The Liquidity Crisis: The 2007–2009 Market Impacts on Municipal Securities

This article surveys developments in the municipal debt market for their practical and conceptual implications for public financial managers and scholars. It provides an overview of the market crisis of 2007–9, focusing on what fiscal stress reveals about debt costs, the incidence of risk, and management methods. The first part focuses on the systemic factors—highly leveraged subprime mortgage instruments and collateralized debt obligations—that affected credit availability, interest costs, and the changing risk profiles of the debt instruments. The second part emphasizes the new institutional architecture of the borrowing environment: the collapse of the market for variable-rated securities, the withdrawal from the market of traditional bond insurers, the diminished availability of credit enhancement instruments from banks, the demise of the standby bond purchase agreement, and the introduction of Build America Bonds. The article presents an agenda for practitioners and scholars as they face a borrowing future that differs markedly from that of the past.

“I used to think that if there was reincarnation, I wanted to come back as the president or the pope or as a .400 baseball hitter. But now I would like to come back as the bond market. You can intimidate everybody” (James Carville, quoted in Campbell and Kruger 2009).

The U.S. municipal bond market remains formidably large, at $2.8 trillion in outstanding volume in 2009–10. The municipal market also remains an active and healthy market, although lower-quality issuers have had difficulty recently, and even healthy issuers have had to make adjustments. Events brought on by the subprime mortgage crisis have altered the municipal market environment and may have begun a process of longer-term institutional change, especially with respect to regulation, market access via credit enhancement, and federal–state relations. The diverse impacts of the subprime mortgage crisis on state and local government finances include local property tax base contraction, reduced sales tax revenues, and tightened capital market liquidity.

The effects of the 2007–9 crisis are all too familiar: mortgage default and foreclosure rates soared to unprecedented levels, adversely affecting property tax revenues. State and local governments deferred financing of certain capital investment needs (Honadle 2009), waiting for greater market stability and lower interest costs (Stone & Youngberg 2009). Municipal debt issuance levels fell during 2009, excluding Build America Bonds (BAB), to around $330 billion in new municipal debt, the lowest volume since 2002. Credit concerns abound; some fear that municipalities have been taking on too much debt because of the stimulus funds provided through the BAB program (Temple-West 2010). A further fear (since 2010, an eventuality) is that stimulus funds will dry up before local revenues recover enough to replace them, which some have termed the “cliff effect.” Local governments even fear being forced into a dreadful trade-off between providing services and maintaining their credit ratings (McGee 2010). In 2009–10, bond rating agencies downgraded several hundred public entities, reporting increased volatility in the municipal market (McGee 2010; SIFMA 2009). Concerns are greater for special revenue obligation bonds versus general obligation issues and for those jurisdictions that require citizen referenda to approve tax-supported debt (Bullock 2010).

Of key interest is that tomorrow’s municipal market will be markedly different from yesterday’s municipal market...
This brief article reviews recent developments in the municipal debt market in order to draw practical and conceptual implications for public financial managers and scholarly researchers as they brace for a new market environment. The article provides an overview of the market crisis of 2007–9, identifying structural changes that affect municipal markets and exploring what fiscal stress reveals about the relationships between debt cost, the incidence of risk, and management methods. We conclude that although the crisis in the municipal bond market has had much less to do with the quality of the underlying bond issues than with the health and liquidity of the overall market, financial administrators are left to handle and need to position themselves for changes in the market. The following sections present a case for how the crisis affected the municipal bond market and introduces its changing institutional architecture. The article concludes with a discussion of implications for practitioners and scholars.

**Municipal Crisis Background**

In this section, we explore the systemic factors that dramatically affected credit availability, interest cost, and the institutions on which municipal issuers have come to rely. Critical to any review of this period are the effects of certain recent market innovations, especially highly leveraged subprime mortgage instruments and collateralized debt obligations (Lewis 2010).

**The Subprime Mortgage Crisis**

Subprime mortgages are loans made to borrowers whose credit scores and credit history are below the standards for most conventional mortgages (Chomsisengphet and Pennington-Cross 2006). Large numbers of subprime borrowers—sometimes in excess of 40 percent for given lenders—were exempted from written verification of their incomes, a risky practice even in good times (Lowenstein 2008). Subprime mortgages provide considerable benefits to loan originators (Zandi 2009). Perhaps the most notable benefit is increased liquidity: in money multiplier fashion, lenders could resell loans in the secondary market in the form of bonds, employing the proceeds to make further loans, and do so repeatedly. Between 1996 and 2006, the number of subprime mortgage originations increased by a factor of 10 (Ashcraft and Schuermann 2008; Chomsisengphet and Pennington-Cross 2006).

