

# CRS Report for Congress

## Auction-Rate Securities

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# Auction-Rate Securities

## Summary

Many municipalities, student loan providers, and other debt issuers have borrowed funds using auction-rate securities (ARSs), whose interest rates are set periodically by auctions. ARSs combine features of short- and long-term securities; ARSs couple longer maturities with interest rates linked to short-term money markets. Most ARSs are bonds, although some are preferred equities. Since ARSs were introduced in the mid-1980s, volumes grew rapidly. By 2007 ARSs comprised a \$330 billion market.

Turmoil in global financial markets that erupted in August 2007, combined with vulnerabilities in the structure of ARSs, put mounting pressure on the ARS market. In addition, downgrades of some bond insurers increased stress on segments of the ARS market. In early February 2008, major ARS dealers withdrew their support for ARS auctions, most of which then failed. Widespread auction failures in the ARS market left many investors with illiquid holdings and sharply increased interest costs for many issuers, such as student lending agencies, cities, and public authorities. In particular, ARS failures, according to some, have made it more difficult for student lenders that had used ARSs to raise funds. These issues are discussed in CRS Report RL34578, *Economics of Guaranteed Student Loans*, by D. Andrew Austin.

Many major investment banks, in the wake of lawsuits filed by state attorneys general as well as pressure from state and federal regulators, have announced plans to repurchase outstanding ARSs for certain relatively smaller investors and to make efforts to liquidate ARS holdings of larger and institutional investors. Lawsuits alleged that some investment banks sold ARS products as cash equivalents, but failed to disclose liquidity risks and the extent of bank support for auctions — the main liquidity channel for ARSs. Many major investment banks involved in the ARS market have announced settlements and agreements to buy back ARSs from some investors.

Some segments of the ARS market, such as municipal issues and closed-end mutual funds, have started to restructure their debt, as issuers have redeemed ARS securities and switched to other financing strategies. In other segments, such as the student-loan-backed ARS (SLARS) market, only a small portion of existing debt issues have been refinanced.

In the past, Congress has expressed concern about policy areas that the ARS market's collapse has affected. For example, the House Financial Services Committee held a March 2008 hearing to examine how financial market developments may have increased interest and other financing costs of state and local governments. In April 2008, Congress passed the Ensuring Continued Access to Student Loans Act of 2008 (H.R. 5715, P.L. 110-227) to allow the Secretary of Education to provide capital to student lenders, whose ability to borrow in some cases had been constricted by ARS failures. More generally, many Members of Congress have stepped up oversight of financial markets and have shown interest in reconsidering the structure of federal financial regulation. This report will be updated as events warrant.

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# Auction-Rate Securities

## Introduction

Auction-rate securities (ARSs) couple long-term maturity borrowing with interest rates linked to short-term money markets by periodic auctions, and thus combine features of short- and long-term securities. Most ARSs are long-term bonds, although some auction-rate securities are structured as preferred shares and so have no maturities.<sup>1</sup> Municipalities and public authorities, student loan providers, and other institutional borrowers have raised funds using auction-rate securities since they were first created in the mid-1980s.<sup>2</sup> By 2007, auction-rate securities had become a market worth more than \$330 billion, with state and local borrowing composing nearly half of that total.<sup>3</sup>

Many institutional borrowers viewed auction-rate securities as a cheaper way of raising funds, compared to alternative borrowing strategies. Interest rates for auction-rate securities are tied to short-term market interest rates, even though the securities themselves have longer maturities. In past decades, interest rates on short-term variable-rate securities have on average been lower than interest rates on long-term fixed-rate securities because investors usually require compensation to bear interest-rate risks embedded in long-maturity assets.<sup>4</sup> While ARSs allowed issuers to borrow more cheaply in normal times, the role of ARS auctions created inherent liquidity risks to investors and interest-rate reset risks to issuers.<sup>5</sup>

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<sup>1</sup> Douglas Skarr, "Auction Rate Securities," California Debt and Investment Advisory Commission Issue Brief, Aug. 2004, available at [<http://www.treasurer.ca.gov/Cdiac/issuebriefs/aug04.pdf>].

<sup>2</sup> ARSs were also widely used by closed-end mutual funds, asset-backed securities and collateralized debt obligations (CDOs). Treasury Strategies, Inc., Press release, "Treasury Strategies Addresses the Auction-Rate Securities Debacle," Apr. 3, 2008, available at [<http://www.treasurystrategies.com/resources/pressReleases/ARSpr040308.pdf>].

<sup>3</sup> Statement of Erik R. Sirri, Director, Division of Trading and Markets, U.S. Securities and Exchange Commission, in U.S. Congress, House Committee on Financial Services, "*Municipal Bond Turmoil: Impact on Cities, Towns, and States*," 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., Mar. 12, 2008.

<sup>4</sup> An investor who buys a long-term security cannot react to changing circumstances until the security matures or is sold. In financial terms, when an investor buys a long-term asset, she forgoes "option value," which is the value of being able to react to new information or conditions. In a competitive market, the asset's yield relative to a short-term alternative will reflect the expected value of that forgone option value.

<sup>5</sup> This point is discussed in more detail below.

Following the extraordinary turmoil in global financial markets that erupted in August 2007, several interest-rate auctions for ARS failed, which temporarily left investors unable to sell their ARS holdings. While ARS markets appeared to return to normalcy that fall, some large institutional investors had begun to withdraw funds from ARS markets. A large number of ARS auctions in 2007 and early 2008 avoided failure only because investment banks stepped up their support for ARS auctions, which required them to take on larger ARS inventories on their own accounts.

In mid-February 2008, key investment banks declined to support auctions, causing widespread auction failures. Liquidity essentially evaporated as auctions failed in most ARS markets, shutting off investors' ability to sell their holdings in an orderly way and casting doubt on the future viability of auction-rate securities.<sup>6</sup> The collapse of the auction-rate securities market raised borrowing costs for many issuers, including student lenders, municipalities, and public authorities. Many economists expect turmoil in financial markets to continue, suggesting that ARS markets may be unlikely to function as smoothly as they did before August 2007.<sup>7</sup>

**Congressional Concerns.** In the past, Congress has expressed concern that the collapse of the ARS market could elevate costs of state and local government borrowing, disrupt higher education finance, and raise important questions about federal financial regulation and oversight.

**State and Local Finance.** ARS markets helped raise funds for a wide variety municipal infrastructure projects, including some required by federal mandates. Congress has shown concern that turmoil in the ARS market could hinder state and local government borrowing and infrastructure project financing, and that increases in municipal borrowing costs could lead to cuts in public services. Some policymakers and macroeconomists have looked to infrastructure investments to stimulate economic activity while increasing future economic productivity. Yet, many state and local governments saw financing costs jump due to failures of interest auctions for their ARS debt, just as the economic slowdown that began in late 2007 began to depress their revenues. After widespread ARS auction failures in February 2008, the House Financial Services Committee held a hearing to examine how financial market developments may have increased borrowing costs to state and local governments.<sup>8</sup>

**Student Loans.** Congress has shown concern about possible disruptions to federally guaranteed loan programs.<sup>9</sup> Student lenders and state student loan agencies

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<sup>6</sup> One senior financial journalist dubbed the auction-rate securities market a "historical relic." Aline van Duyn, "Little Chance of Quiet Farewell for Auction Rate Securities," *Financial Times*, Aug. 2, 2008.

<sup>7</sup> James Politi, "Tighter Loan Rules Dash Hopes of End to Squeeze," *Financial Times*, Aug. 12, 2008.

<sup>8</sup> U.S. Congress, House Committee on Financial Services, "*Municipal Bond Turmoil: Impact on Cities, Towns, and States*," 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., Mar. 12, 2008.

<sup>9</sup> For further information on student loan markets, see CRS Report RL34578, *Economics* (continued...)

had used ARSs extensively to raise funds that were then used to make loans to students. In early 2008, about \$80 billion of the total \$350 billion in outstanding Federal Family Education Loan program (FFELP) loans were financed using ARSs.<sup>10</sup>

Congress held two hearings in spring 2008 to examine how turmoil in financial markets might affect the availability of student loans. On March, 14, 2008, the House Committee on Education and Labor held a hearing entitled “Ensuring the Availability of Federal Student Loans.”<sup>11</sup> The Senate Committee on Banking, Housing, and Urban Affairs held a hearing on April 15, 2008, entitled “Turmoil in U.S. Credit Markets Impact on the Cost and Availability of Student Loans.”<sup>12</sup>

On May 1, 2008, Congress passed the Ensuring Continued Access to Student Loans Act of 2008 (ECASLA, H.R. 5715, P.L. 110-227) on a 388-21 vote less than a month after it was first introduced. ECASLA allows the Secretary of Education to provide capital to student lenders, whose ability to borrow in some cases could have been constricted by ARS failures. The Secretary of Education has not implemented ECASLA in a way that would directly affect existing SLARS debt. Rather, the Secretary of Education has focused on providing facilities that would allow the purchase of newly originated loans. While most students have been able to obtain federal student loans for the fall 2008 semester, according to some media reports, concern remains that student lenders remain under stress.<sup>13</sup>

***Oversight and Financial Regulation.*** The collapse of the ARS market may help spur broader changes in the oversight and regulation of financial institutions and markets. Many Members of Congress have stepped up oversight of financial markets and have shown interest in reconsidering the structure of federal financial regulation. Changes in financial regulation could strongly affect how new financial products that may replace ARSs will evolve.

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<sup>9</sup> (...continued)

of *Guaranteed Student Loans*, by D. Andrew Austin; and CRS Report RL34452, *Proposals to Ensure the Availability of Federal Student Loans During an Economic Downturn: A Brief Overview of H.R. 5715 and S. 2815*, by David P. Smole.

<sup>10</sup> Testimony of Chuck Sanders, President and CEO, South Carolina Student Loan Corporation, in U.S. Congress, House Committee on Education and Labor, *Ensuring the Availability of Federal Student Loans*, hearing, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., March, 14, 2008, available at [<http://edlabor.house.gov/testimony/2008-03-14-CharlieSanders.pdf>].

<sup>11</sup> House Committee on Education and Labor, *Ensuring the Availability of Federal Student Loans*, hearing, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., March, 14, 2008, available at [<http://edlabor.house.gov/hearings/fc-2008-03-14.shtml>].

<sup>12</sup> Senate Committee on Banking, Housing, and Urban Affairs, *Turmoil in U.S. Credit Markets Impact on the Cost and Availability of Student Loans*, hearing, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., Apr. 15, 2008, available at [<http://banking.senate.gov/public/index.cfm?Fuseaction=Hearings.Detail&HearingID=08955ff1-d3cc-434c-b32a-60972599a048>].

