RAYMOND JAMES

US RESEARCH | PUBLISHED BY
RAYMOND JAMES & ASSOCIATES

MACRO RESEARCH
Chris Meekins | (703) 351-5294 | chris.meekins@raymondjames.com
Ed Mills | (202) 872-5933 | ed.mills@raymondjames.com
Tavis C. McCourt, CFA | (615) 645-6811 | tavis.mccourt@raymondjames.com
Pavel Molchanov | (713) 278-5270 | pavel.molchanov@raymondjames.com
Simon Leopold | (212) 856-5464 | simon.leopold@raymondjames.com
Justin Patterson, CFA | (415) 616-8035 | justin.patterson@raymondjames.com
William A. Crow | (727) 567-2594 | bill.crow@raymondjames.com
Lawrence Keusch | (617) 897-8992 | lawrence.keusch@raymondjames.com

REVISED FEBRUARY 17, 2020 | 9:32 PM EST
FEBRUARY 17, 2020 | 9:31 PM EST
INDUSTRY BRIEF

Coronavirus - Worst Is Yet To Come, Sorry Frank

Frank Sinatra sang "The best is yet to come," sadly we cannot yet say that about the coronavirus. In conversations with government officials, academics, other experts, and based on our expertise, consensus is that **this coronavirus outbreak (COVID-19) is going to get worse before it gets better.** It seems as though **the market is underappreciating the potential dangers and what the key government leaders on the virus are saying.**

In this report, authored by numerous Raymond James analysts, we discuss:

- Potential impact to the U.S including growing concerns about preparedness;
- Status of virus in China and political implications for Xi;
- Disease spread including lessons from cruise ship and Singapore outbreaks;
- Government funding of treatments;
- Potential for expanded travel restrictions.
- Impact to U.S. China trade war;
- Estimated impact on oil demand;
- Company commentary on the virus;
- Equity Strategy: Earnings Coming Down, Equity Markets Shrug As Commodity/Currency Markets Factor In Near Term Slowdown In Economic Activity;

A wildfire is burning in China. Will the embers from the fire there start a fire here? Will the U.S. be able to stamp out the embers prior to them becoming a wildfire? The CDC portrays a level of confidence, though we become more concerned by the day. **We increase our likelihood of notable widespread cases in the U.S. from 1 in 7 to 1 in 5.** We note many officials we speak with believe the likelihood is higher. In China, the time from initial virus introduction (we believe probably late November or early December) to reaching epidemic levels took between 7-10 weeks. That means we probably need to wait another **2-4 weeks before we can say we will not see a widespread outbreak in the U.S.** We continue to believe the number of cases in China is dramatically higher (400,000+) than official reports (70,000). On a positive note, the hospitalization rate is likely 5-6% instead of 15%, and fatality rate right now looks like it is under 1%. Unlike the flu, which is hitting children particularly hard this year, we are not seeing a large impact on children from Covid-19.

One growing area of concern is that there was an assumption that this would be like SARS and by summer it would go away. **Now there is a growing belief that this could become an annual seasonal virus (like colds and flu) or a global pandemic which means it would spread across the globe until herd immunity is reached.**

The amount decision-makers do not know about virus origination, genetic sequence, whether it is mutating, incubation period, and more is unsettling. The lack of meaningful cooperation by Chinese officials is slowing the response to this virus.

INTERNATIONAL HEADQUARTERS: THE RAYMOND JAMES FINANCIAL CENTER | 880 CARILLON PARKWAY | ST. PETERSBURG FLORIDA 33716

Disease Statistics

- Officially reported number infected in China: 72,436
- Officially reported number deaths in China: 1,868
- Officially reported number nations with a case: 27
- Officially reported number infected in U.S.: 15
- Officially reported number of cases in Singapore: 75
- Officially reported number of deaths outside of China: 3

Worse Before It Gets Better

After consultation with a wide range of key thought leaders, we are increasingly convinced the impact of the virus will get worse before it gets better. We hear statements by the leaders of the response (some of which we highlight below) and we just have too many doubts to believe we have turned some corner on the virus. When we see a Japanese tourist spend a week in Hawaii while sick from coronavirus without being identified at any point during his stay and only being diagnosed when he returned to Japan; our belief that more cases will occur in the U.S. is only heightened. The fact a vast majority of those infected only have mild symptoms means we could have community spread and only find out once the 5-6% of people get hospitalized. At the time we see a spike in hospitalizations it will likely be too late to prevent it from becoming widespread.

In China, we continue to believe the government is underreporting the cases. Factories were supposed to be humming again and yet reports from across the nation show a large number of factories remain closed and many of those that are open are not operating at full capacity. If China truly wants to stop the spread, it likely has to keep the travel lockdown for the remainder of February and likely until mid to late March. Assuming the fatality rate is low, China may decide the economic impact isn't worth the cost of preventing further disease spreading and could reopen the hardest hit areas before advisable from a public health perspective.

What key government officials are saying:

It appears to us that the market is largely discounting important statements from key government officials around the world. Here is a selection we find particularly noteworthy:

- Japan's health minister on Sunday urged the public to avoid crowds and "non-essential gatherings", including notoriously packed commuter trains, to prevent the new coronavirus from spreading in the country"
- U.S. CDC Director Robert Redfield: told CNN "This virus is probably with us beyond this season, beyond this year, and I think eventually the virus will find a foothold and we will get community-based transmission"
- HHS Secretary Alex Azar said that while they hope the virus slows in the summer, they are preparing for that not to be the case.
- U.S. NIAID Director Tony Fauci: "I think we better be careful that as much as we want things to turn around, we may not have wishful thinking. We still have a very serious problem in China and as we get more travel-related cases, the threat of this becoming more diffuse is great." "we're not past the point of containment, but it really does have the potential to turn into a global pandemic."
- WHO Director General Tedros Adhanom Ghebreyesus said the virus is "a very grave threat for the rest of the world" and "Viruses can have more powerful consequences than any terrorist action." "It's impossible to predict which direction this epidemic will take.

These officials are sounding the alarms and yet the market seems to be largely discounting them. The officials are saying they expect more community infections in other countries and that they believe this virus will not be a one and done like SARS. The idea this virus could continue through the summer or return next near undercuts the consistent refrain from investors that this will be a one time hit and the market can ignore it.

