The Determinants of Municipal Credit Quality

This article focuses on the methodology that one bond rating agency, Moody's Investors Service, uses for rating general obligation, lease-backed, and revenue bonds. It also clarifies which factors are predominant in rating assignments and which factors drive a future rating upgrade or downgrade.

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Issuers, investors, and intermediaries often ask rating agencies the same thought-provoking questions. These questions generally focus on which factors will be predominant in assigning a credit rating, which credit factors will most likely drive a future rating upgrade or downgrade, and how rating levels on proposed Certificates of Participation (COPs) and revenue secured transactions can be gauged. This article is a response to these questions, and it focuses on the factors that Moody's Investors Service examines for its public finance ratings.

Credit Factors

There is always some variation in credit factors evaluated, but in general, factors considered when assigning a credit rating cover four primary areas: economy, debt, finances, and administration/management strategies.

Economic Factors. The economy, while probably the least controllable of the four credit factors, remains critical to credit analysis because the economic base is what ultimately generates the resources to repay municipal debt. Analysts assess the current economic profile and gauge specific economic strengths and weaknesses in an effort to better understand and set expectations for future performance. Ultimately, a clear vision of an issuer's current economic profile coupled with anticipated future economic trends is a key credit measure. Analysts consider the credit quality and market position of a region's largest employers, and the strength and diversity of its largest taxpayers. Public finance analysts consult regularly with analysts in the corporate finance group for information on the performance of an issuer's largest corporate employers or taxpayers.

Demographic and other economic statistics also are evaluated in order to assess the vitality of an area's economy. A diverse economic base (one that is not highly concentrated in a single employer or type of industry) is more likely to steadily expand and keep pace (or even exceed) with the national economy. An economy that is highly dependent on a cyclical industry may periodically surge, stagnate, or even experience declines. Unemployment rates are one of the most current measures of an area's economic health. Unemployment trends over time demonstrate a municipality's ability to withstand changes in the national or regional economy and may provide an indication of future employment performance. Other indicators of economic growth (i.e., retail sales, building permits, employment data, etc.) are especially critical in this evaluation. The type of economic statistics examined for any credit will vary, depending upon the forces that drive the area's economy.

When examining an issuer's ability to tap resources to support debt and pay for services, the extent of a community's overall wealth also is evaluated. Although no single aggregate measure fully quantifies a community's wealth, the full value per capita—which is the full valuation of taxable property divided by a given population—is an important indicator. In addition to these figures, trends in full value are examined along with full value relative to such factors as a community's population and debt outstanding. This allows analysts to gauge the leveraging of the local tax base and the residents and businesses paying the tax bills.

The resident population's socioeconomic characteristics also are evaluated using data from the U.S. Census Bureau and various state agencies. One of the most useful statistics for determining an area's economic well-being is per capita and median family income. Because significant variations in state and regional cost-of-living exist, it is important to compare these figures with both state and national averages.

Debt Factors. With every new issuance of debt, the issuer's debt position is re-evaluated in order to determine the impact of the increased debt on credit quality. In rating debt, analysts calculate numerous ratios (see Exhibit 1). For general obligation tax-supported or general fund-supported debt, analysts evaluate all the debt for which the issuer's tax base or citizens are the source of repayment, whether or not that issuer actually issued the debt. Therefore, overlapping debt is considered to determine the overall debt burden to the taxpayers.

Overlapping debt is debt issued by municipal entities that have geographic boundaries that overlap (in part or whole) those of the issuer. For example, the debt of a city within a given county will be considered as overlapping debt for that county because the same tax base is responsible for supporting the debt. For measuring the burden of all tax-supported debt on the tax base, "overall net debt" is considered. Overall net debt excludes self-supporting debt that is unlikely to be paid from the tax base itself because it has its own revenue stream (i.e., from water and

Exhibit 1
MUNICIPAL TAX-BACKED COMPONENTS AND RATIOS

COMPONENTS

Direct Debt or Gross Bonded Debt—The sum of the total bonded debt and any unfunded debt (typically short-term notes) of the issuer. Direct debt may be incurred in the government's own name or assumed through the annexation of territory or consolidation with another governmental unit.

