Pandemic Economics: What Bankers Need to Do to Beat COVID-19's Shock and Awe Attack

New IBISWorld Tools to Manage Novel External Shocks

By Rick Buczynski, PH.D.

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Introduction

"Truth is ever to be found in simplicity, and not in the multiplicity and confusion of things"

Isaac Newton

The COVID-19 pandemic has thrust an unexpected, unprecedented shock into the economy, exacerbated by a credit cycle teetering between late expansion and early contraction. While the situation embodies unique risks, the calamity begs for a commonsense procedure to deal with the crisis. In response to commercial bank demands to identify mounting risks tied to specific lines of business, IBISWorld has developed a process for connecting loan exposures to economic shocks employing a stepwise algorithm. The procedure is engrained in a tool that is currently employed by dozens of our clients. In this paper we have also assessed some of the key risks facing banks as facilitated by the tool. Those familiar with our "Rogue Waves" article, published in the February 2020 RMA Journal, will see that many of the combustible risk factors we identified are eerily ablaze.

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1. The Challenge? Uncertainty and Confusion

If someone told you as recently as January that the economic and financial world would be brought to its knees by a virus, would you have believed it? Would you concur if informed earlier this year that major, reputable forecasters would be calling for a serious recession commencing immediately, with some dystopians predicting that the collapse would rival the Great Recession or even the Great Depression? Would you have been shocked if you were informed that real GDP in America would sink 4.8% in the first quarter or in awe if told that Eurozone would retreat by a stunning 14.4%? How about if you were told that more than 36.0 million American workers would apply for unemployment benefits in a matter of a couple of months with an unemployment rate nearing 15.0%?

We have all been taken aback as a new lexicon has emerged virtually overnight—social distancing, distributed employees, essential/nonessential businesses. Even more serious contributions include net reproduction rates, case fatality rates and flattening the curve.

The unending challenge for all decision makers is, and always has been, uncertainty. As J. Paul Getty said, "Without the element of uncertainty, the bringing off of even the greatest business triumph would be dull, routine and eminently unsatisfying." However, the Chinese curse—"May you live in interesting times"—is alive and well, and perhaps it is an understatement during these trying times. And, unlike during Getty's times, we live in a world of nonstop, real-time news updates, special reports, webinars, podcasts and misinformation, much of this due to the internet. This further lays the seeds of uncertainty, confusion and paralysis by analysis.

A commercial bank's portfolio and risk managers face a bevy of key decisions and actions to execute and administer at a breathtaking pace. During the present crisis, they are also inundated by the seemingly endless portal of "information" that persistently hoses us all with "strategic intelligence." The abundance of intelligence can overwhelm and suffocate, both in quantity, unknown quality and, most importantly, relevancy to your organization. How many meetings have bankers been coerced to attend for discussion of COVID-19 issues that have limited relevance to their organization? What about the teleconferences to demystify the fog of war government announcements that change with the frequency of daily weather forecasts?

Of course, by the time this piece is published, the malaise and far-reaching consequences will likely morph into a stream of consciousness pouring into new rivulets coursing off into a variety of directions. Major economic forecasters, as they did during the onset of the Great Recession, are ratcheting down their forecasts continually, at times, almost weekly. After all, physicist Stephen Hawkins observed, "I have noticed even people who claim everything is predestined and that we can do nothing to change it, look before they cross the road." Well-respected epidemiologists are hamstrung by a lack of credible data and a clearly novel virus frustrating efforts to arrive at a reasonably clear consensus of what the future holds. Historical models are impotent, just like during the last economic crisis.

Even skilled bank analysts, awash with data and equipped with a horde of post-Great Recession models, are stymied. The informational advantage of analysts over senior managers is waning. Solid research-supporting analytics such as Ali, et al[1], argue that this advantage "is more likely to exist for firms that operate in industries that are characterized by more uncertain operating environments due to industry-level shocks. We find that for firms in such industries, analysts provide more accurate forecasts than managers."

Although we concur with this finding, the current shock is so traumatically pervasive that traditional forecasting has lost its luster. We submit that seasoned managers with logical intuition, focused dialogue and a well-defined process will prevail. Right-side brain "expert judgment," as professed by Pink[2], Savage[3] and Abrahams/Buczynski[4], is now in play.

Relevance and commonsense are the operatives:

- What is important to my organization?
- What sources of information/analysis are trustworthy and relevant?
- How can we define our priorities?
- What should an actionable process look like?
- What is the endgame?

This paper covers four main topics:

1. First, we consider some of the nuances of the pandemic, including the effects of social distancing and nonessential business policies.

2.Next, we move on to define a stepwise procedure on how to deal with unexpected external shocks within the context of the novel coronavirus. The procedure is engrained in an IBISWorld tool that is currently employed by dozens of our clients.

3.Then, we identify additional pressure points of the COVID-19 "Rogue Wave" and review pertinent time-tested credit risk factors, while analyzing new risks that have emerged since the Great Recession.

4.Finally, we evaluate some esoteric factors unique to the crisis, such as the challenge and timing of CECL (current expected credit losses), issues for supply-chain financing and the risks involved in the Paycheck Protection and Main Street Lending Programs.

2. Considering the Nuances of the Pandemic: Effects of Social Distancing & Nonessential Business Policies

As of this writing, there are obvious business segments under siege, despite growing support from federal and state authorities. Much has been analyzed and reported, including work by IBISWorld[5], Wells Fargo[6] and, regarding general default rates, a paper in the RMA Journal[7].

Government officials have adopted suppression tactics to combat the spread of the novel coronavirus; the best strategies for minimizing the toll of the virus involve widespread and extended social distancing and restricting "nonessential businesses." Although policies vary from state to state and are evolving rapidly, we have constructed a list of NAICS-based industries that are vulnerable to these strategies.

To this list, we have added two KRIs (key risk indicators) and merged them with the list of the industries most susceptible to social distancing and "nonessential business" restrictions. The first KRI is the historical volatility of an industry defined as a through-the-cycle variance in IBISWorld industry risk scores[8] during the 2006-19 period. IBISWorld industry risk scores are a marriage of Porter's Five Forces[9] and a top-down macroeconomic approach similar to the Fed's stress-tests. The second KRI defines the trend of the IBISWorld industry risk scores prior to the outset of the COVID-19 debacle.

Together these metrics provide insights as to how the virus's induced shock differs from previous calamity-causing triggers. The point here is that a bank's warehoused historical KPIs (key performance indicators)—things like delinquencies and charge-offs—have become less useful in driving credit models that support critical decision-making. Models and risk mitigation systems work splendidly in times of relative normalcy, but can fail catastrophically when they are needed most. Like now.

