

PUTNAM MUNICIPAL OPPORTUNITIES TRUST

Form N-CSR

December 29, 2004

Putnam
Municipal
Opportunities
Trust

Item 1. Report to Stockholders:

The following is a copy of the report transmitted to stockholders pursuant to Rule 30e-1 under the Investment Company Act of 1940:

SEMIANNUAL REPORT ON PERFORMANCE AND OUTLOOK

10-31-04

[GRAPHIC OMITTED: POCKET WATCH]

[SCALE LOGO OMITTED]

From the Trustees

[GRAPHIC OMITTED: PHOTO OF JOHN A. HILL AND GEORGE PUTNAM, III]

John A. Hill and
George Putnam, III

Dear Fellow Shareholder:

During the past several months, Putnam has introduced a number of reforms for the benefit of shareholders, including increasing the amount of disclosure for our funds. We are now including additional information about your fund's management team. Following the Outlook for Your Fund, we list any changes in your fund's Portfolio Leader and Portfolio Members during the prior year period, the current Portfolio Leader's and Portfolio Members' other fund management responsibilities at Putnam, and the dollar range of fund shares owned by these individuals.

We are also pleased to announce that three new Trustees have joined your fund's Board of Trustees. Nominated by your fund's independent Trustees, these individuals have had outstanding careers as leaders in the investment management industry. Myra R. Drucker is a Vice Chair of the Board of Trustees of Sarah Lawrence College and serves as Chair of the New York Stock Exchange (NYSE) Pension Managers Advisory Committee and as a Trustee of Commonfund, a not-for-profit asset management firm. Richard B. Worley is Managing Partner of Permit Capital LLC, an investment management firm. Both Ms. Drucker and Mr. Worley are independent Trustees (i.e., Trustees who are not "interested persons" of your fund or its investment advisor). Charles E. Haldeman, Jr., the third new Trustee, is President and Chief Executive Officer of Putnam Investments.

During the period covered by the following report, Putnam Municipal Opportunities Trust delivered respectable results. In the following pages, the fund managers discuss fund performance, strategy, and their outlook for fiscal 2005.

Respectfully yours,

/S/ JOHN A. HILL

/S/ GEORGE PUTNAM, III

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John A. Hill
Chairman of the Trustees

George Putnam, III
President of the Funds

December 15, 2004

Report from Fund Management

Fund highlights

- * For the six months ended October 31, 2004, Putnam Municipal Opportunities Trust's total return was 6.59% at net asset value (NAV) and 4.65% at market price.
- * The fund's benchmark, the Lehman Municipal Bond Index, returned 4.78% for the period.
- * The average return for its Lipper category, General Municipal Debt Funds (leveraged closed-end) was 6.58%.
- * The fund's dividend was reduced to \$0.0735 in September. See page 6 for more information.
- * See the Performance Summary beginning on page 10 for additional fund performance, comparative performance, and Lipper data.

Performance commentary

Two factors drove positive performance for the high-yield, lower-quality bonds in the fund's portfolio, enabling its results at NAV to surpass those of its benchmark during the six months ended October 31, 2004. The first factor was the improving economic climate, which increased investor confidence in the relative financial stability of many lower-rated bond issuers, lifting the price of the bonds. The second factor was investor demand for higher-yielding municipal debt, which increased while supply remained relatively small, driving up prices of these bonds. The fund's position in lower-rated bonds also helped it perform, at NAV, in line with its Lipper peer group average, in spite of the fund's relatively conservative duration during the period. It is important to note that a fund's performance at market price may differ from its results at NAV. Although market price performance generally reflects investment results, it may also be influenced by several other factors, including changes in investor perceptions of the fund or its investment advisor, market conditions, fluctuations in supply and demand for the fund's shares, and changes in fund distributions.

TOTAL RETURN FOR
PERIODS ENDED 10/31/04

(inception 5/28/93)	NAV	Market price
6 months	6.59%	4.65%
1 year	8.57	6.30
5 years	47.05	45.48
Annual average	8.02	7.78

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10 years	107.44	112.98
Annual average	7.57	7.85
Annual average (life of fund)	6.56	5.62

Data is historical. Past performance does not guarantee future results. More recent returns may be less or more than those shown. Investment return, net asset value, and market price will fluctuate and you may have a gain or a loss when you sell your shares. Performance assumes reinvestment of distributions and does not account for taxes.