Net Direct Debt or Net Bonded Debt—Net direct debt less sinking fund accumulations and all self-supporting debt.

Total Overall Debt—Net direct debt plus the issuer's applicable share of the net direct debt of all overlapping jurisdictions.

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Overlapping Debt—The issuer's proportionate share of the debt of other local governmental units which either overlap it (the issuer is located either wholly or partly within the geographic limits of the other units) or underlie it (the other unit are located within the geographic limits of the issuer). The debt is generally apportioned based upon relative assessed value.

KEY DEBT AND ECONOMIC RATIOS

Net Direct Debt Burden	Net direct debt, divided by the estimated full value of taxable property
Net Overall Debt Burden	Net overall debt, divided by the estimated full value of taxable property
Net Direct Debt per Capita	Net direct debt, divided by total population
Net Overall debt per Capita	Net overall debt, divided by total population
Full Value per Capita	Estimated full value of taxable property, divided by total population

sewer fees or other self-supporting enterprise earnings).

In general, counties have the lowest debt ratios among the three primary groups of issuers (counties, cities, and school districts). This is because even though underlying debt of cities and school districts is considered, counties often contain unincorporated areas that provide some support to the tax base but are generally not authorized to issue debt.

Debt structure is another area of focus when examining the issuer's credit profile. Debt characteristics such as the amount of short-term debt an issuer has outstanding, the extent of reliance on variable rate debt obligations, and the overall structure of debt service payments are examined.

One key debt factor is the rate of debt repayment or payout. This statistic measures the rate of principal retirement within a given period of time and can sometimes be indicative of an issuer's willingness to pay. If retirement is rapid, the issuer may be viewed as very willing to draw upon its resources to pay its obligations. Conversely, if debt is structured for a very slow payout, the opposite may be true. Debt structure, including the rate of retirement, also can reflect such considerations as debt limits, future borrowing plans, and political factors related to tax levies. As a general rule, issuers usually structure their issues so that all debt is repaid within the useful life of the asset(s) being financed.

Financial Factors. Financial analysis involves a great deal more than just reviewing year-end financial statements. Although statements of operating results and year-end financial position are important, they reflect only a snapshot of time; these indicators only have analytic significance when placed in a proper context. For example, a large budget surplus may appear impressive, but could actually have negative implications if it results from a municipality's inability to execute certain spending programs, or results in taxpayers' taking legislative action to limit taxation. Conversely, a planned drawdown of a prior surplus (particularly to fund one-time expenditures such as capital or Y2K projects) may not signify fiscal problems. In fact, an established trend of financial performance and control is more important than year-end figures alone. Budgetary planning and projecting, in conjunction with daily spending control, as well as an issuer's policies on spending growth, use of surplus, and shortfall contingency plans are all incorporated into credit analysis.

One financial statistic that is key to evaluating financial strength is the general fund balance as percent of revenues. This ratio provides a measure of the financial reserves potentially available to fund unforeseen contingencies. The level of fund balance should be related to the likelihood that such reserves will be needed, as well as the issuer's revenue raising flexibility. Larger balances may be warranted if budgeted revenues and expenditures are economically sensitive or not easily forecasted. General fund balance should be sufficient to address normal contingencies which, as a general guideline, is typically at least 5 to 10 percent of annual revenues. It is important to emphasize, however, that the appropriate level of fund balance varies depending upon the particular issuer and its respective operating environment. A range of other financial data also is examined, such as annual growth or volatility in revenues and expenditures; the amounts of and reasons for interfund transfers; primary revenue sources and expenditures items; the composition of assets and liabilities; cash position; and actual financial performance relative to budget.

Although general fund operations are often a key focus in the analysis of general obligation debt, analysts are interested in the financial position of all funds, including special revenue funds and enterprise funds. Particular focus is paid to how an issuer funds expenditures from its own resources. Therefore, in the analysis of financial operations, special emphasis is placed on those funds over which the issuer has discretion, rather than funds that are simply state or federal pass-throughs.