A selected sample of this merged list appears in Table 1. It is not intended to be an exhaustive laundry list. However, it is useful for identifying which industries are affected most by social distancing policies because, in theory, these industries can potentially recover quickly once restrictions are loosened. Nevertheless, it is pertinent to note that some segments are populated by small firms, and only the financially healthiest operators may survive.

Table 1 Selected Examples of Industries Impacted by Social Distancing and Nonessential Business Declarations

Industry	Industry Description	NACIS CODE 2017 6 Digit	Historical Industry Volatility	Risk Trend Prior to this COVID-19 Crisis
Transporation/Travel-Related	Airlines	48111	Medium	Increasing
Transporation/Travel-Related	Charter Flights	481211	Very Low	Increasing
Transporation/Travel-Related	Taxi & Limousine Services	485310	Very High	Increasing
Transporation/Travel-Related	Sightseeing Transportation	487110	Medium	Increasing
Transporation/Travel-Related	Travel Agencies	488111	Medium	Increasing
Transporation/Travel-Related	Tour Operators	561520	Medium	Increasing
Transporation/Travel-Related	Trade Show & Conference Planning	561920	Low	Increasing
Transporation/Travel-Related	Hotels & Motels	721110	Medium	Increasing
Transporation/Travel-Related	Bed & Breakfast & Hostel Accommodations	721191	Medium	Increasing

Industry	Industry Description	NACIS CODE 2017 6 Digit	Historical Industry Volatility	Risk Trend Prior to this COVID-19 Crisis
Entertainment/Recreation	Movie Theaters	512131	Medium	Steady
Entertainment/Recreation	Convention & Visitor Bureaus	561591	Medium	Increasing
Entertainment/Recreation	Sports Franchses	711211	Medium	Increasing
Entertainment/Recreation	National & State Parks	712190	Medium	Increasing
Entertainment/Recreation	Concert & Event Promotion	711310	Very Low	Increasing
Entertainment/Recreation	Historic Sites	712120	Medium	Increasing
Entertainment/Recreation	National & State Parks	712190	Medium	Increasing
Entertainment/Recreation	Amusement Parks	713110	Medium	Increasing
Entertainment/Recreation	Lotteries & Native American Casinos	713290	Medium	Increasing
Entertainment/Recreation	Golf Courses & Country Clubs	713910	Low	Steady
Entertainment/Recreation	Casinos Hotels	721120	High	Increasing

Source: IBISWorld

Table 1 Selected Examples of Industries Impacted by Social Distancing and Nonessential Business Declarations

Industry	Industry Description	NACIS CODE 2017 6 Digit	Historical Industry Volatility	Risk Trend Prior to this COVID-19 Crisis
Retail/Restaurants	Musical Instrusment & Supplies Stores	451140	Low	Steady
Retail/Restaurants	Department Stores	452210	Very High	Steady
Retail/Restaurants	Dollar & Variety Stores	452319	Medium	Steady
Retail/Restaurants	Florists	452110	Medium	Increasing
Retail/Restaurants	Chain Restaurants	722511	Medium	Steady
Retail/Restaurants	Single Location Full-Service Restaurants	722511	Medium	Increasing
Retail/Restaurants	Fast Food Restaurants	722513	Medium	Increasing
Retail/Restaurants	Coffee & Snack Shops	722515	Medium	Increasing
Retail/Restaurants	Food Service Contractors	722310	Medium	Increasing
Retail/Restaurants	Street Vendors	722330	Medium	Steady
Retail/Restaurants	Bars & Nightclubs	722410	Medium	Steady

Industry	Industry Description	NACIS CODE 2017 6 Digit	Historical Industry Volatility	Risk Trend Prior to this COVID-19 Crisis
Education	Private Schools	611110	Medium	Steady
Education	Colleges & Universities	611310	Medium	Increasing
Education	Trade & Technical Schools	611511	Very Low	Steady

Industry	Industry Description	NACIS CODE 2017 6 Digit	Historical Industry Volatility	Risk Trend Prior to this COVID-19 Crisis
Other Services	Hair & Nail Salons	812111	Medium	Steady
Other Services	Tanning Salons	812199	High	Steady
Other Services	Parking Lots & Garages	812930	Medium	Increasing
Other Services	Religious Organizations	813110	Medium	Steady

Source: IBISWorld

2.A Transportation/Travel-Related

Prior to the COVID-19 crisis, many industries in this group, including airlines, charter flights and taxi/limousine services, suffered from increasing stress because of weakening demand. Moreover, taxi/limousine services were prone to high volatility and competition from Uber and Lyft. But even Uber and Lyft are suffering because of social distancing and nonessential business policies; delivering food cannot supplant revenue lost from moving fewer passengers. Travel-related businesses such as hotels and motels, sightseeing transportation, tour operators and travel agencies are in the same boat as their pre-crisis risk trajectory was also on the rise.

Note that travel-related industries are highly discretionary spends. Thus, these industries are not necessarily going to bounce back quickly once social distancing restrictions are relaxed.

Cruise lines are an interesting case as they possess potentially positive drivers moving forward; in particular, aging populations that have accrued wealth—Americans are by far their largest clientele.

Stumbling cruise line Carnival raised nearly $1.8 billion in early-April through a convertible-bond sale. According to reports in the Wall Street Journal, Carnival was previously in discussions with hedge funds, including Apollo Global Management and Elliott Management, regarding a high-interest loan. Evidently, with the recent bond offering, there are investors that see this business segment as recovering at some juncture

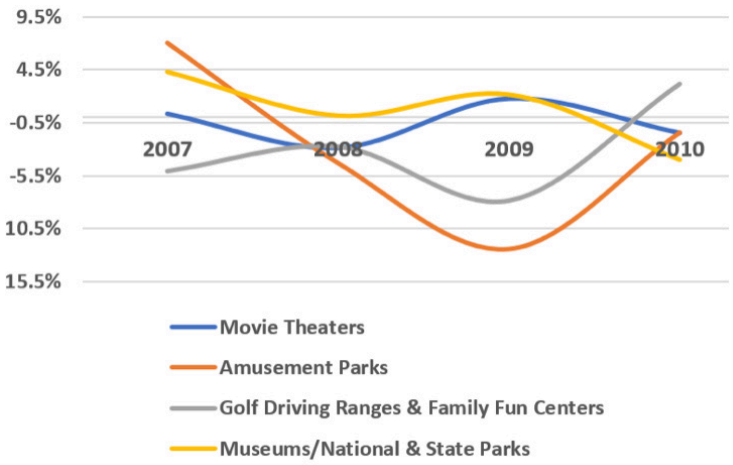
2.B Entertainment/Recreation

The COVID-19 crisis has spawned an across-the-board tsunami, rolling over business segments already under water due to weakening economic growth in the US and the rest of the world through most of 2019. Concert and event promotion, amusement parks and casinos have been particularly hard-hit. Not only have entertainment and recreation establishments suffered from social distancing and nonessential business policies, but they are also highly discretionary spending-dependent, one of many of our “Rogue Wave” red flags.

