Breckinridge CAPITAL ADVISORS

PERSPECTIVES

COVID-19 AND MUNI CREDIT: ESSENTIAL SERVICE MUNICIPALS ARE MORE RESILIENT THAN APPRECIATED

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Despite the unprecedented pace and scale of municipal financial stress caused COVID-19 crisis Breckinridge expects the high-grade and essential service issuers in which we invest to ably manage through the pandemic. The market's foundational credit strengths remain intact, and the vast majority of issuers entered the crisis on stable credit footing. In contrast to the years prior to the Great Depression and Great Financial Crisis (GFC), mundane issuance practices have characterized the market for the past decade, and key credit risks have been largely transparent. Importantly, federal support to state and local government is flowing and is likely to increase. The pandemic is a nationwide natural disaster unfolding against the backdrop of historically low Treasury rates. With few exceptions, any increase in defaults will likely be concentrated in the non-essential and high yield space.

Over the long-term, investors should expect credit quality to diverge among essential service names. Short-term borrowing will be common in the current cycle, which may create credit challenges down the road. Federal stimulus will eventually wane. What seems clear is that Breckinridge's bottom-up approach to research and long-standing philosophy of buying bonds with a healthy cushion can continue to make sense for high grade municipal investors.

COVID-19 AND MUNICIPAL FINANCES: HOW BAD IS IT?

The pandemic has forced governors to impose stay-at-home orders in 42 states and triggered a remarkable decline in economic activity. The Congressional Budget Office expects gross domestic product (GDP) to decline at an annualized rate of 40 percent in Q2 2020.[1] The April 2020 unemployment rate may exceed 20percent in 15 states.[2] Plane and subway travel is down by over 90percent in many cities.[3]

The economic stoppage will weaken municipal finances. *Moody's Analytics* expects state budget deficits could reach 23 percent of spending in FY 2021.[4] Tax-filing deferrals will exacerbate matters. All 43 states that impose an income tax have delayed their April 15 filing date to July 15, consistent with the federal government's decision.[5]

In the revenue sectors, hospital margins are likely to decline precipitously as labor and supply expenses rise and elective procedures are delayed. University revenues will also decrease as student room and board fees are refunded or students continue with remote learning in the fall. Airport revenues from landing, parking, and terminal rentals are certain to plummet.

Falling stock prices and interest rates also will have a negative effect. Unfunded pension liabilities will grow by 50 percent next year while contributions into funds will need to rise by 60 percent just to avoid negative amortization.[6] Asset-price declines will also weaken nonprofit issuers' endowments and state permanent funds. Some issuers rely on endowments and permanent funds to fund operations.

The drop in oil prices is also a negative. Oil-reliant communities could experience fiscal pressure for several budget cycles. Wyoming officials expect a drop in revenue of up to 30 percent over the next two years.[7]

The pandemic may prove lasting. The figures listed above broadly reflect the assumption that America returns to work, in some form, in Q3 or Q4 2020. However, absent a robust testing regime, vaccine, or anti-viral treatment, the economy may operate in an on-again, off-again manner for quite some time.

More ratings downgrades are likely. *Fitch Ratings Inc.* notes that "the pandemic and its impact on the economy are well outside the calibration of our previous through-the-cycle analysis, which was meant to capture sensitivity to a more 'normal' business cycle."[8] *S&P Global Ratings* has placed all U.S public finance sectors on "negative outlook."[9]

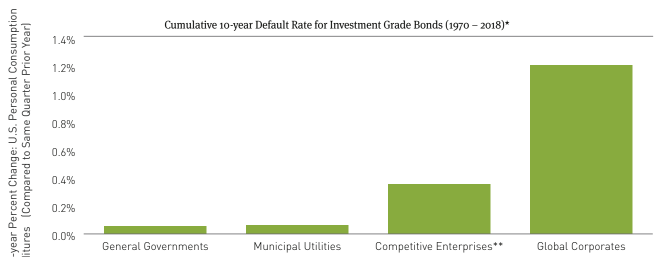
FORTUNATELY, ESSENTIAL SERVICE MUNICIPALS REMAIN RESILIENT CREDITS

Despite the unprecedented degree of stress, most investment-grade essential service issuers will avoid a serious credit event as a result of the COVID-19 pandemic. This is true for several reasons.

