WILARY WINN LLC

Advice to Strengthen Financial Institutions

Economic Recovery from the COVID-19 Pandemic with a Timeline Developed Based on Forecasted Advancements in Medical Treatments (Part II)

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INTRODUCTION

This white paper, along with its predecessor, released last month, attempts to build an economic recovery timeline based upon medical initiatives currently underway to combat the COVID-19 pandemic.

This timeline can then be applied to asset-liability management analysis to measure, monitor, and mitigate credit, interest rate, and liquidity risks. Within the paper, we provide specific strategic recommendations.

KEY TAKEAWAY

This white paper demonstrates how we prospectively worked to incorporate major macroeconomic events into our clients' ALM and credit risk analyses.

HOW CAN WE HELP YOU?

Founded in 2003, Wilary Winn LLC and its sister company, Wilary Winn Risk Management LLC, provide independent, objective, fee-based advice to nearly 600 financial institutions located across the country.

We provide the following services:

CECL & ALM

Holistic solutions to measure, monitor and mitigate interest rate, liquidity, and credit risk on an integrated basis.

MERGERS & ACQUISITIONS

Independent, fee-based determinations of fair value for mergers and acquisitions.

VALUATION OF LOAN SERVICING

Comprehensive and cost-effective valuations of servicing arising from the sale of residential mortgage, SBA 7(a), auto, home equity and commercial loans.

ADDITIONAL SERVICES

Services to support our CECL, ALM, Fair Value and Loan Servicing product offerings.

Economic Recovery from the COVID-19 Pandemic with a Timeline Developed Based on Forecasted Advancements in Medical Treatments (Part II)

We are at the beginning stages of the reopening process. As of mid-May 2020, 42 states have partially opened their economies. The level of permitted increased economic activity through the easing of restrictions varies considerably by state. There are currently 15 states which permit restaurant dine-in services. Elective surgeries are permitted or soon will be for more than half of the United States. Conversely, bars, night clubs and sporting events remain closed and schools in every state are also closed for the remainder of the academic year. Due to the severity of the COVID-19 outbreak, Northeastern states remain the most restrictive as the polices to close nonessential businesses in response to the COVID-19 pandemic remain in place.

On May 8, the nonfarm payroll employment numbers for April were released which reflected an unemployment rate of 14.7% as nonfarm payroll employment fell by 20.5 million jobs. The hardest hit industry was leisure and hospitality which incurred 7.7 million total job losses (of which 5.5 million came from eating and drinking establishments). Education and health services lost 2.5 million jobs, professional and business series lost 2.1 million workers and manufacturing lost 1.1 million jobs. More than 78% of the unemployed workers described their layoffs as being temporarily furloughed. An alternative measure of the unemployment rate that includes those not actively looking for work as well as the underemployed holding part-time jobs stood at 22.8% at the end of April.

On May 4, the Mortgage Bankers Association released results from their Forbearance and Call Volume Survey which showed that 3.8 million homeowners or 7.54% are currently in forbearance. Mortgages backed by Ginnie Mae reflected the highest total by investor at 10.45% in forbearance. Private label securities and portfolio loans had 8.30% of loans in forbearance. Fannie Mae and Freddie Mac loans were at 5.85%.

Ultimately, America's economic recovery will be largely based upon the current and future treatments available for COVID-19 patients and its distribution plan, as well as the expansion of our testing capabilities. Since the release of the initial whitepaper in mid-April, the expected timeline for medical advancements to combat COVID-19 has decreased further, which is certainly good news. Future distribution plans for treatment options can be best described as a work in process. As a reminder, this whitepaper attempts to build an economic recovery timeline based upon medical initiatives currently underway to combat the COVID-19 pandemic. This timeline can then be applied to asset-liability management analysis to measure, monitor, and mitigate credit, interest rate, and liquidity risks.

Economy – May 2020

The Federal Government has undertaken massive and unprecedented fiscal and monetary stimulus in response to the COVID-19 pandemic. The Coronavirus Aid, Relief, and Economic Security ("CARES") Act was signed into law on March 27, 2020, and included over $2 trillion in relief (detailed in the previous whitepaper). A follow-up $484 billion package was signed into law on April 24, 2020, which included:

- $310 billion additional funding to the Paycheck Protection Program
- $60 billion for a separate small business lending program
- $75 billion for hospitals
- $25 billion for COVID-19 testing

Overall Federal actions of this magnitude ($3 trillion and counting) are unprecedented from a historical perspective. Due to the substantial economic impact related to the COVID-19 pandemic, substantial federal solutions were needed as a response to avoid a depression.