Disease in China

We have seen gradual decreases in recent days in the increases in number of reported cases in Hubei province. The total number now rests around 72,000 and nearly 1,800 deaths. We continue to believe the official numbers from China should not be relied on as being accurate because: 1) China has reasons to underreport with a long history of underreporting. 2) There are limitations to the diagnostic tests available; 3) China is not allowing clinical diagnosis of the virus outside of Hubei and still requires diagnostic tests in other areas of the outbreak, 4) Based on our conversations with people with direct knowledge of what is happening on the ground, the numbers are not accurately reporting everyone. We believe the number of people infected in China likely tops 400,000.

In January the number of people with some type of travel restrictions stopped being reported when it reached above 60 million. We believed the number was above 150 million; however over the weekend, the NY Times reported that **760 million are under some type of travel restrictions**. China has now begun sterilizing cash to try to prevent the spread of the disease. They continue to take dramatic actions to try to prevent the spread, though we do not have evidence it is effective. Factories remain shuttered or are open at reduced capacities. In the hardest hit areas, hospitals continue to delay elective surgeries and focus solely on treating coronavirus cases.

"Chernobyl-like" event for Chinese leadership?

There have been lingering questions about the grip on power General Secretary Xi and the Chinese Communist Party have on China. These questions are only being amplified by the coronavirus and we have been receiving questions on whether or not this will be a "Chernobyl-like" event for China – the comparison being the impact of the Chernobyl nuclear power plant disaster on the fall of the Soviet Union. The slow reaction and continued unanswered questions appear to be sowing real concerns among the Chinese people. However, the real impact will likely take years to fully measure. In our opinion there are two mostly likely paths from here that we will be watching, with path one the more likely path.

Disease in U.S.

The current number of officially reported cases in the U.S. stands at 15, but we believe there are likely more. All cases either originated in China or are traced to a case that originated in China. The announcement HHS is going to start using the flu surveillance network to test people for flu AND coronavirus in five cities to serve as a "early warning network" implies officials are worried community spreading is happening here. We believe this is an important step, though it will likely be days before we see if this turns up any new cases. The U.S. government continues to have a travel restriction from China and is quarantining most people for 14 days who have been exposed. In addition to trying to monitor the spread of the disease, as we outline below, the government is also preparing for potential spread in the U.S. The Department of Defense has activated its pandemic plan as a precaution.

Concerns over U.S. preparedness

The U.S. is the global leader in infectious disease detection and response; however we are increasingly concerned that while the U.S. may be the global leader, it is still not ready for what could come. Of particular concern is the fact that the CDC did not have plans in place for how to handle quarantines. In fact more than 36 hours passed from the announcement to quarantine people coming from China for CDC to have a plan for how to handle the quarantine. In many instances other parts of government have had to make up for CDC's unpreparedness. Some of the lab diagnostics from CDC aren't working for state and local labs, which is obviously problematic. Some state and local governments have put federal funding over the years to good use to actually prepare (NY and TX as examples) and others, because little financial accountability in the programs existed, have failed to adequately prepare (HI as an example). There are concerns that underfunding by Congress for the Strategic National Stockpile may mean we do not have enough of certain supplies that we may need. Now as the government is trying to ramp up supplies, it is learning that the source for many of the critical products is outside the United States. While we believe the U.S. is still probably better prepared than most nations, our concern has heightened in recent days.

Disease Spread

In China, the time from initial virus introduction (we believe probably late November or early December) to reaching epidemic levels took between 7-10 weeks. **That means we probably need to wait until 2-4 weeks before we can say we will not see a widespread outbreak in the U.S.**

We have become increasingly concerned after seeing a new coronavirus infection of a Japanese tourist in Hawaii who traveled throughout Maui (without symptoms) and Oahu (with symptoms) for more than a week before returning to Japan where the individual was diagnosed with coronavirus. Public health officials are now trying to trace who he may have come in contact with on planes and while in Hawaii to track whether they get sick.

There is also a concern that unlike previous major outbreaks like SARS, most people infected by this virus do not show "serious" symptoms and in fact the symptoms look similar to may other common viruses spreading now. The virus could in fact be spreading now all the while the patients assume they have a cold or the flu. This can make tracking the disease difficult.

Rate of infection of health workers is also concerning. More than 1,700 health workers in China have been infected. If the infections came early in the outbreak then maybe it is a result of a lack of knowledge about how to protect themselves. If infections are still occurring; then there may be questions about how effective personal protection equipment is at preventing the spread.

China's stiff-arm to the international community

China continues to play games with regard to allowing international scientists real access to the infected areas in China. More than a month ago WHO and U.S. officials offered global leaders in science to assist in the response and to help inform the broader public about the virus itself. At every turn China spurned the offers of assistance. Finally, more than two weeks ago China agreed to allow the WHO to come and yet it is only now that officials have been allowed into the country. Despite being allowed in, the scientists are not being permitted to visit Hubei province which is the most critical area for them to go. If this virus becomes a true global pandemic, the actions by the Chinese leadership will come under great fire as they no doubt contributed to the spread.

Singapore outbreak

The outbreak in Singapore not totaling more than 75 cases is important to study for numerous reasons. 1) Singapore isn't a cold area, in fact it has been repeatedly over 80 degrees, so it makes scientists wonder whether the virus will really dissipate in summer, 2) There appears to be community spread. 3) Some people contracting the virus are not able to be traced to people who have been to China or to people who have the virus now - meaning they can't figure out where it came from yet. The outbreak in Singapore may be the best example of what potentially could come to the U.S. It also may result in more travel restrictions.

Cruise ship outbreak

The cruise ship outbreak, though horrible for passengers on the ship, is providing helpful data. On the ship, about a third of the individuals were tested and a third of those tested positive. Of those individuals, about one fifth are not showing symptoms. This is all really important because it helps us better understand how the virus is spreading. It is critical we continue to track the individuals who are asymtomatic to see if they develop symptoms or not, and if these individuals infect others or not. The U.S. government is evacuating Americans who do not exhibit symptoms to the U.S. One crazy thing about the cruise ship, until Wednesday night, CDC had not spoken to a single person on the ship and it took a member of congress to mention he had a friend on it for another part of HHS to then connect CDC with them.