1. The foundational credit strengths of the muni market remain very much intact.

Essential service municipals retain several inherent credit strengths that have contributed to the market's decades-long low default rate. For perspective, it would take a twenty-fold increase in municipal government and utility defaults to generate a default rate equivalent to that for investment grade corporate bonds (Figure 1).

FIGURE 1: INHERENT MUNICIPAL CREDIT STRENGTHS HAVE TENDED TO KEEP DEFAULTS VERY LOW FOR DECADES



* Cumulative 10-year default rate means the likelihood that a bond defaults within 10 years of issuance.

** Competitive Enterprises include some speculative sectors including nursing homes and housing bonds.

Source: Moody's Investors Service, as of August 2019.

Essential service municipals' inherent strengths are likely to mitigate default risk, again. They include:

a. **Monopoly pricing power.** Most essential service issuers are legislated monopolies. Consequently, they can generate liquidity with relative ease. Unlike businesses, state and local governments can cut services and raise taxes without immediately losing "customers" (read: residents). In the current environment, spending cuts may be more draconian than in past cycles and tax hikes harder to enact, but both are much more likely than defaulting on debt. In just the past few weeks, the Governor of Hawaii has proposed reducing employee pay by 20 percent.[10] Livonia, Michigan has furloughed 37 percent of its workforce,[11] and New York State has proposed trimming education aid by 20 percent.[12] On the tax front, a bill proposed in New York State would tax on-line advertising.[13] There is growing chatter about increasing gross receipts taxes, which generate funds even in the absence of business profits,[14] and it's likely that some affluent jurisdictions increase property taxes.[15]

b. **Reliable revenue streams.** Essential service revenue sources are generally more resilient than those in other sectors of the economy. Inelastic property taxes comprise 72 percent of U.S. local tax revenue and are typically paid from mortgage escrows.[16] Likewise, residents and businesses generally prioritize the payment of water, sewer, and electric bills. The pandemic has caused a shocking drop in many taxes and fees, but municipal revenue volatility remains lower than in most other asset classes.

c. **Perpetual existence.** Most essential service issuers cannot go-out-of-business. Consequently, they are less likely to lose market access when facing large operating deficits. In the current cycle, perpetual existence is likely to benefit airport, hospital, and mass transit systems, among others, by preventing a liquidity crisis from becoming an insolvency crisis.[17] Notably, airports have survived sharp drops in revenue in the past. Atlanta's Hartsfield International Airport experienced a 40 percent fall in operating revenue during 2006.[18] Airports in Pittsburgh and St. Louis have weathered similar declines. Hospital issuers survived a spate of debt acceleration events after the variable rate bond market collapsed in 2008.[19]

d. **Strong security structures.** Essential service bonds are generally backed by strong legal pledges like an issuer's "faith and credit" (general obligation bonds) or a reliable revenue source. These pledges are routinely doubted during recessions but, in fact, the law appreciates that they become valuable only during periods of economic weakness. As one court has put it regarding general obligation bonds:

"The... pledge of faith and credit is designed... to protect rights vulnerable in the event of difficult economic circumstances. Thus, it is destructive... to [deny] that protection on the ground that government confronts the difficulties which, in the first instance, were envisioned."[20]

When the law sanctions municipal debt adjustment, it is typically only after an issuer has exhausted its fiscal options over a long period of time. The bankruptcy code inculcates this idea via its insolvency requirement. Issuers must prove they are "insolvent" before they can restructure debt.[21] It is no accident that the issuers that defaulted or came close in the aftermath of the GFC were already chronically weak (for example, Detroit, Puerto Rico, Harrisburg). In the current environment, many essential service issuers may face near-term liquidity challenges, but few issuers face fiscal strains that rise to the level of "insolvency." Consequently, *if* defaults occur, they are likely to be cured relatively quickly.