FUND PROFILE

Putnam Municipal Opportunities Trust seeks to provide high current income free from federal income tax consistent with the preservation of capital, by investing in investment-grade and some below-investment-grade municipal bonds. The fund may be appropriate for investors seeking tax-free income and who are willing to accept a moderate degree of risk.

Market overview

Over the past six months, which constitute the first half of your fund's 2005 fiscal year, the yield on the 10-year Treasury bond fell, and bond prices, which move in the opposite direction of yields, rose. In mid-March, the bond market had begun to anticipate a change in the Federal Reserve Board's (the Fed) monetary policy. Treasury bonds sold off sharply and pushed yields upward, as strong economic growth and rising corporate profitability increased the likelihood that the Fed would raise short-term interest rates at its June 30 meeting. Interestingly, when the Fed announced what had been a widely anticipated 25-basis-point increase, the bond market changed its course. Yields of bonds with maturities in the range of 11-21 years trended downward. At the same time, yields rose for bonds with short maturities and those with very long maturities (over 21 years). This resulted in a flattening of the yield curve -- that is, shorter- and longer-term interest rates began to converge.

Among uninsured bonds and bonds rated A and below, yield spreads remained essentially flat for the period. However, these higher-yielding securities continued to provide attractive income streams that contributed to the fund's total return during the period. Municipal bonds issued by the State of California were generally strong performers. The California economy improved to such an extent that three bond-rating agencies -- Moody's, Standard & Poor's, and Fitch -- upgraded the state's credit rating. Tobacco settlement bonds performed fairly well during the period. Yields on these bonds varied with the results of ongoing legal battles, but declined overall since May, and their prices rose accordingly. Airline-related industrial development bonds (IDBs) performed poorly in general, as the industry continued to face financial difficulties that were made worse by record high oil prices. New York City general obligation (GO) bonds rose in price over the past six months, reflecting a dearth of new issuance, as well as investors' confidence in improving economic prospects for the city.

MARKET SECTOR PERFORMANCE 6 MONTHS ENDED 10/31/04

Bonds

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Lehman Municipal Bond Index (tax-exempt bonds)	4.78%
Lehman Aggregate Bond Index (broad bond market)	4.23%
Lehman Government Bond Index (U.S. Treasury and agency securities)	3.96%
JP Morgan Global High Yield Index (global high-yield corporate bonds)	6.14%
Equities	
S&P 500 Index (broad stock market)	2.96%
Russell 1000 Index (large-company stocks)	3.04%
Russell 2000 Index (stocks of small and midsize companies)	4.87%

These indexes provide an overview of performance in different market sectors for the six months ended 10/31/04.

Strategy overview

Because we believe that the Fed is likely to continue to raise short-term interest rates through mid-2005, we have positioned the portfolio more defensively. This involves shortening the fund's duration, which means reducing its sensitivity to changes in interest rates. To accomplish this, we began the process of selling longer-term bonds and replacing them with shorter-term bonds, which have a shorter duration. Meanwhile, we continued to trim and diversify the fund's positions in uninsured bonds and bonds rated A and below, which have performed strongly. We maintained a neutral position, relative to the fund's benchmark, in California municipal bonds, which were in high demand as that state got its fiscal house in order and its debt rating was upgraded by the major bond-rating agencies. The fund maintained its overweight position in tobacco settlement bonds. We closely monitored developments in that sector. The fund had less exposure to airline-related IDBs during the period than did its peers.

In previous fiscal years, the fund emphasized non-callable bonds -- bonds that the issuer is not permitted to redeem (or call) before the maturity date. These issues performed well as rates fell through March 2004, but during the spring we began to moderate this position, selling non-callable bonds and purchasing callable issues scheduled to mature in the 15- to 20-year range. We believe callable bonds may perform better than non-callable bonds if interest rates rise and the yield curve flattens further.

[GRAPHIC OMITTED: horizontal bar chart THE FUND'S MATURITY AND DURATION COMPARED]

THE FUND'S MATURITY AND DURATION COMPARED

	4/30/04	10/31/04
Average effective maturity in years	9.0	7.3

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Average effective duration in years	9.2	8.3
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Footnotes read:

This chart compares changes in the fund's duration (a measure of its sensitivity to interest-rate changes) and its average effective maturity (a weighted average of the holdings' maturities).