Impact on U.S.-China Trade War

As the Chinese economy weakened in the last year, China was much more willing to negotiate and agree to the phase one trade deal. Based upon our conversations with US-China trade experts, the consensus has been that the Coronavirus will make China much more likely to implement the phase one deal. The near-term purchase may be somewhat weaker than expected (a contingency outlined in the deal), but the reductions in structural barriers towards U.S. goods are expected to be eliminated and the intellectual property (IP) protects are expected to be enforced. We have received an uptick in questions related to the possibility of an accelerated phase two deal, especially if China's economy continues to have greater-than-expected economic impact from the virus. We believe that China would seek to have additional tariff reductions, but formal negotiations take a backseat to dealing with the challenges of controlling the outbreak of the virus/full implementation of phase one.

As it relates to the technical implementation of phase one, the in-person meetings have been delayed, and non-essential U.S. personnel have been removed from U.S. embassies in China, making some of the implementation more difficult. However, there have been suggestions that implementation can continue via video conferences and other means.

The other trade-related headlines have related to the ongoing national security concerns related to Huawei. As we have published, the U.S. government has ramped up scrutiny on Huawei in recent days and is expected to move forward with further restrictions.

We believe China hardliners in the Trump administration and on Capitol Hill view the current situation as a chance to further push tech restrictions at a time of political and economic vulnerability for China. China has been somewhat muted in its response to the recent Huawei-related headlines, which may further embolden some in the Trump administration. We believe that President Trump is somewhat reticent of repeating some of the tension of the past several years, especially as he has been looking to use the phase one deal to his political benefit. However, he may need to keep the pressure on Huawei (which the Trump administration views as a unique national security concern) to prevent a larger-scale escalation of the tech war between the United States and China.

Path one is to show progress with key trading partners (such as the U.S.) and will be a market positive event. This would include the robust implementation of the phase one deal, continued lowering of tariffs on U.S. goods (like we saw earlier this month), meeting purchase obligations, and seeking to engage in further trade talks (potentially being open to some items that had been previously off the table for discussion [e.g., tech transfers]).

Path two would be to turn inward in use propaganda to blame the U.S. and other countries for the economic woes and stock nationalism to divert blame. We have already seen some of this behavior as the U.S. and other countries have shutdown travel or ports of entry for Chinese nationals. China has a long history of using this type of propaganda (traditionally towards Japan) as a way to bolster domestic leaders. We would view an increase in these type of activities as a demonstration that the Chinese leadership is concerned about its control and would view this path as a market negative. Should Chinese leadership pursue this path, the threat of tariff escalation, tech restrictions, and a return to the concerns of the past two years would quickly return.

Travel Restrictions

A spread in other areas like Singapore may lead to more travel restrictions. HHS Secretary Azar hinted on CNBC on Friday that the agency is considering this. We believe other parts of Asia, such as Singapore and possibly Japan would be considered. For a travel ban to be necessary, widespread community spreading would likely need to occur. There would also need to be a lack of confidence in the local public health entities. We believe both are unlikely at this point. When discussing potential further travel restrictions, the question arises, "If this becomes more widespread, then is there a point to the travel ban especially with the low mortality rate?" In our view, if it gets widespread, there is little scientific reason for a broad travel ban (and in fact some argue a travel ban can do more harm than good) to all the countries because it is coming here and it is unrealistic to think we will stop all international travel. On the flip side, if this thing is spreading, it is really tough to see how politically the administration could get away with lifting bans. It would be perceived by voters as allowing more virus in. Any fatalities (even if rate is low) would be considered one or two too many. The public will want a ban and in an election year, it is unlikely science will beat politics. The bottom line is that we expect the travel ban to stretch on for a while. As we stated earlier in this report, the assumption the virus would die out in summer is now called into question meaning an end date for the ban is uncertain.

Government Funding and Disease Treatment

Government funding continues to focus predominantly on the quarantine efforts and lab diagnostic tests. There has not been a large influx of funds to develop treatments or vaccines as we have seen after similar outbreaks in the past like Ebola and H1N1. While HHS has shifted around about $150M for funding the response, that is not enough to truly meet the needs, in our view. The National Institutes of Health has entered into a vaccine development agreement with Moderna, but we beleive more funds will be necessary. Congress will likely need to pass a supplemental appropriations bill to provide additional funds. We believe Congress is willing to do so, but the Trump administration's Office of Management and Budget refuses to sign off on a funding level. Pressure continues to mount and delays only increase risks to the U.S. We believe a supplemental appropriations bill is likely to occur. When it passes, we believe there will be funding for development of diagnostics, treatments, and vaccines. The U.S. lacks a good diagnostic test and even the one developed by CDC and sent to labs across the country seems to be struggling. On treatments, we believe the initial focus is going to be on repurposing other drugs to see if they can effectively treat this virus. Assuming this does not work, the U.S. government will need to partner with pharmaceutical companies on the development of a new treatment tailored specifically for this virus. That would likely cost hundreds of millions of dollars and at least 18 months. Vaccine development is also a priority, but similar to treatments, vaccines will take at least 18 months and hundreds of millions of dollars to get across the finish line. For perspective, the U.S. government invested billions into developing treatments for Ebola after the 2014-2015 outbreak and yet only in recent months have products received FDA approval.

Refining Curtailments in China Point to Coronavirus’s Oil Demand Impact

The full extent of the virus’s macroeconomic and industry-specific impacts remain largely a matter of guesstimating. As it relates to oil demand, in addition to making comparisons to SARS in 2003, there is finally some bottom-up data that helps quantify the impact. Sinopec, China's largest refiner, curtailed February throughput by 600,000 bpd, equating to 12% of its capacity. PetroChina, the number-two player, cut in February by 320,000 bpd, or 10% of capacity, and plans an even larger cut of 377,000 bpd in March. There is less clarity vis-a-vis the independent, non-state-enterprise firms – the so-called "teapot refiners" – but press reports point to cuts of 30-50% by approximately a dozen plants in Shandong province, i.e., large percentage cuts on a relatively small base. For context, China’s total oil consumption in 2019 was 13.5 million bpd, or just over 13% of the world total.