With economic activity varying considerably by state and potential future outbreaks of COVID-19 unknown, projecting future values of United States economic indicators is subject to a great deal of uncertainty and likely, high variability to actual results. Nonetheless, the Congressional Budget Office ("CBO") published an economic forecast on April 24, 2020. The expectation for 2nd Quarter 2020 GDP from the CBO is an annualized decline of 39.6% followed by an annualized increase of 23.5% in the 3rd Quarter of 2020. With respect to forecasted unemployment, the CBO expects an average unemployment rate of 15.0% for the United States in the 2nd and 3rd Quarter decreasing to 11.7% in the 4th Quarter of 2020. An updated CBO forecast is expected later this month.

Medical Science and COVID-19—Repurposed Drugs—May 2020

Last month we covered 5 repurposed drugs currently being utilized as treatments to provide relief for COVID-19 positive patients: Remdesivir, Hydroxychloroquine, Favipiravir, Ruxolitinib and Baricitinib. Famotidine, the active ingredient in the over-the-counter heartburn treatment Pepcid, is currently under clinical trials as a COVID-19 treatment and is another repurposed drug to track progress on.

Of the repurposed drug treatments, Remdesivir continues to show the most promise. On May 1, 2020, the Food and Drug Administration ("FDA") granted emergency use authorization for Remdesivir as a COVID-19 treatment. Dr. Anthony Fauci, the nation's top infectious disease specialist, stated after reviewing global trial data involving 1,063 people in 75 hospitals that Remdesivir is "a very important first step" in combatting COVID-19 and the trials "show that Remdesivir has a clear-cut, significant, positive effect in diminishing the time to recovery." He also added "better and better drugs will be coming along". The Remdesivir trial showed a median recovery time reduction from 15 to 11 days. Additionally, it showed an increase in the survival percentage.

Gilead Sciences stated that it will donate its entire current supply of Remdesivir, 1.5 million doses, globally which can treat between 140,000 and 280,000 people, based on dosage (5 or 10 dosages per individual). The US allocation is 607,000 doses which can treat between 78,000 and 156,000 patients again depending on prescribed dosage.

Based on the positive trial results, production of Remdesivir is being scaled up. According to their website, Gilead Sciences is currently "in discussions with some of the world's leading chemical and pharmaceutical manufacturing companies about their ability, under voluntary licenses, to produce Remdesivir". The production of Remdesivir is a long, linear chemical synthesis process which is both resource and time intensive. Until other remedies prove superior, supply of Remdesivir will be a global focus.

Famotidine is undergoing clinical trials as it was reported in New York and China that those who took a common heartburn medicine, Pepcid, while hospitalized for COVID-19 were more than twice as likely to survive the infection, although we do not know at this time whether this was just a coincidence. Famotidine is being studied to see if it inhibits COVID-19 replication.

Once thought of with high expectations, Hydroxychloroquine is not showing much effect on recovery rates in COVID-19 treatment studies. It likely does not work as a treatment and could potentially cause heart problems.

Because of the low supply of Remdesivir, the U.S. supply is intended to be used for the most severe COVID-19 patients. For less severe cases, Favipiravir, is undergoing trials as a broader treatment option. A phase 2

clinical trial began in Massachusetts in April. Favipiravir works by preventing the virus from replicating in cells. The Japanese government has stockpiled enough doses for 2 million people. Fujifilm Toyama Chemical is working to produce 100,000 courses a month in July and 300,000 courses a month by September. Unfortunately, this drug has been linked to fetal deaths.

Incyte has started a phase 3 clinical trial of Ruxolitinib to treat the cytokine storm caused by COVID-19 in certain individuals. The primary use of Ruxolitinib historically has been as a cancer treatment. The commercial and clinical supply in the U.S. is sufficient to meet anticipated needs.

Baricitinib is being tested as treatment in conjunction with Remdesivir in a clinical trial of 1,063 patients. Baricitinib is an anti-inflammatory agent that may potentially further improve mortality outcomes as part of a "cocktail" treatment.

Although not a repurposed drug treatment, convalescent plasma is an established approach to combat outbreaks. This approach uses immune cells extracted from the blood of people who have recovered from COVID-19. The drawback to this approach is limited supply. Emergent BioSolutions is a leading company in this area.