Average effective maturity also takes into account put and call features, where applicable, and reflects prepayments for mortgage-backed securities.

How fund holdings affected performance

When economic growth improves, the chances of a company or municipality defaulting on its bond payments generally decrease, which can boost the prices of lower-rated bonds significantly. The more credit-sensitive pockets of the market benefited from this trend, as well as increased demand from investors who were hungry for yield in a low-interest-rate environment. Consequently, the fund's focus on lower-rate bonds helped performance substantially. While we emphasize lower-quality bonds in this fund's portfolio, we have also been trying to manage risk exposure by diversifying holdings across a number of issuers, locations, and sectors.

The fund was more conservatively positioned than its peers in terms of its duration -- a measure of the fund's sensitivity to interest rates. We shortened duration in an effort to preserve the fund's principal value from an increase in interest rates that has yet to affect the long-term end of the market. In spite of the Federal Reserve Board's tightening, which sent short-term interest rates up, intermediate- to longer-term rates actually fell, and the fund missed some of the resulting capital appreciation. However, we continue to believe our cautious approach is warranted, and the positives that resulted from our emphasis on yield offset any negative effects of our conservative duration.

Price appreciation of the fund's New York City's general obligation (GO) bonds illustrate the benefits of an improving economy and narrowing credit spreads. GOs are backed by taxpayer receipts and reflect investor perceptions of the financial strength of the issuing municipality. After three consecutive years of decline, New York City's employment outlook is finally improving. The private sector has been adding new jobs, boosting the city's employment rate and tax revenues. Although its per capita debt is still higher than the average for other U.S. cities, New York City's fundamental outlook has stabilized, and two major bond-rating organizations recently upgraded their outlook for the city, causing bond prices to rise and narrowing the gap between these bonds and others issued by municipalities that have higher ratings.

[GRAPHIC OMITTED: pie chart CREDIT QUALITY OVERVIEW]

CREDIT QUALITY OVERVIEW

Aaa	(49.4%)
Aa	(5.5%)
A	(11.2%)

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Baa	(23.3%)
Ba	(5.5%)
B	(1.4%)
Other	(3.7%)

Footnote reads:

As a percentage of market value as of 10/31/04. A bond rated Baa or higher is considered investment grade. The chart reflects Moody's ratings; percentages may include bonds not rated by Moody's but considered by Putnam Management to be of comparable quality. Ratings will vary over time.

The fund has a somewhat greater emphasis on tobacco settlement bonds than many of its peers, which has proved beneficial in spite of the volatile market environment for these issues. The payments from these high-yielding bonds are secured by income promised to various states through settlements from tobacco companies. This income could be jeopardized as a result of multibillion-dollar judgments against the companies, and prices in this sector have shifted as concerns about litigation overshadowed optimism. Our analyst believes that, despite several highly visible lawsuits against the tobacco industry, litigation risk is receding from where it was in 1999. Also, long-term cigarette consumption levels appear not to have been reduced. Considering the risks, we have diversified the fund's investments in tobacco settlement bonds and we remain watchful of the situation. Holdings include South Carolina Tobacco Settlement revenue bonds and Badger Tobacco Settlement Asset Securitization Corp. revenue bonds, issued in Wisconsin.

Although some airline-related industrial development bonds (IDBs) remain in the portfolio, the fund's position in these securities is relatively small. IDBs are bonds issued by municipalities but backed by the credit of the company benefiting from the financing. Investor perceptions about the backing company's health, or that of its industry group, affect the prices of these bonds, not the rating of the municipality issuing them. The airline industry has been under a cloud for several years, although it regained some ground last year. However, the industry continues to grapple with high operating costs and strong competition among carriers, which is keeping the price of airline tickets down. These problems, plus the ongoing threat of terrorism, make us cautious about the industry, so we limited the fund's airline-related investments to what we believe to be the strongest carriers.

