MOODY'S ANALYTICS

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Assessing the Impact of the COVID-19 Virus - Question & Answer

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Question: Does the baseline scenario factor in the COVID-19 impact?

Answer: We began incorporating the impact of COVID-19 into our February baseline. The February baseline for China was revised lower to reflect our estimate of lost output because of the coronavirus. We also revised lower our forecast for the U.S. economy. Travel restrictions by China were expected to be a small drag on U.S. exports. Tourism to the U.S. is counted as an export and the coronavirus outbreak is occurring during the Lunar New Year, potentially reducing tourism to the U.S. Travel to the U.S. is a service export. Travel accounts for 25% of nominal services exports. Growth in U.S. travel exports weakened around SARS, Swine Flu (H1N1) and H7N9, but the drag on GDP growth was small and temporary.

The assumption in the February baseline was that the coronavirus would remain contained to China. This proved to be too optimistic, and the March baseline includes our latest assessment of the economic costs of the coronavirus because of the impact on global equity markets, commodity prices, supply chains and travel. Also, more countries are being affected, and that is reflected in the March baseline.

Q: The first slide uses the term "Pandemic." Has it been declared a pandemic by WHO or CDC?

A: The WHO declared a pandemic on March 11.

Q: Can you provide the mnemonic for the Pandemic scenario in Data Buffet?

A: For each variable, add _covid19_pd. For example, if you want to pull real U.S. GDP use, FGDP$_COVID19_PD.IUSA

Q: What is the probability of U.S. recession?

A: We have updated our probability of recession models and, no surprise, they increased. Based on the financial market data, the odds of a recession in the next 12 months are 46%, up from 37% in January and 31% in December. The model that uses only economic data puts the odds at 30% in January (most recent data available), compared with 32% in December.

It is likely that the model based on economic data is underestimating the probability of recession. The economic cost of COVID-19 has not been noticeable in the weekly or monthly data yet, but that is coming.

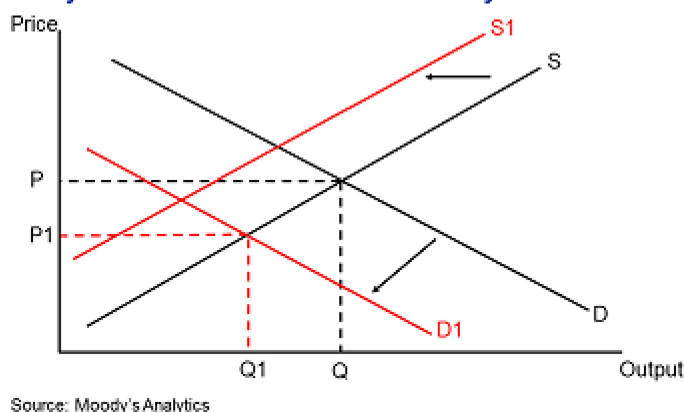
Therefore, we are monitoring high-frequency measures of confidence and putting more weight than normal on them, because a deterioration in the collective psyche could cause U.S. economic growth to slow even more abruptly this quarter and next as COVID-19 causes consumers to adjust their behavior. We are paying close attention to measures of consumer sentiment.

Q: It seems that COVID-19 shocks supply and demand almost at the same time. The supply effect may start a couple of weeks earlier, but the demand shock will quickly follow. Once COVID-19 is gradually contained, the demand will come back, but will likely be weaker than if the outbreak had not happened. I am very much interested in your view on longer-term demand and interest rates.

A: COVID-19 is a negative short-run supply shock because of the significant disruptions to global supply chains. The plunge in China's manufacturing PMIs and drop in South Korea's imports from China in February all indicate significant supply chain issues. The impact of supply chain issues is already visible in the U.S. soft data, including in the anecdotes of the ISM surveys and Fed's latest Beige Book.

Negative supply shocks are inflationary, all else being equal. However, financial markets view COVID-19 as a demand shock, which is disinflationary. Market expectations for the consumer price index over the next year have dropped recently, and the 10-year Treasury yield is near historic lows. Monetary policy is better equipped to address a demand, rather than supply, shock.