In addition, a modest amount of demand impact is likely to be reflected in data from outside China – particularly in East and Southeast Asia – due to reductions in international aviation and marine shipping. Zeroing in on flights to/from China, the largest reductions on an absolute basis – measured in flight-seat capacity – pertain to Japan, Thailand, and South Korea. The U.S. is the only country outside Asia-Pacific that is in the top ten on this basis (it is ranked seventh).

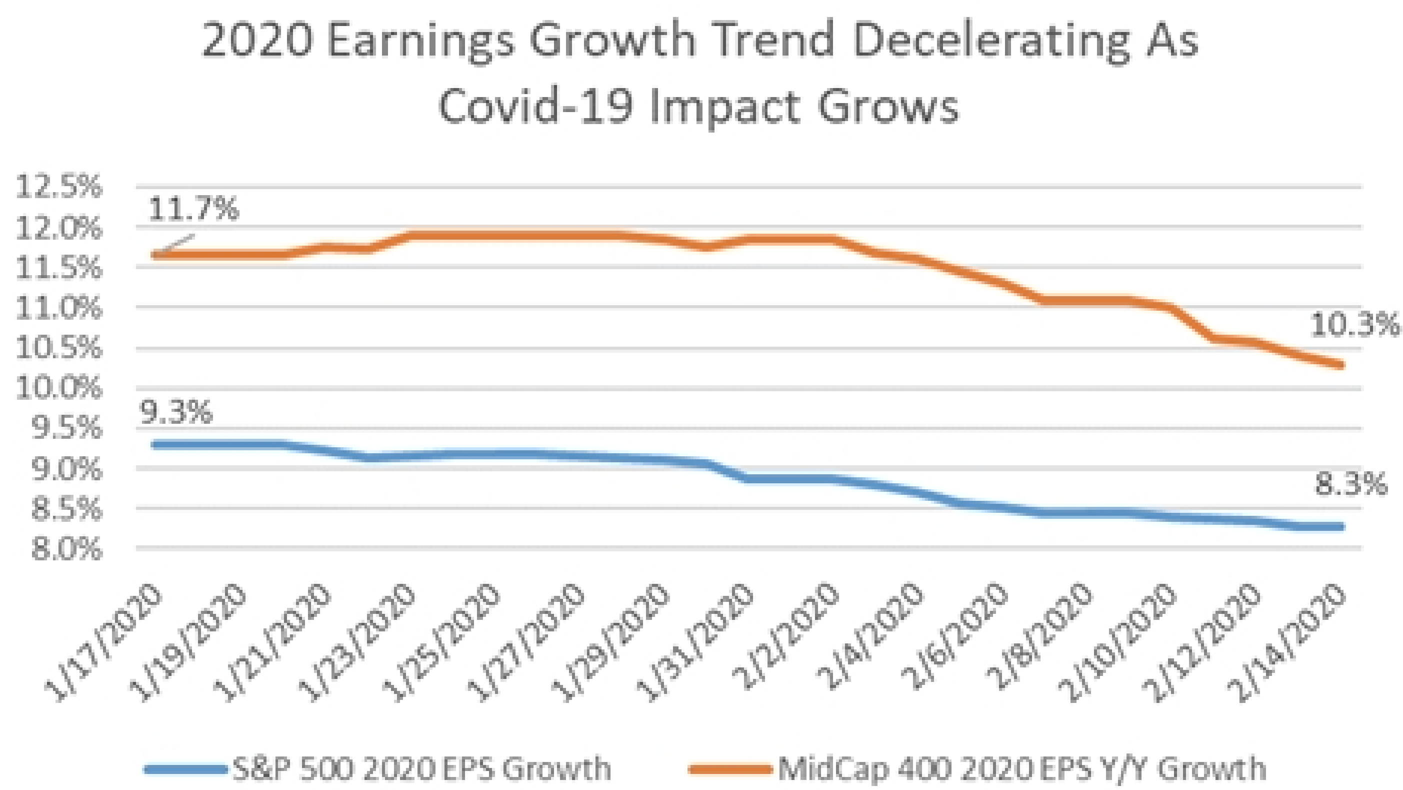
Impact on Companies

- LITE incorporated a 4% headwind in March guide
- IIVI incorporated a minimum 9% headwind in March guide
- CSCO said its guidance reflects weak China business regardless of coronavirus. It has not incorporated risk to its supply chain from coronavirus.
- ANET has not incorporated risk to its supply chain from coronavirus. It does no business in China
- ERIC and NOK mentioned possible risk to their supply chains; contemplated but not quantified
- XYL has guided to a back-end-weighted trajectory for 2020 revenue, in part due to the current virus-related shutdown of deliveries into the Chinese market.
- TPIC has wind blade production facilities in coastal China that are currently shut down; timing of resuming normal operations has yet to be determined.
- EXPE expects a $30-$40 million impact to adjusted EBITDA in 1Q, and some impact beyond 1Q (still TBD).
- Both Hilton and Wyndham (the only two lodging companies to report so far), reported some impact. 150 Hilton properties with 33,000 rooms are temporarily closed in China. Wyndham said up 1,000 hotels were closed, though many have reopened. Both pointed to a potential 2% drag on EBITDA for the year, though a greater impact to the top lines. They assumed a 6-12 month period of impact.
- Hospital Supplies: Companies are likely to be impacted by fewer people seeking non-urgent care at hospitals and other healthcare settings. From a supply chain perspective, many companies import components (such as electronic circuit boards) or fully assembled products. Given the lunar New Year, inventory is typically built up in advance, so it is our sense that many companies had sufficient inventory. Should the rate of production slow or exports become bottlenecks, it could be a temporary headwind. Of companies that have reported, the majority were earlier in the process and have not included any quantified impact in the 2020 outlook, although every management team is watching the events unfold. Of the large hospital supply companies with meaningful presence in China, BD has assumed a $20-$30M headwind in the fiscal (March) 2Q, representing under 1% of revenues for the quarter. Of note, BD sells ~95% of what is manufactured in China into the geography, so exports are not a major issue for the company.