Although high-yielding municipal securities generally performed well during the past six months, there were a few individual securities that had a negative impact on the fund's performance. Louisiana Development Authority Revenue Bonds for St. James Place hurt the fund's performance. St. James Place is a continuing-care retirement community. We purchased these bonds originally in 1996, but over time the system suffered from overly optimistic projections and marketing difficulties. We had been hopeful that a turnaround was possible. However, recently we joined the remaining bondholders in a tentative agreement to tender our bonds back to the issuer in exchange for a position in a newer bond that more closely reflects St. James's current income.

Please note that all holdings discussed in this report are subject to review in accordance with the fund's investment strategy and may vary in the future.

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OF SPECIAL INTEREST

As short-term interest rates increased during the period, your fund's portfolio was structured defensively in order to protect investors' principle. This positioning helped the fund to provide positive relative returns, although it did prompt a reduction of the fund's monthly distribution from \$0.0795 to \$0.0735 per share in September 2004.

The outlook for your fund

The following commentary reflects anticipated developments that could affect your fund over the next six months, as well as your management team's plans for responding to them.

Judging from the flattened yield curve, the bond market appears to have largely shrugged off the recent Fed rate hikes. However, we believe that interest rates all along the yield curve are more likely to rise than fall. After the close of the fiscal period, the Fed again raised the discount rate by 25 basis points, or one quarter of a percentage point. Going forward, we anticipate greater increases for bonds with shorter maturities because we believe the Fed will continue to raise short-term rates incrementally through mid-2005. This also suggests further flattening of the yield curve. The fund is positioned defensively in terms of duration, and we will continue to monitor and adjust the fund's duration as seems appropriate. We believe inflation will remain low, despite the threat posed by high oil prices. We also anticipate that the rate of GDP growth will slow during the next two quarters, as the effects of the Fed's tightening policy are felt.

In general, these signs indicate that we are headed into a more challenging environment for bond investing. Our task will be to continue to search for the most attractive opportunities among tax-exempt securities and to balance the pursuit of attractive current income with prudent risk management.

The views expressed in this report are exclusively those of Putnam Management. They are not meant as investment advice. Lower-rated bonds may offer higher yields in return for more risk. Capital gains, if any, are taxable for federal and, in most cases, state purposes. For some investors, investment income may be subject to the federal alternative minimum tax. Income from federally exempt funds may be subject to state and local taxes. Mutual funds that invest in bonds are subject to certain risks, including interest-rate risk, credit risk, and inflation risk. As interest rates rise, the prices of bonds fall. Long-term bonds are more exposed to interest-rate risk than short-term bonds. Unlike bonds, bond funds have ongoing fees and expenses.

Your fund's management

Your fund is managed by the members of the Putnam Tax Exempt Fixed-Income Team. David Hamlin is the Portfolio Leader, and Paul Drury, Susan McCormack, and James St. John are Portfolio Members of your fund. The Portfolio Leader and Portfolio Members coordinate the team's management of the fund.

For a complete listing of the members of the Putnam Tax Exempt

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Fixed-Income Team, including those who are not Portfolio Leaders or Portfolio Members of your fund, visit Putnam's Individual Investor Web site at www.putnaminvestments.com.

Fund ownership

The table below shows fund ownership, in dollar ranges, by the fund's current Portfolio Leader and Portfolio Members. Information shown is for the current and prior year ended November 30.

FUND PORTFOLIO LEADER AND PORTFOLIO MEMBERS

			\$1 - \$10,000	\$10,001 - \$50,000	\$50,001- \$100,000	\$100,001 - \$500,000	\$500,001 - \$1,000,000	\$1,000,001 and over
David Hamlin	2004	*						
Portfolio Leader	2003	*						
Paul Drury	2004	*						
Portfolio Member	2003	*						
Susan McCormack	2004	*						
Portfolio Member	2003	*						
James St. John	2004	*						
Portfolio Member	2003	*						

Other funds managed by the Portfolio Leader and Portfolio Members

David Hamlin is the Portfolio Leader and Paul Drury, Susan McCormack, and James St. John are Portfolio Members for Putnam's tax-exempt funds for the following states: Arizona, California, Florida, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, and Pennsylvania. The same group also manages Putnam AMT-Free Insured Municipal Fund*, Putnam California Investment Grade Municipal Trust, Putnam High Yield Municipal Trust, Putnam Investment Grade Municipal Trust, Putnam Managed Municipal Income Trust, Putnam Municipal Bond Fund, Putnam Municipal Income Fund, Putnam New York Investment Grade Municipal Trust, Putnam Tax Exempt Income Fund, Putnam Tax-Free Health Care Fund and Putnam Tax-Free High Yield Fund.