By packaging thousands of subprime mortgages into bundles sold to investors through shell companies termed “special-purpose vehicles” (SPVs), banks raised fresh capital to lend by selling mortgage-backed bonds, committing the cash flows from the underlying mortgages to service SPV-issued debt (Ashcraft and Schuermann 2008). Such SPV-issued bonds may be termed “first-order derivatives”; essentially, derivatives are financial assets whose value is based on the value of other assets. Layers of complicity can grow, as bonds backed by subprime portfolios are repackaged in the form of collateralized debt obligations (CDOs), a “second-order derivative.” CDOs are bond-like securities whose repayment depends on the performance of underlying portfolios of other bonds; in this case, their value ultimately depended on bundles of subprime mortgage assets, at the bottom layer of debt. Figure 1 illustrates this. Some CDOs were even created by buying the bonds of other CDOs. By issuing CDOs, mortgage originators pass the credit risk to other institutions and investors. These risks are extremely difficult to evaluate. By building new debt on top of existing debt, an inverted “pyramid of debt” was created, all based on portfolios of subprime loans whose performance deteriorated rapidly in 2007–8. This otherwise highly risky approach was legitimized, in effect, by both high credit ratings and the willingness of financial institutions (banks and bond insurers) to insure the portfolios against loss.

In classic “bubble” fashion, subprime lending grew from around $65 billion in 1995 to $332 billion in 2003. The number of subprime originations swelled from 62,000 fixed-rate mortgages and 21,000 adjustable-rate mortgages (ARMs) in 1995 to nearly 780,000 fixed-rate mortgages and more than 860,000 ARMs in 2006 (Chomsisengphet and Pennington-Cross 2006). ARMs were attractive to potential home buyers because of their relatively low initial interest rates (Lowenstein 2008). In most ARMs, low rates were in effect for up to two years, after which the rate could be adjusted, or “reset,” as frequently as every six months. Lenders also attracted home buyers with low—or zero—down payments, which provided little cushion against price drops. Near-zero down payments also attracted speculators, a sure sign that a bubble may be expanding. As a consequence, relatively minor price changes could place a mortgage loan “upside down” (i.e., the debt exceeds the value of the mortgaged home). Such properties were particularly susceptible when the impending real estate collapse finally occurred.

Subprime lending took a larger share of a growing market starting in the early 1990s, rising from 0.74 percent to nearly 9 percent by 1999 (Nichols, Pennington-Cross, and Yezer 2005). Total mortgage lending also surged during this period, reaching $2.5 trillion in 2006. A large part of the growth was attributable to increasing leverage. As market returns began to stabilize in the face of competition, investors increasingly leveraged their portfolios, borrowing much of the money that they would invest in CDOs. Global CDO issuance increased from $157 billion in 2004 to $481 billion in 2007, before crashing in 2009 to a low of $4 billion (SIFMA 2010). When the bubble burst, the correction occurred quite rapidly.

**Risk-Assessment Problems**

It is extremely difficult to sort out the risks of the various sources of cash flow supporting the layers of first- and second-order investments (Gorton 2008). Investors naturally turned to the bond rating houses, without whom the rapid growth in this market would not have been possible (Lowenstein 2008). Freixas and Shapiro (2009) contend that the “gatekeeping” role of the credit raters was crucial in overcoming informational asymmetries between the SPV issuers.

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**Figure 1 Graphic Operation of Subprime Mortgage-Based Securities Pyramid**
and investors, many of whom naively presumed that SPV-issued bonds holding AAA ratings were as safe as fixed-rate corporate bonds of the same grade. Although the rating agencies did not have access to individual mortgage data—a practical requirement for accurate risk assessment—they evaluated risk levels based on historical default rates (Diamond and Rajan 2009; Lowenstein 2008; White 2009). The rating agencies apparently accepted financial institutions’ assurances that management of the mortgage portfolios would mitigate the risk. The portfolios were divided into classes of bonds, or “tranches,” of varying quality based on anticipated rates of repayment, with the highest quality tranches to be paid first, and lower-quality tranches taking payment on a subordinated basis from the lower-quality mortgages. In some cases, 12 or more tranches were created, each corresponding to an asset class, from AAA (highest quality) to B1 (junk).

The highest-rated bonds thus would have a priority claim on the cash flows; lower-rated bonds would receive higher returns but stood to lose more in the event of unexpectedly high rates of homeowner default. Few could have known in advance which bonds, based on which mortgage portfolios, would default or when. These arrangements were workable as long as delinquency rates remained low, in the assumed 4 percent to 8 percent range, reflecting the subprime nature of the debt (which is still high by historical standards). However, when average actual default rates reached double-digit levels (in some cases with more than 25 percent of total loan value in default), the pyramid of debt could no longer be supported by the underlying asset base. The inevitable collapse became, at a point, an almost inevitable collapse. The ratings became increasingly suspect. For instance, a comparison of default rates on identically rated Baa corporate bonds and Baa-rated CDOs from 1993 to 2005 reveals that the CDOs defaulted a stunning 10 times more often than the corporate bonds (U.S. House 2007). What is more, as late as 2007, Moody’s was rating CDOs without even the scantest information as to which bonds a CDO manager would buy and put in the portfolio, which is subject to fairly continuous churning at the manager’s discretion. Referring to the rating agencies’ reliance on statistical models, Lowenstein (2008) notes, “they were checking the math, not the mortgages. But no CDO can be better than its collateral.”

