

BLACKROCK MUNIVEST FUND, INC.

Form N-Q

January 24, 2013

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM N-Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED

MANAGEMENT INVESTMENT COMPANY

Investment Company Act file number 811-05611

Name of Fund: BlackRock MuniVest Fund, Inc. (MVF)

Fund Address: 100 Bellevue Parkway, Wilmington, DE 19809

Name and address of agent for service: John M. Perlowski, Chief Executive Officer, BlackRock MuniVest Fund, Inc.,

55 East 52nd Street, New York, NY 10055

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

Date of fiscal year end: 08/31/2013

Date of reporting period: 11/30/2012

Item 1 Schedule of Investments

Schedule of Investments November 30, 2012 (Unaudited)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| Alabama 2.9% | | |
| Alabama State Docks Department, Refunding RB, 6.00%, 10/01/40 | \$ 7,610 | \$ 9,134,511 |
| Camden IDB Alabama, RB, Weyerhaeuser Co. Project, Series A, 6.13%, 12/01/13 (a) | 2,550 | 2,698,512 |
| Selma IDB, RB: | | |
| Gulf Opportunity Zone, International Paper Co., 5.80%, 5/01/34 | 1,850 | 2,119,360 |
| International Paper Co., Series A, 5.38%, 12/01/35 | 1,000 | 1,115,100 |
| Selma IDB Alabama, Refunding RB, International Paper Co. Project, Series B, 5.50%, 5/01/20 | 5,000 | 5,134,200 |
| | | 20,201,683 |
| Alaska 0.2% | | |
| Northern Tobacco Securitization Corp., Refunding RB, Asset-Backed, Series A, 5.00%, 6/01/46 | 1,250 | 1,059,375 |
| Arizona 3.9% | | |
| Maricopa County IDA Arizona, RB, Arizona Charter Schools Project, Series A, 6.75%, 7/01/29 | 4,100 | 2,918,298 |
| Maricopa County Pollution Control Corp., Refunding RB, Southern California Edison Co., Series A, 5.00%, 6/01/35 | 3,300 | 3,747,579 |
| Phoenix Civic Improvement Corp., Refunding RB, Junior Lien, Series A, 5.00%, 7/01/40 | 2,000 | 2,273,900 |
| Pima County IDA, RB, Charter Schools, Series I, 6.75%, 7/01/21 | 630 | 630,699 |
| Pima County IDA, Refunding RB, Arizona Charter, Series I (a)(b): | | |
| 6.10%, 7/01/13 | 110 | 113,494 |
| 6.10%, 7/01/13 | 370 | 384,348 |
| 6.30%, 7/01/13 | 230 | 237,574 |
| 6.30%, 7/01/13 | 740 | 765,915 |
| Pima County IDA Arizona, ERB, Arizona Charter School Project, Series E, 7.25%, 7/01/31 | 1,995 | 1,997,334 |
| Salt River Project Agricultural Improvement & Power Distribution, Refunding RB, Electrical System, Series A, 5.00%, 12/01/31 | 7,000 | 8,706,390 |
| Salt Verde Financial Corp., RB, Senior, 5.00%, 12/01/37 | 5,000 | 6,026,700 |
| | | 27,802,231 |
| California 10.4% | | |
| California Health Facilities Financing Authority, RB: | | |
| Scripps Health, Series A, 5.00%, 11/15/40 | 2,800 | 3,225,152 |
| | Par (000) | Value |
| Municipal Bonds | | |
| California (concluded) | | |
| California Health Facilities Financing Authority, RB (concluded): | | |
| Stanford Hospital and Clinics, Series A, 5.00%, 8/15/51 | \$ 3,750 | \$ 4,302,562 |
| State Joseph Health System, Series A, 5.75%, 7/01/39 | 5,000 | 5,871,550 |
| Sutter Health, Series B, 6.00%, 8/15/42 | 5,600 | 6,856,192 |
| California Health Facilities Financing Authority, Refunding RB, Catholic Healthcare West, Series A, 6.00%, 7/01/34 | 1,055 | 1,272,224 |
| California HFA, RB, Home Mortgage, Series K, AMT, 5.50%, 2/01/42 | 2,165 | 2,241,338 |
| California State Public Works Board, RB, Department of Mental Health, Coalinga, Series A: 5.50%, 12/01/13 (a) | 6,000 | 6,313,800 |
| 5.13%, 6/01/29 | 10,435 | 10,891,323 |
| California Statewide Communities Development Authority, RB: | | |
| Health Facility, Memorial Health Services, Series A, 6.00%, 4/01/13 (a) | 4,240 | 4,322,426 |
| Kaiser Permanente, Series A, 5.00%, 4/01/42 | 4,170 | 4,844,539 |
| City of Los Angeles Department of Airports, Refunding RB, Series A, 5.25%, 5/15/39 | 1,200 | 1,378,692 |
| Golden State Tobacco Securitization Corp. California, RB, Asset-Backed, Series A-3, 7.88%, 6/01/13 (a) | 5,725 | 5,944,840 |
| Poway Unified School District, GO, CAB, School Facilities Improvement District No. 2007-1, Election of 2008, Series B, 4.85%, 8/01/46 (c) | 15,000 | 2,990,700 |
| State of California, GO, Various Purpose, 6.50%, 4/01/33 | 9,700 | 12,458,389 |
| | | 72,913,727 |
| Colorado 0.9% | | |
| Colorado Health Facilities Authority, RB, Catholic Health Initiatives, Series D, 6.25%, 10/01/33 | 2,500 | 3,036,325 |
| Colorado Health Facilities Authority, Refunding RB, Evangelical Lutheran, Series A, 5.25%, 6/01/34 | 3,000 | 3,074,430 |