Management Strategies/Administrative Factors. Administrative factors are perhaps the most difficult credit fundamentals to assess because they are not easily quantifiable. An evaluation of management is, however, crucial because ultimately it will be management's responsibility to seize upon economic opportunities, adopt a budget, and take corrective action as may be necessary to realize targeted results. Despite the qualitative nature of a management assessment, there are a number of elements that are regarded as indicators of management strength which are important to evaluation. They are: an issuer's organization,

division of responsibilities, professional qualifications, and sufficiency of power to perform its functions.

In many ways, management strength can be judged from looking at the other three factors:

1) good management strategies will help ensure that financial practices, such as tax collection procedures, budgeting, and investments are appropriate and responsive to the municipality's needs;
2) debt practices will be thoughtfully structured and in line with statutory and voter prescribed debt limits; and
3) good economic development policies will be adopted and government officials will be balanced in response to the demands for services relative to the needs of business and residential taxpayers.

In addition, strong management strategies often include institutionalized means of coordinating and cooperating with other government agencies, particularly if those agencies must come together to provide services to a common group of citizens.

It should be noted that most issuers, both large and small, are well-managed. Despite this fact, they may not all achieve high ratings because there are many aspects of credit quality that management simply cannot control—most notably a locality's economy.

Rating Factors for Leases and COPs

Lease-revenue obligations are fundamentally different than security on a GO bond. The issuer's full faith and credit secures the GO bond, but generally, only annual budget appropriations secure associated debt service payments on the lease. Furthermore, in the case of a voter approved GO issue, there is typically a dedicated revenue stream (often property taxes or user fees) isolated to fund debt service. Conversely, in the case of a lease, a dedicated revenue stream is generally not available and lease payments, which often are subject to annual appropriation, are carved from operating revenues. As a result, although issuers have very strong motives to honor lease-backed obligations, lease payments compete with other government priorities.

Appropriation Risk and Project Essentiality. When assigning a rating to an issue secured by a lease-revenue pledge or a Certification of Participation (COP), it is particularly important to assess the fundamental credit quality of the issuer. Lease ratings are assigned by factoring legal ties (such as appropriation risk and flow of funds) to the issuer and project essentiality (which focuses on the importance of the asset financed to the government operation).

To the extent that the lease payments are subject to annual appropriation, the rating will typically start one notch lower than the entity's general obligation or issuer rating—with the rating distinction capturing the increased risk associated with the annual appropriation process.

Essentiality of the project or asset being financed is a fundamental factor used to determine a rating outcome. If the project is deemed crucial to the obligor's operations and service provision (such as school buildings, courthouse facilities, or municipal offices), the obligor would more likely feel compelled to make the annual appropriation to ensure continued use of the facility. Conversely, if the project is not deemed as critical (such as leases for athletic fields, vehicles, or equipment), there is sometimes greater credit risk because the obligor may feel less compelled to make an annual appropriation if the equipment fails or if the obligor experiences budgetary pressures. Therefore, in the case of many equipment leases or leases for nonessential purposes (that also are subject to annual appropriation), a two-notch rating distinction, relative to the obligor's general obligation bond rating is often warranted.

The notching conventions discussed above are guidelines and not absolute rules. We believe that exceptions can arise when dedicated revenues sources have been isolated—thereby eliminating competition for payment of debt service with payment of other program priorities. Another exception to the notching convention may arise in the case of clear and demonstrated political support for a project that, while important, may not be defined as essential to overall municipal operations. Additionally and subject to significant analysis, an issuer with an unusually strong or a particularly weak financial position may warrant a greater or lesser lease notching.

Upgrade and Downgrade Factors

National Economy. The strength of the national economy continues to benefit local governmental units, including counties, school districts, and cities. The United State's low unemployment rates and healthy economy have resulted in strong growth in the sectors underlying the primary sources of municipal tax receipts—property, income, and sales taxes—without a commensurate increase in expenditures. In many cases, the result has been large budget surpluses.