<sup>13</sup> For example, Moody's warned that it might downgrade its credit rating for the largest student lender, Sallie Mae (SLM). “SLM May Face Ratings Cut,” *Wall Street Journal*, Aug. 29, 2008, p. C3.

## Structure of the Auction-Rate Securities Market

**Market Composition.** Municipal bonds and bonds backed by student loans have been the most prominent parts of the ARS market. Tax-preferred and taxable municipal bonds accounted for nearly half of the market at the end of 2007 and securities backed by student loans accounted for another quarter. Some closed-end investment funds used ARS bonds to leverage investments in municipal bonds.<sup>14</sup> **Table 1** shows the composition of the ARS market at the end of 2007.

**Table 1. Composition of Auction-Rate Securities Market**

Type	Amount Outstanding 12/13/2007 (\$Billions)
Tax-Exempt Municipal Bonds	\$146
Taxable Student Loan Bonds	56
Taxable Preferred (closed end)	33
Tax-Exempt Preferred Bonds (closed end)	30
Tax-Exempt Student Loan Bonds	29
Taxable Municipal Bonds	19
Corporate Preferred (DRD)	9
Other (Including ABSs)	8
<b>Total</b>	<b>\$330</b>

**Source:** Banc of America Securities LLC. ABSs are asset-backed securities. DRDs are dividend-received deduction preferred stock or related securities.

**Mechanics of Auction-Rate Securities.** An issuer of auction-rate securities, such as a student lender, typically engages a broker/dealer, usually a major investment bank, to underwrite and distribute securities. As in bond markets, broker/dealers sell securities for the issuer, who receives the net proceeds. Issuers typically receive bond ratings from agencies such as Fitch or Moody's Investors Service, which are meant to reflect a security's credit quality over its maturity. Some issuers also have obtained bond insurance, guaranteeing timely payments to investors in the event of default or delayed payments. Typically, a broker/dealer would receive an initial fee equal to 1% of the amount underwritten and an annual fee equal to 0.25% of the amount managed.<sup>15</sup>

Unlike a traditional bond with a fixed interest rate, an auction mechanism determines who holds the securities and sets the interest rate they receive. The

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<sup>14</sup> The manager of a closed-end mutual fund sells a fixed number of shares, which are traded like stocks on exchanges after their initial sale. Closed-end funds typically hold specialized investment portfolios.

<sup>15</sup> Complaint, In the Matter of UBS Securities, LLC and UBS Financial Services, Inc., case 2008-0045, filed June 26, 2008 at the Office of the Secretary of the Commonwealth [of Massachusetts] Securities Division, pp. 37-38.

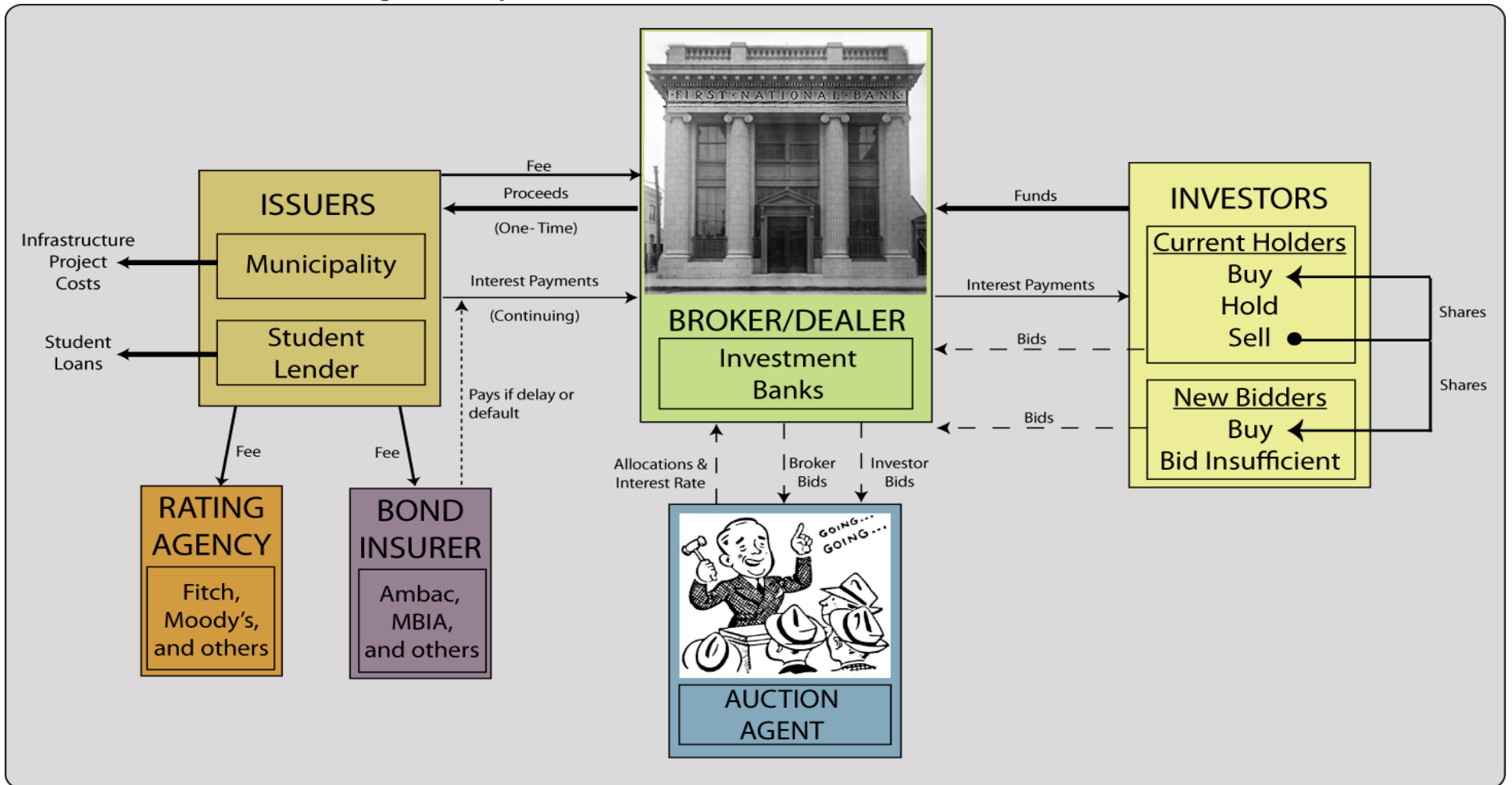
broker/dealer and issuer choose an auction agent, typically a bank, to run the auctions.<sup>16</sup> Investors wishing to hold ARSs submit bids in the form of interest rates along with the amount of assets they wish to buy. **Figure 1** provides a stylized view of the mechanics of an ARS market.

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<sup>16</sup> ARS auctions are sometimes called “remarketings.”



Figure 2. Stylized Mechanics of the Auction-Rate Securities Market



Interest-rate auctions usually are held every 7, 14, 28, or 35 days, as specified in the security contract. Before each auction, investors interested in acquiring ARSs state how much of an issue they wish to hold and specify the lowest interest rate they are willing to accept. Investors interested in selling ARSs also send instructions to the broker/dealer. The broker/dealer transmits bids, which may include its own bids, to the auction agent who parcels out available holdings to investors with the lowest interest-rate bids until the entire issue is taken up. The interest rate of the last bidder assigned a portion, termed the “clearing rate,” is then paid to all holders until the next auction. Bids with interest rates above the clearing rate receive none of the issue. This type of auction is often called a “Dutch auction.”<sup>17</sup>

**Auction Failures.** If bidders’ requests are insufficient to take up the whole issue then the auction fails. The interest rate is then set by terms specified by the securitization contract, and investors holding a portion of the issue retain their stake. Because investors lacked a guaranteed option to sell ARS holdings back to issuers or broker/dealers, liquidity for those securities essentially depended on the success of auctions. After auction failures, investors holding ARSs may receive attractive interest rates, but may be unable to sell those holdings except at a high discount on a thin secondary market. For issuers, failure of an auction often raises interest costs well above prevailing short-term commercial paper rates. In the past, some broker/dealers supported auction-rate markets by bidding on their own accounts to avoid auction failures, which could have antagonized potential and current issuers and investment clients.

## The Fall of the ARS Market

For many years, the ARS market allowed issuers to borrow more cheaply and gave investors slightly better yields compared to other financial instruments. The eruption of a global credit crunch in August 2007 strained the ARS market. Investment banks running ARS markets faced increasing difficulties in finding new buyers for ARSs. Efforts to avoid auction failures put mounting pressures on investment bank balance sheets. In February 2008, major investment banks finally pulled the plug on auctions, leading to the collapse of the ARS market.

**Early Warnings.** As early as 2003, some had noted ARSs could present liquidity risks. By early 2005, some financial advisors counseled corporate clients to reduce or eliminate ARS holdings.<sup>18</sup> In February 2005, PriceWaterhouseCoopers and other major accounting firms stated that corporations should, in general, classify

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<sup>17</sup> Auctions in which the price falls and the first bid wins, as in Amsterdam flower markets, are also called Dutch auctions. Falling-price auctions were first invented to avoid Napoleonic-era taxes on traditional, rising-price auctions. A falling-price auction, under certain conditions, is theoretically equivalent to a sealed-bid, first-price auction. ARS auctions are typically sealed-bid, first-price auctions with multiple units, although some ARS broker/dealers see investors’ bids before submitting their own.

<sup>18</sup> Lance Pan, “Forecasting a Perfect Storm: New Developments Aggravate the Potential Fall of the Auction Rate Securities Market,” Capital Advisors Group Research Newsletter, Mar 1, 2005, available at [[http://www.capitaladvisors.com/pdf/Forecasting\\_a\\_Perfect\\_Storm.pdf](http://www.capitaladvisors.com/pdf/Forecasting_a_Perfect_Storm.pdf)].

ARSs as “investments” rather than “cash equivalents” in financial reports.<sup>19</sup> Some contended that this view of ARSs was overly conservative. For example, the head of the Association for Financial Professionals in June 2005 claimed that “auction rate securities have proven to be highly liquid investments and there is no substantial evidence that the risk of an auction failure is other than a remote possibility.”<sup>20</sup> This claim, however, apparently failed to affect the accounting profession’s view of ARSs.

The major accounting firms’ stance, that ARSs should not be viewed as cash equivalents, reduced the attractiveness of ARS assets on corporate balance sheets.<sup>21</sup> In addition, some corporations had to trade ARS assets for more traditional cash equivalents to maintain contractually mandated minimum cash reserves.