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| | | |
|----------------------------------------------------------------------------------------|-------|-----------|
| Regional Transportation District, COP, Refunding, Series A, 5.38%, 6/01/31 | 385 | 449,260 |
| Delaware 0.2% | | 6,560,015 |
| County of Sussex Delaware, RB, NRG Energy, Inc., Indian River Project, 6.00%, 10/01/40 | 1,500 | 1,710,870 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|-------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|
| Municipal Bonds | | |
| District of Columbia 0.2% | | |
| Metropolitan Washington Airports Authority, RB, First Senior Lien, Series A: 5.00%, 10/01/39 | \$ 415 | \$ 466,485 |
| 5.25%, 10/01/44 | 650 | 736,755 |
| | | 1,203,240 |
| Florida 4.9% | | |
| County of Miami-Dade Florida, GO, Building Better Communities Program: Series B, 6.38%, 7/01/28 | 4,630 | 5,723,097 |
| Series B-1, 5.63%, 7/01/38 | 5,000 | 5,935,950 |
| County of Miami-Dade Florida, Refunding RB Miami International Airport: AMT (AGC), 5.00%, 10/01/40 | 10,000 | 10,702,900 |
| Series A-1, 5.38%, 10/01/41 | 10,290 | 12,004,417 |
| | | 34,366,364 |
| Georgia 2.1% | | |
| City of Atlanta Georgia, Refunding RB, General, Series B, AMT, 5.00%, 1/01/29 | 1,070 | 1,237,583 |
| DeKalb County Hospital Authority Georgia, Refunding RB, Dekalb Medical Center, Inc. Project, 6.13%, 9/01/40 | 3,570 | 4,276,325 |
| DeKalb Private Hospital Authority, Refunding RB, Children's Healthcare, 5.25%, 11/15/39 | 3,335 | 3,769,517 |
| Municipal Electric Authority of Georgia, RB, Series W: 6.60%, 1/01/18 (d) | 250 | 258,915 |
| 6.60%, 1/01/18 | 4,530 | 5,004,654 |
| | | 14,546,994 |
| Hawaii 0.9% | | |
| Hawaii State Harbor, RB, Series A, 5.25%, 7/01/35 | 5,000 | 6,015,250 |
| Illinois 11.3% | | |
| Chicago Illinois Board of Education, GO, Series A, 5.50%, 12/01/39 | 6,670 | 8,000,332 |
| Chicago Transit Authority, RB, Sales Tax Receipts Revenue, 5.25%, 12/01/36 | 2,110 | 2,483,955 |
| City of Chicago Illinois, ARB, O'Hare International Airport, Third Lien, Series B-2, AMT (NPFGC), 6.00%, 1/01/27 | 17,080 | 17,931,267 |
| Illinois Finance Authority, RB: Advocate Health Care Network, Series D, 6.50%, 11/01/38 | 9,700 | 11,942,349 |
| Community, 6.50%, 7/01/22 | 655 | 635,016 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Illinois (concluded) | | |
| Illinois Finance Authority, Refunding RB: Northwestern Memorial Hospital, Series A, 6.00%, 8/15/39 | \$ 9,000 | \$ 10,755,900 |
| OSF Healthcare System, Series A, 6.00%, 5/15/39 | 5,060 | 5,971,306 |
| Railsplitter Tobacco Settlement Authority, RB, 6.00%, 6/01/28 | 2,645 | 3,254,488 |
| Regional Transportation Authority, RB: Series A (AMBAC), 7.20%, 11/01/20 | 2,765 | 3,369,650 |
| Series C (NPFGC), 7.75%, 6/01/20 | 4,000 | 4,989,240 |
| Village of Hodgkins Illinois, RB, MBM Project, AMT, 6.00%, 11/01/23 | 10,000 | 10,016,000 |
| | | 79,349,503 |
| Indiana 2.4% | | |
| Indiana Health & Educational Facilities Financing Authority, RB, Clarian Health Obligation, Series A, 5.25%, 2/15/40 | 8,980 | 9,845,942 |
| Indianapolis Local Public Improvement Bond Bank, Refunding RB, Series D, 6.75%, 2/01/14 | 7,120 | 7,354,390 |
| | | 17,200,332 |
| Iowa 0.1% | | |
| Iowa Tobacco Settlement Authority, RB, Asset-Backed, Series C, 5.63%, 6/01/46 | 1,000 | 980,060 |
| Kentucky 1.2% | | |
| County of Owen Kentucky, RB, Kentucky American Water Co., Series B, 5.63%, 9/01/39 | 1,000 | 1,099,610 |
| Kentucky Economic Development Finance Authority, RB, Owensboro Medical Health System, Series A: | | |