2.B Entertainment/Recreation Continued

Figure 1 looks back at the previous cycle. Movie theaters and museums/national and state parks held up reasonably well during the 2008-09 recession compared with amusement parks, golf driving ranges and family fun centers. This is clearly not the current situation.

Figure 1 Revenue Growth: Family Entertainment and Recreation During the Previous Downturn



Source: IBISWorld

The obvious stress of social distancing on sports franchises and major college athletic competitions radiates locally, reminiscent of the US federal government shutdown of late-2018 that extended through early-2019. Several attributes of the shutdown, outlined in a special report released by IBISWorld in January 2019[10], are similar to those evident now in the suspension of large-scale arena hosted events:

- The greatest risks are clustered locally; talk about concentration pools.
- The impacts will be felt the heaviest in retail and restaurants where these clusters exist. Small businesses will be especially vulnerable.
- Finally, think about consumer lending exposures in vulnerable locations, such as mortgages, credit cards and auto loans.

Look out for the geographic areas in your footprint that have significant exposure to large-scale arena-hosted events. Businesses, their workers and their contractors are at risk. Latent risks associated with unmapped, underestimated concentrations are another risk to be avoided.

Are there exceptions in this business space? Sure. Netflix added a massive 15.8 million subscribers in the first quarter of 2020. Can it galvanize this gain in an increasingly competitive industry with the likes of Disney breathing down its neck? This is yet to be seen.

2.C Brick-and-Mortar Retail/Restaurants

These businesses are among the biggest casualties of social distancing and prohibitions on the selling of nonessential goods, especially brick-and-mortar retail. Department stores, a volatile industry struggling for survival as the share of online retail sales has nearly tripled over the past 10 years[11], continue to get pounded, as do many of the shopping malls that surround them. JCPenney has recently missed a $12.0 million interest payment and applied for Chapter 11 protection in mid-May. Think about once-venerable Sears and Macy's. Plus, many shopping malls have been acquired by private equity firms which find themselves at the mercy of evaporating rental income. What an ongoing contagion!

Even powerhouses such as Amazon, Walmart, Costco and Target have been barred from selling nonessential items, such as clothing and electronics. Additionally, they have been hard-pressed to adapt to an accelerating shift toward online orders, plagued by a shortage of workers and systems stressed beyond capacity. This simply reflects market share growing pains that have hastened due to the crisis. Nonetheless, these companies are still good bets going forward.

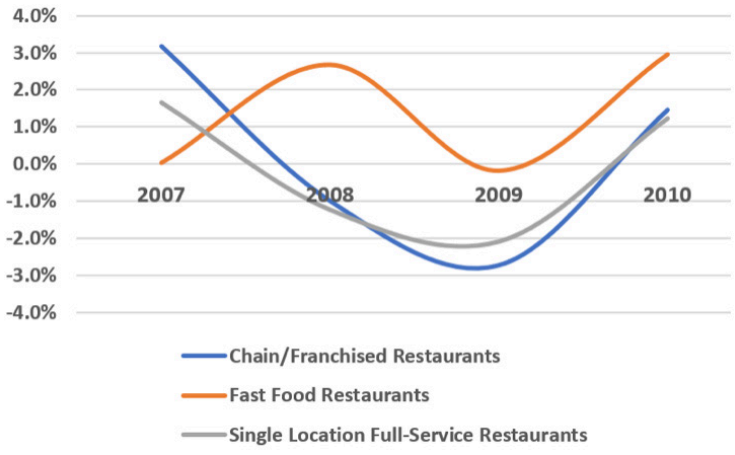
Two additional observations. One is that many of these businesses are in the declining phase of their industry life cycle; case-in-point, we have been talking about the demise of department stores for decades. Another is that, often serious downturns accelerate the process of decline, which is likely to haunt brick-and-mortar businesses, both big and small.

As portrayed in Figure 2, fast food restaurants fared relatively well during the previous recession; many were mom-and-pop shops. Chain/franchised establishments dove fast and furious.

Do not expect history to repeat itself here—delivering food, often via third parties, rather than serving food, is financially disastrous. Profit has eroded overnight. Mom-and-pop shops are truly at-risk.

Restaurants that survive the crisis are likely to recover solidly once social distancing restrictions are lifted. But many chain restaurants are closing restaurant locations, such as Subway, Pizza Hut and Burger King to name a few. This was underway before the pandemic.

Figure 2 Revenue Growth During the Last Cycle: Restaurants



Source: IBISWorld

2.C Brick-and-Mortar Retail/Restaurants Continued

The key here is understanding granularity. There are different types of restaurants, and they will behave differently down the road. So? Pay attention.

Lastly, at-risk businesses also include bars and nightclubs and weary street vendors, at a level beyond what was experienced during the last cycle. Brick and mortar businesses were deeply challenged even before the advent of COVID-19, facing menacing market penetration from online rivals. Survival, much less recovery, will be dependent on fundamental shifts in the way goods are delivered. Online, drive-throughs and walk-ups will be the methods of choice moving forward. Business will have to adapt to this "new normal" for any prayer of survival.

2.D Education and Other Services

Many industries within the educational services group suffer enormously during economic contractions. A key example are colleges and universities whose tuition revenues sank by nearly 40.0% during the Great Recession. Social distancing is clearly compounding this challenge, and in many parts of the country it is unclear when campuses will reopen, dimming revenue prospects for on-campus housing. Adding to these woes, many students are suing colleges for coronavirus-related refunds, arguing that they are still paying high tuitions for what now amounts to an online education.

Even trade and technical schools that fared relatively well during the last slump are vulnerable now.

Also, very hard-pressed are private primary and secondary schools (schools teaching K through high school grades). One of the key drivers affecting these schools is the number of relatively wealthy households living nearby. In some locales, these families weathered the effects of the Great Recession reasonably well; but this is all dependent on the sources of family income. Nonetheless, during the 2007-10 cycle, there was an exodus from expensive private schools to public facilities in many parts of the country.