**How the Credit Rating Agencies Got into Trouble**

It has become increasingly clear that the credit rating agencies played a significant role in the financial breakdown of 2007–9. A number of interrelated factors contributed to a false sense of safety on the part of investors. First, the agencies apparently failed to accurately identify, evaluate, and rate the risks inherent in the new generation of structured financial products, especially CDOs secured by subprime mortgage portfolios. Second, the industry practice of issuers paying for ratings poses an inherent conflict of interest, with incentives to negotiate qualifications for receiving superior ratings in order to avoid issuers “shopping around” for the best rating. Third, a 1975 government-sponsored barrier to new entrants diminished competition among potential rating agents: the Securities and Exchange Commission (SEC) designation of “nationally recognized statistical rating organization” (NRSRO). Finally, the rating agencies contend that they are neither legally responsible nor financially liable for the quality of the ratings they provide. They offer advice only.

**Issuer Pays: A Conflict of Interest**

The entire edifice of debt depended on the bond rating. In this respect, the “issuer pays” business model adopted in 1975 posed a clear conflict of interest, with investment banks and hedge fund managers increasingly willing to shop for desirable ratings. As a consequence, the rating process became more collaborative than regulative, and the ratings themselves became more stable as issuers designed structured financial packages to meet the minimum threshold for a superior rating. In this manner, a thin cushion of security was preserved for investors, but the ratings became increasingly suspect. In general, the notion is sound: to provide issuers and investors with independently generated, easy-to-understand measures of relative default risk. However, designating the largest, most prominent credit ratings houses as NRSROs created a concentrated, specialized industry with privileges for a few players. White (2009) contends that through its policies and actions, the SEC constitutes a barrier to entry into the bond rating business. The SEC explicitly made NRSRO ratings part of its regulatory structure. Investment banks and broker-dealers must employ the ratings provided by NRSROs in issuing securities to the public. The NRSRO ratings must also be used by banks and other financial institutions to meet regulatory requirements specifying the quality of their investments. While there may be as many as 150 rating agencies around the globe, the three major U.S. agencies dominate the market (Langohr and Langohr 2008). Reasonable observers may infer that the industry structure is counter to the public interest.

**Denial of Responsibility for Actions Based on the Ratings**

Ratings agencies prefer to think of themselves as “publishers” who offer opinions, not judgments, on the securities they evaluate. NRSROs claim First Amendment privileges, providing disclaimers, such as “any user of the information contained herein should not rely on any credit rating or other opinion contained herein in making any investment decision” (White 2009, 1). This disclaimer no longer seems as plausible as it once did. A heightened level of governmental scrutiny may be expected in the future.

**Changing Institutional Architecture**

In this section, we discuss the institutional origins of the bond market decline. The liquidity crunch has induced rather dramatic changes in the municipal market. These include decreased availability of credit enhancement, a dramatically reduced variable-rate debt market segment, a falling share of tax-exempt versus taxable issues, proposals for rating changes, increased interest rate volatility, and an increased likelihood of policy change in municipal tax subsidies.

**Bond Insurance Woes**

Bond insurance is a form of credit enhancement that permits lower-rated issuers to enjoy the more attractive interest costs of
higher-rated issuers, essentially lending the credit rating of the AAA insurer to the issuer for a premium cost. Insurance provides additional security to investors by guaranteeing payment in the event of a default. Because of the signaling aspects of insurance, it serves an additional purpose by improving the security’s liquidity in the market (McGee 2009). Since 1971, bond insurance has played a key role in gaining access to the municipal market for smaller, more obscure, and lower-quality municipal issuers (Lemov 2009).² In 2007, seven municipal bond issuers were active in the market. All received AAA ratings from the three major rating agencies (S&P, Moody’s, and Fitch). Bond insurance became so integral to the municipal market that in 2007, more than one-half of all new issues were insured. Despite widespread understanding that municipal issuers rarely default, both issuers and investors believed that the bond insurance costs would be more than offset by the interest cost savings accompanying a higher-rated issue. Empirical studies affirm the potential cost savings of insurance (Bland 1987; Cole and Officer 1981; Kidwell, Sorensen, and Wachowicz 1987).

As for-profit enterprises, bond insurers took aggressive positions in the subprime mortgage market, both on the retail side (by insuring collateralized securities tied to subprime mortgages) and on the investment side (by investing in the subprime market) of the business. When the subprime market began to reel in 2007–9, insurers were squeezed from two directions: claims against the insured CDOs on their books mounted, while their direct investments in the subprime mortgage markets failed.