A combination of negative supply and demand shocks is problematic and will require both the Fed and fiscal policy to respond. We use a simple example of both a supply and demand shock, which causes a decline in output and is disinflationary. The exact slope of the supply and demand curves needs to be estimated econometrically.



COVID-19 has caused the 10-year Treasury yield to fall to historic lows. However, in the long run, the 10-year Treasury yield has historically equaled nominal GDP growth. The relationship can break down from year to year, but our forecast for where the 10-year will peak is based on this historical relationship. COVID-19 and rate cuts by the Fed don't alter the long-run forecast for the 10-year.

Q: Is there any plan to push the COVID-19 scenarios down to state-level variables?

A: Yes. The COVID-19 state scenarios have been posted to DataBuffet. The metro area scenarios will be completed soon.

Q: What will be incorporated in the U.S. macro outlook?

A: We made some last-minute and notable adjustments to our March baseline forecast because of COVID-19, turmoil in equity markets, and the plunge in global oil prices. We have lowered our forecast for U.S. GDP growth in the first half of this year, with it rising less than 0.5% at an annualized rate and weaker than the 1.5% in the February baseline. Growth picks up in the second half of the year, but this assumes that COVID-19 is contained soon.

We have altered our forecast for the fed funds rate and now anticipate it hitting the zero lower bound. For messaging, the Fed could lean on the academic research that has shown it is better to be more aggressive early when interest rates are near the zero lower bound.

The new forecast for the fed funds rate led to a downward revision to the forecast for the 10-year U.S. Treasury yield. The 10-year Treasury yield is expected to average 1.2% in the fourth quarter of this year, compared with the 2.11% in the February baseline.

Q: How, if at all, has your outlook on the impact of COVID-19 on the U.S. economy changed based on the Fed's decision to cut rates by 50 basis points?

A: It did not alter our forecast for GDP growth but did warrant a change to our expected path of the target range for the fed funds rate. We have altered our forecast for the fed funds rate and now expect it to hit the zero lower bound. For messaging, the Fed could lean on the academic research that has shown it is better to be more aggressive early when interest rates are near the zero lower bound.

The Fed could signal that it is trying to get ahead of the expected weakness in the economy by slashing rates now. Also, there is not a compelling case to keep some powder dry. If the Fed falls behind the curve, the fed funds rate would end up at 0% anyway. If rates return to the zero lower bound, the Fed will likely consider aggressive forward guidance, quantitative easing, and yield curve control. However, given that the 10-year Treasury yield is around 0.5%, these won't pack as much of a punch.

There has been some debate about whether the Fed would buy stocks. Former Fed Chair Janet Yellen floated this idea in 2016, arguing that if quantitative easing reached its limits, it could be useful for the central bank to intervene directly in assets, where the prices have a more direct link to spending decisions. In other words, the Fed would consider buying equities and corporate bonds. The biggest hurdle is that the Federal Reserve Act prevents the Fed from buying stocks. However, the act still allows lending to nonfinancial borrowers in unusual and exigent circumstances, suggesting the Fed could dust off the Term Asset-Backed Securities Loan Facility.

The Fed has tools to help address funding issues and stress in credit markets. The Federal Reserve Bank of New York on March 9 announced an increase in the current monthly schedule of repo transactions designed to deal with short-term liquidity problems for primary dealers and certain other market participants: from $100 billion to $150 billion in overnight repos and, for two-week term repos, from $20 billion to $45 billion.

Elsewhere, the central bank could ease pressures in bank funding markets via its liquidity swaps with other central banks. The key is dollar liquidity swap lines. The Fed could restart its credit facilities, but the banking system is already well funded. One idea is for the Fed to support credit extension to the COVID-19-exposed industries, but the Fed isn't well equipped for this.

Q: What about the impact of the USMCA?

A: Little in the new trade agreement differs from NAFTA, which the United States-Mexico-Canada Agreement will replace, but this is hardly a bad thing. NAFTA has brought tangible benefits to U.S. consumers and opened new export markets for U.S. energy and agricultural producers. Manufacturing jobs were lost to competition from low-wage Mexican workers, but the data suggest that these losses buck perceptions of a greater decline.