The future health of private schools will clearly hinge on the timing and shape of the recovery, which is highly uncertain now. Day care centers, although technically categorized by NAICS as belonging to the healthcare group, are very much in the same boat. Similar business drivers. Similar clientele. Similar risks.

The other service category (NAICS 2-digit code 81) is a morass of industries that are often uncorrelated. It is populated by a preponderance of businesses that some officials have declared nonessential. For example, hair salons held their own during the Great Recession, but not this time around. Donation-dependent entities, such as charities and religious organizations, are hard-hit when recessionary pressures mount, and social distancing will only worsen their outlook.

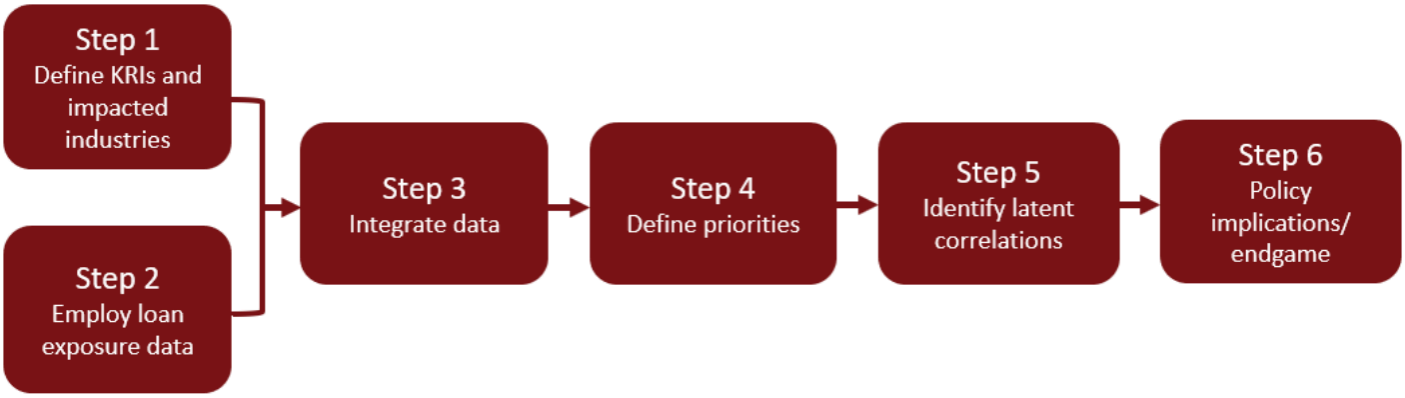
2.D Education and Other Services Continued

As a final note, one “other industry” that is going to get hammered is municipalities. Not much attention has typically been paid to this sector as historical default rates are low. However, sources of revenue, from locally collected taxes to state distributions, are going to be seriously impaired by the sudden stop in the economy and anticipated gradual recovery. Government programs designed to help municipalities have been slow to get off the ground and, in any event, are geared to the top 50 cities. Mid-size and smaller entities may be left to their own devices to get back on their feet.

3. Managing External Shocks by Defining a Commonsense Process: The Case of the COVID-19 Pandemic

Here we define a stepwise procedure on how to deal with unexpected external shocks from the onslaught of the new coronavirus. A key element of the process involves setting decision-making priorities germane to an individual bank that are based on relative exposures. As mentioned above, this procedure is embedded in a newly developed IBISWorld tool that is in use by multiple clients. A summary follows with a schematic in Figure 3.

Figure 3 A Procedure for Managing Severe External Shocks



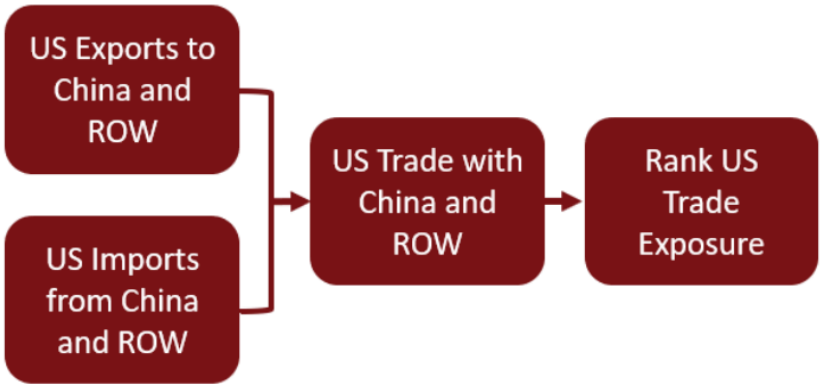
Source: IBISWorld

- **Step 1 Define appropriate KRIs**: Identify the most vital and pertinent key risk indicators affected by COVID-19 and the NAICS-based industries that are most affected.
- **Step 2 Employ loan exposure data**: Using NAICS industry mapping tables, the bank extracts loan exposure data by industry
- **Step 3 Integrate data**: Combine KRI and exposure data.
- **Step 4 Define priorities**: The bank sets actionable priorities by rank ordering highest to lowest exposures. We suggest starting with the top 15.0-20.0% of your portfolio and work down from there.
- **Step 5 Identify latent correlations**: Pinpoint key upstream and downstream concentrations for each industry and calculate the total exposure summing both direct and supply chain exposures.
- **Step 6 Policy implications/endgame**: The bank uses the output to manage concentration risks, refine grading models, support capital planning and stress-testing and plan for business development opportunities when the crisis subsides

Step 1 Define Appropriate KRIs and Impacted Industries

When the COVID-19 crisis began to gain attention, the immediate concern was trade with China. As the crisis quickly spread to other major American trading partners (the rest of the American trading world or ROW), the trade exposure issue broadened, involving both export and import markets. Using official data, we rank US trade exposure by industry in Figure 4.

Figure 4 Ranking US Trade Exposure by Industry



Source: US International Trade Commission, IBISWorld

A specific example of total trade exposure with China, using official data, is found in Table 2, which includes both exports and imports, sorted by degree of exposure.