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| | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| 6.38%, 6/01/40 | 2,000 | 2,419,100 |
| 6.50%, 3/01/45 | 4,000 | 4,859,400 |
| | | 8,378,110 |
| Louisiana 0.8% | | |
| Louisiana Local Government Environmental Facilities & Community Development Authority, RB, Westlake Chemical Corp., Series A-1, 6.50%, 11/01/35 | 2,615 | 3,086,014 |
| Parish of Saint Charles Louisiana Gulf Opportunity Zone, RB, Valero Energy Corp. Project, 4.00%, 12/01/40 (e) | 2,210 | 2,453,299 |
| | | 5,539,313 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|-------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Municipal Bonds | | |
| Maine 1.0% | | |
| Maine Health & Higher Educational Facilities Authority, RB, Series A, 5.00%, 7/01/39 | \$ 5,000 | \$ 5,555,600 |
| Portland New Public Housing Authority Maine, Refunding RB, Senior Living, Series A, 6.00%, 2/01/34 | 1,190 | 1,230,401 |
| | | 6,786,001 |
| Maryland 1.8% | | |
| Maryland Community Development Administration, RB, AMT, 5.10%, 9/01/37 | 1,835 | 1,931,686 |
| Maryland Community Development Administration, Refunding RB, Residential, Series D, AMT, 4.90%, 9/01/42 | 3,250 | 3,378,635 |
| Maryland Health & Higher Educational Facilities Authority, Refunding RB: | | |
| Charlestown Community, 6.25%, 1/01/41 | 2,000 | 2,338,300 |
| University of Maryland Medical System, 5.00%, 7/01/34 | 2,100 | 2,341,290 |
| University of Maryland Medical System, 5.13%, 7/01/39 | 2,100 | 2,344,902 |
| | | 12,334,813 |
| Massachusetts 5.5% | | |
| Massachusetts Bay Transportation Authority, Refunding RB, General Transportation System, Series A, 7.00%, 3/01/19 | 3,010 | 3,585,632 |
| Massachusetts Development Finance Agency, RB, Wellesley College, Series J, 5.00%, 7/01/42 | 2,800 | 3,372,152 |
| Massachusetts HFA, RB, AMT: | | |
| S/F, Series 130, 5.00%, 12/01/32 | 2,500 | 2,618,000 |
| Series A, AMT, 5.20%, 12/01/37 | 2,865 | 3,001,861 |
| Massachusetts HFA, Refunding RB, Series C, AMT, 5.35%, 12/01/42 | 6,550 | 7,143,365 |
| Massachusetts Water Resources Authority, RB, Series A, 6.50%, 7/15/19 (d) | 16,000 | 19,089,600 |
| | | 38,810,610 |
| Michigan 3.8% | | |
| City of Detroit Michigan, RB, Second Lien, Series B (AGM), 6.25%, 7/01/36 | 2,500 | 2,962,525 |
| City of Detroit Michigan Water Supply System, RB, Second Lien, Series B (AGM), 7.00%, 7/01/36 | 1,250 | 1,539,200 |
| Michigan State Hospital Finance Authority, Refunding RB: | | |
| Henry Ford Health System, Series A, 5.25%, 11/15/46 | 7,950 | 8,502,445 |
| | Par | |
| | (000) | Value |
| Municipal Bonds | | |
| Michigan (concluded) | | |
| Michigan State Hospital Finance Authority, Refunding RB (concluded): | | |
| McLaren Health Care, 5.75%, 5/15/38 | \$ 7,285 | \$ 8,567,233 |
| Royal Oak Hospital Finance Authority Michigan, Refunding RB, William Beaumont Hospital, 8.25%, 9/01/39 | 4,100 | 5,340,291 |
| | | 26,911,694 |
| Minnesota 0.5% | | |
| Tobacco Securitization Authority Minnesota, Refunding RB, Tobacco Settlement, Series B, 5.25%, 3/01/31 | 3,000 | 3,378,030 |
| Mississippi 4.4% | | |
| County of Lowndes Mississippi, Refunding RB, Weyerhaeuser Co. Project: | | |
| Series A, 6.80%, 4/01/22 | 9,160 | 10,936,124 |
| Series B, 6.70%, 4/01/22 | 4,500 | 5,319,135 |
| Mississippi Business Finance Corp., Refunding RB, System Energy Resource, Inc. Project, 5.88%, 4/01/22 | 15,000 | 15,047,100 |
| | | 31,302,359 |
| Nebraska 1.7% | | |
| Central Plains Energy Project Nebraska, RB, Gas Project No. 3, 5.00%, 9/01/42 | 6,200 | 6,892,602 |
| Omaha Nebraska Public Power District, Series B, 5.00%, 2/01/36 | 4,000 | 4,734,640 |
| | | 11,627,242 |
| Nevada 0.8% | | |
| County of Clark Nevada, RB, Series B, 5.75%, 7/01/42 | 5,000 | 5,899,700 |
| New Hampshire 0.3% | | |
| | 2,145 | 2,323,271 |