Where the USMCA differs most from NAFTA is in new content requirements for the auto industry. But the impact of provisions aimed at boosting U.S. auto production and employment is often overstated. Under the USMCA, 75% of a vehicle must be produced in North America to qualify for tariff-free treatment. Additionally, 40% of its value must be produced by workers earning at least $16 per hour. However, the new regulations are unlikely to shift the reality on the ground.

NAFTA and the USMCA ultimately matter more for the guarantees they offer investors rather than the removal of tariffs. Given Mexico's hard-fisted treatment of foreign investment prior to NAFTA, which ranged from technology transfers to limits on foreign ownership, a pact that preserves the status quo is well worth the cheer.

Q: With the 10-year already at an all-time low, do you think the Fed cutting rates will push the 10-year Treasury yield lower?

A: Since the webinar, the 10-year U.S. Treasury yield has declined sharply and is among historic lows. To assess where long-term rates are headed, we decomposed the 10-year into three components: expected inflation over the term of the security, the expected path of short-term real interest rates, and a residual component known as the term premium. Long-term inflation expectations have dropped noticeably, but there is a strong correlation between inflation expectations and global oil prices. As for the Fed, markets anticipate that the Fed is headed toward the zero lower bound. Because this is priced in, the next rate cut is unlikely to push the 10-year significantly lower, all else being equal. However, if the Fed restarts quantitative easing, that would put additional downward pressure on the 10-year Treasury yield via the term premium.

Q: Has there been any indication that multifamily housing permit volume is being impacted by COVID-19?

A: Not yet, but housing could be tested by COVID-19. The January housing data do not capture the impact of the virus, since those issues did not intensify until February. Still, lower mortgage rates could provide some cushion for housing.

Q: What led to the high U.S. fiscal policy response in 2018?

A: The rise in federal discretionary nondefense funding for emergencies in fiscal 2018 was attributed to funding provided for Hurricanes Florence and Michael.

Q: Are you going to be releasing new forecasts?

A: We update our forecasts monthly. The March baseline forecasts are available.

Q: What is the working definition of a pandemic? And do these models include the fiscal stimulus already announced?

A: According to the WHO, an influenza pandemic occurs when almost simultaneous transmission takes place worldwide. The March baseline incorporates the approved $8.3 billion in federal spending along with the impact of the Fed's intra-meeting rate cut.

Q: How many rate cutes do you expect after the March Fed meeting?

A: We believe the Fed will lower the target range for the fed funds rate to 0% to 0.25% at the March meeting. We don't anticipate that the Fed will adopt negative interest rates. Therefore, the next cut would be the last.

Q: If COVID-19 proves to be largely seasonal and mostly becomes background noise by summer, won't pent-up demand and low inventories (a need for production) help boost an economic recovery?

A: Yes, that would be an upside scenario. That would be similar to recoveries seen following many natural disasters, the so-called V-shape recovery. The Fed's rate cuts and the proposals for fiscal stimulus would also support the recovery if COVID-19 is contained.

Q: Can you comment on the near-term housing market?

A: The coronavirus will hurt economic growth in 2020, but the impact on the U.S. residential real estate market will not be an unalloyed negative. The worst effects will be felt in regions that rely disproportionately on leisure/hospitality and trade, two industries that will directly feel the hit from lower tourism volumes and goods flow, respectively. Temporary disruptions to travel schedules and supply chains will result in lighter consumer spending as well as lower incomes. Of the larger metro areas, Las Vegas, Orlando FL and New Orleans are most exposed in terms of leisure/hospitality employment, while Fort Lauderdale FL, Miami, and Camden NJ are the most vulnerable via trade employment.

Homebuyer sentiment, especially in the metro areas listed above, could take a hit as we enter the key spring homebuying season in April. Homebuyers who were planning on looking for a dwelling in the spring may wait until the summer season to visit open houses because of lingering fears over the spread of coronavirus. However, if history is a guide, homebuyer demand will be deferred rather than erased. During the SARS virus outbreak from late 2002 to mid-2003, some homebuyers did put off looking at properties and single-family sales correspondingly dipped in the first half of 2003, but demand came roaring back in the latter half of 2003.