The trend of economic prosperity has manifested itself in a trend of continued credit quality improvement. In 1997 and 1998 combined, Moody's upgraded 659 ratings affecting $160 billion outstanding general obligation bonds compared to 108 downgrades affecting $9 billion of debt. Projections for 1999 indicate a continuation of this trend with more than 350 upgrades year-to-date affecting $56 billion of outstanding debt compared to 47 issuer downgrades affecting $7 billion in debt.

Local Economy. The location, size, and diversity of the local tax base are the predominant factors assessed when looking at the issuer's fundamental economy. These factors, however, are certainly not static and will most likely change over the life of the bond rating. That being said, significant growth in assessed values could eventually drive ratings up—simply because the growth results in a larger tax base supporting debt obligations—with a correlating decrease in debt burden (assuming additional debt to meet development needs is not growing at the same or a faster pace than the tax base).

In addition, continued valuation growth also can yield additional tax base diversification in certain cases. This may offset a previous economic weakness such as concentration in one industry or one particular business as the predominant employer and taxpayer. For example, when

WHY ISSUERS SELL LEASE REVENUE DEBT OR COPS TO FINANCE PROJECTS

The difficulty in garnering voter approval for the issuance of general obligation debt and the need to fund necessary but politically unpopular projects (including jails) has led to increased utilization of lease debt to finance city, county, and school district infrastructure and even equipment programs. Because leases typically do not require voter approval and do not typically count toward debt limitations, lease issuance can enable governments to generate capital funds despite constraints upon the issuance of GO bonds.

economic development efforts in a city dominated by a particular industry (such as automotive or steel) are successful in attracting various support businesses to the area, many positive benefits occur. Although the new businesses often are connected to the original industry, they typically have components in entirely new or simply related business enterprises. The presence of the additional business benefits the local economy through new jobs and municipal tax revenues. Additionally, they also provide a more positive operating and economic environment for the original industry and the region as a whole.

The absolute size of a municipality—whether it is valued in dollars or in population—is a tangible factor. However, the function of size and its correlating implications (potentially stronger for mid to large sized entities and somewhat weaker for particularly small credits) is also fluid. Issuers, intermediaries, and investors may concur that a municipality with an extremely modest tax base, has fewer taxable resources supporting its general obligation debt than another municipality with the same debt (in an absolute dollar amount) and a larger tax base. The smaller issuer also may face certain challenges that a neighboring but larger entity will not face. This includes the ability to generate greater tax revenues or flexibility in expenditure reduction, which often results in the need for even stronger management strategies. However, the prospects for rating upgrades are certainly present if economic trends point to continued valuation or population growth. Conversely, the issuer may feel downward rating pressure if confronted with the dual obstacle of a declining revenue base in a modest or limited local economy.

Fiscal Management Strategies. Careful, institutionalized budgeting policies contribute to an issuer's ability to withstand economic downturns without compromising recurring structural balance (annual revenues equal to or greater than annual expenditures). Cautious financial policies enable many local issuers to maintain or build their reserves and invest in technologies which, in turn, support more timely and accurate accounting, reporting, and oversight procedures.

There is no particular level of cash or fund balance necessary for a rating upgrade. Attention is, however, focused on the factors that resulted in a particular level of reserves with careful scrutiny placed on an issuer's expected ability to maintain the higher level of financial cushion in the future. To the extent that reserves are bolstered and are expected to be maintained (and the prior financial position detracted from other favorable credit fundamentals), a rating upgrade may be warranted. Similarly, a change in management strategies or political environment that supports expectations for future reserve augmentation or depletion also could be sufficient to drive a rating change.