Equity Strategy: Earnings Coming Down, Equity Markets Shrug As Commodity/Currency Markets Factor In Near-Term Slowdown In Economic Activity

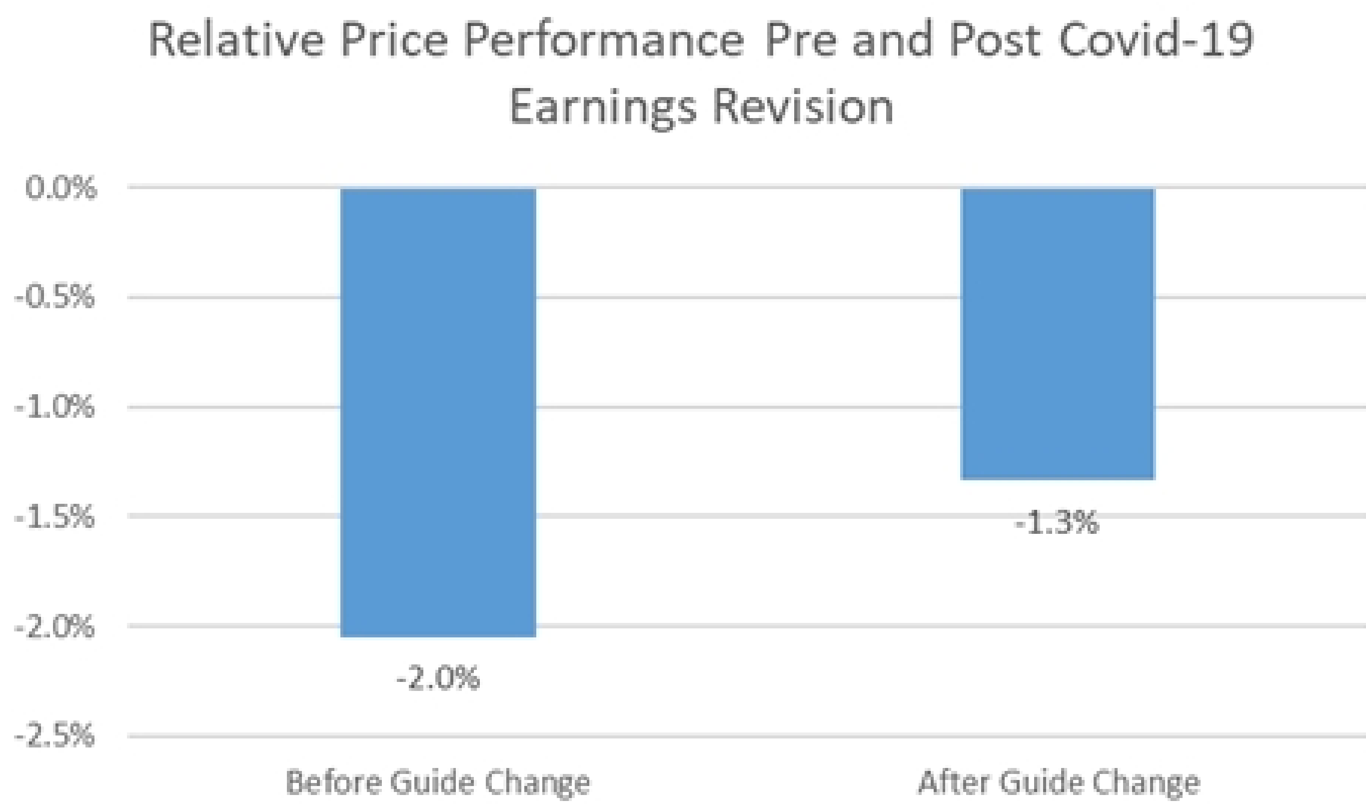
We explored asset price moves since the mid-January explosion of Covid-19 into mainstream/financial media in our note last week "To Asset Markets, Covid-19 Looks Remarkably Similar To The Trade War". Generally, earnings are coming down, and will likely continue to do so, and we have seen the rational response from commodity and risk free yield markets (commodity price down, risk free yields down), while equity markets have been remarkably stable as China liquidity stimulus, and a bet by the investment community that central banks globally have already pressed "9-1-" and are just waiting for any pullback for the emergency liquidity injection to help economies directly, and asset prices indirectly. From a stock price perspective, we have seen exactly what we would expect from an equity market driven by hope for liquidity stimulus, which is meaningful outperformance of stocks at higher and higher market cap tiers. We have attached a number of charts and explanations below, that explains some of the equity and asset price trends over the past month, and what is likely to continue as long as liquidity driven stimulus trumps earnings expectations.

1) EPS expectations are starting to come down – The graph below shows the consensus 2020E EPS growth for the S&P 500 and S&P MidCap 400 since mid-January. As shown, earnings expectations were holding very well through earnings season until the end of January when management teams started to slowly bake some kind of guess of Covid-19 impact in earnings outlooks. Since then, consensus EPS has decreased on a daily basis, and we expect this to continue, likely into 1Q20 earnings reporting season as impacts become fully understood by management teams. We note the same trend exists in the Russell 2000, off of a higher growth estimate.