Moreover, there are countervailing financial effects that will offset any temporary dip in homebuyer demand, at least in terms of house price appreciation. Concerns about the economic implications of COVID-19 have pushed U.S. bond yields to record lows because of a global flight to quality assets. The 10-year U.S. Treasury bond yield fell to all-time lows of less than 1% in recent days, which will soon push the 30-

year fixed mortgage rate to a record low, down from a recent weekly contract rate of 3.57%. Lower housing financing costs will boost homebuyer demand, especially toward the latter half of 2020 if COVID-19 doesn't become widespread and persistent within the U.S.

All told, we expect some near-term softness in the regional housing markets listed above, but the national housing market will continue its slow but steady ascent in terms of home sales and house price appreciation through next year, provided COVID-19 does not turn into a full-fledged pandemic.

Q: What regions of the U.S. are most at risk?

A: The spread of COVID-19 has shown no sign of slowing, with dozens of cases in Washington, California and New York. The impact on consumer industries, finance and supply chains in those states has already been felt, and the pain is widening.

With large states bearing the brunt and the spread of the virus intensifying, the entire nation remains in the crosshairs. But outside of a few places that are either dealing with an outbreak already or are uniquely positioned to struggle with indirect impacts—such as Florida, Nevada and Hawaii, all of which rely heavily on tourism—residents of many states could construct a plausible scenario in which the next few months prove painful, but not all that economically damaging.

But suddenly the list of states for which that is the case has shrunk. The oil price war between Russia and Saudi Arabia puts significant pressure on domestic producers, who are no doubt flashing back to the price collapse of 2015-2016. However, unlike the middle of the decade, a prolonged period of low prices could be accompanied by weak demand from firms and consumers. Put it together, and states such as Oklahoma, New Mexico, North Dakota and Alaska go from below-average exposure to a potential downturn to elevated risk.

Texas, meanwhile, is already vulnerable to COVID-19 based on its linkages to the global economy and heavy reliance on trade. While the latter bakes in Texas' oil exports to some degree, any exposure before the price war had more to do with demand-side pressures. Reduced drilling and layoffs at major oil-producing firms would only intensify the pain.

All told, this means that the nation's four largest states can now be counted among its most vulnerable. California, Texas, Florida and New York together account for more than one-third of the nation's population and output. And with the coronavirus, oil price collapse, or both hurting each, the breadth of the looming slowdown has widened, leaving most other regional economies with nowhere to hide.

Q: Please assess the potential demand effects on logistics and distribution, supply chains, and real estate, arising from COVID-19 trade disruptions?

A: China plays an important role both upstream and downstream in supply chains. The OECD's Trade in Value-Added data (with 2015 the latest datapoint) provide a good place to examine trading partners that are relatively more exposed to disruptions in China.

Asia is disproportionately exposed in terms of backward and forward participation. Backward participation in global value chains represents the foreign value-added share of gross exports from China included in the gross exports of various countries. Vietnam, Cambodia, Mexico and Malaysia have high shares on a total industry basis. It would be expected that since 2015, the backward participation share of exports from China included in exports of Vietnam, Cambodia and Malaysia would have increased, helped most recently by supply chains adjusting as a result of the trade war.

Meanwhile, forward participation in global value chains is the domestic value-added from various countries included in China's gross exports. For instance, Taiwan's forward participation in China's value chain represented 10.7% of Taiwan's total exports in 2015, a significant but unsurprising exposure given Taiwan's close economic ties with the mainland.

Another angle on China's influence in global supply chains is to look at the share of value-added that originates from China to a number of countries. Vietnam, Cambodia, Hong Kong and Thailand have the highest shares on a total industry basis.

Examining exposure of total exports to China by country gives a broader indication of those that will be caught up by the expected deterioration in China's economic conditions, including weaker domestic demand.

All told, the data show that Southeast Asia, Hong Kong, Taiwan and South Korea are heavily integrated with China's supply chain and stand to face greater disruption the longer the coronavirus outbreak continues and imposes restrictions on the day-to-day operations of the Chinese economy.

Q: I heard some discussion of "helicopter" money disbursements in Hong Kong. Is this policy in response to political unrest or virus concerns or both?

A: Hong Kong's fiscal stimulus package announced on 26 February was aimed at addressing the significant downside risks facing the economy, including the ongoing social unrest at home and COVID-19.