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New Hampshire Health & Education Facilities Authority, Refunding RB, Elliot Hospital, Series B, 5.60%,
10/01/22

New Jersey 4.8%

| | | |
|------------------------------------------------------------------------------------|--------|------------|
| New Jersey EDA, RB, Cigarette Tax, 5.75%, 6/15/14 (a) | 3,695 | 4,002,757 |
| New Jersey EDA, Refunding RB: Cigarette Tax, 5.00%, 6/15/25 | 990 | 1,160,072 |
| School Facilities Construction, Series AA, 5.25%, 12/15/33 | 10,000 | 11,682,800 |
| New Jersey State Housing & Mortgage Finance Agency, RB, Series AA, 6.38%, 10/01/28 | 1,055 | 1,142,681 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|
| Municipal Bonds | | |
| New Jersey (concluded) | | |
| New Jersey Transportation Trust Fund Authority, RB, Transportation System, 5.50%, 6/15/31 | \$ 8,000 | \$ 9,856,320 |
| Tobacco Settlement Financing Corp. New Jersey, RB, 7.00%, 6/01/13 (a) | 5,980 | 6,183,200 |
| | | 34,027,830 |
| New York 4.7% | | |
| Metropolitan Transportation Authority, RB, Series 2008C: 6.25%, 11/15/23 | 3,245 | 4,174,303 |
| 6.50%, 11/15/28 | 14,925 | 19,291,309 |
| New York State Thruway Authority, Refunding RB, Series I, 5.00%, 1/01/42 | 4,215 | 4,950,602 |
| Port Authority of New York & New Jersey, RB, JFK International Air Terminal, 6.00%, 12/01/36 | 3,165 | 3,776,478 |
| Rochester Housing Authority, RB, College Andrews Terrace Apartments, AMT (Ginnie Mae), 4.70%, 12/20/38 | 1,000 | 1,039,980 |
| | | 33,232,672 |
| North Carolina 1.0% | | |
| 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 | 3,848,150 |
| North Carolina Medical Care Commission, Refunding RB, Wakemed, Series A, 4.13%, 10/01/38 | 2,730 | 2,901,253 |
| | | 6,749,403 |
| Ohio 0.5% | | |
| Buckeye Tobacco Settlement Financing Authority, RB, Senior, Series A-2, 6.50%, 6/01/47 | 1,125 | 1,091,936 |
| County of Lucas Ohio, Refunding RB, Promedica Healthcare, Series A, 6.50%, 11/15/37 | 1,915 | 2,451,947 |
| | | 3,543,883 |
| Oregon 0.7% | | |
| City of Tigard Washington County Oregon, Refunding RB, Water System: 5.00%, 8/01/37 | 2,000 | 2,389,100 |
| 5.00%, 8/01/42 | 2,335 | 2,787,079 |
| | | 5,176,179 |
| Pennsylvania 0.9% | | |
| Chester County IDA, RB, Aqua Pennsylvania Inc. Project, Series A, AMT (NPFGC), 5.00%, 2/01/40 | 540 | 577,201 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Pennsylvania (concluded) | | |
| Delaware River Port Authority of Pennsylvania & New Jersey, RB, Series D, 5.00%, 1/01/40 | \$ 195 | \$ 222,665 |
| Pennsylvania Economic Development Financing Authority, Refunding RB, Aqua Pennsylvania, Inc. Project, Series A, AMT, 5.00%, 12/01/34 | 2,780 | 3,151,825 |
| Philadelphia Authority for Industrial Development, RB: Arbor House, Inc. Project, Series E, 6.10%, 7/01/33 | 1,000 | 1,026,410 |
| Rieder House Project, Series A, 6.10%, 7/01/33 | 1,355 | 1,390,785 |
| | | 6,368,886 |
| Puerto Rico 2.5% | | |
| Puerto Rico Sales Tax Financing Corp., RB, First Sub-Series A, 6.38%, 8/01/39 | 13,000 | 15,154,750 |
| Puerto Rico Sales Tax Financing Corp., Refunding RB, CAB, Series A (NPFGC), 5.42%, 8/01/41 (c) | 10,000 | 2,159,600 |
| | | 17,314,350 |
| South Carolina 0.9% | | |
| County of Georgetown South Carolina, Refunding RB, International Paper Co. Project, Series A, AMT, 5.55%, 12/01/29 | 1,000 | 1,037,570 |
| County of Richland South Carolina, Refunding RB, International Paper Co. Project, AMT, 6.10%, 4/01/23 | 5,000 | 5,125,050 |
| | | 6,162,620 |
| Texas 14.5% | | |
| Brazos River Authority, Refunding RB, Texas Utility Co., Series A, AMT, 7.70%, 4/01/33 | 3,055 | 411,997 |
| Brazos River Harbor Navigation District, Refunding RB, Dow Chemical Co. Project, Series A-7, AMT, 6.63%, 5/15/33 | 11,460 | 11,605,427 |
| Central Texas Regional Mobility Authority, Refunding RB, Senior Lien: | | |