While the shift in the financial accounting treatment of ARSs may have indirectly affected the ARS market as a whole, some observers doubt that it was a proximate cause of auction failures in 2007, as most sophisticated investors and corporate cash managers were well aware of issues concerning ARSs.<sup>22</sup> On the other hand, according to court filings, Merrill Lynch managers expressed concern that research highlighting liquidity risks associated with ARSs could undermine the entire ARS market.<sup>23</sup>

**SEC Consent Decree.** The Securities and Exchange Commission (SEC) in 2006 sanctioned 15 broker/dealers for irregularities in auction-rate securities markets, including the failure to disclose dealer/broker interventions in auctions.<sup>24</sup> Some analysts expressed concern that the resulting consent decree might inhibit dealer support for auctions, which they believed could elevate liquidity risks.

**Were Auctions Administered or Arms-Length Transactions?** The 2006 SEC consent decree highlighted broker/dealer support of auctions. Many ARS contracts allowed broker/dealers to see investor bids before they were submitted to

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<sup>19</sup> PriceWaterhouseCoopers, *Capital Markets Accounting Developments Advisory 2005-04*, Mar. 4, 2005. Financial Accounting Standards 95 (FAS 95) essentially defines the term “cash equivalent” as liquid assets with a maturity of three months or less.

<sup>20</sup> James A. Kaitz, President and CEO of the Association for Financial Professionals, letter to the Financial Accounting Standards Board, June 28, 2005, available at [[http://www.afponline.org/pub/pdf/cl\\_20050628\\_smith.pdf](http://www.afponline.org/pub/pdf/cl_20050628_smith.pdf)].

<sup>21</sup> Association for Financial Professionals, “AFP Calls on Financial Accounting Standards Board (FASB) to Update FAS-95 Definitions of Cash Equivalents: ‘Big-4’ Accounting Firms Imposing Rule Changes without Authority,” Press release, July 19, 2006, available at [[http://www.afponline.org/pub/pr/pr\\_20060719\\_fasb.html](http://www.afponline.org/pub/pr/pr_20060719_fasb.html)].

<sup>22</sup> Conversation with Federal Reserve official, Sept. 8, 2008.

<sup>23</sup> Complaint, In the Matter of Merrill Lynch, Pierce, Fenner & Smith, Inc., case 2008-0058, filed July 31, 2008, at the Office of the Secretary of the Commonwealth [of Massachusetts] Securities Division, available at [[http://www.sec.state.ma.us/sct/sctml2/ml\\_complaint.pdf](http://www.sec.state.ma.us/sct/sctml2/ml_complaint.pdf)], p. 3.

<sup>24</sup> SEC Administrative Proceeding File No. 3-12310, In the Matter of Bear, Stearns & Co. Inc., et al. (cease-and-desist order, May 31, 2006), available at [<http://www.sec.gov/litigation/admin/2006/33-8684.pdf>].

the auction agent. Knowing other bids could have allowed broker/dealers, by bidding on their own account, to influence prices and allocations of ARS shares to investors. For auctions with a higher number of bids relative to available shares, the ability of broker/dealers to influence prices would have been limited. When auctions had relatively few bids and were at risk of failing, however, broker/dealers could effectively set interest rates within a range determined by maximum interest rates set in the bond contract or by bids of other investors. Numerous internal emails quoted in court documents strongly imply that broker/dealers effectively set prices for many auctions at risk of failing.<sup>25</sup>

If broker/dealers set prices for some auctions, their role would have resembled that of “market makers” in the London stock markets before the arrival of electronic trading. A market maker controlled an order book of bids and offers for a particular stock, held some inventory on his own account, and executed trades at prices chosen to balance supply and demand.<sup>26</sup> Some broker/dealers held ARS inventories, acquired by their own bids, and for some auctions could, within limits, set interest rates that would balance needs of issuers against those of investors. ARS broker/dealers that could see external bids before submitting their own, like market makers, had an important informational advantage that could in some cases produce trading profits.

**The August 2007 Credit Crunch.** Before the global credit crunch erupted on August 9, 2007, failures of interest auctions were considered unusual.<sup>27</sup> In August and September 2007, however, more than 60 auctions failed.<sup>28</sup> Interest-rate spreads between government securities and money market rates (shown in **Figure 2**) abruptly widened after August 9, 2007 as concerns emerged that mortgage-backed liabilities could threaten the survival of some financial institutions. This may have affected ARSs in three ways. First, some ARSs were backed by collateralized debt obligations (CDOs) that were linked to mortgages. Second, some ARS issues carried maximum interest-rate caps linked to London Interbank Offered Rate (LIBOR) or Treasury base rates, which made returns on those ARS issues less attractive than comparable short-term alternatives. Third, more and more corporations were becoming aware of ARS liquidity risks, which tight credit conditions could trigger.

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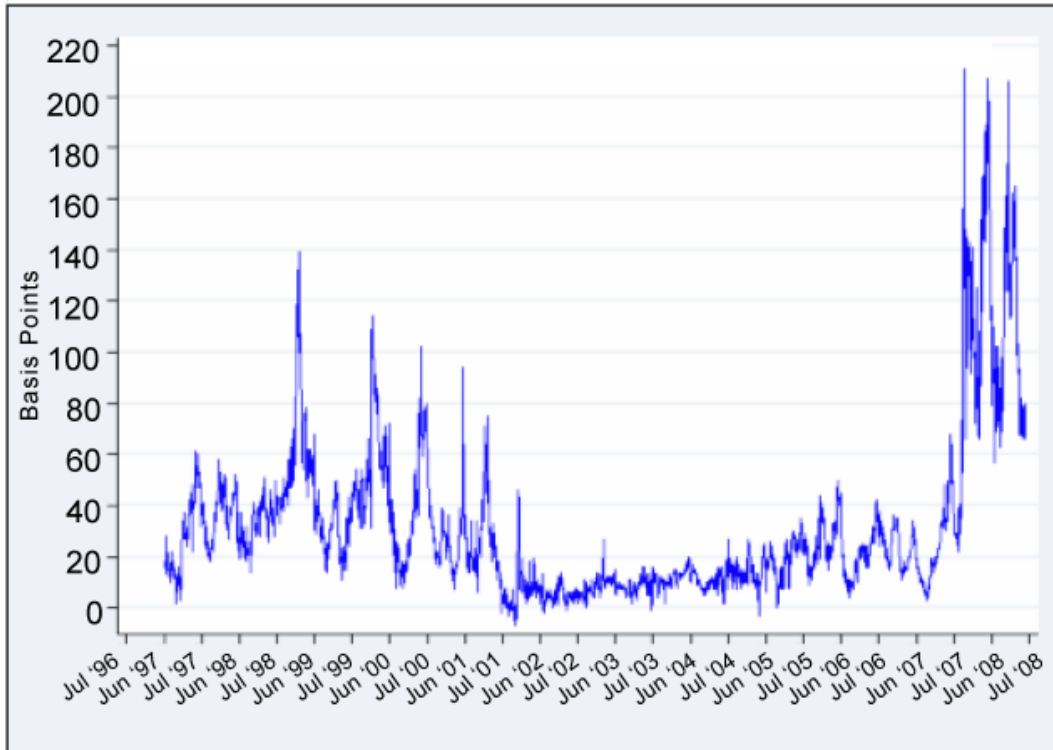
<sup>25</sup> Summons and complaint, *Cuomo v. UBS Securities LLC, et al.*, case 650262-2008, filed July 24, 2008, in the Supreme Court of New York (New York County), p.3, available at [<http://www.oag.state.ny.us/press/2008/july/UBS.pdf>]; Complaint, *In the Matter of Merrill Lynch, Pierce, Fenner & Smith, Inc.*, case 2008-0058, filed July 31, 2008, at the Office of the Secretary of the Commonwealth [of Massachusetts] Securities Division, available at [[http://www.sec.state.ma.us/sct/sctml2/ml\\_complaint.pdf](http://www.sec.state.ma.us/sct/sctml2/ml_complaint.pdf)].

<sup>26</sup> Lance Pan, “True Colors of an ‘Auction’ Market: What the SEC Unveiled in the Auction Rate Securities Market,” *Capital Advisors Group, Credit Commentary*, June 30, 2006.

<sup>27</sup> The credit crunch was precipitated when BNP Paribas, a major French bank, suspended withdrawals from funds backed by subprime mortgage loans. For a chronology of the credit crunch, see Stephen G. Cecchetti, “Monetary Policy and the Financial Crisis of 2007-2008,” *CEPR Policy Insight* 21, April 2008, available at [[http://www.cepr.org/pubs/PolicyInsights/CEPR\\_Policy\\_Insight\\_021.asp](http://www.cepr.org/pubs/PolicyInsights/CEPR_Policy_Insight_021.asp)].

<sup>28</sup> Megan Johnston, “Firms Caught in Money Lockup — Failed Auctions Make Cash Stashes Illiquid; as Much as \$6 Billion Tied Up.” *Financial Week*, Sept. 17, 2007, available at [<http://www.financialweek.com/apps/pbcs.dll/article?AID=/20070917/REG/70914033>].

**Figure 2. Spread Between 3-Month Financial Commercial Paper and 3-Month Constant Maturity Treasury Rates**



**Source:** Federal Reserve. Spread is difference between 3-Month AA Financial Commercial Paper Rate and 3-Month Treasury Constant Maturity Rate. One basis point is 1/100th of 1%.

The global scramble for liquidity in August 2007 put pressure on many major investment banks, which were highly leveraged and in many cases, severely exposed to mortgage-backed securities and their derivatives.<sup>29</sup> Many banks and financial institutions faced strong demands to de-leverage, which required liquid assets.

Trends in the ARS market put additional strains on investment banks that were major ARS broker/dealers. Those banks had routinely supported auctions, by bidding on their own accounts, in order to avoid auction failures that could cast doubt on the liquidity of ARS assets. When investment banks had taken ARSs onto their own balance sheets to support an auction on one date, they had typically been able to unload those ARSs in subsequent auctions. After August 2007, more aggressive support was needed to avoid auction failures. At the same time, some major investors were withdrawing from the ARS market, putting more ARS assets on the market. ARS inventories in some investment banks rose sharply in late 2007, as support for ARS auctions intensified, even as banks were reluctant to add to ARS inventories on their already strained balance sheets. For example, court documents

<sup>29</sup> Before August 2007, investment banks held, on average, assets 24 times larger than their equity base. Barry Eichengreen, "Securitization and Financial Regulation: Pondering the New Normal," working paper, July 2008, available at [[http://www.econ.berkeley.edu/~eichengr/securitization\\_7-28-08.pdf](http://www.econ.berkeley.edu/~eichengr/securitization_7-28-08.pdf)]; published as "Reformen sind möglich," *Finanz und Wirtschaft*, Aug. 9, 2008, p. 1.

indicated that UBS increased its holdings of auction-rate securities fivefold from June 2007 to January 2008.<sup>30</sup> In the first half of 2007, UBS, the second largest broker/dealer in the ARS market, held between \$1 billion and \$2 billion of auction-rate securities.<sup>31</sup> By February 8, 2008, UBS held nearly \$10 billion in auction-rate securities, raising serious risk-management concerns at a time of mounting mortgage-backed securities losses.