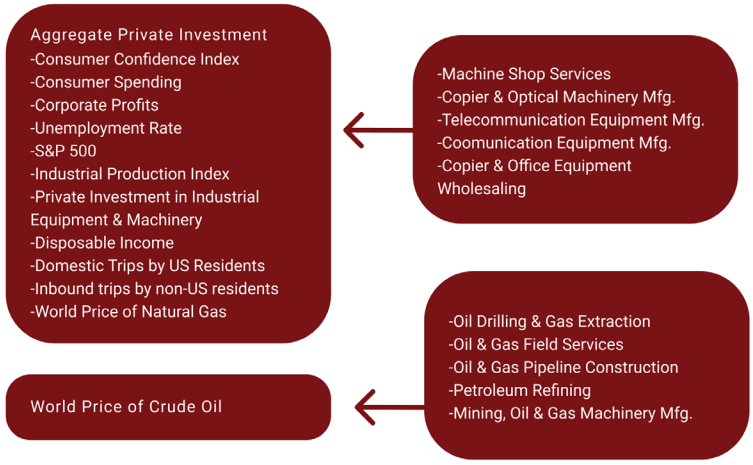
Table 2 Total Trade Exposure to China

USITC NAICS Code	NACIS Industry Description	Trade Exposure to China	Level of Exposure
33993	Dolls Toys & Games	89.6%	Very High
33521	Small Electrical Appliances	81.5%	Very High
31621	Footwear	78.9%	High
31519	Other Knit Apparel	68.7%	High
33512	Lighting Fixtures	68.4%	High
33421	Telephone Apparatus	68.1%	High
33992	Sporting & Athletic Goods	68.7%	High
33422	Radio/TV Broadcast/Wireless Communication Equip	64.1%	High
31511	Hosiery & Socks	62.9%	High
33999	Other Manufactured Commodities	61.8%	High
31499	All Other Textile Products	61.0%	High
31412	Curtains & Linens	60.8%	High
32711	Pottery Ceramics & Plumbing Fixtures	60.4%	High
32619	Other Plastics Products	59.9%	Medium
33221	Cutlery & Handtools	58.0%	Medium
31491	Textile Bags & Canvas	57.7%	Medium
33411	Computer Equipment	55.6%	Medium
33711	Wood Kitchen Cabinets & Countertops	54.4%	Medium
31599	Apparel Accessories	54.0%	Medium

Source: US International Trade Commission, IBISWorld

Trade is not the only KRI. As COVID-19's dominoes fell, other macro-drivers came into play. Figure 5 delineates additional KRIs and, for aggregate private investment and crude oil prices, shows the top industries that are impacted.

Figure 5 Other Selected KRIs and the Major Industries They Impact

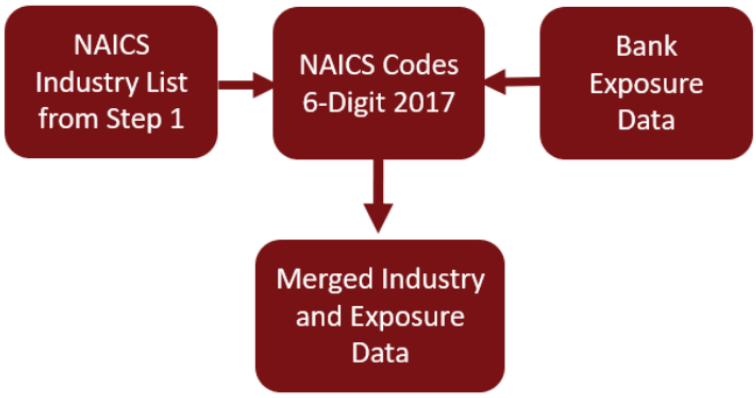


Source: IBISWorld

Steps 2 and 3 Employ Exposure Data and Integrate with the Vulnerable Industries List

Using NAICS mapping tables, banks extract exposure data to populate the industry list compiled in Step 1 using NAICS as the epicenter of a relational database. We have used the most current version of NAICS (NAICS 2017) as the basis for our dot-connecting, but other available NAICS mappings, and even SIC and GIC concordances, exist for those relying on them. Most banks use line-of-business aggregations, rolling-up 5- or 6-digit NAICS-based industries. We suggest using a bank's relative exposures to aggregate data when rolling up.

Figure 6 Retrieving Exposure Data for Each Industry Using Mapping Tables



Source: IBISWorld

Step 4 Define Priorities

Set priorities according to size of loan balances outstanding and commitments for each industry. We suggest narrowing down the list to the top 15.0-20.0% of total exposures initially. Table 3 presents data from a theoretical bank following this algorithm.

Table 3 A Theoretical Bank's Exposure by Industry

IBIS Code	NAICS Code 2017 6 Digit	NACIS Industry Description	Outstanding Loans	Credit Loans	Total
33631	336310	Automobile Engine & Parts Mfg.	$1,650,980	$670,450	$2,321,430
72111	721110	Hotels & Motels	$1,700,670	$300,350	$2,001,020
48211	482111	Rail Transportation	$1,550,000	$275,660	$1,825,660
32622	326220	Hose & Belt Mfg.	$1,412,500	$350,500	$1,763,000
23622a	236220	Commerical Building Construction	$1,198,750	$350,250	$1,549,000
33422	334220	Communication Equipment Mfg.	$1,102,230	$400,250	$1,502,480
33721	337211	Office Furniture Mfg.	$770,450	$550,255	$1,320,705
33521	335210	Small Electrical Appliances	$1,245,600	$20,350	$1,265,950
21311	213111	Oil & Gas Field Services	$950,875	$295,400	$1,246,275
56151	561510	Travel Agencies	$860,550	$252,560	$1,115,110
42433	424330	Women's/Children's Apparel Wholesaling	$950,250	$80,500	$1,030,750
56152	561520	Tour Operators	$775,600	$225,000	$1,000,600
72112	721120	Casino Hotels	$650,670	$155,050	$805,720
42432	424320	Men's & Boys' Apparel Wholesaling	$665,800	$100,255	$766,055
33512	335121	Lighting Fixtures	$455,255	$225,005	$680,230
45392	453920	Art Dealers	$650,500	$10,250	$660,750
33331	333316	Copier & Optical Machinery Mfg.	$323,875	$250,00	$573,875
31621	316210	Foodware	$387,920	$25,685	$413,605
56159	561591	Convention & Visitor Bureaus	$367,000	$10,250	$377,250
33421	334210	Telecommunication Networking Equip Mfg.	$233,500	$50,000	$283,550

Source: IBISWorld

Step 5 Identify Other Exposures: The Supply Chain

This step is designed to recognize both upstream and downstream exposures augmenting the results from Step 4. To illustrate, we consider a high exposure industry in the above example: automobile engine and parts manufacturing; total direct exposure is $2,321,430. But what about bank exposures to the industry's key markets (i.e., its downstream demand)? In this example, Table 4 discloses the three industry segments where our theoretical bank has downstream exposure, totaling $656,100

Table 4 A Theoretical Bank's Downstream Exposure for Automobile Engine and Parts Manufacturing

IBIS Code	NAICS Code 2017 6 Digit	NACIS Industry Description	Bank Exposure
33611a	336111	Car & Automobile Mfg.	$235,000
33611b	336112	SUV & Light Truck Mfg.	$225,650
33612	336120	Truck & Bus Mfg.	$195,450
		TOTAL	$656,100

Source: IBISWorld

Likewise, the exercise continues in Table 5, which identifies the bank's exposure totaling $449,650 for the Automobile Engine and Parts Manufacturing industry's principal suppliers.