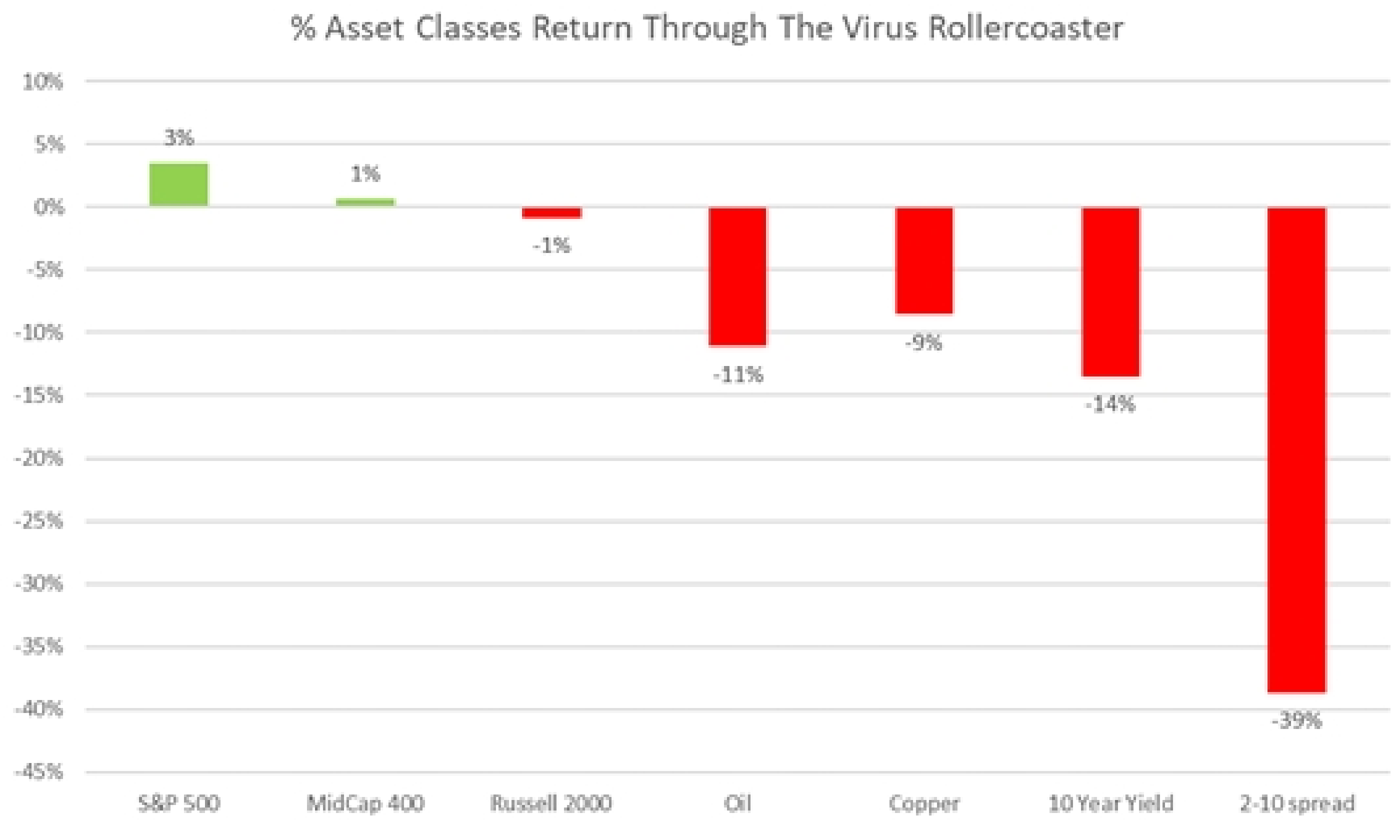
Source: FactSet, Raymond James

2) On Average, individual stock reactions are not encouraging on Covid-19 Excuses (Bad News Is Still Not Good News On Average) – Although the overall equity market (and generally equity markets globally) is holding up quite well in a victory of liquidity over earnings so far, the 24 companies in Raymond James' covered research universe that have explicitly incorporated Covid-19 into guidance have underperformed by ~2.0% prior to guidance, and another ~1.3% post earnings, on average. About 60% of the companies have underperformed since the guidance, while 40% rallied on the news (not as bad as feared.). Net/Net, Coronavirus-inspired EPS adjustments are not a "bad news is good news" situation as of yet.



