A Historical Loss Stress Test: How Will COVID-19 Affect Community Banks

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Times of crisis often need to be contextualized – that's why you have likely seen news articles comparing the financial fallout of COVID-19 against other crises: the Great Recession of a decade ago, Black Monday of 1987 and even the Great Depression.

A record number of unemployment claims, the worst days the market has seen in a decade, and a permanent impact that only time will reveal. While the future of the U.S. and global economies remain uncertain, businesses and organizations have to prepare.

University of Arkansas professor Timothy J. Yeager and doctoral student Cao Fang have done the same, publishing their financial analysis, "Community Bank Stress Testing for the COVID-19 Shock." Yeager and Fang conduct a **bank stress test**, a simulation that makes "an educated guess as to how banks will be affected by this crisis." Their current findings are based on a model the researchers developed to use contemporary banking data and then place that data under the stress of the Great Recession.

After using 2017 banking data for their original article, "An Historical Loss Approach to Community Bank Stress Testing," Yeager and Fang note that "More than ten years after the 2007-2009 financial crisis, community banks are well prepared to weather a similar shock." Now that the U.S. economy *is* in a similar shock, **how well can the banking industry weather COVID-19?**

The Bank Stress Test

In their original article Yeager and Fang contend that since 2009, "the Federal Reserve has greatly expanded the importance of stress testing at the largest banking organizations," but smaller community banks are not required to conduct these simulations. **Community banks** are banks with less than $10 billion in assets; Northwest Arkansas, alone, has dozens of community banks. The researchers identify and test nearly 5,000 community banks using the model they developed.

The stress test uses an "historical-loss" approach, which tests "a community bank's ability to withstand a severely adverse yet plausible shock over a five-year horizon." Yeager and Fang use up-to-date banking data and statistics and place them under the conditions of the Great Recession.

They do so "by exposing each community bank to the 90th percentile charge-off rates experienced by banks in the local geographic market of its headquarters in the years 2008-2012." A charge-off occurs when a creditor decides it cannot reasonably expect to collect a debt

and thus charges it off its books. Essentially, **if a bank, in its current standing, can withstand the Great Recession today, they're not doing too terrible**.

Each community bank is assigned to one of either 46 rural or 66 urban markets to assess the unique conditions to be put under for the study, based on its geographic location. Doing so affords more accurate data for the researchers to capture realistic statistics; urban markets, for example, tend to have higher charge-off rates than rural markets.

The model also places *all eleven different loan types* on these charge-off rates, which, the researchers note, is highly unlikely to occur in reality, but putting these banks under that level of stress affords the ability to accurately predict their strength in the aggregate.

That strength is measured by the "**Tier 1 Leverage** (T1Lev) ratio, or Tier 1 capital divided by Tier 1 average assets. Prompt Corrective Action (PCA) requirements set minimum capital ratios because, especially during financial crises, banks need capital to absorb losses. If that ratio falls below 2%, PCA guidelines define the bank as "critically undercapitalized," and the bank risks insolvency.

Yeager and Fang also test for "at-risk" banks by using a 6% threshold. This threshold determines which banks may struggle quite a bit in a recession but might not necessarily go under.

The results of the original study using 2017 data are optimistic: "**Banks are much better positioned for a severe downturn [now] than they were in 2007**." The reason for this better positioning is "because the riskiest banks are no longer in business, and construction and land development (CLD) loan concentrations are lower."

In their simulation, only 153 or the nearly-5,000 banks' T1Lev ratio fell below the 2%, and only 563 banks fell below 6%. There are a number of explanations for this performance: more stringent regulation, independent bank response to the recession and even simply greater awareness of risks.

But, as Yeager and Fang note, the simulation is just a simulation: "Out-of-sample testing of our model is not yet possible because the parameters are based on recent experience and, fortunately, banks have not experienced another shock like the 2007-2009 financial crisis." But then, **COVID-19 struck and markets dropped**.

COVID-19 and the Stress Test

"Arguably, the uncertainty associated with this shock is greater than the uncertainty experienced in 2008," Yeager and Fang write. "There is no modern precedent for a global shock that has disrupted such a large swath of households and firms."

COVID-19 presented another opportunity to use the community bank stress test. The test allows banks, and even the general population, to visualize the potential damage of the

financial crisis and prepare for the aftermath. “With preparation, damage to banks’ balance sheets can be reduced, allowing them to continue to lend to creditworthy households and businesses **to promote economic recovery**.”

The shape of the U.S. business cycle remained one of the most significant differences between the Great Recession downturn and the forecasted COVID-19 downturn that needed addressing. The original *financial crisis scenario* accounts for a **U-shaped cycle**, implying that the economic damage will be slow to recover. The *COVID-19 scenario*, though drastic, will likely have a quicker recovery.

“Analysts expect a **V-shaped business cycle** resulting from the COVID-19 shock because once households and employees can move freely again, **demand for goods and service will resume and most businesses will return to normal production levels quickly**.”

In order to present accurate results for the “five-year period” after 2019, Yeager and Fang update the charge-off rates from the Great Recession period to reflect a V-shaped cycle. The researchers use the actual 2019 rates, double the rates from 2008 and apply them to 2020, and then apply the 2009 rates to 2021. For the rest of the years (2022-2024), the charge-off rates are set at 0%. “The doubling of 2008 charge-off rates reflects the more rapid economic deterioration in 2020 relative to 2008. The actual 2009 charge-off rates capture the lagged effect on bank performance… Finally, the zero charge-off rates thereafter reflect the quick recovery.”

The economy has, to a large extent, shut down, making the financial impact immediate and more severe, but recovery will likely be more rapid.

Community Banks in the COVID-19 and Financial Crisis Scenarios

The results, though a little harrowing at first, are optimistic: “**Community banks are projected to fail at a faster pace in 2020 and 2021 from the COVID-19 scenario**.” Yeager and Fang’s model predicts that **50 community banks** will fall below the 2% T1Lev ratio by 2021, nearly **double** the projected failures from the financial crisis scenario.

“However, banks weather the COVID-19 scenario much better than the financial crisis scenario over the five-year horizon because the economic recovery is much quicker.” The stress-test predicts that **“just 68 banks are projected to fail by 2024 in the COVID-19 scenario.”** Five years into the financial crisis scenario, however, 237 banks are projected to fail.

Yeager and Fang also predict that **262 community banks under the COVID-19 will be “severely distressed by 2021,”** falling below the 6% T1Lev ratio. That number is higher than the 140 banks projected to become severely distressed in the first two years from the financial crisis scenario. Given, though, the projected quick recovery and the V-shaped business cycle of the COVID-19 scenario, by 2024 only 289 banks will be under severe distress, as opposed to 637 banks in the financial crisis scenario.

They also offer a profile of what these banks, typically, look like:

> The average bank projected to become severely distressed from the COVID-19 scenario is larger than the median community bank and operates primarily in **urban markets**. The mean severely distressed bank holds assets of $635 million at year-end 2019, and 87% of the banks are headquartered in urban markets… 159 (61%) of them are headquartered in the five states of Florida, Michigan, Illinois, Georgia and Minnesota.

Times are tough, and they will be for some time. Yeager and Fang predict that the economy will struggle, likely for a couple of years. That said, "whether the business cycle is V-shaped or U-shaped, **banks are better prepared to absorb an adverse shock than they were in 2007**."

The historical-loss model Yeager and Fang have developed allows banks and even the general population not only to prepare for the worst but to be optimistic about the future.

COVID-19 is scary, but it is not 2008. Community banks have adapted since the Great Recession: "Even if the current economic shock is prolonged, the banking industry should fare better than it did between 2008 and 2012."