Table 5 A Theoretical Bank's Upstream Exposure for Automobile Engine and Parts Manufacturing

IBIS Code	NAICS Code 2017 6 Digit	NACIS Industry Description	Bank Exposure
33211	332111	Metal Stamping & Forging	$230,200
33351	333511	Metalworking Machinery Mfg.	$219,450
		TOTAL	$449,650

Source: IBISWorld

Finally, Table 6 sums up the bank's direct, downstream and upstream exposures for a grand total of $3,427,180.

Table 6 A Theoretical Bank's Total Exposure for Automobile Engine and Parts Manufacturing

IBIS Code	NAICS Code 2017 6 Digit	NACIS Industry Description	
33631	336310	Automobile Engine & Parts Mfg.	
Total Direct Exposure ($)			$2,321,430
Downstream Exposure ($)			$656,100
Upstream Exposure ($)			$449,650
GRAND TOTAL			$3,427,180

Source: IBISWorld

Although this illustration is straightforward, the moral of the story is that exposures might reside in different LOBs (lines of business) as latent risks. Often a bank will have a CRE (commercial real estate) development book and, separately, a C&I (commercial and industrial) exposure to construction contractors such as electricians, painters and plumbers. Other latent exposures reside in the credit cards, auto loans and mortgages extended to the construction workers and commercial lines and loans held by materials suppliers of the contractors (e.g., lumber yards, paint stores, construction equipment dealers, asphalt plants, stone quarries, etc.). Hidden concentrations like this were commonplace during the previous financial crisis.

Step 6 Policy Implications

Among the policy implications to consider.

- **Managing concentration risks**: Identifying pockets of risk pools, assessing limits and determining appropriate risk pricing of loan segments, while adjusting risk appetite statements, which should be very granular in this situation. Also, performing sensitivity analyses (using current data and not relying on stock assumptions) on those segments and adjusting risk ratings as warranted.

- **Refining grading models**: Providing updates for dual risk rating systems, early warning systems, heat maps and commercial scorecards. Models that are primarily based on the collection of historical financial data and other backward-looking metrics will suffer over the next several quarters. Consideration should be given to using short-term and medium-term projections (e.g., modification and extension of the 13 week cash forecast common with problem borrowers), as well as model components that are based on factors external to the company itself (e.g., industry scores that are based on industry factors and not an aggregation of the financial metrics in a bank's portfolio).

- **Capital planning and stress-testing**: Reevaluating economic capital, regulatory capital requirements, ALLL (allowance for loan and lease losses) and CECL. Scenario analysis.

- **Business development**: Identifying safe and sound lending opportunities under times of stress. Despite the widespread shutdown, there WILL be opportunities as stronger companies secure their advantage.

- **Problem asset management**: When loan modifications are warranted what should they look like? They should follow accounting for TDR (troubled debt restructurings) using either Section 4013 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act or the regulatory Interagency Statement of April 7, 2020. You will need to modify your standard problem loan methodologies as companies strive to recover.

- **Accounting**: There will be a need to reconcile GAAP (generally accepted accounting principles) with regulatory accounting.

4. Additional Pressure Points of the COVID-19 "Rogue Wave" Shock

Several factors that we evaluated in our February 2020 "Rogue Waves" article are worth revisiting. These time-tested cautionary warnings always matter, regardless of where we sit in an economic or credit cycle, but take on even greater weight during recessions.

- **IGNORING the attributes of discretionary versus nondiscretionary spending**: Industries dependent on discretionary spending (luxury goods) are more vulnerable to downturns than nondiscretionary spending (necessities). With unemployment claims soaring and uncertainty dampening consumer confidence, recovery in discretionary expenditures is likely to be sluggish, as household savings rates rise in response to recent run ups in auto and credit card debt along with an increase in student loans.

- **FORGETTING the perils of small retail trade business exposures**: Be cautious of obligors that operate in a highly competitive environment, are not "price makers," have low barriers to entry, are living on thin margins and are located next to a suffering "anchor" retailer. Many small food service companies and mom-and-pop retail shops will not survive the current crisis. In short, the "retail apocalypse" marches on with increased vigor.

- **FORGETTING the obvious dangers and opportunities in an industry's life cycle**: End of cycle financial stress can accelerate the demise of industries in the declining phase of their life cycle, such as department stores, newspapers and broadcast media. Anyone remember newsstands and candy stores?

- **FAILING to recognize the threat of substitute products or services**: Watch for these red flags: when a consumer's switching costs are low; a substitute product or service is highly price competitive; the substitute product or service is of equal or superior quality. With a myriad of supply chain gaps emerging, this factor's influence has grown. Once again, single-product outlets, such as yogurt shops, smoothie bars, hat and cap stores and toy stores are vulnerable to larger multi-product big box retailers selling the same products at similar quality and at lower prices. It should be noted that perceived threats of substitutes could start feeding on themselves. For example, hotels have been under threat from companies that provide alternative accommodations by using people's residences or vacation homes or investment homes. Even prior to the pandemic, there was a concern about the quality of cleanliness in these facilities. That will get magnified as hotels will be making cleanliness a top priority and selling point. Also, the clientele for these types of accommodations tend to stay longer and fly in. Flying is likely to be slow to recover and bookings could suffer as a result.

- **UNDERESTIMATING the significance of capital spending cycles**: CAPEX (private nonresidential fixed investment) is historically hyper-sensitive to both upturns and downturns in economic cycles, rendering it highly volatile. Be vigilant for signs of stress in industry segments that are correlated to CAPEX, e.g., industries tied to machinery and equipment, commercial construction (especially industrial infrastructure), software and systems and training.

- **OVERLOOKING one of a banker's greatest fears: volatility**: Sudden, unexpected change is the bane of banks. Be careful not to underestimate risks associated with historically volatile, idiosyncratic industry groups that have little correlation with economic cycles (e.g., commodity-based industries and those dependent on energy- or mineral-based suppliers). Oil has long been the most volatile of all commodities, and the recent crisis has ushered in a strong new dose of volatility[12] that will likely linger, particularly in financial markets, even after a recovery is underway.