According to court filings, some large investment banks began to market ARSs more aggressively to small investors in an attempt to reduce their inventories.<sup>32</sup> Sales to small investors, however, failed to increase demand sufficiently to allow many auctions to run without broker/dealer support.

**Widespread Auction Failures in Mid-February 2008.** On February 13, 2008, most major broker/dealers ceased their support of interest-rate auctions, leading to failures in the vast majority of auctions held that day. As a result, the ARS market has largely seized up, leaving investors with illiquid investments in long maturities. When auctions fail, interest rates are set by terms of the securitization contract. In some cases, default interest rates revert to high levels that have caused some issuers financial stress, while in other cases interest rates are more in line with normal short-term rates. While many investors holding ARSs earn interest rates higher than usual money market rates, the lack of liquidity has decreased the value of many of those holdings.<sup>33</sup> Small investors locked into ARSs who have had to borrow to meet short-term obligations typically pay higher rates than what those securities return.

Even though over 85% of the ARS market experienced auction failures in mid-February 2008, some auctions have since continued to operate more or less normally.<sup>34</sup> In particular, auctions for municipal ARS assets, which often lack maximum-interest-rate caps, have been less likely to fail than student loan ARSs (SLARSs), that typically have such caps.

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<sup>30</sup> Summons and complaint, *Cuomo v. UBS Securities LLC, et al.*, case 650262-2008, filed July 24, 2008 in the Supreme Court of New York (New York County), pp. 3, 29, available at [<http://www.oag.state.ny.us/press/2008/july/UBS.pdf>].

<sup>31</sup> UBS was formed when the Union Bank of Switzerland merged with the Swiss Bank Corporation in June 1998.

<sup>32</sup> Summons and complaint, *Cuomo v. UBS Securities LLC, et al.*, case 650262-2008, filed July 24, 2008 in the Supreme Court of New York (New York County), p.3, available at [<http://www.oag.state.ny.us/press/2008/july/UBS.pdf>].

<sup>33</sup> When auctions fail, the investor is left holding a long-maturity asset, unless there is some reason to believe that future auctions might not fail. Because long-term interest rates are generally higher than short-term interest rates for securities of equal credit quality, and because bond prices are inversely related to interest rates, the value of such illiquid ARS falls. For a description of early developments in the ARS market after the February 2008 collapse, see Gretchen Morgenson, "It's a Long, Cold, Cashless Siege," *New York Times*, Apr. 13, 2008.

<sup>34</sup> Jeremy R. Cooke, "Florida Schools, California Convert Auction-Rate Debt (Update5)," Bloomberg News, Feb. 22, 2008, available at [<http://www.bloomberg.com/apps/news?pid=20601103&refer=us&sid=awCJRyi5ngcQ>].

**What Caused the Collapse?** The February 2008 collapse of the ARS market caught many by surprise.<sup>35</sup> Some may have assumed that the high quality of the assets backing many ARSs would ensure smooth functioning of those markets. Other factors, however, combined to undermine the viability of ARS auctions.

**Default Risk vs. Liquidity Risk.** While fears that an issuer may default on payments often sharply reduce liquidity for an asset, liquidity risks may also stem from other causes. That is, default risk and liquidity risk are distinct. For example, an asset entitling its owner to a stream of interest payments paid by a municipality, and backed by that municipality's power to tax, may present a very low risk of default. However, that asset may be structured in such a way that may limit, in some circumstances, the asset owner's ability to sell to a third party. This would present a liquidity risk.

Auction failures have occurred for asset-backed securities such as student loans and municipal debt where the financial risks embedded in the underlying loans appear minimal.<sup>36</sup> No Moody-rated municipal general obligation or water & sewer obligation has defaulted since 1970. Furthermore, historical default probabilities for other investment-grade municipal debt is lower than Aaa-rated corporate debt, while recovery ratios are much higher.<sup>37</sup> Moody's and Fitch have announced plans to recalibrate municipal ratings in order to make them more comparable to corporate credit ratings.<sup>38</sup>

Nonetheless, even guaranteed assets carry some financial risk. For instance, even though federal guarantees for student loans protect lenders or their assignees from most losses due to default, administrative and legal procedures required by the default process could delay payments to asset holders. That is, federal guarantees ensure *eventual* payment of most lost earnings due to default, but not *prompt* payment. In some cases, bond insurers provide guarantees of *timely* payment to holders of asset-backed securities. Concerns about the financial condition of bond insurers, therefore, might trigger investor concerns about timely payment, even if eventual repayment were federally guaranteed.

Problems in most auction-rate markets, however, probably stem from how auction-rate securities are structured, rather than from the quality of underlying

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<sup>35</sup> Ibid.

<sup>36</sup> Concern over the financial condition of some bond insurers has been cited as a factor in the failure of auctions for municipal securities. "Auction Rate Securities Unwinding," *Financial Times*, Apr. 29, 2008.

<sup>37</sup> Moody's Investors Service, Public Finance Credit Committee, "Request for Comment: Mapping of Moody's U.S. Municipal Bond Rating Scale to Moody's Corporate Rating Scale and Assignment of Corporate Equivalent Ratings to Municipal Obligations," June 2006, available at [<http://www.moodys.com/cust/content/content.ashx?source=StaticContent/Free%20pages/Credit%20Policy%20Research/documents/current/2005700000427679.pdf>].

<sup>38</sup> Michael McDonald, "Moody's Set to Begin Upgrading States' Bonds in Rating Overhaul," Aug. 20, 2008, *Bloomberg.com*.

assets.<sup>39</sup> For ARSs backed by municipal taxing authority or by federally guaranteed student loans, the risk of default is minimal. Rather, the breakdown of ARS markets appears to stem, in large part, from features of their fundamental design that introduce liquidity risk, that is, the risk that an owner of an auction-rate security would be left holding a hard-to-sell long-maturity asset. If an issuer sought to obtain short-term interest rates for long-term borrowing by selling and rolling over traditional short-term bonds, the *issuer* retains those bonds if a placement or auction fails. With auction-rate securities, once the initial placement succeeds, *asset holders* retain the assets if an auction fails.

Auction-rate securities provide investors with liquidity so long as auctions function normally. When potential investors fear that auctions may fail, however, which would lock them into illiquid positions, they may hesitate to bid, especially when short-term credit has become more difficult or costly to obtain. Fears of auction failure may be self-fulfilling: concerns that auctions may fail will deter bidders, thus increasing the chances of failure.

The dynamics of widespread auction failures resemble those of a pre-deposit-insurance-era bank run. In a traditional banking model, banks earn profits by borrowing short (via demand deposits) and lending long (such as funding for multi-year projects). Similarly, ARS fund long-term debt via short-term investments — or perhaps more accurately, investments that investors hope are short-term. The fear that a bank would be unable to redeem deposits (because funds were tied up in long-term loans) might encourage depositors to withdraw funds or discourage others from making deposits in the first place. Similarly, the fear that auctions may fail appeared to encourage some investors to exit the ARS market and discourage others from entering.

Deposit insurance provided by a third party, that ensures that depositors can withdraw funds, is a classic solution to preventing bank runs. In ARS-type markets, an analogous solution would be a third-party guarantee to investors that they could redeem their investments after giving appropriate notice. The ability to redeem investments is called a “put option” in financial markets. Many issuers have restructured ARSs into alternative investment vehicles such as Variable-Rate Demand Obligations (VRDOs) that incorporate a put option, giving investors guaranteed liquidity.

***Bond Insurance Downgrades.*** Some issuers, as noted above, have used bond insurance to boost the credit quality of their offerings. An insured debt issue takes on the credit rating of the bond insurer, which until 2007, generally had AAA credit ratings. When severe problems in mortgage markets led to ratings downgrades for several bond insurance companies in late 2007 and early 2008, credit ratings for

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<sup>39</sup> Credit ratings for ARSs are intended to reflect the long-term credit quality rather than short-term liquidity risks. For details, see Lance Pan, “When AAA Does Not Mean Roadside Peace Of Mind: A Credit Perspective on Rating Limitations of AAA-Rated ARS Bonds, Capital Advisors Group Research Newsletter, Nov. 12, 2004, available at [[http://www.capitaladvisors.com/about\\_capital\\_advisors\\_group/downloads/whitepapers/Limitations\\_of\\_ARS\\_AAA\\_Ratings.pdf](http://www.capitaladvisors.com/about_capital_advisors_group/downloads/whitepapers/Limitations_of_ARS_AAA_Ratings.pdf)].



debt insured by those companies were automatically downgraded as well, disrupting some debt markets.<sup>40</sup> Thus, many municipalities and other public borrowers, which have historically had extremely low default rates, had their debt downgraded due to rating agencies' perception of financial weakness in bond insurers.<sup>41</sup> Because many financial institutions, such as certain pension funds, can only hold highly rated debt, the downgrades forced sales of debt issued by high-quality borrowers. Those sales, in turn, increased the market strain upon firms, such as issuers of letters of credit or standby bond purchase agreements (SBPAs), that provide liquidity to the variable-rate debt market.

One email, sent by a senior Merrill Lynch trader on January 9, 2008, warned that possibly impending downgrades of two bond insurers could affect the bank's support for ARSs insured by those firms, and that subsequent market reaction would affect the broader ARS market.<sup>42</sup>

**Interest-Rate Caps.** Interest rate caps may have played a role in the collapse of the ARS market. Many student loan-backed auction rate securities have included interest rate caps added to enhance bond ratings. While ARS issues vary considerably, many student loan ARS were issued by trusts that hold loan assets and which are off the balance sheet of the sponsoring bank.<sup>43</sup> Some issuers obtained better credit ratings by imposing interest rate caps, so that the trust could make payments even in the event of an auction failure.

Caps were often considered important for securities backed by guaranteed student loans. Borrower interest rates and lender yields for federally guaranteed student loans are and have been established by law. Under current law, these lenders receive a yield equal to a short-term commercial paper rate plus a legislatively

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<sup>40</sup> CRS Report RL34364, *Bond Insurers: Issues for the 110<sup>th</sup> Congress*, by Baird Webel and Darryl E. Getter.

<sup>41</sup> One financier concluded that "states and cities and towns in this country are triple A credits without triple A ratings and the financial guarantee companies have triple A ratings without being triple A credits." David Einhorn, President, Greenlight Capital, "Remarks at the 17<sup>th</sup> Annual Graham&Dodd Breakfast," October 19, 2007, available at [<http://nakedshorts.typepad.com/nakedshorts/files/EinhornOnCredit.pdf>].