The 2019-2020 budget deficit is estimated to be HKD37.8 billion (1.3% of GDP), making it the largest in 15 years. In the 2020-2021 financial year, the deficit is forecast to widen to HKD139 billion (4.8% of GDP), its largest on record. This breaches the government's policy of keeping the deficit below 3% of GDP and is a change in position after recording budget surpluses in recent years.

The generous package contains a variety of one-off spending measures to temporarily shore up near-term domestic demand. In particular, Hong Kong's permanent residents over age 18 will receive HKD10,000 in a one-off cash payment, which is not means tested. Individuals will receive salary and property tax rebates and a month of lower public housing rent. The monthly public allowance for low-income families will be doubled. Profit taxes on businesses will be reduced, while public rents and utility bills will be subsidized. In addition, the government will provide a guarantee on business loans used to pay employee wages and taxes. On the property front, a pilot program will be launched offering fixed-rate mortgages to increase homebuyer options and reduce interest rate volatility.

Hong Kong's youth will benefit from several initiatives. These include the government setting aside HKD1 billion to continue the work of the Youth Development Commission, which has already spent around HKD500 million on programs such as innovation and entrepreneurship. This includes increasing the number of government internship places to almost 5,000 in 2020.

Hong Kong's government was under pressure to unveil a generous stimulus and it seems to have delivered on that. The economy slumped into a recession in the second half of 2019 amid the combination of protests and weakened global trade flows. Now, COVID-19 is an additional hit to the ailing economy because of its close ties with China; GDP is expected to slump to 1.5% to 0.5% in 2020. This budget gives Hong Kong's government the opportunity to tackle some of the causes of social unrest that began in mid-2019 but which have dissipated recently given concerns over COVID-19.

Q: Could you please provide a more detailed summary of Chinese policy that has been implemented?

A: Fiscal policy includes: tax relief for small businesses and individuals; subsidies to persons returning to work quickly; rent relief and wage subsidies while business is slow; and accelerated local government bond issuance for infrastructure spending. Monetary policy includes: cuts in the Loan Prime Ratio for SMEs; cuts in the Reserve Requirement Ratio for banks; and liquidity injections.

Q: Do you see evidence of global companies moving manufacturing and related supply chains out of China either in the short or long run?

A: Companies began looking at diversifying sources of inputs and manufacturing as the U.S.-China trade war extended through December. COVID-19 will cause firms to continue to diversify as the visible risks extend beyond trade policy and tariffs toward more unforeseen events such as the spread of this virus. Already Vietnam has been a major beneficiary of diversification. Other locations in the APAC region and globally will be considered.

Q: What is the view on COVID-19's potential impact on NPL in Asia?

A: There is a good chance that nonperforming loans will rise across much of Asia. This may happen first among travel, tourism, hospitality, and other service industries since they were the first to feel the impact, and these industries have a large share of small and medium-size enterprises with little cushion to fall back on. Much will depend upon the extent that government fiscal policy can support them through easier access to credit, delaying interest payments, lower taxes, and rent and wage subsidies to get them through the worst of the situation.

Q: When can we expect business to get back to normal in the base case in China, like schools reopening, airlines flying to all locations, etc.?

A: In the base case, business is expected to be more-or-less back to normal in China by the end of April. Airlines, schools, and other industries or institutions would be back running at a normal pace in April.

Q: Weekly shipping container volumes in China fell 20% since the outbreak, what is the outlook on the shipping sector compared to airlines?

A: Shipping should begin recovery prior to airlines. Foreign trade data for January and February were weak with exports down 17.2% year over year. But as production ramps up, shipping will improve, even as restrictions remain on air travel and passengers are cautious to fly.

Q: How do you expect COVID-19 to affect Moody's standard set of scenarios (e.g. baseline, S1, S3, etc.) for March?

A: The March scenarios will reflect our standard process and use updated information through March 9 including the release of the BLS employment report for February (released March 6). In addition to assumptions on the spread of the virus and the impact on specific industries and commodities, the scenarios will reflect changes to the fed funds rate as well as expectations for future cuts. The scenarios will also account for shocks to oil prices and the 10-year Treasury rate. Alternative scenarios will include more pessimistic scenarios with the 10-year Treasury rate falling below zero.