Rating agencies began to downgrade bond insurers, with the secondary effect of reducing ratings for many of the municipal bonds that they had insured. By November 2008, no municipal bond insurer was rated AAA. Insurers exited the market en masse in 2008–9, leaving only two active bond insurers in the market at the end of 2009 (The Bond Buyer 2010a). Bond insurance thus became more difficult to obtain. The percentage of municipal issues with insurance plummeted from 46.7 percent in 2007 to 8.7 percent in 2009 (SIFMA 2009).³

Experts hold mixed expectations for the future of bond insurance. One view expects the insurance market to dwindle, with investors refocusing on underlying credit quality instead of insured value; another expects the insurance market to rebuild as demand for bond insurance continues among certain segments of investors and issuers, especially for issues rated BBB or less (McGee 2009). Denison suggests that both of these views are valid: “In the long term, the markets will adapt by rebuilding the bond insurance industry and/or by attracting into the market bond buyers who are less risk averse” (2009, 46).

**Diminished Liquidity Provision**

Other forms of liquidity provision also contracted during the crisis. Letters of credit (LOCs) are guarantees of payment by a provider, usually a bank, to an investor in the event that the security cannot be resold in the market on some periodic basis. In particular, LOCs have been used as a form of credit enhancement for variable-rate debt obligations (VRDOs). The use of LOCs spiked at $71.5 billion in 2008 before crashing (McGee 2009). From 2008 to 2009, the top 10 LOC providers experienced a 66 percent decline in the number of issues (The Bond Buyer 2010a). As supply contracted, LOC fees increased. On a typical LOC transaction for a tax-backed, A-rated issue, LOC bank fees increased from 35 basis points in 2007 to 140 basis points in 2009, a substantial increase (Levine and Greaves 2009).

**Collapse of the Variable-Rate Debt Market**

The market expansion of the last decade and a half brought with it new and more complicated instruments, including a variety of variable-rate debt obligations. VRDOs, which also include auction rate securities (ARSs), are issued as long-term bonds but have the characteristics of short-term bonds. They offer issuers the advantages of funding permanent asset construction or acquisition using long-term debt but with the reduced borrowing costs of short-term issues. VRDOs typically provide investors with periodic opportunities to resell their bonds—effectively, to “put” them—to the issuer through a remarketing agent who resells the bonds at current market rates. Bondholders who take advantage of this option receive the bond’s par value. Interest rates are reset by the remarketing agent, in many cases, on a weekly basis.⁴

Credit guarantees have been required by institutional investors, especially for smaller and lesser-known municipal issuers. As an added measure of protection, VRDOs may be guaranteed by a bank-issued LOC or a standby bond purchase agreement (i.e., through a liquidity provider, normally a bank). One expert has noted that “VRDOs normally need letter-of-credit backing from a bank to achieve ratings strong enough to be eligible for purchase by a money market fund. . . . Since the credit crisis decimated banks’ credit ratings, letters of credit with sufficiently strong ratings are more expensive and difficult to find. As a result, sales of VRDOs are down 76.5% this year” (Seymour 2009). Bank LOCs are provided for a fee, generally ranging between 75 and 300 basis points. After 2007, as credit steadily tightened, the fee spread also widened. Further, the term of liquidity facilities narrowed from between three and seven years, down to one to three years by the end of 2009. Standby purchase agreements have also been provided by banks acting as “purchasers of last resort.”

Recently, however, banks have backed away from the VRDO market. As a consequence, since the crisis began, there has been a marked drop in the issuance of variable-rate debt obligations (SIFMA 2009). Having reached a high volume totaling about $115 billion in 2008, VRDO volume fell to $34.8 billion in 2009. This drop is attributed to a decrease in housing-related VRDOs, increased costs of acquiring liquidity provision, and the withdrawal of VRDO investors, such as money market and hedge funds.

Until recently, an important and growing segment of the VRDO market was ARSs. Like all VRDOs, ARSs are long-term, variable-rate instruments whose yields are reset periodically at auction. ARSs also were subject to credit enhancements, mostly in the form of bond insurance. ARSs have been marketed to investors as a viable alternative to money market funds, providing both safety and liquidity at attractive rates of return. Issuers incur short-term interest costs for what is essentially a long-term debt obligation. Until the crisis, investors had been able to liquidate their ARSs at face value, leading many to consider them “near cash investments.” In early 2008, the ARS market was estimated at around $330 billion issued and outstanding.