<sup>42</sup> The email from Jim Brewer of Merrill Lynch to Edward Curland (GMI NYMUMI) noted that "(i)t seems increasingly likely that these two monoline insurers are going to be downgraded. We anticipate that if that happens there will be a wave of selling in these issues that we will be unable to support causing the auctions to fail. If any of these issues fail one can make the assumption that it will spread to the other sectors of our market regardless of the insurer or ratings." Complaint, In the Matter of Merrill Lynch, Pierce, Fenner & Smith, Inc., p. 66.

<sup>43</sup> Testimony of John F. (Jack) Remondi, Vice Chairman and Chief Financial Officer, Sallie Mae, in U.S. Congress, Senate Committee on Banking, Housing and Urban Affairs, *Impact of Turmoil in the Credit Markets on the Availability of Student Loans*, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., Apr. 15, 2008, p. 3, available at [[http://banking.senate.gov/public/\\_files/OpgStmtRemondi041508SallieMaeJohn\\_Jack\\_RemondiSenateBankingTesti\\_.pdf](http://banking.senate.gov/public/_files/OpgStmtRemondi041508SallieMaeJohn_Jack_RemondiSenateBankingTesti_.pdf)]; Tom Graff (Managing Director, Cavanaugh Capital Management), "Despite Impressions, Most Auction Rate Securities Are Healthy," *TheStreet.com*, Aug. 8, 2008.

determined add-on (i.e., a Special Allowance Payment or SAP), which can vary by type of loan and by type of lender.<sup>44</sup> Cash flows generated by the pools of student loans used to make payments to investors holding auction-rate securities thus depend on commercial paper rates and the level of federal subsidies to lenders (SAPs).

Rating agencies often have considered caps as a critical safeguard against high payout rates that could exhaust the loan pools' ability to make later payments. Some ARSs carried caps that applied directly to auction interest rates. For example, a cap might specify that interest rates could not exceed 7% or could not exceed some fixed spread above a benchmark rate such as LIBOR or a given Treasury rate. Caps for tax-exempt student loan ARSs were typically set as a percentage above a benchmark municipal debt yield index.<sup>45</sup> Some taxable student loan ARSs also included a cap structured to ensure that income from the trust's loan pool could pay on average a fixed spread over a given benchmark rate. These caps often tied the maximum interest rate to a level that would ensure that trusts could pay minimum cash flows. Thus, many student loan-backed ARSs had maximum-interest-rate caps and related restrictions to govern maximum auction reset (interest) rates, but also that could limit cash flows generated by the loan pool.

Municipal ARSs have been less likely to include maximum-interest-rate caps. Because municipal ARSs were typically backed by the power to tax, there has been less need for interest-rate caps to ensure that income streams would be sufficient to pay interest to ARS holders. In addition, state governments have at times intervened to head off impending defaults by local governments or public authorities. While the absence of caps implies that municipal interest costs for many ARS issues have risen substantially, a significantly smaller proportion of municipal ARS auctions have failed persistently.<sup>46</sup>

While most interest-rate caps were well above pre-August 2007 historical levels, the sharp expansion of short-term interest spreads pushed yields in some cases up against interest-rate maximums. Some broker/dealers were able to convince rating agencies to allow issuers to waive temporarily interest-rate maximums in order to reduce the chances of auction failures. Without those waivers, some ARS would have offered investors yields that were not competitive with short-term money

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<sup>44</sup> This commercial paper index, compiled by the Federal Reserve, is the 3-Month AA Financial Commercial Paper Rate (series ID: CPF3M) available at [<http://research.stlouisfed.org/fred2/series/CPF3M?cid=120>].

<sup>45</sup> Email from Ross Jackman (UBS) to Chris Long (UBS), Feb. 10, 2008, in Complaint, In the Matter of UBS Securities, LLC and UBS Financial Services, Inc., case 2008-0045, filed June 26, 2008 at the Office of the Secretary of the Commonwealth [of Massachusetts] Securities Division, Exhibit 3, available at [[http://www.sec.state.ma.us/sct/sctubs2/ubs2\\_complaint.pdf](http://www.sec.state.ma.us/sct/sctubs2/ubs2_complaint.pdf)].

<sup>46</sup> Ben Campbell and Lance Pan, "Developments in the ARS Market Collapse," Research presentation, Capital Advisors Group, May 6, 2008, available at [[http://www.capitaladvisors.com/about\\_capital\\_advisors\\_group/downloads/whitepapers/ARS.Call\\_05.06.FINAL.pdf](http://www.capitaladvisors.com/about_capital_advisors_group/downloads/whitepapers/ARS.Call_05.06.FINAL.pdf)].

market alternatives. In extreme cases, the interest-rate maximums triggered by cash-flow caps for some student loan ARSs were near or at zero.<sup>47</sup>

Some investment banks, whose inventories of ARS debt was rapidly expanding as they supported auctions in late 2007 and early 2008, realized that when temporary maximum-interest-rate waivers expired, the reimposition of those caps would hold some ARS yields below those banks' cost of capital, which could result in substantial financial losses. According to internal emails quoted in legal filings, the realization that interest cap waivers would begin to expire in February or March 2008 was one factor that led UBS to withdraw support for ARS auctions in mid-February 2008. A mid-December 2007 internal UBS email noted that

Focusing on Student Loans, prevailing market conditions have continued to cut into excess spread of these structured products. Continued stress will trigger max rates ("available funds caps") potentially resulting in auctions resetting at below market yields. These max rates are integral in the securities meeting rating agency stress scenarios and ultimately maintaining current ratings. The unwillingness of rating agencies to grant waivers on current max rates, under current market conditions, will accelerate the onset of below market yields due to max rate caps. This forces the hand of every broker dealer in the auction market to decide between supporting deals, taking inventories on at levels far below market rates or failing auctions (no supporting) which triggers a chain reaction of selling across all auction products, regardless of them being Student Loans, Municipals or Auction Preferred Stock.<sup>48</sup>

## The Aftermath

The collapse of the auction-rate securities market put substantial strains on investors who had thought they were investing in highly liquid cash equivalents.<sup>49</sup> Once ARS markets began to fail in large numbers, many investors were left with illiquid assets with maturities of 10 years or more.<sup>50</sup> Many issuers, such as municipalities, universities, and student lenders, were faced with steeply higher interest costs.

**What Were Investors Promised?** Many investors and financial professionals claim that they were not alerted to liquidity risks presented by possible auction failures. Some major investment banks, according to court documents, told investors that auction-rate securities were "cash equivalents." Many financial professionals claim that they were led to believe that dealers would play a more active role in preventing auction failures. One survey found that about two thirds of corporate treasurers in firms that held auction-rate securities said that dealers had

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<sup>47</sup> Ibid., p. 6.

<sup>48</sup> Christopher Long, Executive Director of UBS Securities, Email, Dec. 19, 2007, included in Complaint, In the Matter of UBS Securities, LLC and UBS Financial Services, Inc.

<sup>49</sup> Gretchen Morgenson, "It's a Long, Cold, Cashless Siege," *New York Times*, Apr. 13, 2008.

<sup>50</sup> Summons and complaint, *Cuomo v. UBS Securities LLC, et al.*

implied support for auction securities to avoid auction failures, and 17% of treasurers said that dealers had explicitly promised such support.<sup>51</sup>

On the other hand, major accounting firms had insisted in early 2005 that financial reports reflect possible ARS liquidity risks. Moreover, some financial institutions had warned investors in previous years of possible liquidity risks in auction-rate securities markets.<sup>52</sup>

**Litigation, Settlements, and Buy-Back Offers.** Litigation initiated by state attorneys general and by class-action suits plays an important role in the restructuring or unwinding of ARS markets.<sup>53</sup> The U.S. Securities and Exchange Commission (SEC) and some state securities regulators, according to press accounts, have also opened investigations.

Most major investment banks active in the ARS market have reached agreements with state attorneys general and financial regulators to buy back ARSs from some classes of investors. Citibank, the largest ARS broker/dealer, agreed to buy back about \$7.5 billion in auction-rate securities from small investors as part of an agreement with the New York State Attorney General, and committed to unwind auction-rate securities holdings of larger investors as well.<sup>54</sup> UBS, the second largest ARS broker/dealer, agreed in principle to buy back \$22.1 billion in auction-rate securities.<sup>55</sup> Merrill Lynch agreed in principle to buy back \$10-12 billion in auction-rate securities starting in January 2009 after an earlier offer was rejected by the New York State attorney general.<sup>56</sup> Deutsche Bank, Goldman Sachs, JP Morgan, Morgan Stanley, and Wachovia, have also announced agreements with the New York State attorney general to repurchase ARSs sold to retail customers, charities, and small- to mid-sized businesses.<sup>57</sup> Fidelity reached an agreement in September 2008 with New

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<sup>51</sup> Joanna Chung, "Investors Expected Bond Bail-Out," *Financial Times*, June 30, 2008, p. 1.

<sup>52</sup> SVB Asset Management, *Fixed Income Advisory: Auction Rate Securities Update*, June 2006, available at [<http://www.svbassetmanagement.com/pdfs/AuctionRateSecurities0606.pdf>].

<sup>53</sup> Aaron Pressman, "Auction-Rate Securities: How to Get Unstuck," *Business Week*, May 22, 2008, available at [[http://www.businessweek.com/magazine/content/08\\_22/b4086076696407.htm](http://www.businessweek.com/magazine/content/08_22/b4086076696407.htm)].

<sup>54</sup> Heather Landy, "Citigroup to Return Billions to Investors, Pay \$100M in Penalties," *Washington Post*, Aug. 7, 2008.

<sup>55</sup> UBS AG, Press Release, "UBS Announces Comprehensive Settlement, in Principle, for All Clients Holding Auction Rate Securities at the Estimated Cost of U.S. \$900 Million," Aug. 8, 2008, available at [<http://www.ubs.com/1/e/about/news.html?newsId=148497>].

<sup>56</sup> Patrick Temple-West, "Merrill Lynch in ARS Deal," *Bond Buyer*, Aug. 25, 2008. On September 14, 2008, Merrill Lynch agreed to be bought by Bank of America. Francesco Guerrera, "Bank of America to Buy Merrill Lynch for \$50bn," *Financial Times*, Sept. 14, 2008, updated Sept. 15, 2008.

<sup>57</sup> Office of the New York Attorney General, Press releases, "Attorney General Cuomo Announces Settlements with JP Morgan and Morgan Stanley to Recover Billions for (continued...)"