A rating upgrade is not only warranted when fund balance increases. A rating upgrade also could be driven by the ability of the issuer to either aggressively manage and limit fiscal volatility or augment financial flexibility—without changing reserve levels. The ability of an issuer to decrease volatility may occur if the issuer gains greater expenditure control or decreases financial vulnerability, perhaps through the elimination of a service that historically proved to be expensive and difficult to budget, such as a nursing home or hospital. This can be a key credit strength that could result in a rating upgrade. Similarly, the ability of an issuer to garner additional fiscal resources and promote future fiscal flexibility—perhaps through referendum approval of a dedicated property tax millage or through council approval to augment certain fees or taxes—also could result in a rating upgrade. Both of these issues (decreasing fiscal vulnerability or increasing financial flexibility) could drive a rating upgrade without a corresponding increase in reserve levels because by limiting vulnerabilities or augmenting flexibility, the need for larger reserves is decreased.

Major Vulnerabilities. In addition to the upward credit pressure that strengthening economic and financial position may place on a particular issuer rating, the presence or elimination of a major vulnerability also can drive a rating change. The vulnerability can come in the form of litigation, implementation of electric deregulation (which could significantly reduce taxable resources and user-generated revenues), and various tax appeals. For example, when a municipality is involved in litigation on a controversial issue, significant resources (both dollars and time) may be allocated to the cause, and projects may be delayed until a municipality is more confident of a projected outcome. Therefore, when a ruling is eventually rendered, a municipality could reallocate resources previously dedicated to litigation to improving its creditworthiness.

Although a significant and favorable outcome to litigation may drive upward rating pressure, not all adverse settlements will drive a rating downgrade. Analysts will want to ascertain the implications of the judgment. Will there be a one-time draw in fund balance to meet settlement costs or a one-time increase in debt burden if judgment-funding bonds are issued? In most cases of an adverse settlement, issuers typically have some time and some flexibility in repaying settlements.

Exhibit 2
FACTORS THAT DRIVE RATING CHANGES

Credit Factor:	Potential Rating Change Driver
Economy	• Significant development in the local tax base driving continued growth in total property values • Increased or decreased diversification of local economic base • Loss of key industry or employer with no work out plan
Finances	• Expected augmentation or loss of financial flexibility • Expectation that significant growth or decline of reserves will continue
Debt	• Significant increase in debt obligations without correlating development to offset tax-base leveraging • Utilization of debt structure not appropriately matched to asset's useful life
Administration/ Management strategies	• Implementation of new strategies that are expected to augment or detract from operating flexibility • Change in political environment which affects ability to react to unanticipated events.

Revenue Bond Rating Factors

Revenue bonds have been issued since the 1930s to finance many purposes, including environmental needs (water,

sewer, storm water, and solid waste), transportation facilities (airports, toll roads, parking facilities, rapid transit, ports), and a myriad of other activities (stadiums, hospitals, convention centers, higher education, etc.). Although once considered highly innovative securities, the capital intensive nature of most enterprise systems, in conjunction with growing government mandates, have made revenue bonds the predominant financing vehicle, accounting for 67 percent of 1998's new long-term issuance. Unlike general obligation bonds, revenue bonds pledge repayment from a limited source of revenues, typically those generated by an enterprise system such as water, sewer, electric, and solid waste.

While ratings on these bonds generally trend near the general obligation ratings in the systems' service areas, there is no rule that the rating assignment be capped by an issuer's general obligation rating. In fact, ratings on municipal enterprise systems can be higher, lower, or the same as an issuer's general obligation bond rating. Moody's average rating for water and/or wastewater systems is an A2, which largely reflects the essential nature of these enterprise systems. In general, however, stronger revenue pledges and legal provisions increase the likelihood of a higher revenue bond rating.

Because credit factors vary for each type of revenue bond, this section will focus on water and sewer bonds. These bonds constitute the largest category of revenue bonds by far, largely driven by government regulations and mandates arising from the Clean Water Act (1972) and the Safe Drinking Water Act (1974) and amendments made to those Acts since their inception.

Legal Provisions. The primary legal document defining a revenue bond structure is the "indenture" or "master resolution." This document specifies the revenue stream pledged to repay debt service (principal and interest) requirements. Generally, these revenues are generated by the service provided by the system for which debt is being issued; they are typically sufficient to cover both operations and debt service. As a rule, net revenues (those remaining after operating and maintenance [O&M] expenses are paid) are pledged first to debt service.