The ARS market collapsed precipitously in February 2008. The stability of auctions noticeably started to decline in 2007 and

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accelerated after January 1, 2008. The widening credit crisis, coupled with the withdrawal of bond insurers from the market, led to increasing numbers of ARSs failing to be resold at auction. In just three days in February 2008, more than 1,000 auctions failed, leading to the virtual collapse of the ARS market (Lee 2008). The collapse hurt many municipal issuers, whose debt portfolio consisted largely of ARSs. These municipalities have had strong incentives to restructure their debts, moving away from variable-rate bonds in favor of fixed-rate issues. In order to control the risk of not placing large portions of issues, many issuers have negotiated direct placements with large financial institutions rather than using competitive bids. Some issuers also experienced greatly increased interest costs because of rates being reset at punitive levels in both failed and successful auctions.

**Volatile Interest Rates**
The interest rates for municipal bonds have seen dramatic changes, particularly since 2007. While short-term rates (indicated by the SIFMA Municipal Swap Index) and long-term rates (indicated by the Bond Buyer 20-Bond Index) follow similar trends, the variation in the short-term market is much greater, as indicated in figure 2. Interest rates for fixed-rate bonds stayed between a band of 3.94 percent (September 2009) to 6.01 percent (September 2008), yet rates for variable-rate bonds fell to record-low levels in 2009: 0.22 percent in December 2009, from a record high of 7.96 percent in September 2008. The peak in 2008 is attributed to the rapid downgrade of bond insurers and the reduction in bank-offered LOCs. The 2008 shock led many short-term borrowers to restructure their debt, either replacing the insurer or LOC provider or, where feasible, converting issues to fixed-rate debt (Stone & Youngberg 2009). As the market corrected, investor demand for short-term investments predominated, driving short-term rates down (Cooke 2010). Interestingly, not all municipal issuers have been equally affected: “Public agencies fortunate enough to have stable credit enhancement for their short-term debt have benefited from these very low rates, while other issuers have struggled to find scarce letters of credit or liquidity commitments” (Stone & Youngberg 2009).

Relatively low municipal yields were expected to continue beyond 2010 (SIFMA 2009). As the taxable market expands with the advent of Build America Bonds, higher demand for tax-exempt issues is being fueled by the relatively limited supply of tax-exempt bonds and expectations of higher marginal tax rates, putting downward pressure on municipal yields.

**Widening Credit Spread**
Widespread use of bond insurance had effectively created a homogenous class of bonds; but the near collapse of the insurance industry has again underscored the heterogeneous nature of debt issues. Investors and financial institutions have recently developed a renewed interest in the issuer’s credit quality. Consequently, rate spreads among issues of different underlying credit have widened. Interest rate differentials between the highest-rated municipal bonds and the lowest-rated bonds have broadened to around 200 basis points, from an average 35 basis point differential for most of the period between 2002 and 2007 (Stone & Youngberg 2009). This is a rather dramatic change.

**Policy Change in Municipal Tax Subsidies: Build America Bonds**
In an effort to stimulate municipal market liquidity, the federal government introduced the Build America Bond program as part of the American Recovery and Reinvestment Act of 2009. The program was designed to stimulate spending at the local government level, primarily in infrastructure and development. Through the program, municipalities may issue as much taxable debt as they choose and receive either a direct subsidy of 35 percent or provide the subsidy to bondholders in the form of tax credits. As the insurance market imploded, the BAB program offered a stimulus to local investment that did not rely on third-party credit enhancement. BABs are thus a form of subsidy from the federal to municipal governments.

Tax-exempt bonds have long been a mainstay of state and local government finance. They attract investors who desire lower taxes and, in return, accept a lower rate of return. The federal government forgoes tax collections on interest income, and the issuing state or local government receives the benefit of borrowing at lower interest costs. After nearly a century, tax-exempt securities are once again being reconsidered as the best vehicle for low-cost credit for subnational governments. “[T]he federal government believes the tax exemption on state and local government debt is a costly subsidy that siphons to investors much of the largesse intended for municipalities” (Seymour 2010; Wessel 2010). While the introduction of BABs was ostensibly to stimulate the economy, it can also be seen as an opportunistic shift of the municipal credit market away from tax-exempt bonds to more efficient subsidies, as evidenced by the 2010 extension of the BAB program.
The Congressional Budget Office (CBO) estimates that tax-exempt subsidies exceeded $26 billion annually from 2008 to 2012 (CBO 2009). It is estimated that for every $1 of tax-exempt subsidy, municipal borrowing costs are reduced by only $0.80 (Seymour 2010). This is because the pool of high-tax-rate investors is inadequate to purchase all of the bonds issued by municipalities, so that municipalities need to pay a higher return to attract investors in lower tax brackets. The higher-tax-bracket investors benefit from the higher interest rate, although it also involves a deadweight loss to the federal government (Seymour 2010).8

One of the issues raised by the CBO is how the federal subsidies are accounted for in the budget process (CBO 2009). For tax-exempt bonds, the subsidies hit the books as forgone revenue but are not included in the budget-allocation process. The concern is that the federal government has no control over the value of the subsidy. The implication of this concern is that the federal government may want to explicitly include the value of the subsidy in the budget. This might (whether intentionally or not) result in a cap on the amount that municipalities can issue at a tax-preferred price.