York Attorney General Andrew Cuomo and Massachusetts Secretary of State William Galvin to buy back \$300 million in ARSs bought by its clients.<sup>58</sup> Fidelity, a mutual fund group, had not originated ARSs, but sold some ARSs to clients. **Table 2** summarizes these settlement announcements.<sup>59</sup>

**Table 2. Summary of Proposed ARS Buy-Back Settlements**

<b>Financial Institution</b>	<b>Approximate Number of Accounts</b>	<b>Approximate Amount of Buy-Back (billions)</b>
Citigroup	38,000	\$7.3
Deutsche Bank	unknown	unknown
Fidelity	unknown	\$0.3
Goldman Sachs	unknown	\$1.0
JP Morgan Chase	6,000	\$3.0
Merrill Lynch	unknown	\$12.0
Morgan Stanley	19,500	\$4.5
UBS*	40,000	\$21.1
Wachovia	43,000	\$8.8
<b>Total</b>	<b>&gt;146,500</b>	<b>\$57.7</b>

**Source:** NY State Attorney General, Press release, Aug. 15, 2008, Restricted Stock Partners.

\* UBS settlement includes \$8.3 billion for individual investors, \$3.5 billion for “Other/Tax-Exempt ARPS, and \$10.3 billion for institutional investors. The buy-back start date for latter is June 30, 2010.

If these buy-backs proceed as announced, ARS broker/dealers will again have large holdings of ARSs on their balance sheets. While some deep-pocketed broker/dealers may wish to hold ARSs to maturity, those with liquidity concerns might sell ARSs to major institutional investors or hedge funds at a discount.

**Partial Buy-Backs.** Some have expressed concern that investment banks might buy back illiquid ARS assets from favored clients, without offering similar

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<sup>57</sup> (...continued)

Investors in Auction Rate Securities,” Aug. 14, 2008, available at [[http://www.oag.state.ny.us/press/2008/aug/aug14a\\_08.html](http://www.oag.state.ny.us/press/2008/aug/aug14a_08.html)]; “Attorney General Cuomo Announces Settlement with Wachovia to Recover Billions for Investors in Auction Rate Securities,” Aug. 15, 2008, available at [[http://www.oag.state.ny.us/press/2008/aug/aug15a\\_08.html](http://www.oag.state.ny.us/press/2008/aug/aug15a_08.html)].

<sup>58</sup> Joanna Chung, “Fidelity in \$300m ARS Settlement,” *Financial Times*, Sept. 13, 2008.

<sup>59</sup> For details, see Restricted Stock Partners, “Auction-Rate Securities (ARS) Broker-Dealer Settlements/Offers,” available at [<https://www.restrictedsecurities.net/announced-bd-settlements.pdf>].

relief to others. The Financial Industry Regulatory Authority (FINRA) issued guidelines in April 2008 regarding partial buy-backs of auction-rate securities intended to ensure fair treatment of investors.<sup>60</sup>

Proposed ARS buy-back settlements have focused on individual, non-profit, and other non-institutional investors, while some large and institutional investors have been offered more limited or more delayed relief.<sup>61</sup> Investment banks may come under pressure to address concerns of major corporate customers holding illiquid ARS assets.

**Restructuring the Auction-Rate Securities Market.** Untangling the auction-rate securities market will likely be complex, even when the quality of underlying assets, such as federally guaranteed student loans, is high. Different parts of the ARS market will face different challenges. So far, some evidence suggests that the restructuring of the municipal ARS market has proceeded farther and more smoothly than that of the student loan ARS market.

**Municipal Debt.** Even though by the end of April 2008 roughly half of municipal ARS auctions were not failing, municipal issuers pushed to exit the ARS market. Some municipalities have restructured auction-rate securities debt and other issuers have redeemed portions of security issues. As an example, auction failures for some Port Authority of New York and New Jersey ARS debt issues pushed its interest rates as high as 20%, prompting the Authority to redeem its ARS debt.<sup>62</sup> Washington, D.C. redeemed \$800 million in ARS and VRDO debt in May 2008, saving an estimated \$10 million per year in interest costs.<sup>63</sup>

Market volumes for short-term, variable-rate issues with put options, such as variable rate demand obligations (VRDOs), boomed in the first half of 2008, while

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<sup>60</sup> Financial Industry Regulatory Authority, Regulatory Notice 08-21, *Partial Redemptions of Auction Rate Securities*, Apr. 2008, available at [[http://www.finra.org/web/groups/rules\\_regs/documents/notice\\_to\\_members/p038407.pdf](http://www.finra.org/web/groups/rules_regs/documents/notice_to_members/p038407.pdf)].

<sup>61</sup> Hilary Johnson, "ARS deals snub corporate buyers," *Financial Week*, Aug. 25, 2008, available at [<http://www.financialweek.com/apps/pbcs.dll/article?AID=/20080825/REG/860812>].

<sup>62</sup> Port Authority of New York and New Jersey, Press Release 24-2008, "Port Authority Announces Sale of \$700 Million of Consolidated Bonds," Mar. 12, 2008, available at [<http://www.panynj.gov/AboutthePortAuthority/PressCenter/PressReleases/PressRelease/index.php>]; Ted Phillips, "N.Y. Issuers Eye Exit From Auction Market," *Bond Buyer*, Feb. 22, 2008.

<sup>63</sup> Natwar Gandhi, Chief Financial Officer, Washington, D.C., "Over \$100 Million Saved: \$10 Million This Fiscal Year by CFO Debt Management Strategy," Press release, May 27, 2008, available at [<http://newsroom.dc.gov/show.aspx/agency/cfo/section/2/release/13845/year/2008>].

interest in new auction-rate security deals vanished.<sup>64</sup> By the end of April 2008, about a third of municipal ARS debt had been refinanced.<sup>65</sup>

**Student Loan Debt.** The student loan ARS market has shown sparse signs of recovery. At the end of April 2008, nearly all auctions continued to fail. Contractually mandated maximum-interest-rate caps appear to have played a role in a significant number of these failures.<sup>66</sup> By August 2008, only \$3 billion of the \$80 billion in auction-rate debt held by nonprofit student lenders had been restructured.<sup>67</sup>

The nature of educational finance may complicate efforts to refinance student loan-back ARS debt.<sup>68</sup> First, the structure of student-loan-backed ARS (SLARSs) may complicate refinancing. Second, finding new funding to refinance existing ARS debt may be harder for student loan issuers compared to municipal and closed-end fund issuers.

**Trusts.** A key element in the structure of a SLARS is the trust that holds the underlying student loan assets. When an investment bank underwrites a SLARS, it typically places student loans from the issuer in a trust administered by a third party bank. The trustee bank uses income generated by the trust's student loan assets to make interest payments to investors holding SLARSs. Ordinarily, other sources of income are not available to pay interest. The flow of income from the trust is variable, because individual student borrowers may default on repayments or may prepay, and because lender subsidies (SAPs) in recent years have been tied to a commercial paper interest rate benchmark. The issuer and the trustee bank, however, have little control over that income flow because lender yields for federally guaranteed student loans are established by law. Thus, SLARS trust's income streams flow unsteadily and essentially uncontrollably.

Credit ratings agencies, whose imprimatur is typically indispensable for SLARS issuers, usually impose conditions on trust structures and payout rates designed to minimize default risk. These conditions are typically based on financial analysis using "stress tests." Stress tests are hypothetical scenarios, which assume a variety of unfavorable conditions. For example, one stress test might assume that student repayment default rates and commercial interest rates both rise sharply. A credit rating agency's financial analysts would then assess whether a SLARS could sustain interest payments, at least for some period of time, under such adverse circumstances. The credit rating for an issuer's SLARS would then be tied to specific protections,

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<sup>64</sup> Dakin Campbell, "Flight From ARS Fuels Market Volume Surge," *Bond Buyer*, June 2, 2008.

<sup>65</sup> Ben Campbell and Lance Pan, "Developments in the ARS Market Collapse," Research presentation, Capital Advisors Group, p. 4.

<sup>66</sup> *Ibid.*

<sup>67</sup> Patrick Temple-West, et al., "UBS AG in \$22.1 Billion ARS Settlement," *Bond Buyer*, Aug. 11, 2008.

<sup>68</sup> Kate Haywood, "Hunkering Down With Student Loan ARS," Dow-Jones News Service, June 20, 2008; Tom Graff, "Auction-Rate Securities: You Are Now Mine!," *Accrued Interest Blog*, posted Aug. 12, 2008.

such as maximum-interest-rate caps, that would limit default risks in infelicitous conditions by capping interest rates or limiting payouts from trust income flows in extreme situations. The particular mechanisms resulting from credit rating agencies's stress tests are more idiosyncratic than standard.

**Refinancing ARS Debt.** Some issuers had viewed auction-rate securities as a cheaper means of borrowing funds compared to other variable-rate securities, such as VRDOs. In light of the collapse of the auction-rate securities in February 2008 many debt issuers and investors have sought alternatives to auction-rate securities for new debt issues and have looked for ways to refinance existing ARS debt.<sup>69</sup> A significant proportion of municipal debt has been refinanced, using "plain vanilla" fixed-rate long-maturity bonds as well as variable-rate securities such as VRDOs or similar instruments.

**The Return of the Put Option.** The melding of characteristics of long-maturity and short-maturity securities was a key attraction of auction-rate securities. The way in which ARSs combined those characteristics, however, also created an intrinsic vulnerability to tight credit conditions or liquidity fears because auction-rate securities generally lack a put option (i.e., the right to sell back securities to the issuers or a designated third party on short notice). Periodic interest auctions, so long as demand was sufficient to supply liquidity, tied ARS interest payments to typically cheaper short-term rates. Because investors holding ARSs lacked a put option, they accepted (knowingly or unknowingly) a risk that liquidity could evaporate if auctions failed. Following widespread auction failures, many investors and issuers returned to financial instruments that include a put option.

Omitting a put option allowed issuers to avoid certain underwriting costs. VRDOs, which, like auction-rate securities, generally have long maturities with interest rates linked to short-term money markets, include a put option that allows investors to resell, or tender, assets after a short notice period set by contract. Issuers typically would arrange for a letter of credit or a stand-by bond purchase agreement (SBPA) provided by a bank or other financial institution in order to make funds available were VRDO investors to demand repurchase. Acquiring a letter of credit, according to one 2004 estimate, added about 65 basis points to lending costs.<sup>70</sup> In 2008, many issuers converted ARSs into VRDOs, although some issuers have had difficulty obtaining letters of credit or SBPAs, or have had to pay fees well above historical levels. Costs of obtaining letters of credit increased partly because many issuers demanded them and partly because the wider credit crunch had raised risk premia generally, thus make insurance-like products like letters of credit more expensive.

While obtaining a letter of credit raises borrowing costs, it also provides investors with a guarantee of liquidity. Conversely, auction-rate securities allowed

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<sup>69</sup> For example, Nuveen Investments and Eaton Vance Management announced plans to develop new forms of variable-rate securities. "Fund Manager Is to Refinance Stalled Auction-Rate Notes," *New York Times*, May 22, 2008, p. C8.