- **DISREGARDING the domino effects of hidden concentration risks**: (See Buczynski and Kirby[13]). Recall the recent housing crisis which infected construction contractors and correlated industries such as furniture, carpeting, appliances, forest products and other building materials. More recently, a Trepp[14] report brought to surface some additional ripple effects of the pandemic—the closing of movie theaters across the country, the impending bankruptcy of the largest maker of reclining movie theater seats, the 95.0% decline in air travel and the failure of the company providing Wi-Fi on planes.

In short, be aware of the fundamentals of risk mitigation and prudent lending that always matter regardless of where we sit in the credit cycle. Pay special attention to the difference between discretionary vs nondiscretionary spending, industry volatility and latent concentration risks.

Several areas described in the "Rogue Waves" paper dealt with factors that have emerged or have become more acute since the 2008-09 meltdown. Many of these have intensified during the current crisis.

- **CRE risks have spread and deepened**: With the structural demise of traditional retail gaining downward momentum, we are far from a nadir with, unfortunately, the worse yet to come. It is not just the big-name retailers; this includes debtors with exposures to CRE-related projects. Many are private equity firms. There are obvious geographic issues to consider as many American cities have been experiencing oversupplies in office space[15] even before the coronavirus predicament. The successful migration of corporate America from the office to the homestead could be the start of a trend as opposed to an aberration. There is more. Hotel occupancy rates have plunged, and some have been used to house pandemic patients, which will require extensive clean-up to lure back cautious customers. Recovery of hotels catering to individual travel (and primarily drive-to destinations) will be faster than those reliant on business/convention travel. Expensive amenities could become an albatross instead of a lure. Hospitals are, in many locales, reconfiguring with readiness as a mandate. REITs (real estate investment trusts) are reeling. Also, as noted above, consider the collateral damage associated with proximity, as deteriorating malls become blighted spaces, affecting valuations of nearby properties regardless of use. And think about the correlated risks of CRE when it comes to owner occupied CRE.

- **Energy-related industry woes will not fade**: Even as of this writing, with the Saudi/Russian production impasse apparently resolved, global energy demand has plummeted, and supply and demand imbalances prevail. With record high oil inventories stressing storage facilities and a depressed world economy, energy prices will probably remain not only historically low but volatile. Although the United States is now the leading energy producer and net exporter, further opportunities are limited. Environmental concerns over fracking continue even as dozens of fracking oil-and-gas producers went bankrupt in 2019, and many more are heavily in debt and carrying junk-rated bonds. Private producers and small, publicly held firms have been particularly hard-hit, many finding it difficult to service obligations when oil prices dip below $60.0 a barrel; look at where we are now. Scary.

- **Skilled labor shortages may hinder an economic recovery**: Prior to the start of the COVID-19-induced recession, there were more job openings than the number of available unemployed. The gap, which was almost 1.4 million workers, was due to a dearth of skilled trade workers. Scarcities were most prevalent in construction and transportation, particularly trucking, which can add to supply-chain risks. The lack of skilled workers in blue collar areas may be an issue when the economy rebounds again. Be prepared to see higher wage costs for your borrowers employing this type of worker even in an economy struggling to regain its footing.

- **Debt, debt and more debt**: Much has been written about the surge in government, corporate and household debt since the Great Recession. The continuation of low interest policies, the 2018 Tax Cuts and Jobs Act coupled with liberal Federal government spending the past two years helped to boost total American debt even before passage of the CARES Act and Paycheck Protection Program. With the Fed's discount window wide open and a return to the quantitative easing policies of the past decade, an across-the-board acceleration in debt is inevitable. It is outside the scope of this article to comment on the potential consequences of these developments, but there are some obvious ramifications for banks. Many middle-income households have been and are likely to be furloughed or laid off, and unemployment greatly increases the probabilities of delinquencies and defaults on mortgages and consumer credit. Further, many stand to lose job-based health insurance, putting further stress on a healthcare system already burdened by the effects of the coronavirus. Mounting corporate debt along likely earnings deterioration has led to a degradation in credit ratings, and this is relegating many issuers into the growing ranks of noninvestment grade corporate borrowers, which does not augur well for CAPEX or CAPEX-related businesses as noted earlier. Finally, the Fed has basically become a conduit for the conduct of fiscal policy, and the Fed's fiscal role threatens to open the door for bipartisan efforts to undermine the Fed's independence. The issue has been in the wings for years. We find this troubling on many fronts. Can you imagine Congress debating a liquidity crisis like the repo-rate swing that threatened liquidity in bond markets last September?

5. Esoteric Factors Unique to the COVID-19 Crisis

5.A The Snare and Scare of CECL

When Hollywood rolled out The Perfect Storm in 2000, its producers had no idea that the film title would enter the English language as the perfect phrase for situations where everything that can go wrong goes wrong. Intended for natural disasters, the phrase has served us well in describing the economic disaster of the Great Recession, and, once again, it is an apt description for the fusion of the pandemic with the Financial Accounting Standards Board (FASB)'s implementation of the new current expected credit loss principle. In principle, CECL requires bankers to estimate loan loss at inception. First, the estimate is likely to be larger for longer-term loans (e.g., mortgage loans and auto loans than for short-term lines of credit). Second, the lender is supposed to incorporate broad economic circumstances, but no one had considered a pandemic shutting down the world economy. Finally, critics have warned that CECL is procyclical, that it will force banks to hold larger reserves during recessions and so reduce credit availability. Even before COVID-19 hit the United States, banks with large mortgage and auto loan portfolios reported bigger loan loss reserves than their competitors with smaller consumer and mortgage portfolios.

5.B Supply-Chain Financing and Just in Time Inventory Management

Groucho Marx observed, "Time wounds all heels," and the 2020 pandemic has brought to heel our dependence on supply chains strained by JIT (just-in-time) inventory management strategies. A company practicing JIT expects its suppliers to show up in the nick of time with the critical items needed to fulfill customer orders. JIT is indeed reliant on nick of time delivery of inventory.

Sometime around the 1580s, the phrase "in the nick" or "in the very nick" began to be used for the critical moment, the exact instant at which something has to take place. "The nick" was a narrow and precise marker, so if something was in "the nick," it was precisely where it should be. A nick stick was used to keep track of time, points and transactions that occurred. The first appearance of the expanded idiom "in the nick of time" was recorded in 1643, and it has come to mean almost too late, at the last possible second or at a pivotal or important moment. So why is JIT so risky?