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| | | |
|----------------------------------------------------------------------------------------------------------------|-------|-----------|
| 5.75%, 1/01/31 | 1,000 | 1,192,170 |
| 6.00%, 1/01/41 | 4,300 | 5,117,946 |
| Gulf Coast Waste Disposal Authority, Refunding RB, Series A, AMT, 6.10%, 8/01/24 | 4,000 | 4,014,720 |
| Harris County Health Facilities Development Corp., Refunding RB, Memorial Hermann Healthcare System, Series B: | | |
| 7.13%, 12/01/31 | 3,500 | 4,537,470 |
| 7.25%, 12/01/35 | 5,400 | 6,845,634 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Municipal Bonds | | |
| Texas (concluded) | | |
| La Vernia Higher Education Finance Corp., RB, KIPP, Inc., 6.25%, 8/15/39 | \$ 925 | \$ 1,087,948 |
| Love Field Airport Modernization Corp., RB, Southwest Airlines Co. Project, 5.25%, 11/01/40 | 3,600 | 3,915,504 |
| Matagorda County Navigation District No. 1 Texas, Refunding RB, CenterPoint Energy Project, 5.60%, 3/01/27 (e) | 9,355 | 9,732,942 |
| North Texas Education Finance Corporation, ERB, Uplift Education, Series A, 5.13%, 12/01/42 | 1,000 | 1,079,180 |
| North Texas Tollway Authority, Refunding RB, First Tier, Series A, 6.25%, 1/01/39 | 3,500 | 4,104,975 |
| San Antonio Public Facilities Corp., Refunding RB, Convention Center Refinancing and Expansion Project, 4.00%, 9/15/42 | 7,200 | 7,502,040 |
| Tarrant County Cultural Education Facilities Finance Corp., RB, Scott & White Healthcare, 6.00%, 8/15/45 | 5,000 | 6,044,350 |
| Texas Department of Housing & Community Affairs, Refunding RB, Series A, AMT, 5.00%, 7/01/34 | 1,180 | 1,181,522 |
| Texas Municipal Gas Acquisition & Supply Corp. III, RB, 5.00%, 12/15/28 | 5,000 | 5,612,800 |
| 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 | 12,564,100 |
| NTE Mobility Partners LLC, North Tarrant Express Managed Lanes Project, 6.88%, 12/31/39 | 4,710 | 5,809,550 |
| Texas Transportation Commission, Refunding RB, Central Texas Turnpike System, First Tier, Series A, 4.00%, 8/15/38 | 9,375 | 9,602,250 |
| | | 101,962,525 |
| Utah 0.7% | | |
| Utah Transit Authority, Refunding RB, Subordinated Sales Tax, 4.00%, 6/15/39 | 5,000 | 5,259,300 |
| Vermont 0.1% | | |
| Vermont Educational & Health Buildings Financing Agency, RB, Developmental & Mental Health, Series A, 6.38%, 6/15/22 | 420 | 428,564 |
| | Par (000) | Value |
| Municipal Bonds | | |
| Virginia 2.9% | | |
| City of Norfolk Virginia, Refunding RB, Series B (AMBAC), 5.50%, 2/01/31 (a) | \$ 3,550 | \$ 3,555,254 |
| City of Portsmouth Virginia, GO, Refunding, Series D, 5.00%, 7/15/34 | 3,105 | 3,657,286 |
| Fairfax County EDA, Refunding RB, Goodwin House, Inc.: 5.13%, 10/01/37 | 2,000 | 2,093,460 |
| 5.13%, 10/01/42 | 6,015 | 6,277,254 |
| Virginia HDA, Refunding RB, Sub-Series A3, AMT, 5.05%, 7/01/26 | 1,325 | 1,427,290 |
| Virginia Small Business Financing Authority, RB, Senior Lien, Elizabeth River Crossing Operation LLC Project, AMT, 6.00%, 1/01/37 | 2,620 | 3,067,889 |
| | | 20,078,433 |
| Washington 4.0% | | |
| Energy Northwest, Refunding RB, Series B, 7.13%, 7/01/16 | 14,320 | 17,584,101 |
| Seattle Housing Authority Washington, RB, Replacement Housing Projects, 6.13%, 12/01/32 | 2,120 | 2,121,590 |
| Washington Health Care Facilities Authority, Refunding RB, Catholic Health Initiatives, Series D, 6.38%, 10/01/36 | 7,000 | 8,718,080 |
| | | 28,423,771 |
| West Virginia 0.4% | | |
| West Virginia Hospital Finance Authority, Refunding RB, Charleston, Series A, 5.63%, 9/01/32 | 2,500 | 2,808,900 |
| Wisconsin 0.4% | | |
| Wisconsin Health & Educational Facilities Authority, RB, SynergyHealth, Inc., 6.00%, 8/01/13 (a) | 3,040 | 3,156,128 |
| Wyoming 0.7% | | |
| County of Sweetwater Wyoming, Refunding RB, Idaho Power Co. Project, 5.25%, 7/15/26 | 4,500 | 5,211,585 |
| Total Municipal Bonds 101.9% | | 717,105,816 |