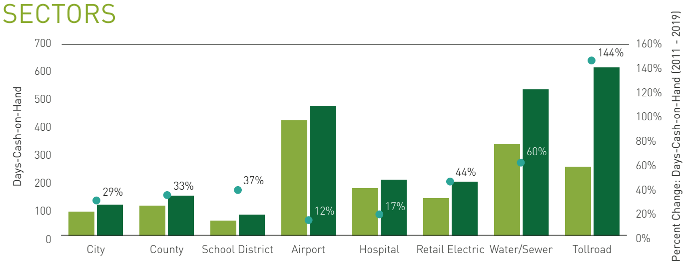
e. **Strong state oversight.** States exert significant control over the financial practices of their local issuers and public corporations. When issuers become fiscally stressed, states often step in to assist with, or takeover, decision-making functions.[22] If needed, states establish special financing vehicles to ensure capital market access for a weak issuer and to protect the state's credit reputation. Examples include the Municipal Assistance Corporation (established for New York City in the mid-1970s) and the Pennsylvania Intergovernmental Cooperation Authority (established for Philadelphia in the early 1990s). Similar vehicles may be established in coming months. One wrinkle in the current environment is that several states are weak issuers themselves (for example, Illinois and New Jersey). In these situations, a securitized municipal structure may prove helpful, along the lines of Chicago's Sales Tax Securitization Corporation.

2. The market enters the pandemic on a stable credit footing.

As explained in Breckinridge's *2020 Municipal Credit Outlook*, most issuers entered the COVID-19 pandemic with a very stable credit profile. Broadly, issuers exhibit good reserves, low debt, and the ability to sell infrastructure assets to manage through the crisis, if needed. Pension risks will grow over the next few years but present few immediate cash flow problems.

Across sectors, municipal liquidity is "up" (Figure 2). Since 2011, median days-cash-on-hand has increased for most tax-backed and revenue issuers. Notably, some stressed sectors are very liquid. The median airport holds over 460 days-cash-on-hand, and the median toll road over 600 days. State reserves (not shown) reached a three-decade high in 2019.[23]

FIGURE 2: LIQUIDITY IS "UP" MEANINGFULLY ACROSS SECTORS



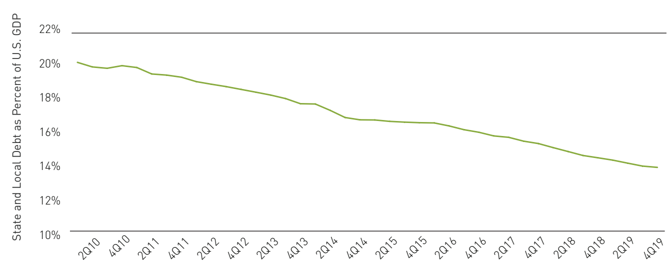
Source: Merritt Research Services and Breckinridge Capital Advisors, as of April 2020.

Reserves vary from issuer-to-issuer, but the aggregate figures suggest that many will be able to draw down rainy day funds to help balanced budgets. The same *Moody's Analytics* report that forecasts state deficits of 23 percent in FY 2021 concludes that state reserves are "large enough in 17 states to absorb the... stress estimated in our baseline [projections] with relatively minor fiscal difficulty."[24]

Low debt also characterizes the market. State and local debt now comprises 14 percent of GDP compared to 20 percent in 2010 (Figure 3). Principal and interest costs are typically less than 5 percent of expenditures for a state and less than 10 percent for local governments.[25] Notably, low debt servicing ratios enable large spending cuts without pitting bondholders against other essential priorities. A government that spends 10 percent of its budget on debt service will spend only 12.5 percent after a 20 percent budget cut. In such an environment, it makes no sense to default on bonds.