Companies are in business to make money, and the road to profitability is built on a product inventory broad and deep enough to attract customers and a credit strategy easy and quick enough to sell it to them. Rapid revenue growth comes with growing pains, as inventories begin to bulge and receivables begin to balloon. Bankers are quick to extoll the virtues of good working capital management—keep the inventory and receivable turning over because not to do so results in over-investment in these two working capital assets and ultimately a decline in shareholder value, as cash flow is diverted from equity into unsaleable inventory and uncollectible receivables.

5.B Supply-Chain Financing and Just in Time Inventory Management Continued

So with a kick in their assets from us bankers, borrowers naturally look for ways to reduce inventory investment, and just in the nick of time, back in the 1970s, Toyota adopted JIT manufacturing, sometimes called the Toyota Production System. The success of the JIT production process relies on steady production, high-quality workmanship, minimal machinery breakdowns and reliable suppliers. This approach allowed Toyota to operate with low inventory levels but relied heavily on its supply chain to deliver its parts as needed. Of course, Toyota discovered that JIT production reduced inventory costs because it did not have to pay storage costs, and if an order were cancelled, it would not be stuck with unwanted inventory. What JIT production does not handle well are disruptions (i.e., materials supplier suffers delivery breakdown and is unable to deliver in time, or material shipments to the supplier are interrupted by hurricanes or by civil unrest, etc.). Toyota devised the Kanban scheduling system to identify potential problem areas by measuring lead and cycle times across the production process to identify upper limits for work-in-process inventory to avoid overcapacity. But it took Toyota some 15 years to work out the kinks. Then in February 1997, a fire at its automotive parts supplier, Aisin, shut down Aisin's production of P-valves for Toyota. Unfortunately, only Aisin made P-valves, so Toyota had to suspend production for several days, and its shutdown caused a ripple effect as other parts suppliers then had to shut down because Toyota had no need for their parts during its temporary closing. However, Aisin's fire cost Toyota ¥160.0 billion in sales.

Despite its hiccup over Aisin, Toyota's JIT philosophy was embraced by other manufacturers around the world, and the result has been a substantial shift of inventory, carrying expenses back on suppliers, who, in turn, push back on their suppliers. Eventually, inventory carrying costs carry through to the end of the supply chain and are exacerbated by increasing expectations that their suppliers will invest in transportation infrastructure that will speed up the delivery in the nick of time. Never known for hefty profit margins, wholesalers bear the brunt of the squeeze, and the decline in shipping and trucking has been dramatic. For example, the COVID-19 pandemic has reduced activity at many ports. The March 2020 figures for the Port of Los Angeles are 31.0% lower than March 2019 figures. The decline is attributed to the disappearance of much of the discretionary demand as importers curtail or cancel their orders. As JIT proponents boost their profits by transferring inventory costs back up the supply chain and demanding tighter and tighter nicks, they inflict a kind of death by a thousand nicks upon the logistics supply chain.

The current pandemic bears an eerie resemblance to the Aisin fire in its ripple effect, but the pandemic's ripple effect has swelled into a tidal wave inundating industries and economies around the world. The point of this short review has been to identify one reason why the effect has been so quick—JIT has eliminated the inventory buffers that might have acted as shock absorbers to diminish the pandemic's impact. The real losers may not be the logistics industry, but society itself. When individual decision makers do not internalize all the costs which society is bearing, economists call this a problem of externalities. Maybe a company produces a good that does not take into account externalities such as water or air pollution; perhaps, industries that practice JIT fail to consider the costs to society of shortages of food and medical supplies, the closure of schools and universities, the collapse of medical and elderly care and the massive government funding needed to keep the millions of unemployed workers fed and sheltered. We are now paying a high price for betting that everyone would show up just in the nick of time. Now we know what happens when they don't.

5.C Risks Associated with the Paycheck Protection Program (PPP) and Main Street Lending Program

The CARES Act provided $350.0 billion in funds to provide an incentive for small businesses (defined as having fewer than 500 employees, with certain industry exceptions). The program calls for the Small Business Administration (SBA) to guarantee 100.0% of the loan made by a bank to an eligible borrower, with a substantial portion forgiven (on a tax-free basis), provided the funds are used to keep employees on the payroll or hire more personnel. Demand for the loans was extensive and funds ran out quickly. Congress voted to supply an additional $310.0 billion.

Almost immediately, the rules changed and continue to change as the program progresses. Although eligibility was broad (and included certain industries not previously eligible for SBA guarantees, such as 501.3(c) organizations) and the parameters of the program allowed for loans up to $10.0 million, criticism of some recipients of the funds caused the Treasury Department to state that all loans $2.0 million or more will require a "full audit" (undefined as of the date of this article) before loan forgiveness is approved. There is no clarification on what happens if a company with loan over $2.0 million fails the audit. While not part of the original eligibility requirements, companies who got a PPP loan with access to capital markets will have to take extra steps to prove their eligibility or repay the loan. And the terms and conditions for forgiveness have yet to be published. It could be that banks will be on the hook for more of a two-year, 1.0% unsecured loan than they originally expected.

The Federal Reserve has announced that three facilities will be available under the Main Street Lending program, which will provide funding for mid-size companies (defined as under 15,000 employees or $5.0 billion in revenues). The program is scheduled to run through September 30, 2020. There are significant flaws and unknowns in this program ranging from the significant (how are voting rights distributed if the Fed buys 85.0-95.0% of the loan) to the technical (how can banks use the hardwired fallback language on LIBOR loans when the language is in the process of being significantly changed) and banks are understandably asking for more clarification before agreeing to participate.

6. Conclusion and Summary

As we grapple with bringing the pandemic under control, there is some irony in the old Chinese curse, "May you live in interesting times." Well, COVID-19 certainly has made life interesting in 2020, but we still have to get by with a little help from the Feds. Meanwhile, we suggest that you step up to the advice and recommendations in this article:

- Identify the most vital and pertinent key risk indicators affected by COVID-19 and the NAICS-based industries that are most impacted.
- Employ your loan exposure data to extract loan exposure data by industry.
- Combine your KRI and loan exposure data
- Set actionable priorities by rank ordering highest to lowest exposures, and start with the top 15.0-20.0% of your portfolio.
- Identify latent correlations by looking for key upstream and downstream concentrations for each industry, and calculate the total exposure in both direct and supply chain exposures.
- Use the output to manage concentration risks, refine grading models, support capital planning and stress-testing and plan for business development opportunities when the crisis subsides.

We hope you find that the advice helps you find a path back to safety and soundness, and be sure to heed Yogi Berra's advice: "When you get to a fork in the road, take it."

Footnotes

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