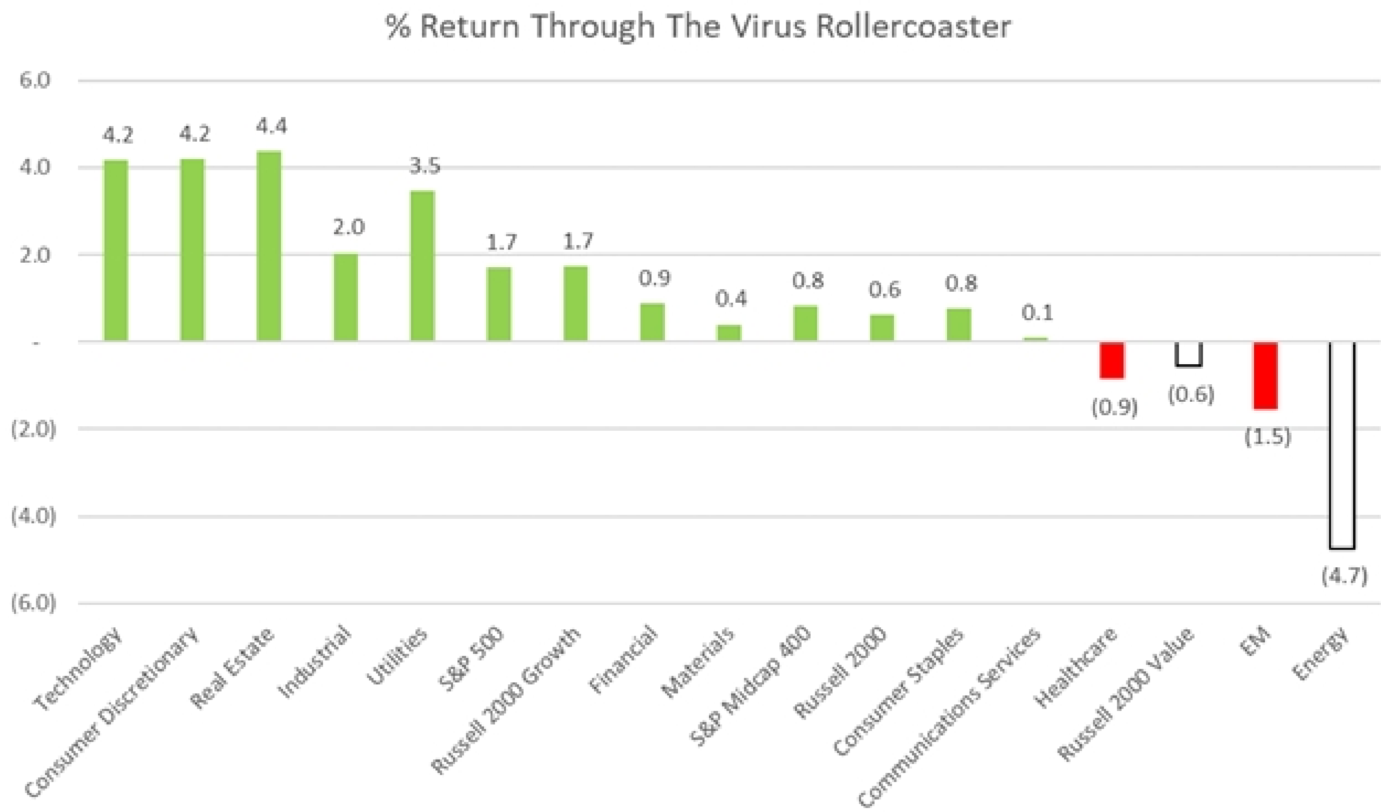
Source: FactSet, Raymond James

3) With earnings expectations coming down, equities are looking through to the recovery, other markets are not – Equity markets are generally higher across the world since prior to the Covid-19 outbreak, despite lower earnings outlooks, in a clear victory of liquidity trumping earnings in near term stock performance. Equity markets have been severely market cap biased since Mid-January (another sign of liquidity premium), with large caps outperforming smaller caps as shown below. However, the oil market and most economically influenced commodities are down ~10% since mid-January, the 10 year Treasury yield is ~14% lower and the 2/10 spread is 39% flatter than it was in mid-January. Ultimately, either the equity markets will be right, and commodities/yields will recover, or vice versa. It's hard to believe such a divergence can exist for long without consistent liquidity injections.



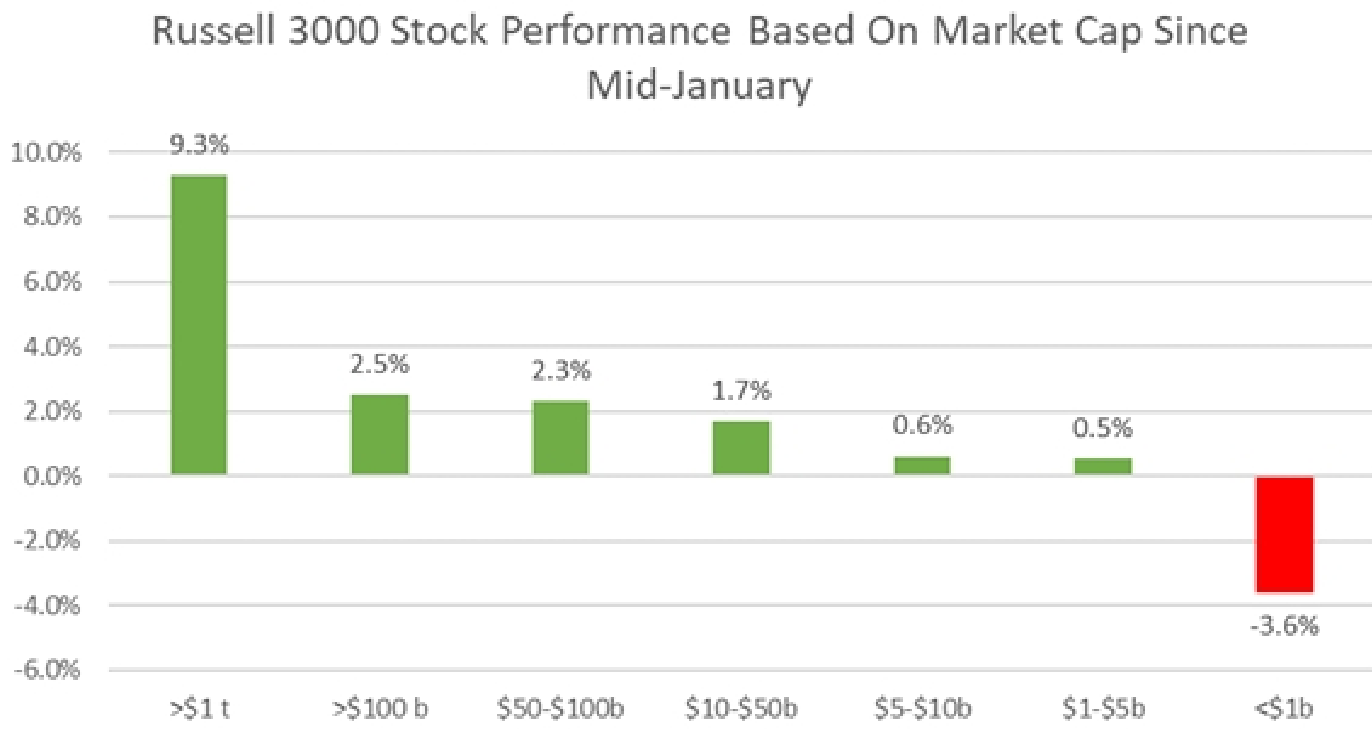
Source: FactSet, Raymond James

4) Stock performance has been very tech and defensive-centric since mid-January, similar to the trade war. As shown below, sector performance has been focused on sectors dominated by FAANGM, or megacap tech names, while real estate and utilities have also rallied in a very predictable "knee-jerk" reaction to long term rates collapsing. Small cap, value, EM and energy have all underperformed at the index or sector level. This index and sector level return profile is essentially exactly what we saw during the trade war. Which is why we say, to asset market, Covid-19 looks almost exactly like the trade war. As investors chase liquidity, defensive sectors and megacap tech outperform as risk free yields and commodity prices languish. We suspect a rotation into cyclicals, small caps, and generally anything out of favor since early 2018, which was happening in 2H19 before Covid-19, will "re-engage" at some point, but we suspect for the next several weeks until the Covid-19 virus impact is fully baked into asset prices, we probably stay in this liquidity-centric market.



Source: FactSet, Raymond James

5) Equity returns the past month are the definition of liquidity premium. If we just look at stock returns by market cap in the Russell 3000 since Mid-January, we see the clear market-cap bias to returns as Covid-19 has sparked a liquidity rally. In fact, the median stock in the Russell 3000 is down slightly since Mid-January, even as the S&P 500 is up ~1.7%. The consistency of the trend across market cap ranges is breathtaking and clearly demonstrates the most substantial dynamic of the Covid-19 market, that is “bigger is better”, as investors stay in stocks, but want as much liquidity as possible in case they change their mind.