The market's modest debt profile also positions many issuers to borrow more without severely damaging their long-term credit prospects. In the current environment, issuers are likely to float short-term notes to fund operations, issue long-term bonds to refinance upcoming maturities, or to draw down lines of credit. Traditionally, relying on market access to balance operations is a credit no-no; it runs counter to balanced budget rules. But there are workarounds, and in the current circumstances, borrowing is a reasonable way to bridge issuers from today to the post-pandemic economy.

FIGURE 3: STATE AND LOCAL GOVERNMENT DEBT HAS FALLEN,CAPACITY EXISTS FOR INFRASTRUCTURE OR OPERATING NEEDS



Source: Federal Reserve Flow of Funds, as of March 2020.

Less commonly, issuers may seek to monetize their infrastructure assets. This could take the form of a sale-leaseback transaction or, less frequently, an *outright asset-sale*. Note that state and local transportation, power, water, and utility assets are valued at $2.6 trillion, and highways and streets are worth another $3.7 trillion.[26] Together, these figures exceed the $3.1 trillion in outstanding state and local debt.[27]

Pension and retiree health care challenges are real, but they will likely remain a medium- or long-term problem for most issuers; they will infrequently create cash flow difficulties. Issuers typically smooth pension contributions by accounting for large drops in pension assets over a period of years, and if needed, many have the authority to defer or amortize payments. For most, these costs should be manageable. Expenses for pensions, retiree health care, and debt service comprise less than 9 percent of revenue for states and around 13 percent of expenditures for most local governments.[28]

3. Mundane market issuance practices defined the 2010s.

Investors are likely to accept the deficit-financing solutions outlined above (such as reserve draws, short-term borrowing), in part, because the past decade was characterized by straightforward debt structures and relatively good transparency into key credit risks. That was not the case in the years leading up to the Great Depression and GFC.

Prior to the Great Depression, municipal issuers often financed operations with debt and repaid maturities from new bonds. State governments lacked oversight of local bond management, and municipal debt rose by 90 percent in the seven years prior to the stock market crash (Figure 4).[29] State and local deposits were often uninsured and were sometimes lost when the banking system collapsed.

Prior to the GFC, the municipal market was characterized by significant variable rate and insured debt issuance. Fewer asset managers employed their own municipal analytical staffs, and pension risk was less well understood or disclosed. Variable rate bonds averaged 15 percent of market issuance from 2000 to 2008.[30] Insured issuance reached 57 percent of the market in 2005 (Figure 5). When the variable rate market unraveled during 2007 and 2008, and the solvency of bond insurers was questioned, investors lacked transparency into their underlying investments. The situation was compounded when pension asset values collapsed. There were relatively few independent analysts to assess their credit worthiness, and most were unfamiliar with actuarial math. The rating agencies were distrusted.

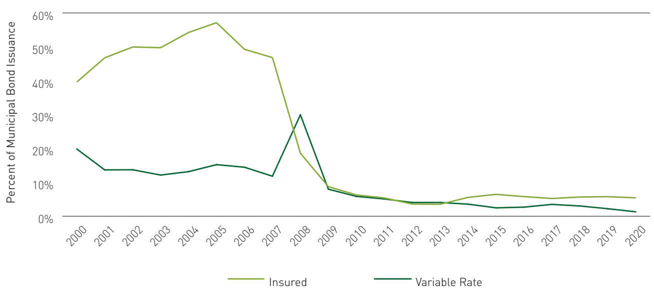
FIGURE 4: IN CONTRAST TO THE YEARS PRIOR TO THE GREAT DEPRESSION AND GFC, MUNICIPAL ISSUANCE PRACTICES HAVE BEEN MUNDANE OF LATE

	Great Depression (1929 - 1933)	Great Financial Crisis (Q4 2007 - Q4 2009)	Great "Cessation" (2020 - ?)
Many Muni Issuers "Roll" Their Debt?	Yes	No	No
Net Increase in Muni Debt (Excludes Pre-Refinancings)	90% (1922 - 1929)	34% (2000 - 2007)*	0% (2012 - 2019)
Interest as Percent of State & Local Revenue (Excludes Federal Revenue & Unemployment Insurance Trusts)	12% (1934)	5% (2007)	5% (2017)
State Oversight of Muni Borrowing	Weak	Strong	Stronger
Percent of Issuance, Variable Rate	n/a	15% (avg 2000 - 2008)	1%
Percent of Issuance, Bond Insurance	n/a	57% (2005)	5%

* Estimated by Breckinridge Capital Advisors; Federal Reserve data was readjusted beginning in 2004.