An important credit factor addressed in the indenture is the rate covenant. The rate covenant mandates that system administrators assess rates sufficient to generate revenues at a designated threshold level. For instance, a system with a net revenue pledge of 1.1 times, covenants that net system revenues will be sufficient (during every year in which bonds are outstanding) to cover O&M expenses with a multiple of $1.10 of net revenues available for every $1.00 of debt service due. A strong rate covenant enhances bondholder's security by creating a larger fiscal cushion. Hence, though both are commonly seen, a rate covenant pledge of 1.25 times offers more protection than a pledge of 1.10 times.

POTENTIAL SIGNS OF CREDIT DISTRESS

* Declines or large swings in collection of economically sensitive taxes, e.g., sales and income tax collections
* Trend of operating losses; fund balance draw down
* Declining financial margins
* Deficit ending fund balance
* Increasing reliance on operating transfers
* Rising mandated or fixed cost as percent of budget
* At or close to tax ceiling (no margin)
* Increasing employee benefits
* Pension deferrals or assumption changes
* Decreasing capital project outlay
* Self-insured with no corresponding reserves
* Significant litigation or settlement
* Sale of asset for operating revenue
* Interest earnings as percent of cash on hand
* Current tax collections less than 95 percent or declining trend
* Declining taxable values
* Loss of major employer
* Sharply increased debt obligations
* Debt structure not consistent with useful life of financed asset

The additional bonds test (ABT) is another legal provision. The ABT specifies that the issuer's revenue stream must demonstrate sufficiency to provide coverage of both existing and proposed debt service. The most conservative ABT is purely historical in nature, however, it is not uncommon for the ABT to factor in adjustments for future rate increases. The ABT is important because its intent is to ensure that future debt issuance does not erode bondholder security by creating too great a burden on the system's revenue stream. While not legally required, the ABT often is expressed as a coverage level equivalent to the rate covenant discussed above.

The flow of funds requirements reflect the process by which revenues are allocated to various system funds created within the indenture. Usually, monies are deposited into a general revenue fund from which monies flow into other funds. This generally occurs in the following order: first, O&M; second, debt service; third, debt service reserve fund replenishment; and, fourth, any other authorized system uses. It is important to note that, if allowed, unrestricted transfers to funds outside the system should be closely monitored as they can diminish system liquidity.

The debt service reserve fund (DSRF) is another important structural component of a revenue bond. First, the DSRF creates a fiscal cushion substantial enough to prevent an immediate default when revenues are insufficient to cover debt service requirements. Second, utilization of the DSRF serves as a warning that operations and/or service rates may not be sufficient. The DSRF is typically funded in one of three ways:

1) from bond proceeds;
2) incrementally from system revenues over a pre-specified period (traditionally five years);
3) with a surety bond.

The size of the debt service reserve fund is limited by provisions of the 1986 Tax Reform Act which reduced the maximum amount to be funded from bond proceeds to 10 percent of issue size. As a result, the DSRF is often maintained at a level equivalent to the lesser of 10 percent of bond proceeds, Average Annual Debt Service, or Maximum Annual Debt Service (MADS).

Debt Levels and Structure of Debt. A common measurement for evaluating the debt load of an enterprise system is the "debt ratio" which is derived by dividing total outstanding system debt (net of the DSRF) by its fixed assets and net working capital. This ratio reflects the system's reliance on debt relative to its asset base. The debt ratio also reflects the system's ability to support future debt. Generally speaking, the lower this ratio, the less leveraged is the system.

Debt structure is as important as debt levels. Debt structures that are heavily reliant on short-term or variable-rate debt can subject the system to fluctuating interest rate environments, which can make planning, forecasting, and rate setting more difficult. In addition, both short-term and variable-rate debt necessitate greater flexibility and autonomy to set rates.