BABs have been so popular that they have quickly assumed a large share of the municipal market. While the share of taxable bonds historically averaged about 5 percent, in 2009, the value increased to 19.2 percent. There has been a clear substitution of taxable BABs for tax-exempt bonds, with the volume of tax-exempt bonds—totaling $331 billion—currently at 2002 levels (SIFMA 2009). BABs have far exceeded the federal government’s expectations of their popularity. Whereas the 2011 budget estimated that the BAB program would cost $13 billion a year by 2020, recent estimates price the program at $64 billion by 2020 (Seymour 2010). With the advent of Build America Bonds, the investor base of municipal securities expanded and shifted dramatically. As the BABs are not tax exempt, they are relatively more attractive to investors who do not pay federal taxes. Thus, BABs attract a larger pool of nontraditional investors, including pension funds, corporations, and foreign nationals. In particular, foreign holdings of municipal debt recently increased 78.9 percent. About 13 percent of all municipal issues are held by foreigners (SIFMA 2009). This proportion is likely to rise in the future.

There has been some discussion at the federal level that the 35 percent subsidy currently applied to the BABs exceeds prudent levels and that a rate in the 21 percent to 28 percent range would be more appropriate (Seymour 2010; Wessel 2010). Lowering the subsidy rate would reduce the attractiveness of BABs relative to traditional tax-exempt instruments. Ironically, the popularity of BABs has reduced the supply of tax-exempt bonds relative to demand, depressing investor returns but also reducing the price paid by subnational governments for capital improvements.

**Proposed Regulatory Changes**

Among the many proposed measures for federal financial regulatory reform, the provisions for credit rating agencies and municipal securities are most relevant to this discussion.

Proposed reform to the credit rating agencies comes in response to the agencies’ practice of assigning unreasonably high ratings to instruments having complex layers. Legislators have pushed for the creation of an Office of Credit Ratings at the SEC, which would be responsible for examining the NRSROs annually. NRSROs would be required to disclose their methodologies and ratings track record; the functions of compliance officers would be separated from ratings, methodologies, and sales; rating agencies would be held accountable for reckless reporting; the SEC would have the authority to deregister an agency for a pattern of poor ratings outcomes; and reliance on ratings would be reduced by requiring regulators to remove unnecessary references to NRSRO ratings (U.S. Senate 2010). Although the issuer pays system has been much criticized, the proposed legislation does not address this issue.

Regarding municipal securities, the proposed regulatory reform would enhance oversight of currently unregulated municipal advisors and increase representation of investors on the Municipal Securities Rulemaking Board (MSRB). Although presently investment bankers, public pension advisors, and portfolio managers are registered, the measure would additionally require municipal financial advisors, swap advisors, and investment brokers to register with the SEC and subject them to rules of the MSRB. Furthermore, the proposed reform would give investors and public representatives a majority on the MSRB to enhance transparency in municipal markets and increase investor protection (U.S. Senate 2010).

**Discussion and Conclusions**

The mortgage crisis has affected the municipal credit markets in a number of indirect yet significant ways. As is often the case (Honadle, Cigler, and Costa 2004), through no fault of their own, many municipal issuers faced increased borrowing costs, less access to capital, and a changing landscape that could fundamentally alter the way in which public projects are financed. This landscape is characterized by limited credit enhancement, less access to variable-rate instruments, and changing tax-preferred instruments, all of which will have unknown consequences for cost, risk, and management. This article has traced the evolution of the mortgage crisis and its impacts on municipal debt and offered some thoughts about how the changing architecture affects municipal finance.

Based on this review, recommendations are offered to public administrators. Local financial managers and municipal advisors are well advised to embrace prudent debt and investment management policies. The Government Finance Officers Association’s best practices and advisories serve as useful guides (GFOA 1997, 2003, 2010). Beware of fixes that seem too good to be true. No amount of creative financing can compensate for underlying poor financial condition. And financial advisors need to consider their ethical position as stewards of the public purse. Federal financial managers should be aware of the intended and unintended consequences of changing the form of tax subsidies provided to municipal borrowers. While a shift from tax-exempt to direct subsidies may give the federal government more cost control, the potential exists to usurp local decision making, with potentially serious moral hazard implications. These trade-offs need to be carefully considered.
The investor community and regulators are advised to reconsider both the 1975 law and the practice of issuer pays. Perhaps by working in concert the actors can craft voluntary compliance standards that redress the less attractive parts of these measures. In particular, consideration of a co-commitment investment might replace the issuer pays practice.

**Issues for Fiscal Managers**

Practitioners need to return to the fundamentals of prudent financial management as they approach the municipal market. As local property tax bases contract and sales tax receipts fall, investments in brick and mortar appear less politically attractive to local officials. Financial managers therefore must evaluate the cost of deferring the financing of capital investment needs versus assuming additional debt. This involves a trade-off between maintaining a sound credit rating and providing public services. This trade-off is ever present, even in boom times. However, the recent crisis renders such trade-offs more acute and stressful.