Sources: The Bond Buyer, U.S. Census of Governments, Federal Reserve, A.M. Hillhouse, Municipal Bonds – A Century of Experience (1936), George Hempel, The Postwar Quality of State and Local Debt (1971), and Breckinridge Capital Advisors, as of April 2020).

FIGURE 5: VARIABLE RATE AND INSURED DEBT HAS DECLINED AS A PERCENTAGE OF ISSUANCE SINCE THE GFC



Source: The Bond Buyer and Breckinridge Capital Advisors, as of April 2020.

Today's market differs markedly. Bonded debt has not increased since 2010 and has declined as a percentage of GDP. State oversight of municipal issuers is generally strong, and state and local deposits are usually collateralized. The U.S. banking system is under pressure but is much stronger than it was prior to either the Great Depression or the GFC. Bond maturities are generally predictable and level, and issuers infrequently borrow to repay maturing obligations. Variable rate issuance comprises 1 percent of the market, and bond insurance wraps 5 percent. The analytical community has grown. Membership in the National Federal of Municipal Analysts has increased by 21 percent since 2007.[31] Finally, pension risk is generally well understood and incorporated into ratings, both by independent analysts and the rating agencies.

4. The federal government is likely to abandon austerity to address the pandemic.

The federal response to the COVID-19 crisis has been robust, popular, and affordable (so far) and is likely to continue, to a degree. The current crisis involves no banking villains and is best understood as a nationwide natural disaster that requires a coordinated federal/state/local response.

To date, Congress has appropriated $2.8 trillion (13 percent of U.S. GDP in 2019) to address the pandemic through four relief bills.[32] Direct aid to essential service municipal issuers comprises $447 billion of this total (Figure 6). However, municipals also benefit indirectly via aid to airlines, small businesses, and individuals. Notably, some recipients of enhanced unemployment benefits now earn more than they did when working.[33] Consequently, utility, rent, and property tax delinquencies may not rise by as much as the unemployment rate implies.

FIGURE 6: FEDERAL AID FOR MUNICIPAL ISSUERS HAS BEEN SIGNIFICANT AND MORE IS LIKELY

	Amount ($ billions)	Law
State & Local Government	206	P.L. 116-127, -136
Hospitals	175	P.L. 116-136, -139
K-12 Schools	17	P.L. 116-136
Universities	14	P.L. 116-136
Mass Transportation	25	P.L. 116-136
Airports	10	P.L. 116-136
Total	447	

Source: Coronavirus Preparedness and Response Supplemental Appropriations Act (P.L. 116-123), Families First Coronavirus Response Act (P.L. 116-127), CARES Act (P.L. 116-136), Paycheck Protection Program and Health Care Enhancement Act (P.L. 116-139), as of May 2020.

More direct aid is likely. There is broad political support for a fifth aid package, notwithstanding recent comments by the Senate majority leader that *states should consider bankruptcy protection*.[34] Forty-five percent of Americans believe the federal government is doing "too little" to resolve the economic fallout from COVID-19, compared to 36 percent who say the current level of support is "about right" and only 11 percent who say it's "too much".[35] Prior legislation limited direct aid to coronavirus-related spending or revenue losses, and only to larger issuers. However, the looming recession may require a more traditional approach to stimulus.[36] The National Governor's Association has requested $500 billion. City and county officials have asked for another $250 billion.[37] For context, *Moody's Analytics*' "severe scenario" (discussed above) contemplates $203 billion in state budget deficits.