Rate Structure. In general, systems which are able to set rates independently of regulatory bodies or local government boards are better positioned to meet the

Exhibit 3
MUNICIPAL ENTERPRISE COMPONENTS AND RATIOS

Balance Sheet Components and Ratios

Net fixed assets	Fixed assets, less accumulated depreciation
Net working capital	Net current assets and net assets of all funds and accounts not devoted to debt service
Long-term debt	Gross long-term debt, plus the current portion of long-term debt
Net funded debt	Long-term debt, plus accrued interest payable, less the balance in both the debt service reserve fund and the debt service fund
Debt ratio (%)	Net funded debt, divided by the sum of net fixed assets, plus net working capital
Projected debt ratio (%)	Pro forma net funded debt, divided by the sum of projected net fixed assets, plus projected net fixed assets, plus projected net working capital for the first full fiscal year following completion of the capital project financed from the new bonds

Income Statement Components and Ratios

Gross revenue	Operating revenue, plus non-operating revenue and income
Operating and maintenance expenses	Operating and maintenance expenses net of depreciation, amortization, and interest requirements
Net revenues	Gross revenue and income, less operating and maintenance expenses
Operating ratio (%)	Operating and maintenance expenses, divided by total operating revenues
Net take-down (%)	Net revenues, divided by gross revenues and income
Interest coverage (x)	Net revenues, divided by interest requirements for year
Debt-service coverage (x)	Net revenues, divided by principal and interest requirements for year
Debt-service safety margin (%)	Net revenues, less principal and interest requirements for year divided by gross revenue and income
Peak debt-service coverage by historical net revenues (x)	Net revenues, divided by estimated maximum annual principal and interest requirements on all outstanding debt and the bonds to be issued
Peak debt-service coverage by projected net revenues (x)	Projected net revenues for the first full fiscal year, following completion of the capital project financed from the new bonds, divided by estimated maximum annual principal and interest requirements on all outstanding debt and the bonds to be issued

ongoing needs of their system. Risk is reduced when rates are sufficient to support the costs associated with maintenance and operations, debt service, and to a certain extent, ongoing improvements as well as needs arising from unanticipated events. Though water and sewer systems generally function as monopolies within their service areas, relatively high rates can increase risk by limiting management's future flexibility to raise rates. In addition, unusually high rates could mask inefficiencies within the system or diminish the potential for future expansion. Conversely, unusually low rates could reflect a trend of deferred maintenance or result in extremely narrow debt service coverage levels—both factors often reflect management flexibility and political environment.

Management. Management is an important factor in the analysis of revenue bond credit quality. Management's flexibility to create an adequate rate structure and effectively dictate the direction of the enter-prise despite the existence of political pressures is always an analytic focal point. Given these inherent pressures, water and sewer systems often are administered by independent boards. Thus, management's skill in interacting with both political and regulatory agents, while maintaining an agenda focused on best practices, is a key credit consideration. The institutionalization of good management practices can diminish the impact of a change in key personnel as reflected in budgeting techniques, methodologies used for capital planning, and responsiveness to regulatory shifts.

Operations. Though management is a critical credit factor, a number of practical points also must be examined. For example, water systems, which are simply distribution conduits, are far less capital intensive than systems treating water. Regardless of the type of operation, management considers whether the enterprise has sufficient water rights to meet both current and reasonably projected near-term demands. Wastewater operations also range from simple collection systems (which rely on other contracted parties) to collection and treatment systems. Though collection systems lack the heavy capital requirements associated with treatment systems, they face additional risks associated with unanticipated rate increases from their treatment providers. Because a water or sewer system can be either a wholesale client or wholesale service provider, an important factor in the operational analysis is the number, structure, and length of any service agreements.

Systems and Service-area Considerations. Water enterprises are essential components of a community's economic health because the availability of water can dictate an area's rate of growth. Similarly, if a wastewater system is at or near capacity, new usage as a result of intensive construction (housing developments, food processing plants, etc.) could be halted in order to remain within mandated effluent standards.