Practical fiscal management now requires that attention be paid to the market forces that precipitated the crisis. Prudence dictates that revenue estimates should be based to an even greater extent on factors that previously were hidden. Local financial managers must now track and forecast property foreclosure rates, mortgage default rates, and homeowner debt and equity levels to see what share is upside down.

By extension, financial managers must pay heed to private sector investment vehicles that could affect local government finances. While the recent crisis revolved around the housing sector, tomorrow’s crisis could revolve around other sectors—technology, energy, transportation—that also have an impact on the fiscal environment. This will require financial managers to be knowledgeable in investment vehicles that are traditionally outside their purview or, at a minimum, for impartial third parties and watchdog groups to keep an eye out for municipal interests. This will require financial managers to understand how the success and failure of different sectors affects their revenue drivers and operating budgets.

Collectively, the changes in the market call for a greater analytical role of municipal financial managers and third-party industry players as they assess changes in revenue drivers, the costs of credit and credit enhancement instruments, and the impacts of policy changes.

**Issues for Scholarly Researchers**

Beyond these practitioner concerns, the crisis has exposed a number of questions that form the backbone of an empirical research agenda. To begin, the crisis has been a natural experiment to explore the true, underlying relationships among key variables that may reveal themselves only in times of stress. One central agenda pertains to understanding the relationships between debt costs and risk incidence. There does not yet exist a good metric as to who really bears the various risks associated with different instruments, enhancements, management methods, forms of subsidy, and bond ratings. Yet to be addressed is the question of how risk is borne, whether market returns adequately compensate for risk in the postcrisis environment, and the extent to which new investment vehicles (such as CDOs) reduce transparency, exposing both issuers and investors to unforeseen risk.

The research agenda also must concern itself with the efficacy of regulatory and fiscal policy reform. For example, would active federal intervention effectively stabilize muni interest costs, and narrow the crisis-induced credit spreads? Given the range of federal intervention strategies for markets at large, what are the potential impacts on muni markets, interest costs, and credit availability?

Given the extent to which nonmunicipal markets affect municipal markets, it is reasonable for regulatory policy to overcome the associated information challenge. For example,
subprime-mortgage-based portfolios of investment banks and municipal advisors may not even be rateable by rating agencies, or by anyone for that matter. If not, then what reasonable regulatory measures would be warranted to protect issuers and investors from the use of highly risky derivatives? It is clear that it would not be possible to devise a new insurance facility in order to indemnify issuers and investors against such risks. Such risks turn on the unknown future direction of interest rates in the economy, which is inherently uninsurable. Due consideration should also be given to the whether the “issuer pays” model should continue for credit analysis.

By extension, the role of the rating agencies should be evaluated to determine whether they offer the best form of risk analysis needed to overcome the information asymmetries they are designed to address. Is the role of the NRSROs still appropriate? If there were more competition among rating agencies, would it result in more appropriate ratings or exacerbate the problem of “shopping” for a superior rating? Also, as the rating agencies move toward a global scale of public and corporate sector bonds so as to provide ratings of comparable default risk, it is unclear how the realignment will affect the cost of municipal issues. Would reform help investors more carefully distinguish between municipal securities and corporate issues?

Another inquiry related to fiscal policy reform concerns the cost, equity, and efficiency impacts of eliminating the tax exemption for munis. What are the efficiency and equity gains or losses of moving from an individual bondholder tax subsidy to a local government subsidy, as in BABs?

The introduction of BABs raises empirical questions about who bears risk. In the case of traditional unsecured bond sales, risk is borne by the municipal issuer, whereas in the case of BABs, which are subsidized directly by the federal government, there could be an implicit shift of risk to the national level. Direct-subsidy tax-preferred bonds could introduce an implicit role of the federal government as guarantor of local government debt, potentially obscuring investors’ perceptions of local government risk. A further and potentially more far-reaching concern is whether federal authorities would centrally determine capital investment priorities as the quid pro quo for providing the subsidies. If municipal capital financing incentives were to be so heavily influenced by the federal government, then local motivations to keep their fiscal affairs in good order would likely suffer, to the extent that federal subsidies would be provided for some kinds of municipal needs (such as school construction) but not for others (such as local bridge and other infrastructure repair). As things now stand, the implicit tax subsidy provided to municipal debt is indirect in operation; local authorities are free to determine their own capital priorities.

Thus, the policy change may alter federalist arrangements. If BAB-type bonds replace tax-exempt bonds, it is not hard to imagine the imposition of federal controls over the use of municipal debt for predetermined purposes. This would greatly impinge on state and local fiscal autonomy; a federal agenda could usurp thousands of local agendas. If the federal government were to influence project selection, then the municipal credit market as we know it—one based on risk and return—could quickly collapse into one driven by political control of credit quantity.