The Federal Reserve has also been aggressive. The Fed has added $1.6 trillion in Treasury and mortgage securities to its balance sheet since March 5.[38] It has created a variety of emergency lending programs, including, for the first time, several that benefit municipals. The most important of these is the *Municipal Liquidity Facility (MLF)* which can extend up to $500 billion in short-term loans to eligible issuers.[39] While it has not yet been used, the facility has already contributed to lower short-term municipal yields.[40] It is likely to smooth market access for the some of the market's weaker essential service issuers like Chicago, Illinois, and the New York MTA. Notably, the MLF explicitly permits issuers to pay bond maturities with MLF loans; its $500 billion in lending capacity compares to $144 billion in remaining 2020 maturities.[41]

Federal support is likely to wane, over time, as the U.S. Department of the Treasury lacks infinite borrowing capacity, and the politics around deficit-financing and financial repression will eventually grow more intense. However, with 30-year Treasuries yielding 1.29 percent and a real-world need to pay first-responders to stay on-the-job, Congress seems likely to enact a state/local-oriented bill. Nationwide, state and local governments employ 1.6 million public health, public safety, correctional, and air transport workers. The federal government employs only 400,000.[42]

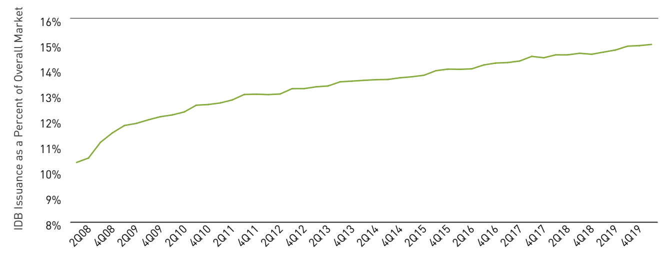
There is a low, but growing, possibility that a stimulus package reinstates the Build America Bonds program or liberalizes private activity bond rules.[43] Changes of this sort would enlarge the buyer base for municipal debt and likely improve liquidity and reduce credit spreads. Large essential service issuers with low-investment grade credit ratings (for example, Illinois or New Jersey) might benefit significantly.[44]

5. Essential service issuers are much less likely to default than their high yield peers

To the extent that municipal bond defaults increase in the coming months, they will likely be concentrated in the non-essential and high yield space. Non-essential and high yield bond issuers typically lack monopoly pricing power or perpetual existence. They are also less likely to receive state support when encountering fiscal stress. Typically, these bonds come with weaker legal covenants.

In recent years, low interest rates and limited essential service supply caused many investors to dip into the high yield municipal space. Underwriting standards weakened for higher risk bonds, and some projects were financed that might not have been, ordinarily.[45] Industrial development bonds (IDBs) which often represent more speculative projects, illustrate the trend. IDBs now comprise a larger portion of the overall market (Figure 7).

FIGURE 7: INDUSTRIAL DEVELOPMENT BOND ISSUERS NOW COMPRISE A LARGER SHARE OF THE MUNI MARKET



Source: Federal Reserve Flow of Funds, as of March 2020.

OVER THE LONG-TERM, ESSENTIAL SERVICE CREDIT FUNDAMENTALS ARE LIKELY TO DIVERGE

The COVID-19 pandemic is certain to leave a lasting mark on municipal credit fundamentals. Although near-term bond defaults are unlikely in the essential service space, the short-term borrowing undertaken this year will create new credit risks in the future. Issuers will need to repay this borrowing from revenue generated in the eventual economic recovery (unlikely) or refinance their short-term securities into longer-term bonds. Market-access risks will grow. Refinancing these securities will be more challenging once the Fed winds down its municipal lending programs and fiscal stimulus ends. Muni market disclosure practices will need to improve to help investors navigate this eventuality.

Breckinridge's active approach to municipal bond management should cope well in this coming credit-focused market. Our long-standing philosophy has been to seek to purchase bonds with a healthy cushion and to sell positions before distress arises. We conduct independent, bottom-up credit research and take no credit for granted, regardless of its public rating. First among our investment priorities is to preserve client principal. The next several months will unquestionably test the municipal market and our investment team. We are confident both will be up to the challenge.

