assets - (0.5)%</b>		(2,700,131)
	<b>Liability for Trust Certificates, Including Interest Expense and Fees Payable - (22.2)%</b>		(118,205,959)
	<b>Preferred Shares, at Redemption Value - (51.6)%</b>		(275,747,293)
	<b>Net Assets Applicable to Common Shares - 100.0%</b>		\$ 533,961,760

\* The cost and unrealized appreciation (depreciation) of investments as of May 31, 2009, as computed for federal income tax purposes, were as follows:

Aggregate cost	\$ 821,665,228
Gross unrealized appreciation	\$ 42,634,066
Gross unrealized depreciation	(51,603,336)
Net unrealized depreciation	\$ (8,969,270)

(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.

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- (b) Assured Guaranty Insured.
- (c) XL Capital Insured.
- (d) Security is collateralized by Municipal or US Treasury Obligations.
- (e) Issuer filed for bankruptcy and/or is in default of interest payments.
- (f) Non-income producing security.
- (g) NPFGC Insured.
- (h) FHLMC Collateralized.
- (i) FNMA Collateralized.
- (j) GNMA Collateralized.
- (k) FGIC Insured.
- (l) FSA Insured.
- (m) AMBAC Insured.
- (n) BHAC Insured.
- (o) FHA Insured.
- (p) Securities represent bonds transferred to a separate securitization trust established in a tender option bond transaction in which the Fund may have acquired the residual interest certificates. These securities serve as collateral in a financing transaction.

**BlackRock MuniVest Fund, Inc.**

**Schedule of Investments May 31, 2009 (Unaudited)**

- (q) Investments in companies considered to be an affiliate of the Fund, for purposes of Section 2(a)(3) of the Investment Company Act of 1940, were as follows:

Affiliate	Net Activity	Income
FFI Institutional Tax-Exempt Fund	9,469,026	\$ 316,055

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

Effective September 1, 2008, the Fund adopted Financial Accounting Standards Board Statement of Financial Accounting Standards No. 157, Fair Value Measurements ( FAS 157 ). FAS 157 clarifies the definition of fair value, establishes a framework for measuring fair values and requires additional disclosures about the use of fair value measurements. Various inputs are used in determining the fair value of investments, which are as follows:

Level 1 - price quotations in active markets/exchanges for identical securities

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)

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

The following table summarizes the inputs used as of May 31, 2009 in determining the fair valuation of the Fund's investments:

Valuation Inputs	Investments in Securities
	Assets
Level 1	14,900,000
Level 2	\$ 915,715,143
Level 3	
<b>Total</b>	<b>\$ 930,615,143</b>



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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 13(a)-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/ Donald C. Burke  
Donald C. Burke  
Chief Executive Officer of  
BlackRock MuniVest Fund, Inc.

Date: July 15, 2009

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/ Donald C. Burke  
Donald C. Burke  
Chief Executive Officer (principal executive officer) of  
BlackRock MuniVest Fund, Inc.

Date: July 15, 2009

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

Date: July 15, 2009