Q: On slide 5, is this stating that there is only a 20% probability for the baseline scenario?

A: No, the baseline scenario is located at the middle of the distribution of economic outcomes. There is a 50% chance the economy performs worse than the baseline and a 50% chance it performs better.

Q: If the disease is about as contagious as the seasonal flu, and if containment fails, then why would global infections only be 3 million to 4 million in a Pandemic scenario? By comparison, during the current flu season, there have been 32 million cases of the seasonal flu in the United States alone.

A: The Pandemic scenario described represents one potential outcome but is not the only description of a potential pandemic. Based on the assigned probabilities, there is a 35% chance that a realized pandemic is worse than what is described in the scenario. As a point of reference, the WHO defines a pandemic as the "worldwide spread of a new disease." As of March 9, the WHO had not officially declared COVID-19 as a pandemic, but a representative stated that it was "very close" to doing so with 116,000 confirmed cases.

Q: I'm very interested in coronavirus within CECL if someone could respond.

A: Please see our post on EconomicView regarding the impact of forecast changes stemming from COVID-19 on the estimation of CECL losses: https://www.economy.com/economicview/analysis/378487/Forecast-Changes-and-CECL

Q: Regarding CECL, are you seeing companies adjust their January 1, 2020 forecasts due to the pandemic? Or are you seeing companies adjusting their March forecasts?

A: Thus far we have observed companies preparing to make adjustments to their CECL estimates for March to account for changes in their economic forecasts. Both qualitative and quantitative adjustments are being contemplated. We have not observed companies changing their January 1 forecasts given that there was no information suggesting an economic decline was imminent at that time. For additional information, please see our article posted on EconomicView: https://www.economy.com/economicview/analysis/378487/Forecast-Changes-and-CECL

Q: What do you think the current economic outlook would be? In CECL loss reserve, what economic scenario would you recommend?

A: For setting the loss allowance under CECL, companies should follow their established processes. Existing accounting procedures require companies to consider subsequent events up to the date of filing. Companies should be taking into account any changes to their economic forecasts resulting from COVID-19 through either a qualitative or quantitative adjustment (or a combination of both). For additional information please see our post on EconomicView: https://www.economy.com/economicview/analysis/378487/Forecast-Changes-and-CECL

Q: What do you suggest as financial stress tests for a large company? Would Moody's have any stress-test scenarios to suggest for modeling purposes?

A: The Federal Reserve's CCAR stress-testing scenarios were released and expanded by the Moody's Analytics economics division in early February. The Severely Adverse scenario included represents an extremely severe economic scenario including an increase in the unemployment rate to 10%. This represents a far more severe scenario than the current COVID-19 Pandemic scenario. Other options for stress-testing include our standard alternative scenarios S3 and S4, which represent the 90th and 96th percentiles in a simulation of possible economic scenarios. Please contact your Moody's representative if you would like additional information about these scenarios and their use in stress-testing applications.

Q: When can we start running our assets through scenarios on page 5?

A: The COVID-19 scenarios were published to our DataBuffet.com website on March 4. They are available to all forecast subscribers.

Q: Will these scenarios be available in Impairment Studio next week for CECL purposes or will they be available on a regular schedule?

A: The ImpairmentStudio development team is working on making the COVID-19 scenarios available to users. Please contact your ImpairmentStudio representative for additional information.

Q: Do you have input files for CMM and RiskCalc for the new coronavirus scenarios? We are trying to create and load them, but we typically do not do this, so we want to make sure we are not making a mistake.

A: The CMM and RiskCalc development team are working on making the COVID-19 scenarios available to users. Please contact your support team representatives for additional information.

Q: Would it be fair to say if you are assuming a 35% chance of economic results worse than the COVID-19 Pandemic scenario that there is a significantly greater chance of recession than is typically stated in the S3 and S4 scenarios (10% and 4%)?

A: The 35% probability references the location of the Pandemic scenario in the distribution of possible economic scenarios. While the Pandemic scenario is severe in the first two quarters of 2020 it defines a faster and sharper recovery than described by the negative shocks represented by either the S3 or S4 scenarios wherein it takes the economy a long time to recover. So the probability of a scenario needs to be considered in relation to its severity. While it is possible to mix and match scenarios, it may be best to consider the COVID-19 scenarios as a group apart from the standard, alternative scenarios, given the different assumptions regarding the timing of and recovery from different shocks.