FOOTNOTES:

1. Congressional Budget Office's economic projection for 2020 and 2021. Available at: *https://www.cbo.gov/publication/56335*.
2. Breckinridge analysis of Bureau of Labor Statistics and Department of Labor data.
3. Transportation Security Administration, checkpoint travel numbers for 2020 and 2019. Available at: *https://www.tsa.gov/coronavirus/passenger-throughput*; Metropolitan Transportation Authority annual disclosure statement supplement, April 17, 2020. Available at: *http://web.mta.info/mta/investor/index_new.html*.
4. Per the severe scenario. "Stress-testing States: Covid-19, Moody's Analytics, April 14, 2020.
5. Hitchcock and Buswick, "Tax Filing Extensions Create Liquidity Issues for U.S. States," Standard & Poor's, April 15, 2020.
6. Thomas Aaron, "2020 pension investment losses poised to inflict material credit damage," Moody's Investors Service, March 24, 2020. Adjusted net pension liabilities (ANPLs) for 56 large U.S. public pension systems are expected to rise to $3.6 trillion from $2.4 trillion (by 50%), based mostly on lower interest rates and falling stock prices.
7. Alan Greenblatt, "Absent Fed Help, State Budgets will be the Worst in Decades," Governing.com, April 27, 2020.
8. Eric Kim, James Batterman, Raj Sanghvi, "Coronavirus: Gauging the Impact of the Economic Dislocation on U.S. State Tax Revenues," Fitch Ratings, April 2020.
9. Robin L Prunty, David N Bodek, Geoffrey E Buswick, Theodore A Chapman, Suzie R Desai, Kurt E Forsgren, Jane H, "All U.S. Public Finance Sector Outlooks Are Now Negative," S&P Global Ratings, April 1, 2020.
10. HNN Staff, "With tourism at a standstill, governor say as he's preparing for $1.5 billion in cuts to state's budget," Hawaii News Now, April 15, 2020.
11. Shelby Tankersley, "Livonia furloughs 37% of city employees in cost-cutting move amid coronavirus crisis," Hometown Life, April 24, 2020. Available at: *https://www.hometownlife.com/story/news/local/livonia/2020/04/24/livonia-furloughs-234-city-employees-amid-coronavirus-crisis/3021337001/*
12. Jay Rey, "State calls proposed spending cuts 'devastating' as it presses Washington for help," The Buffalo News, April 26, 2020.
13. S. 8166, An act to amend the tax law and the state finance law, in relation to sales tax on digital advertising; to amend the education law, in relation to zero interest undergraduate loan refinancing; and providing for the repeal of such provisions upon the expiration thereof". Available at: *https://www.nysenate.gov/legislation/bills/2019/s8166*.
14. Michael Bologna, "States May consider Gross Receipts Taxes to Cope with Virus Impact," Bloomberg Tax, April 24, 2020. Available at: *https://news.bloombergtax.com/daily-tax-report-state/states-may-consider-gross-receipts-taxes-to-cope-with-virus-impact*.
15. Affluent taxpayers are able to work from home in higher percentages than their peers. Bureau of Labor Statistics, available at: *https://www.bls.gov/news.release/flex2.t01.htm*.
16. U.S. Census of Governments, 2017, and CoreLogic: *https://www.corelogic.com/blog/2017/06/escrow-vs-non-escrow-mortgages-the-trend-is-clear.aspx*.
17. Note that essential service issuers' monopoly powers and perpetual existence also influence laws regarding municipal default and bankruptcy. In part, because most essential service issuers are monopolies, the law makes it extremely hard for them to default. The constitution's contracts clause requires that a governmental issuer show that it was "reasonable and necessary" to renege on a contract. The term "necessary" has generally been understood to mean "no other alternative." This is an extremely high bar. The law expects an issuer to raise revenue or cut spending, in any way it can. Likewise, access to Chapter 9 is predicated on an issuer establishing that it is "insolvent," a legal threshold akin to that for altering contracts. Additionally, Chapter 9 is understood as a "debt adjustment" mechanism. It is not designed to eliminate debt. In this way, the chapter adheres to the concept that a municipal issuer is a perpetual entity. The bankruptcy code is not intended to erase the debt of an entity that will continue to exist and can pay; it is supposed to assist a municipality to adjust its obligations in an orderly fashion.