<sup>70</sup> Douglas Skarr, "Auction Rate Securities," California Debt and Investment Advisory Commission Issue Brief, Aug. 2004.



issuers to borrow more cheaply, at least in normal times, but left investors with no guarantee of liquidity. In 2008, however, investors have also sought to withdraw large volumes funds from VRDO markets, putting pressure on issuers and their tender agents.<sup>71</sup>

***Hurdles to Refinancing Student Loan ARS Debt.*** Few student loan issuers have refinanced ARS debt, while municipal issuers have refinanced a large proportion of their existing ARS debt. To refinance existing debt, ARS issuers must choose a new financial instrument and must find willing investors to provide new funds to redeem old debt. Issuers must pay new fees to rating agencies, investment banks, legal advisors, and others.

Because income flows from student loan ARS trusts are variable and not controllable, and because the student loans those trusts hold are generally the only source of income, designing fixed-rate bonds with desirable risk properties for student loan issuers is technically difficult. Some have contended that maximum-interest-rate caps and related restrictions have kept interest payments for some SLARSs at below-market levels, which some argue has dampened student loan issuers enthusiasm for refinancing.<sup>72</sup>

***Refinancing Municipal Debt.*** Municipal ARS issuers, by contrast, usually have made interest payments directly from their own resources, rather than via a trust. Municipalities have a much wider range of revenue streams, such as taxes, fees, and cuts in operating expenses, that can be used to pay interest expenses. Municipalities, whose debts are either explicitly or implicitly backed by the power to tax, may be better suited to plain-vanilla fixed rate bonds. In addition, municipalities' ability to tax may simplify the credit rating process, by providing an ultimate backstop against default, and may allow municipal issuers to obtain letters of credit on more reasonable terms.

***Closed-End Funds.*** Some closed-end funds have used tender option bonds (TOBs) to obtain funds to redeem outstanding ARSs.<sup>73</sup> TOBs are short-term floating rate securities that give bondholders the right to require the issuers or a designated third party to buy back holdings under certain circumstances.

***Asymmetric Risks Present Challenges.*** The problems encountered by the ARS market since August 2007 may relate to wider challenges facing financial markets, such as the management of asymmetric risks. ARSs introduced a liquidity risk with serious consequences for both issuers and investors were auctions to fail. In effect, ARSs bundled small, albeit not insignificant, benefits during normal economic times with serious costs in the event of unusual financial turmoil. Thus,

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<sup>71</sup> Frank Sulzberge and Andrew Flynn, "Lessons From Tough Times: Understanding VRDO Failures," *Bond Buyer*, July 21, 2008.

<sup>72</sup> Kate Haywood, "Hunkering Down With Student Loan ARS," Dow-Jones News Service, June 20, 2008.

<sup>73</sup> Seligman Select Municipal Fund, Inc., "An Update on Auction Rate Securities," Aug. 2008, available at [<http://www.seligman.com/pdf/general/selectars.pdf>].

the basic structure of ARSs incorporated important asymmetric risks. Some argue that asymmetric risks can present serious challenges to financial markets.<sup>74</sup>

The attractiveness of ARSs stemmed from the difference between short-term and long-term interest rates. In normal economic times, the yield curve (which plots interest rates against maturities) slopes upward, allowing issuers to pay short-term rates on long-term debt. So long as auctions ran smoothly, issuers, investors, and investment banks benefitted from the use of ARSs: issuers paid slightly lower interest rates, investors received interest rates slightly higher than short-term money market rates, and investment banks earned underwriting and remarketing fees.

Not all asymmetric risks are inherently problematic. For instance, the core role of insurance markets is to handle asymmetric risks. Insurance professionals have developed sophisticated tools to understand and manage asymmetric risks. In some other markets, however, asymmetric risks that are poorly understood or that are difficult to assess may present important challenges. Because financial markets can be strongly affected by events that, from the analysis of historical patterns, had appeared extremely unlikely, managing asymmetric risks can be difficult.<sup>75</sup>

Asymmetric risks embedded in ARSs appear to have been imperfectly understood by some market participants. Machinery developed to assess credit risks has largely focused on long-term default risks, not short-term liquidity risks such as auction failures.<sup>76</sup> In some cases, arrangements such as maximum-interest-rate caps on SLARSs designed to strengthen long-term default risks appear to have exacerbated short-run liquidity risks, as the presence of caps on some ARSs heightened the chances that auctions would fail. On the other hand, trust administrators and credit ratings agencies may have judged that without such caps, income streams might become inadequate to ensure continued payments to bondholders.

While credit agency ratings provided investors with vital information regarding default risks, assessing short-term liquidity risk was difficult, given the relative non-transparency of ARS auction mechanics. Despite a 2006 SEC consent decree ordering major ARS broker/dealers to inform clients more fully about the workings of ARS auctions, investors were not given key information about ARS market trends in 2007 and 2008 according to court documents.<sup>77</sup>

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<sup>74</sup> Alexander M. Ineichen, *Asymmetric Returns: The Future of Active Asset Management* (New York: Wiley Finance, 2007).

<sup>75</sup> *Ibid.*

<sup>76</sup> Lance Pan, "When AAA Does Not Mean Roadside Peace Of Mind: A Credit Perspective on Rating Limitations of AAA-Rated ARS Bonds," Capital Advisors Group Research Newsletter, Nov. 12, 2004.

<sup>77</sup> SEC Administrative Proceeding File No. 3-12310, In the Matter of Bear, Stearns & Co. Inc., et al. (cease-and-desist order, May 31, 2006); Summons and complaint, Cuomo v. UBS Securities LLC, et al.; Complaint, In the Matter of Merrill Lynch, Pierce, Fenner & Smith, Inc.; Complaint, In the Matter of UBS Securities, LLC and UBS Financial Services, Inc.,

Asymmetric risks may also present challenges to corporate governance. If managers benefit in normal times from slightly lowered costs or slightly augmented profits made possible by assets or strategies that carry large downside risks whose costs are largely borne by others, then managers may face temptations to pursue overly risky strategies.<sup>78</sup> Careful design of corporate governance procedures and compensation schemes may reduce the strength of those temptations.

**Should Issuers and Investors Have Known Better?** Auction-rate securities, since their creation in the mid-1980s, have given thousands of issuers a way to lower borrowing costs relative to long-term fixed rate debt, and for much of the past decade, at a lower cost than alternative variable-rate financing methods. **Figure 3** compares ARS interest rates with variable-rate bond interest rates paid by New York State and an index reflecting average borrowing costs in the municipal finance market. ARS rates were well below (i.e., 10-30 basis points lower) variable-rate bond rates for much of the past five years. Since subprime and other mortgage-related concerns first roiled world financial markets in August 2007, auction-rate securities have led to sharp increases in financing costs to student lenders, municipalities, and other public borrowers. In addition, ARSs created major liquidity problems for many holders of ARS debt.

The savings that ARSs generated before August 2007, in some cases, may well outweigh the increased costs they caused afterwards. The choice to use ARS financing, from the standpoint of what a responsible and well-informed financial manager knew before mid-2007, may well have been reasonable if one assumed that market liquidity conditions would remain within historical bounds.

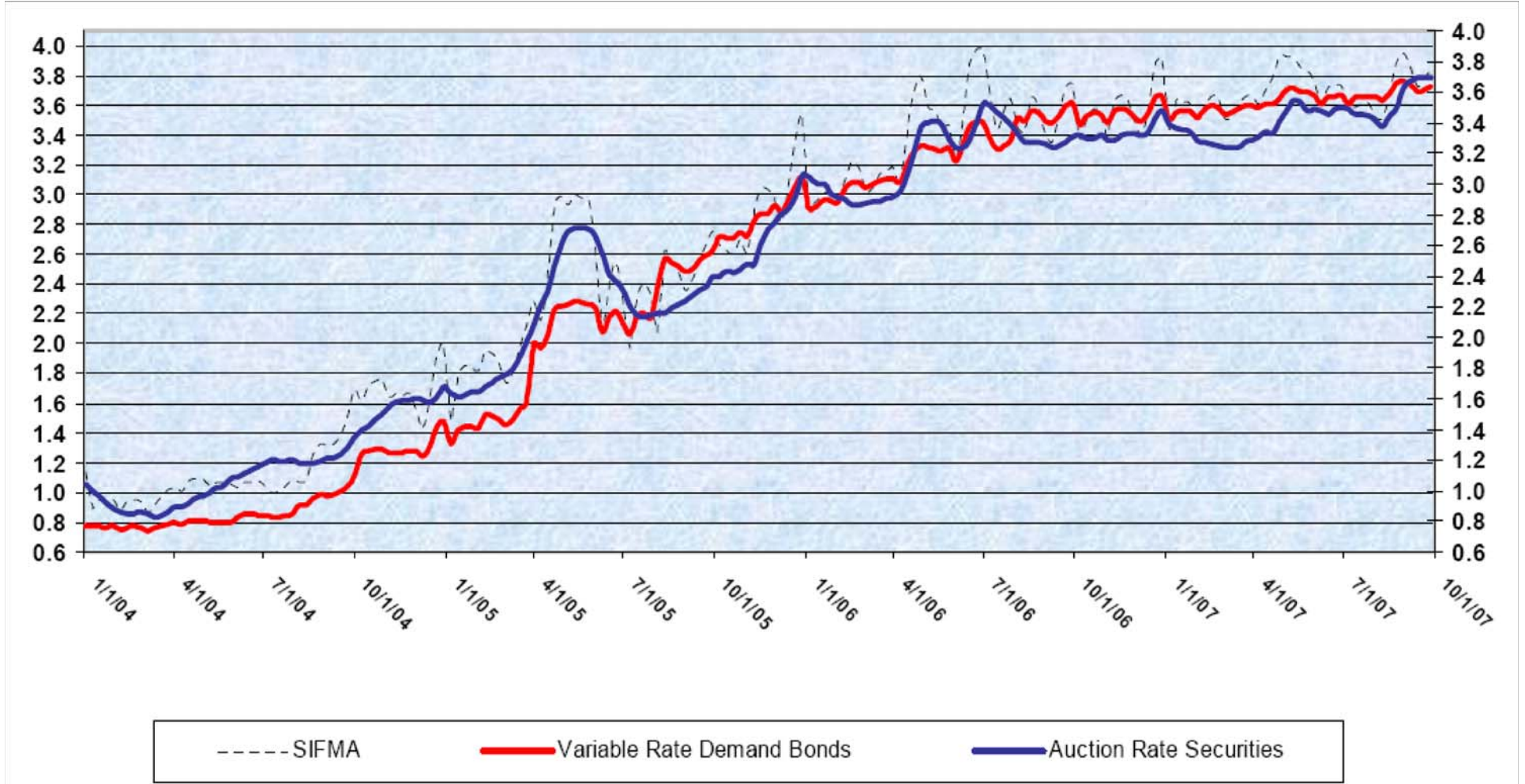
On the other hand, restructuring ARS debt could be a long and expensive process that may put severe pressure on some municipalities and may complicate the financing of student loans. While some issuers contend that ARSs represented a best industry practice that was recommended by financial experts at leading international investment banks, Arthur Levitt, former SEC Commissioner, reportedly strongly criticized issuers for failing to exercise critical judgement in choosing financial instruments like ARSs.<sup>79</sup>

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<sup>78</sup> Dean P. Foster and H. Peyton Young, "Hedge Fund Wizards," *Washington Post*, Dec. 19, 2007.