Q: Would you have any guidance on incorporating the coronavirus through the inputs to CMM and RiskCalc? Would this impact financial statement items or property fundamentals? Would this be advisable?

A: Please contact your CMM and RiskCalc support team to answer these questions. Specific guidance on the impact on financial statements should also be reviewed with your auditor to account for any unique circumstances.

Q: Do you plan on releasing scenarios for Canada?

A: The COVID-19 scenarios are global. National-level forecasts are available for Canada. Subnational forecasts are available on a custom basis. Please contact your Moody's Analytics sales representative for additional information.

Q: How does your Pandemic scenario compare with the FRB Severely Adverse scenario for CCAR?

A: The FRB Severely Adverse scenario is much more severe than the Pandemic scenario. For context, the U.S. unemployment rate under the Pandemic scenario peaks at 5.2% in the second quarter of 2020 and falls back to 3.9% by the third quarter of 2022. The FRB Severely Adverse scenario peaks at 10% in the fourth quarter of 2021 and recovers to only 4.2% by the first quarter of 2030.

Q: What would be the impact to medical costs with potential supply-side shortages and demand increases?

A: It is important to recognize that medicine is not substitutable. The outbreak increases demand only for specific treatments. In this case, there is no pharmaceutical cure; the treatment is hospitalization and intubation/ventilation. (Meanwhile, quarantines and other measures may lead to a reduction in flu and other transmittable illness.)

Demand for hospital services will increase. However, for most folks, prices have already been negotiated between hospitals and insurers. So the immediate increase in cost of care mostly has to cut into hospital and insurer profits. A time likely will come, in late 2020 and early 2021, when hospitals and insurers reprice all the risk. We will probably see a noticeable rise in premiums around that time.

The supply side is much trickier to figure out and depends in part on how much medical goods are manufactured overseas. As a service, we would not expect much, if any, impact on labor costs in the U.S. It appears that much of the treatment for COVID-19 (hospitalization and ventilation) is provided by capital equipment, the investment for which was made long ago.

Nondurable medical goods—for example, drugs—will probably be affected since a fair amount of production occurs overseas. We would expect an increase there, but the magnitude is highly uncertain.

About the Authors

Mark Zandi is chief economist of Moody's Analytics, where he directs economic research. Moody's Analytics, a subsidiary of Moody's Corp., is a leading provider of economic research, data and analytical tools. Dr. Zandi is a cofounder of Economy.com, which Moody's purchased in 2005.

Dr. Zandi's broad research interests encompass macroeconomics, financial markets and public policy. His recent research has focused on mortgage finance reform and the determinants of mortgage foreclosure and personal bankruptcy. He has analyzed the economic impact of various tax and government spending policies and assessed the appropriate monetary policy response to bubbles in asset markets.

A trusted adviser to policymakers and an influential source of economic analysis for businesses, journalists and the public, Dr. Zandi frequently testifies before Congress on topics including the economic outlook, the nation's daunting fiscal challenges, the merits of fiscal stimulus, financial regulatory reform, and foreclosure mitigation.

Dr. Zandi conducts regular briefings on the economy for corporate boards, trade associations and policymakers at all levels. He is on the board of directors of MGIC, the nation's largest private mortgage insurance company, and The Reinvestment Fund, a large CDFI that makes investments in disadvantaged neighborhoods. He is often quoted in national and global publications and interviewed by major news media outlets, and is a frequent guest on CNBC, NPR, Meet the Press, CNN, and various other national networks and news programs.

Dr. Zandi is the author of *Paying the Price: Ending the Great Recession and Beginning a New American Century*, which provides an assessment of the monetary and fiscal policy response to the Great Recession. His other book, *Financial Shock: A 360º Look at the Subprime Mortgage Implosion, and How to Avoid the Next Financial Crisis*, is described by The New York Times as the "clearest guide" to the financial crisis.

Dr. Zandi earned his BS from the Wharton School at the University of Pennsylvania and his PhD at the University of Pennsylvania. He lives with his wife and three children in the suburbs of Philadelphia.

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