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At some point, the supply of highly rated municipal bonds will exhaust the demand for BABs. As less highly rated issues vie for the BAB market, the market may demand higher risk premiums or the return of credit enhancement. This is probable, as investors in the broader bond market are currently less familiar with the municipal market than the corporate market. The long-term effect of BABs on the insurance industry is unclear. On one hand, the introduction of BABs poses a risk to the insurance market. “One, the subsidy allows BABs to come to market at higher yields, which can be attractive enough to investors without an insurance wrap. Two, as taxable bonds they garner a broader base of investors than traditional munis. And three, most BABs are high-grade—more than 65 percent of deals to date have been rated double-A or better” (McGee 2009). On the other hand, the direct subsidy of BABs does not eliminate information asymmetries and the consequent need for market signaling that credit enhancement was designed to provide. Interestingly, “lower graded BABs pay a higher yield than comparable corporate bonds because some investors are unfamiliar with the municipal market. With insurance, borrowers could save money by coming to the market at a lower yield but retain investors because of the added security” (McGee 2009). This feature of muni market behavior will make regulatory change a highly nuanced (read: tricky) affair.

Finally, there is the question of whether alternative institutions (contracts, rules, methods) reveal anything new about investor or issuer rationality. For example, does the presence of a liquidity provider really reduce interest costs, or is it more a means to access credit? As cost and access are two distinct but not mutually exclusive factors, research should establish whether policy directives are best targeted toward each independently, or concurrently. Related, it is unclear who will bear risk as the markets move more toward unsecured bonds.

Another empirical question is whether general obligation debt is always cheaper than special revenue obligation debt. Also, will the trend away from variable-rate and toward fixed-rate bonds be costly for municipalities? That is, has the market’s rush back to fixed-rate debt been warranted? Related, as the insurance industry finds its new role—likely in a smaller market, focused mainly on small, lesser-known or obscure, or lower-quality issues—would the markets focus more on underlying investor risk? What will the absence of insurance cost municipal issuers?

An array of alternative institutional arrangements should be studied empirically to determine the optimal sharing arrangements for risks and subsidies. Of interest is the sensitivity of the muni market to changes in the financial market’s parameters, such as liquidity, ratings, regulation, and other drivers that affect municipal market
access and price. As market and regulatory institution changes are considered in the aftermath of crisis, answers to these questions will become more crucial. Academic researchers thus have a vital role to play in assisting in their development.

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The authors have no supporting agency to disclose. All secondary data are referenced in the text.

Notes
1. Moody's, founded in 1909, was acquired in 1962 by Dun & Bradstreet but divested in 2000 to be an independent firm. Standard & Poor's was formed by the 1941 merger of Poor's Publishing Company and Standard Statistics Company. It was acquired by McGraw-Hill in 1966. Fitch publishing Company was founded in 1924 and acquired in 1997 by IBCA, a British firm. NRSROs added between 1975 and 2000 included Duff & Phelps (1982), McCarthy, Crisanti & Maffei (1983), IBCA (1991), and Thomson BankWatch (1992), but mergers among them and the original three brought the number back to three in 2000. In 2003, the SEC designated the Canadian firm Dominion Bond Rating Services as an NRSRO, followed by the insurance rater A.M. Best (2005), Japan Credit Rating Agency (2007), Rating & Information, Inc. (2007), Egan-Jones (2007), Luce Financial (2008), and Realport (2008).

2. Insurers whose focus is solely on insuring debt instruments are called “monoline” insurers. The municipal bond insurance market grew from insuring just 1.8 percent of municipal issues insured in 1975 to a market high in 2007, when about 60 percent of new issues were insured (Agriss 2008; Lemov 2009). In 2008, about 51 percent of all municipal bonds were insured. The market collapsed, and by early 2010, barely 10 percent of new issues were insured.

3. From 2001 through 2007, some 63 percent of new issues benefited from some form of credit enhancement (bond insurance, letters of credit, etc.).

4. The reset period can be as short as one day and as long as nine months; one week

5. Rates dropped even lower in 2010, to 0.15 percent in January 2010.

6. There are three forms of tax-preferred municipal bonds (CBO 2009). The most common is the tax-exempt bond, which allows investors to receive interest without having to pay federal (and sometimes state) taxes. The second form is a tax-credit bond, whose interest is taxable, but the investor receives a tax credit for the portion of the interest payments made to bondholders.

7. The lower the investor’s marginal tax rate (MTR), the higher the rate that investor needs from a tax-exempt bond to make it equivalent to a post-tax taxable yield, as determined by the relationship between tax-exempt and taxable yields: Tax-exempt yield = (1 − MTR) * taxable yield.

8. The deadweight loss is created when a high marginal tax rate investor would be satisfied with a lower return than a lower marginal tax rate investor.

References