David Hamlin, Paul Drury, Susan McCormack, and James St. John may also manage other accounts advised by Putnam Management or an affiliate.

Changes in your fund's Portfolio Leader and Portfolio Members

During the year ended October 31, 2004, Portfolio Member Richard Wyke left your fund's management team.

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* Formerly Putnam Tax-Free Insured Fund.

Performance summary

This section shows your fund's performance during the first half of its fiscal year, which ended October 31, 2004. In accordance with regulatory requirements, we also include performance for the most current calendar quarter-end. Performance should always be considered in light of a fund's investment strategy. Data represents past performance. Past performance does not guarantee future results. More recent returns may be less or more than those shown. Investment return, net asset value, and market price will fluctuate and you may have a gain or a loss when you sell your shares.

TOTAL RETURN AND COMPARATIVE INDEX RESULTS FOR PERIODS ENDED 10/31/04

	NAV	Market price	Lehman Municipal Bond Index	Lipper General Municipal Debt Funds (leveraged closed-end) category average*
6 months	6.59%	4.65%	4.78%	6.58%
1 year	8.57	6.30	6.02	8.93
5 years	47.05	45.48	41.48	52.49
Annual average	8.02	7.78	7.19	8.78
10 years	107.44	112.98	97.69	113.51
Annual average	7.57	7.85	7.05	7.86
Annual average Life of fund (since 5/28/93)	6.56	5.62	6.22	6.53

Performance assumes reinvestment of distributions and does not account for taxes.

Index and Lipper results should be compared to fund performance at net asset value.

* Over the 6-month and 1-, 5-, and 10-year periods ended 10/31/04, there were 66, 65, 51, and 46 funds, respectively, in this Lipper category.

TOTAL RETURN FOR PERIODS ENDED 9/30/04 (MOST RECENT CALENDAR QUARTER)

	NAV	Market price
6 months	1.83%	-3.79%
1 year	6.80	5.62
5 years	41.83	41.09
Annual average	7.24	7.13

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10 years	99.24	106.46
Annual average	7.14	7.52
Annual average Life of fund (since 5/28/93)	6.49	5.69

PRICE AND DISTRIBUTION INFORMATION 6 MONTHS ENDED 10/31/04

Distributions from common shares

Number	6
Income 1	\$0.465
Capital gains 1	--
Total	\$0.465

Distributions from preferred shares	Series A (800 shares)	Series B (1,620 shares)	Series C (1,620 shares)
Income 1	\$332.29	\$153.51	\$153.44
Capital gains 1	--	--	--
Total	\$332.29	\$153.51	\$153.44

Share value:	NAV	Market price
4/30/04	\$12.72	\$12.47
10/31/04	13.07	12.58

Current return (common shares, end of period)

Current dividend rate 2	6.75%	7.01%
Taxable equivalent 3	10.38	10.78

1 Capital gains, if any, are taxable for federal and, in most cases, state purposes. For some investors, investment income may be subject to the federal alternative minimum tax. Income from federally exempt funds may be subject to state and local taxes.

2 Most recent distribution, excluding capital gains, annualized and divided by NAV or market price at end of period.

3 Assumes maximum 35% federal tax rate for 2004. Results for investors subject to lower tax rates would not be as advantageous.

Terms and definitions

Total return shows how the value of the fund's shares changed over time, assuming you held the shares through the entire period and reinvested all distributions in the fund.

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Net asset value (NAV) is the value of all your fund's assets, minus any liabilities and the net assets allocated to auction rate municipal preferred shares, divided by the number of outstanding common shares.

Market price is the current trading price of one share of the fund. Market prices are set by transactions between buyers and sellers on exchanges such as the American Stock Exchange and the New York Stock Exchange.

Comparative indexes

JP Morgan Global High Yield Index is an unmanaged index used to mirror the investable universe of the U.S. dollar global high-yield corporate debt market of both developed and emerging markets.

Lehman Aggregate Bond Index is an unmanaged index used as a general measure of U.S. fixed-i