18. Merritt Research Services data.
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20. Flushing Nat. Bank v. MAC, 40 N.Y.2d 731 (1976)
21. 11 USC 109(c)(3).
22. Chapman and Cutler, Municipalities in Distress, First Edition (2012).
23. National Association of State Budget Officers, Annual Fiscal Survey of the States, December 2019.
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27. Federal Reserve Flow of Funds.
28. Moody's Investors Service, State Government Medians for adjusted net pension and OPEB liabilities, September 17, 2019; Local Government medians reports, Moody's Investors Service, May 6, 2019
29. Jerome S. Fons, Thomas Randazzo, "An Analysis of Historical Municipal Bond Defaults: Lessons Learned – The Past as Prologue," Kroll Bond Ratings, November 14, 2011.
30. Bond Buyer data.
31. Estimate based on National Federation of Municipal Analyst membership history, shared with Breckinridge in April 2020.
32. The laws are: Coronavirus Preparedness and Response Supplemental Appropriations Act ($8 billion, March 6th), Families First Coronavirus Response Act ($192 billion, March 18th), the CARES Act ($2.2 trillion, March 27th), and the Paycheck Protection Program and Health Care Enhancement Act ($421 billion, April 24th). Amounts per Congressional budget office estimates. Available at: *https://www.cbo.gov/publication/56338*.
33. *https://www.wsj.com/articles/coronavirus-relief-often-pays-workers-more-than-work-11588066200*
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35. Suffolk University/USA Today poll, April 21-25, registered voters, only.
36. Jared Walczak, "State aid provisions of the Federal Coronavirus Response Bill," Tax Foundation, March 25, 2020.
37. Governors' Letter Regarding Covid-19 Aid Request, April 21, 2020. Available at: *https://www.nga.org/policy-communications/letters-nga/governors-letter-regarding-covid-19-aid-request/*; Brian Tumulty, "Neal says muni provisions will be included with state, local aid," The Bond Buyer, April 29, 2020.
38. Federal Reserve "Factors Affecting Reserve Balances," Table H.4.1, April 23, 2020 compared to March 5, 2020.
39. *https://www.federalreserve.gov/monetarypolicy/muni.htm*.
40. The SIFMA swap index fell from a yield of 1.83% on April 1st to 0.74% on April 8th, and again to 0.36% on April 15th. The Fed program was launched on April 9th.
41. Breckinridge analysis of Bloomberg data, which shows that there are $144 billion in non-pre-refunded bonds maturing between May 1, 2020 and December 31, 2020.
42. 2014 Annual Survey of Public Employment & Payroll. U.S. Census of Governments.
43. Brian Tumulty, "Neal says muni provisions will be included with state, local aid," The Bond Buyer, April 29, 2020
44. The Build America Bonds program existed for two years in 2009 and 2010. Under the program, issuers borrowed at taxable bond rates but were reimbursed by the federal government at a rate of 35% of interest costs. The program enlarged the municipal market's buyer base by expanding it to untaxed (or low-taxed) buyers like pension funds, insurance companies, and foreign entities. These buyers are often familiar with infrastructure assets and the economics of essential service providers. They are more likely to lend to weaker issuers who often spook retail buyers, even though overall credit risks are relatively modest.
45. Shruti Singh, "Muni-Bond Safeguards Weakened as Investors Scrounge for Yield," Bloomberg.com, December 20, 2019. Available at: *https://www.bloomberg.com/news/articles/2019-12-20/muni-bond-safeguards-weakened-as-investors-scrounge-for-yield*.