Medical Science and COVID-19 – Specifically Designed Treatments

Last month we covered 4 organizations currently working on treatments or therapeutics (not vaccines) specifically designed for COVID-19 positive patients: Regeneron, GigaGen, Rockefeller University and Bellerophon Therapeutics.

Regeneron is a biotechnology firm working on treatments to neutralize the COVID-19 virus and has established itself as a leader in this area of medicine. Regeneron stated that an experimental antibody treatment for COVID-19 could be available this fall based on the success of human trials which are scheduled to begin in June. The therapy consists of two antibodies which are manufactured versions of immune response proteins.

Many other companies are working on similar treatment options with similar timelines, including: AstraZeneca, Vir Biotechnology, Eli Lilly and AbCella Biologics.

Medical Science and COVID-19 – Vaccines – May 2020

The only way to avoid new waves of infections is to develop a vaccine against COVID-19. Vaccines typically taken years to develop. However, vaccine development is proceeding at an unprecedented pace. There are eight vaccine candidates currently undergoing human trials. Amongst the medical community, there is considerable ongoing debate related to the trade-offs between speed and safety related to vaccine development for COVID-19. The leading pharmaceutical companies are working on developing vaccines in record time. Last month we covered the following drug manufacturers working on vaccines: GlaxoSmithKline, Sanofi, Moderna, Johnson & Johnson and Pfizer.

Of the companies working on a vaccine for COVID-19, Moderna has made the most progress to date. Moderna received $483 million in federal funding to accelerate development of its potential coronavirus vaccine, mRNA-1273. Phase one trials of mRNA-1273 have been completed and phase 2 trails are expected to begin shortly. Of the companies working on a vaccine discussed in the April whitepaper, Moderna is the only company to have reached phase one trials. In comparison to other companies, Moderna makes greater use of artificial intelligence in its processes which speeds up development. If the phase two trials go well, phase three testing could start this summer and the vaccine could be ready in early 2021. Worth noting is that a lot has to go right for Moderna and other companies to be successful because there has never been

a vaccine developed for any kind of coronavirus. Although manufacturing plans are being scaled up, distribution will prove challenging given the sheer amount of people that need to be vaccinated (presupposing the vaccine works as intended). Those most vulnerable are expected to be vaccinated first. Moderna entered into a 10- year manufacturing deal with Lonza to make up to 1 billion doses of mRNA-1273 per year. Production is expected to start in July.

GlaxoSmithKline/Sanofi, Johnson & Johnson, Pfizer and others have vaccine candidates in various stages of early research, pre-clinical and phase 1 trials.

Medical Science and COVID-19 – Testing – May 2020

Since last month, the United States has increased COVID-19 testing from 145,000 to 250,000 daily (4.3 million to 7.5 million monthly). New medical technology CRISPR tests have been granted emergency use authorization.

There are a wide range of estimates on how many tests are needed daily. The suggested ranges all exceed our current testing capabilities. Testing the entire U.S. population once every two weeks requires around 25 million tests a day. Some suggest this objective is feasibly unattainable. The Harvard Global Health Institute estimates 900,000 tests per day are needed to test all those displaying any symptoms at all of COVID-19 and their contacts. Five million tests per day is another common testing objective quoted by experts. With effective contact tracing, the total amount of tests needed can be reduced.

Abbott Laboratories is the current leader when it comes to COVID-19 testing equipment. The company has launched four coronavirus testing products in the U.S.: ID NOW, m2000, Antibody Test and Alinity. Total testing units shipped and production targets as of May 11 are:

- ID NOW – 1.7 million shipped, plans to manufacture 2 million a month by June (portable testing instrument for urgent care clinics, etc.)
- M2000 – 2.0 million shipped (large, high-volume laboratory instrument)
- Antibody Test – 7.2 million shipped, plans to manufacture 20 million a month by June, runs up to 200 tests an hour
- Alinity – recently approved, shipments starting, device can run over 1,000 tests in 24 hours, provides results in less than 2 hours

Client Recommendations and Summary – May 2020

For financial institutions, the current business environment presents significant challenges. Management needs to be realistic about the impact of the COVID-19 pandemic and build a bridge to the other side of it. Eventually, we will have better treatments as well as vaccines for COVID-19. Until we have a vaccinated population, challenges will persist. Financial challenges to individuals have potentially been reduced based on federal actions. Following are our 8 recommendations for Wilary Winn's clients based on the current state of U.S.:

1. Get out the TDR playbook and have an organizational focus on responsible collections. Examine the historical performance of Troubled Debt Restructurings ("TDR") from the last financial crisis. Consider what worked for loss mitigation and what did not work as expected. Make improvements and revisions to collection strategies based on past successes. Further, management needs to ensure that the team communicating with borrowers is properly staffed. Given the current economy, it is essential to communicate with customers/members experiencing financial stress early and often. Work with those experiencing difficulties to inform them of available options to help them bridge to the other side of this pandemic.

2. Assess the loan portfolio for credit risk exposure and its potential impact to capital. Wilary Winn has developed an approach to forecast credit losses that factors in both the unprecedented level of federal stimulus and the rapidly changing and currently elevated unemployment rates. This credit analysis is based on regional factors as well as concentrations in fields of membership. A deeper dive into the loan portfolio composition will also provide credit risk insights as loan and borrower attributes matter.

3. Have liquidity beyond current needs – with increased uncertainty on loan portfolio collections and credit losses, maintain additional liquidity and pledge assets well ahead of anticipated needs.

4. Determine if the low funding rates in the market present opportunities – today's low rates offer financial institutions attractive potential long-term funding rates. Opportunities exist to the extent liabilities can fund duration matched assets without adding undue credit risk exposure.

5. Develop a COVD-19 Preparedness Plan – In some states this is a requirement. Having a plan to keep employees healthy while conducting business is of primary concern at this time.

6. Be strategic in your residential lending activities. Many lenders have increased the minimum credit score and required down payment for new originations. Many have also discontinued offering cash-out refinances and have curtailed HELOC lending. Some lenders should consider following these defensive policies and practices. Others given their location, their strength of their customers/members, the condition of their local economy, etc. might consider not tightening their underwriting in an effort to build market share.

7. Closely monitor the auto market and adjust risk-based pricing matrices as needed. Recessions and economic uncertainty have historically led to significant drops in used vehicle values. According to Edmunds, three-year-old vehicles lost 10% of their value during 2008 in the previous recession. Higher levels of lease returns, reduced demand and additional expenses associated with reconditioning will all put downward pressure on auto prices in the current market environment. The Manheim Used Vehicle Value Index decreased by 11.41% in the month of April 2020.

8. Consider the effect of the pandemic on collateral values for all types of loans in the portfolio not just the residential real estate and auto loans discussed above.

Predicting an economic recovery timeline from a pandemic is challenging or almost impossible. What we know for certain is that when the US population has been effectively vaccinated, it will be business as usual. Compared to a month ago, the economic recovery timelines appear to have been reduced by one quarter. Given the brainpower and support provided to the leading pharmaceutical companies, a vaccine will likely be available in the 1st or 2nd quarter of 2021 – a record time. Therapeutics developed specifically to combat COVID-19 will likely be available in the 4th Quarter of 2020. These medicines will be superior to the repurposed drug treatments available today. Until then, treatments will likely consist of "cocktails" using Remdesivir more effectively administered because we know about proper dosages.

Meanwhile, testing remains essential and must be scaled up dramatically due to asymptomatic carriers. We need to move faster here, as our current level of testing is far below what is recommended by health professionals. According to an ABC News poll, 73% of Americans believe there is a shortage of coronavirus tests available in the United States.

With state Governors and/or Governor groups making decisions or reopening or lessening restrictions in their states, expect choppy economic activity in the 2nd and 3rd quarters of 2020 based on which parts of the country are open and what stage they are in. A secondary outbreak is a concern and could set us back.

Worth noting is that Americans differ greatly in their opinions about their willingness to return to normal economic activity. According to a recent Gallup poll: 21% are ready to return to normal activity right now, 36% will be ready once the new cases in their state declines significantly, 31% say they will return to normal when there are no new cases in their state, and 12% say they will not return to normal until a vaccine has been fully developed. Until people are confident that they can safely return to their normal activities, economic progress will be slow. The keys here until we are vaccinated are effective testing, contact tracing and the availability of new therapeutics.

Wilary Winn will continue monitor progress on the medical front in addition to tracking and analyzing economic activity. We will continue to discuss this information during our credit meetings and disseminate it to our clients.