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

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Arizona 0.6%

Phoenix Arizona Civic Improvement Corp., RB, Junior Lien, Series A, 5.00%, 7/01/34

3,500

4,230,905

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|--------------------------------------------------------------------------------------------------------------|----------------------|---------------|
| Municipal Bonds Transferred to | | |
| Tender Option Bond (TOB) Trusts (f) | | |
| California 5.1% | | |
| Los Angeles Community College District California, GO, Refunding, Election of 2008, Series A, 6.00%, 8/01/33 | \$ 9,586 | \$ 12,257,521 |
| University of California, RB, Series O, 5.25%, 5/15/39 | 20,000 | 23,892,800 |
| | | 36,150,321 |
| Connecticut 2.0% | | |
| Connecticut State Health & Educational Facility Authority, RB, Yale University, Series Z-3, 5.05%, 7/01/42 | 12,000 | 13,843,680 |
| District of Columbia 1.3% | | |
| District of Columbia Water & Sewer Authority, Refunding RB, Series A, 5.50%, 10/01/39 | 7,495 | 8,905,245 |
| Florida 4.5% | | |
| County of Miami-Dade Florida, RB, Water & Sewer System (AGM), 5.00%, 10/01/39 | 14,747 | 16,891,877 |
| County of Miami-Dade Florida, Refunding RB, Transit System Sales Tax Revenue, 5.00%, 7/01/42 | 3,750 | 4,360,537 |
| Miami-Dade County Expressway Authority, Refunding RB, Series A (AGC), 5.00%, 7/01/35 | 8,900 | 10,177,328 |
| | | 31,429,742 |
| Illinois 3.9% | | |
| City of Chicago Illinois, Refunding RB: | | |
| Sales Tax Revenue, Series A, 5.00%, 1/01/41 | 4,640 | 5,365,139 |
| Second Lien (AGM), 5.25%, 11/01/33 | 1,330 | 1,571,354 |
| Illinois Finance Authority, RB, University of Chicago, Series B, 6.25%, 7/01/38 | 10,000 | 12,658,600 |
| Illinois State Toll Highway Authority, RB, Series B, 5.50%, 1/01/33 | 6,999 | 8,042,626 |
| | | 27,637,719 |
| Kentucky 4.9% | | |
| Kentucky Economic Development Finance Authority, Refunding RB, St. Elizabeth, Series A, 5.50%, 5/01/39 | 8,003 | 9,162,514 |
| Kentucky Housing Corp., Refunding RB, Series L, AMT, 5.25%, 1/01/38 | 5,250 | 5,553,765 |
| Lexington-Fayette Urban County Airport Board, Refunding RB, Series A, 5.00%, 7/01/27 | 7,001 | 8,182,937 |
| Louisville & Jefferson County Metropolitan Government Parking Authority, RB, Series A, 5.38%, 12/01/39 | 9,195 | 11,376,146 |
| | | 34,275,362 |
| | Par (000) | Value |
| Municipal Bonds Transferred to | | |
| Tender Option Bond (TOB) Trusts (f) | | |
| Maryland 0.8% | | |
| Maryland State Transportation Authority, RB, Transportation Facility Project (AGM), 5.00%, 7/01/41 | \$ 4,710 | \$ 5,466,756 |
| Nevada 2.8% | | |
| Clark County Water Reclamation District, GO, Series B, 5.75%, 7/01/34 | 15,789 | 20,040,833 |
| New York 8.0% | | |
| New York City Municipal Water Finance Authority, Refunding RB: | | |
| Series FF-2, 5.50%, 6/15/40 | 4,154 | 5,121,630 |
| Water & Sewer System, Series DD, 5.00%, 6/15/37 | 24,199 | 28,421,103 |
| New York City Transitional Finance Authority, RB, 5.00%, 2/01/42 | 8,898 | 10,558,410 |
| New York Liberty Development Corp., Refunding RB, World Trade Center Project, 5.75%, 11/15/51 | 10,000 | 12,234,100 |
| | | 56,335,243 |
| North Carolina 2.8% | | |
| North Carolina Capital Facilities Finance Agency, Refunding RB: | | |
| Duke University Project, Series A, 5.00%, 10/01/41 | 12,678 | 14,244,427 |
| Wake Forest University, 5.00%, 1/01/38 | 5,000 | 5,818,050 |
| | | 20,062,477 |
| Ohio 3.5% | | |
| County of Allen Ohio, Refunding RB, Catholic Healthcare, Series A, 5.25%, 6/01/38 | 2,870 | 3,249,443 |