<sup>79</sup> Andrew Ackerman and Lynne Funk, "Cox: All ARS Dealers Scrutinized," *Bond Buyer*, Aug. 20, 2008.

Figure 3. Rates on New York State Variable-Rate Securities: 2004-2007



Source: New York State Budget Office, *Comprehensive Variable Rate Debt Report*, Dec. 2007. The Securities Industry and Financial Markets Association (SIFMA) compiles indices of average borrowing costs.

Auction-rate securities are one example of relatively new financial instruments developed in the past few decades. Financial innovation, according to many experts, introduced more efficient ways of matching investors to borrowers and parceling out risks to those best suited to bearing them. The increased complexity of some new financial instruments, however, has created new types of risk that may be difficult to assess. In addition, the risks introduced by novel financial arrangements may strain existing corporate governance and ratings structures. While the structure of ARSs is simple compared to many exotic derivatives, unforeseen changes in financial markets in late 2007 and early 2008 fundamentally changed the risks associated with ARSs.

## Issues for Congress

Recent turmoil in ARS markets has affected several policy areas of Congressional concern.

***Financial Regulation, Disclosure, and Oversight.*** Traditionally, the federal government has sought to ensure that dealings in publicly traded securities are transparent and fair, and that material risks are fully disclosed to financial markets. State attorneys general in New York, Massachusetts and other states have filed suits alleging that investment banks active in the ARS market failed to inform clients about rising liquidity risks, especially between when the global credit crunch emerged in August 2007 and when the ARS market collapsed in February 2008.

***Legal Remedies.*** While state attorneys general have acted aggressively to compel investment banks to buy back ARSs from smaller investors, other investors have expressed concern that existing remedies, such as civil suits or mediation, may not adequately protect their interests.

***SEC Role.*** The SEC regulates investment banks, brokerages, and credit rating agencies, which have played central roles in the ARS market. A 2006 SEC consent decree directed ARS broker/dealers to disclose more information about ARS auctions. SEC oversight of the ARS industry following the consent decree may be an area of congressional interest. The SEC Chairman, Christopher Cox, said that all firms involved in selling ARS to individual investors would be investigated.<sup>80</sup> The SEC participated in the negotiation of the proposed Citicorp, Merrill Lynch, UBS, and Wachovia settlement.<sup>81</sup> Those settlements are subject to SEC approval.

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<sup>80</sup> Andrew Ackerman and Lynne Funk, "Cox: All ARS Dealers Scrutinized," *Bond Buyer*, Aug. 20, 2008.

<sup>81</sup> U.S. Securities and Exchange Commission, "Citigroup Agrees in Principle to Auction Rate Securities Settlement," Press release 2008-168, Aug. 7, 2008; "SEC Enforcement Division Announces Preliminary Settlement With Merrill Lynch to Help Auction Rate Securities Investors," Press release 2008-181, Aug. 22, 2008; UBS Securities LLC and UBS Financial Services, Inc. Agree in Principle to Auction Rate Securities Settlement, Press release 2008-171, Aug. 8, 2008; "Wachovia Agrees to Preliminary Auction Rate Securities Settlement That Would Offer Approximately \$9 Billion to Investors," Press release 2008-176, Aug. 15, 2008.

The SEC also charged two Credit Suisse brokers with securities fraud. The brokers allegedly mislabeled \$0.8 billion of ARSs sold to foreign clients.<sup>82</sup>

Some have contended that the SEC and Chairman Cox have been passive in confronting the consequences of recent financial turmoil.<sup>83</sup> Major ARS settlements appear to many to be the result of initiatives of state attorneys general. The SEC (as of Sept. 15, 2008) has yet to announce actions against major ARS market participants that have not been targets of state regulators.<sup>84</sup> Former SEC Chairman Arthur Levitt, widely viewed as an aggressive advocate for financial regulation, is said to have defended SEC's actions as appropriate.<sup>85</sup>

**Who Pays?** The collapse of the ARS market, as noted above, put financial strains on towns, cities, hospitals, and has threatened to disrupt students' ability to finance higher education. Arthur Levitt reportedly warned that taxpayers may end up footing the costs of refinancing ARS debt, and argued that

Instead of placing the burden of a bailout on the backs of taxpayers and the colleges, hospitals, and charities, we could require the firms who sold these securities to absorb the losses and the consequential damages caused by their actions rather than simply, and passively, [to] refinance and pass the costs on to taxpayers.<sup>86</sup>

On the other hand, some may argue that the severity of the credit crunch that began in August 2007 is unprecedented in recent times, and that its consequences could not have been foreseen. Furthermore, placing additional financial burdens, whether deserved or not, on investment banks during tumultuous economic times could exacerbate systematic financial risks.

Senator Grassley, Ranking Member, Senate Finance Committee, has noted that fines paid by investment banks resulting from settlements of state lawsuits could reduce banks' federal tax liabilities, and urged SEC Chairman Cox to "gross up" any possible future SEC-imposed fines to offset any federal tax deductions.<sup>87</sup>

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<sup>82</sup> U.S. Securities and Exchange Commission, Litigation Release No. 20698, Sept. 3, 2008, regarding SEC v. Julian T. Tzolov and Eric S. Butler, Case No. 08 Civ. 7699, Southern District of New York.

<sup>83</sup> Kara Scannell and Susanne Craig, "SEC Chief Under Fire as Fed Seeks Bigger Wall Street Role," *Wall Street Journal*, June 23, 2008, p. A1.

<sup>84</sup> A search of the [<http://www.sec.gov>] website conducted Sept. 14, 2008, turned up no press releases in 2007 and 2008 mentioning ARSs except for those cited in footnote 81.

<sup>85</sup> Roy Harris, "Reports of the SEC's Death Are Greatly Exaggerated: Former [SEC] Chief Levitt Says Congress Will Stand Up," CFO.com, June 25, 2008.

<sup>86</sup> Andrew Ackerman and Lynne Funk, "Cox: All ARS Dealers Scrutinized," *Bond Buyer*, Aug. 20, 2008.

<sup>87</sup> Sen. Charles Grassley, "Grassley Says Taxpayers Should Not Be Left to Pay SEC Penalties Aimed at Financial Institutions," Press release, Aug. 15, 2008, available at [<http://finance.senate.gov/press/Gpress/2008/prg081508.pdf>].

**Role of Bond Insurers and Rating Agencies.** The collapse of the ARS market has raised Congressional concern that higher interest costs and the challenges of refinancing ARS debt could hinder state and local government borrowing and infrastructure project financing. Furthermore, Congress has expressed concern that state and local governments and other public borrowers might not receive credit terms that fully reflect their credit quality, which would raise borrowing costs.<sup>88</sup>

Most, but not all, municipal issuers have used bond insurance to reduce perceived risks of default with the aim of lowering costs of borrowing. In some cases, however, downgrades of bond insurers led to instances in which interest rates for insured bonds *exceeded* rates for essentially identical uninsured bonds. Federal legislation affecting bond insurers would probably have important effects on municipal debt markets.<sup>89</sup>

Rating agencies, by providing accurate and authoritative information on credit quality, can lower the costs of borrowing by reducing risk premia demanded by investors. The Credit Rating Agency Reform Act of 2006 (P.L. 109-291) required rating agencies to file reports with the SEC.<sup>90</sup> Rating agencies have generally focused on long-term default risk rather than short-term liquidity risks, such as those posed by auction-rate securities. In some cases, measures intended to bolster credit quality by reducing the risk of default over the long term may have increased short-term liquidity risks. Encouraging rating agencies to examine a broader range of risks might provide investors with valuable information that might increase the efficiency of capital markets.

**The Student Loan Market.** While some segments of the ARS market have begun to unwind, the student loan ARS market has remained frozen. Some issuers and bondholders could contend that restructuring the student loan market requires federal intervention. For example, some contend that amending the Higher Education Act (P. L. 89-329) in a way that would lead to the federal purchase of older guaranteed student loans could provide liquidity to the student loan ARS market. Whether such an intervention could unfreeze the SLARS market may depend on specific terms of bond contracts. On the other hand, many in and outside of the government have expressed concerns about using federal funds to do what private capital markets might do on their own.

## Conclusion: Looking Beyond the Credit Crunch

Municipal securities backed by the power to tax and federally guaranteed student loans have comprised the largest segments of the auction-rate securities market. Both municipal securities and securities backed by federally guaranteed

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<sup>88</sup> U.S. Congress, House Committee on Financial Services, *Municipal Bond Turmoil: Impact on Cities, Towns, and States*, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., Mar. 12, 2008.

<sup>89</sup> CRS Report RL34364, *Bond Insurers: Issues for the 110<sup>th</sup> Congress*, by Baird Webel and Darryl E. Getter.

<sup>90</sup> CRS Report RS22519, *Credit Rating Agency Reform Act of 2006*, by Michael V. Seitzinger.

student loans are generally considered to be extremely high quality assets. Investor demand for such assets have traditionally been strong, even as investment vehicles evolve over time. The need for financial intermediation between investors requiring safe investments on one side and public borrowers and student lenders will continue, despite disruptions caused by the collapse of the ARS market.

Some experts believe markets learn from financial crises, while others believe the gains that sophisticated financial engineering techniques can deliver in less tumultuous times and the natural turnover of financial market personnel make it unlikely that markets learn from past mistakes.<sup>91</sup> Whether or not financial markets learn from the past, decisions made by Congress and regulatory agencies regarding financial reporting, oversight, and enforcement policies will continue to affect both the structure of financial markets and the behavior of market participants.

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<sup>91</sup> Barry Eichengreen, “Securitization and Financial Regulation: Pondering the New Normal,” working paper, July 2008, available at [[http://www.econ.berkeley.edu/~eichengr/securitization\\_7-28-08.pdf](http://www.econ.berkeley.edu/~eichengr/securitization_7-28-08.pdf)]; published as “Reformen sind möglich,” *Finanz und Wirtschaft*, Aug. 9, 2008, p. 1.