In their analysis of the service area, analysts assess the local economy's continued ability to support system operations. This includes analysis of the customer profiles and whether the system's clients are residential, commercial, or industrial. A key consideration is the degree of concentration in the user base as this lessens the system's susceptibility to economic shifts or downturns. Resident wealth levels also are analyzed to determine the local population's ability to pay the system's rates. Excessive growth in a service area could tax a system's capacity. Conversely, a decline in customer base could leave the system with expensive infrastructure to maintain and excess capacity, which could undermine finances.

Conclusion

In conclusion, while the various statistics discussed throughout this article play a significant role in the evaluation of credit risk, data and ratio analysis is certainly not the sole determinant of a credit rating. As a result, there is no algebraic formula by which a rating can be determined. At the start of the analysis, each of the four-credit categories carry equal weight and many qualitative factors are considered. As analysis of a general obligation, revenue, or lease issue proceeds, however, one factor may become more important because it represents a particular credit strength or weakness or is more likely to have a significant impact on future credit quality. The most useful tool for evaluating credit risk is through examining the way that the four key areas of credit analysis—economy, debt, finances, and administration/management strategies—interact. □

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15. Extent and Nature of Circulation		Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total Number of Copies *(Net press run)*		16,777	16,090
b. Paid and/or Requested Circulation	(1) Paid-Requested Outside-County Mail Subscriptions Stated on Form 3541 *(Include advertiser's proof and exchange copies)*	12,552	14,600
	(2) Paid In-County Subscriptions *(Include advertiser's proof and exchange copies)*	--	--
	(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution	160	50
	(4) Other Classes Mailed Through the USPS	--	--
c. Total Paid and/or Requested Circulation *(Sum of 15b. (1), (2), (3), and (4))*		12,712	14,650
d. Free Distribution by Mail *(Samples, complimentary, and other free)*	(1) Outside-County as Stated on Form 3541 (2) In-County as Stated on Form 3541 (3) Other Classes Mailed Through the USPS	50	50
e. Free Distribution Outside the Mail *(Carriers or other means)*		--	--
f. Total Free Distribution *(Sum of 15d. and 15e.)*		50	50
g. Total Distribution *(Sum of 15c. and 15f)*		13,212	14,700
h. Copies not Distributed		3,565	1,390
i. Total *(Sum of 15g. and h.)*		16,777	16,090
j. Percent Paid and/or Requested Circulation *(15c. divided by 15g. times 100)*		96.22%	99.66%

16. Publication of Statement of Ownership
    ☐ Publication required. Will be printed in the December 1999 issue of this publication. ☐ Publication not required.
17. Signature and Title of Editor, Publisher, Business Manager, or Owner: Karen Utterback — Date: 11/17/99

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

Instructions to Publishers

1. Complete and file one copy of this form with your postmaster annually on or before October 1. Keep a copy of the completed form for your records.
2. In cases where the stockholder or security holder is a trustee, include in items 10 and 11 the name of the person or corporation for whom the trustee is acting. Also include the names and addresses of individuals who are stockholders who own or hold 1 percent or more of the total amount of bonds, mortgages, or other securities of the publishing corporation. In item 11, if none, check the box. Use blank sheets if more space is required.
3. Be sure to furnish all circulation information called for in item 15. Free circulation must be shown in items 15d, e, and f.
4. Item 15h., Copies not Distributed, must include (1) newsstand copies originally stated on Form 3541, and returned to the publisher, (2) estimated returns from news agents, and (3), copies for office use, leftovers, spoiled, and all other copies not distributed
5. If the publication had Periodicals authorization as a general or requester publication, this Statement of Ownership, Management, and Circulation must be published; it must be printed in any issue in October or, if the publication is not published during October, the first issue printed after October.
6. In item 16, indicate the date of the issue in which this Statement of Ownership will be published.
7. Item 17 must be signed.

Failure to file or publish a statement of ownership may lead to suspension of Periodocals authorization.

PS Form **3526**, September 1998 *(Reverse)*

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