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| | | |
|------------------------------------------------------------------------------------------------------------------------|--------|------------|
| County of Montgomery Ohio, Refunding RB, Catholic Healthcare, Series A, 5.50%, 5/01/34 | 5,470 | 6,339,073 |
| Ohio Higher Educational Facility Commission, Refunding RB, Hospital, Cleveland Clinic Health, Series A, 5.25%, 1/01/33 | 4,400 | 4,925,316 |
| State of Ohio, RB, Cleveland Clinic Health, Series B, 5.50%, 1/01/34 | 8,500 | 9,873,855 |
| | | 24,387,687 |
| | | |
| Oregon 2.0% | | |
| Oregon State Housing & Community Services Department, HRB, Series A, AMT, 4.95%, 7/01/30 | 13,000 | 14,038,013 |
| South Carolina 0.4% | | |
| South Carolina State Housing Finance & Development Authority, Refunding RB, Series B-1, 5.55%, 7/01/39 | 2,919 | 3,178,458 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (continued)

BlackRock MuniVest Fund, Inc. (MVF)

(Percentages shown are based on Net Assets)

| | Par (000) | Value |
|---------------------------------------------------------------------------------------------------------------------------|---------------|----------------|
| Municipal Bonds Transferred to | | |
| Tender Option Bond (TOB) Trusts (f) | | |
| Texas 8.9% | | |
| City of Houston Texas, Refunding RB, Texas Airport System, Senior Lien, Series A, 5.50%, 7/01/34 | \$ 8,333 | \$ 9,852,990 |
| Harris County Health Facilities Development Corp., Refunding RB, School Health Care System, Series B, 5.75%, 7/01/27 (d) | 20,970 | 28,227,298 |
| Houston Higher Education Finance Corp., RB, Rice University Project, Series A, 5.00%, 5/15/40 | 10,000 | 11,803,165 |
| Texas Department of Housing & Community Affairs, MRB, Series B, AMT (Ginnie Mae), 5.25%, 9/01/32 | 6,072 | 6,441,429 |
| Texas State University Systems, Refunding RB (AGM), 5.00%, 3/15/30 | 5,667 | 6,376,344 |
| | | 62,701,226 |
| Virginia 2.5% | | |
| Fairfax County IDA Virginia, Refunding RB, Health Care, Inova Health System, Series A, 5.50%, 5/15/35 | 2,099 | 2,451,469 |
| Virginia Commonwealth Transportation Board, RB, Capital Projects, 5.00%, 5/15/32 | 8,001 | 9,680,600 |
| Virginia Small Business Financing Authority, Refunding RB, Sentara Healthcare, 5.00%, 11/01/40 | 5,002 | 5,644,728 |
| | | 17,776,797 |
| Washington 4.1% | | |
| Central Puget Sound Regional Transit Authority, RB, Series A: | | |
| 5.00%, 11/01/34 | 5,000 | 5,776,300 |
| 5.00%, 11/01/36 | 6,000 | 6,931,560 |
| (AGM), 5.00%, 11/01/32 | 14,007 | 16,135,859 |
| | | 28,843,719 |
| Wisconsin 1.0% | | |
| Wisconsin Health & Educational Facilities Authority, Refunding RB, Froedtert & Community Health, Inc., 5.25%, 4/01/39 (g) | 6,099 | 6,892,381 |
| Total Municipal Bonds Transferred to | | |
| | | 416,196,564 |
| Tender Option Bond (TOB) Trusts 59.1% | | |
| Total Long-Term Investments | | |
| (Cost \$993,629,938) 161.0% | | 1,133,302,380 |
| | Shares | Value |
| Short-Term Securities | | |
| FFI Institutional Tax-Exempt Fund, 0.01%, 12/06/12 (h)(i) | 6,302,169 | \$ 6,302,169 |
| Total Short-Term Securities | | |
| (Cost \$6,302,169) 0.9% | | 6,302,169 |
| Total Investments (Cost - \$999,932,107*) 161.9% | | 1,139,604,549 |
| Other Assets Less Liabilities 1.0% | | 7,138,276 |
| Liability for TOB Trust Certificates, Including Interest Expense and Fees Payable (28.3)% | | (198,975,882) |
| VMTP Shares, at Liquidation Value (34.6)% | | (243,800,000) |
| Net Assets Applicable to Common Shares 100.0% | | \$ 703,966,943 |

* As of November 30, 2012, gross unrealized appreciation and gross unrealized depreciation based on cost for federal income tax purposes were as follows:

| | | |
|-------------------------------|----|-------------|
| Tax cost | \$ | 804,097,907 |
| Gross unrealized appreciation | \$ | 143,791,751 |
| Gross unrealized depreciation | | (7,141,593) |

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Net unrealized appreciation \$ 136,650,158

- (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.
- (f) 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.
- (g) All or a portion of security is subject to a recourse agreement which may require the Fund to pay the Liquidity Provider in the event there is a shortfall between the TOB Trust Certificates and proceeds received from the sale of the security contributed to the TOB trust. In the case of a shortfall, the aggregate maximum potential amount the Fund could ultimately be required to pay under the agreements is \$3,048,680.
- (h) Investments in issuers considered to be an affiliate of the Fund during the period ended November 30, 2012, for purposes of Section 2(a)(3) of the Investment Company Act of 1940, as amended, were as follows:

| | Shares Held at August 31, 2012 | Net Activity | Shares Held at November 30, 2012 | Income |
|-----------------------------------|---------------------------------------------------|-------------------------|-----------------------------------------------------|---------------|
| Affiliate | | | | |
| FFI Institutional Tax-Exempt Fund | 6,562,755 | (260,586) | 6,302,169 | \$ 448 |

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 2012

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Schedule of Investments (concluded)

BlackRock MuniVest Fund, Inc. (MVF)

(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) |
| ARB | Airport Revenue Bonds |
| CAB | Capital Appreciation Bonds |
| COP | Certificates of Participation |
| EDA | Economic Development Authority |
| ERB | Education Revenue Bonds |
| 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 |

Fair Value Measurements - Various inputs are used in determining the fair value of investments. These inputs to valuation techniques 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 that the Fund has the ability to access

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

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

The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). Accordingly, the degree of judgment exercised in determining fair value is greatest for instruments categorized in Level 3. The inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, for disclosure purposes, the level in the fair value hierarchy within which the fair value measurement falls in its entirety is determined based on the lowest level input that is significant to the fair value measurement in its entirety.

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 is based on the pricing transparency of the investment 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 other significant accounting policies, please refer to

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the Fund's most recent financial statements as contained in its annual report.

The following table summarizes the Fund's investments categorized in the disclosure hierarchy as of November 30, 2012:

| | Level 1 | Level 2 | Level 3 | Total |
|------------------------------------|---------------------|-------------------------|---------|-------------------------|
| Assets: | | | | |
| Investments: | | | | |
| Long-Term Investments ¹ | | \$ 1,133,302,380 | | \$ 1,133,302,380 |
| Short-Term Securities | \$ 6,302,169 | | | 6,302,169 |
| Total | \$ 6,302,169 | \$ 1,133,302,380 | | \$ 1,139,604,549 |

¹ See above Schedule of Investments for values in each state or political subdivision.

Certain of the Fund's liabilities are held at carrying amount, which approximates fair value for financial reporting purposes. As of November 30, 2012, such liabilities are categorized within the disclosure hierarchy as follows:

| | Level 1 | Level 2 | Level 3 | Total |
|------------------------|---------|-------------------------|---------|-------------------------|
| Liabilities: | | | | |
| TOB trust certificates | | \$ (198,856,484) | | \$ (198,856,484) |
| VMTP Shares | | (243,800,000) | | (243,800,000) |
| Total | | \$ (442,656,484) | | \$ (442,656,484) |

There were no transfers between levels during the period ended November 30, 2012.

BLACKROCK MUNIVEST FUND, INC.

NOVEMBER 30, 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

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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: January 23, 2013

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: January 23, 2013

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

Date: January 23, 2013