Source: FactSet, Raymond James

IMPORTANT INVESTOR DISCLOSURES

Raymond James & Associates (RJA) is a FINRA member firm and is responsible for the preparation and distribution of research created in the United States. Raymond James & Associates is located at The Raymond James Financial Center, 880 Carillon Parkway, St. Petersburg, FL 33716, (727) 567-1000. Non-U.S. affiliates, which are not FINRA member firms, include the following entities that are responsible for the creation or distribution of research in their respective areas: in Canada, Raymond James Ltd. (RJL), Suite 2100, 925 West Georgia Street, Vancouver, BC V6C 3L2, (604) 659-8200; in Europe, Raymond James Euro Equities SAS (also trading as Raymond James International), 45 Avenue George V, 75008, Paris, France, +33 1 45 64 0500 and Raymond James Financial International Ltd., Ropemaker Place, 25 Ropemaker Street, London, England, EC2Y 9LY , +44 203 798 5600.

This document is not directed to, or intended for distribution to or use by, any person or entity that is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation. The securities discussed in this document may not be eligible for sale in some jurisdictions. This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. **Investors should consider this report as only a single factor in making their investment decision.**

For clients in the United States: Any foreign securities discussed in this report are generally not eligible for sale in the U.S. unless they are listed on a U.S. exchange. This report is being provided to you for informational purposes only and does not represent a solicitation for the purchase or sale of a security in any state where such a solicitation would be illegal. Investing in securities of issuers organized outside of the U.S., including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of, the U.S., including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of, the U.S. Securities and Exchange Commission. There may be limited information available on such securities mentioned in this report. Please ask your Financial Advisor for additional details and to determine if a particular security is eligible for purchase in your state.

The information provided is as of the date above and subject to change, and it should not be deemed a recommendation to buy or sell any security. Certain information has been obtained from third-party sources we consider reliable, but we do not guarantee that such information is accurate or complete. Persons within the Raymond James family of companies may have information that is not available to the contributors of the information contained in this publication. Raymond James, including affiliates and employees, may execute transactions in the securities listed in this publication that may not be consistent with the ratings appearing in this publication.

Raymond James ("RJ") research reports are disseminated and available to RJ's retail and institutional clients simultaneously via electronic publication to RJ's internal proprietary websites (RJ Client Access & RaymondJames.com). Not all research reports are directly distributed to clients or third-party aggregators. Certain research reports may only be disseminated on RJ's internal Proprietary websites; however, such research reports will not contain estimates or changes to earnings forecasts, target price, valuation or investment or suitability rating. Individual Research Analysts may also opt to circulate published research to one or more clients electronically. This electronic communication is discretionary and is done only after the research has been publically disseminated via RJ's internal factors including, but not limited to, the client's individual preference as to the frequency and manner of receiving communications from Research Analysts. For research reports, models, or other data available on a particular security, please contact your Sales Representative or visit RJ Client Access or RaymondJames.com.

Links to third-party websites are being provided for information purposes only. Raymond James is not affiliated with and does not endorse, authorize, or sponsor any of the listed websites or their respective sponsors. Raymond James is not responsible for the content of any third-party website or the collection of use of information regarding any website's users and/or members.

Additional information is available on request.

Analyst Information

Registration of Non-U.S. Analysts: The analysts listed on the front of this report who are not employees of Raymond James & Associates, Inc., are not registered/qualified as research analysts under FINRA rules, are not associated persons of Raymond James & Associates, Inc., and are not subject to FINRA Rule 2241 restrictions on communications with covered companies, public companies, and trading securities held by a research analyst account.

Analysts Holdings and Compensation: Equity analysts and their staffs at Raymond James are compensated based on a salary and bonus system. Several factors enter into the bonus determination, including quality and performance of research product, the analyst's success in rating stocks versus an industry index, and support effectiveness to trading and the retail and institutional sales forces. Other factors may include but are not limited to: overall ratings from internal (other than investment banking) or external parties and the general productivity and revenue generated in covered stocks.

The analysts Chris Meekins, Ed Mills, Tavis C. McCourt, Pavel Molchanov, Simon Leopold, Justin Patterson, William A. Crow and Lawrence Keusch, primarily responsible for the preparation of this research report, attest to the following: (1) that the views and opinions rendered in this research report reflect his or her personal views about the subject companies or issuers and (2) that no part of the research analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views in this research report. In addition, said analyst(s) has not received compensation from any subject company in the last 12 months.

Ratings and Definitions

Raymond James & Associates (U.S.) definitions: Strong Buy (SB1) Expected to appreciate, produce a total return of at least 15%, and outperform the S&P 500 over the next six to 12 months. For higher yielding and more conservative equities, such as REITs and certain MLPs, a total return of 15% is expected to be realized over the next 12 months. **Outperform (MO2)** Expected to appreciate and outperform the S&P 500 over the next 12-18 months. For higher yielding and more conservative equities, such as REITs and certain MLPs, an Outperform rating is used for securities where we are comfortable with the relative safety of the dividend and expect a total return modestly exceeding the dividend yield over the next 12-18 months. **Market Perform (MP3)** Expected to perform generally in line with the S&P 500 over the next 12 months. **Underperform (MU4)** Expected to underperform the S&P 500 or its sector over the next six to 12 months and should be sold. Suspended (S) The rating and price target have been suspended temporarily. This action may be due to market events that made coverage impracticable, or to comply with applicable regulations or firm policies in certain circumstances, including when Raymond James may be providing investment banking services to the company. The previous rating and price target are no longer in effect for this security and should not be relied upon.

Raymond James Ltd. (Canada) definitions: Strong Buy (SB1) The stock is expected to appreciate and produce a total return of at least 15% and outperform the S&P/TSX Composite Index over the next six months. **Outperform (MO2)** The stock is expected to appreciate and outperform the S&P/TSX Composite Index over the next twelve months. **Market Perform (MP3)** The stock is expected to perform generally in line with the S&P/TSX Composite Index over the next twelve months and is potentially a source of funds for more highly rated securities. **Underperform (MU4)** The stock is expected to underperform the S&P/TSX Composite Index or its sector over the next six to twelve months and should be sold. Suspended (S) The rating and price target have been suspended temporarily. This action may be due to market events that made coverage impracticable, or to comply with applicable regulations or firm policies in certain circumstances, including when Raymond James may be providing investment banking services to the company. The previous rating and price target are no longer in effect for this security and should not be relied upon.

In transacting in any security, investors should be aware that other securities in the Raymond James research coverage universe might carry a higher or lower rating. Investors should feel free to contact their Financial Advisor to discuss the merits of other available investments.

	Coverage Universe Rating Distribution*		Investment Banking Relationships	
	RJA	RJL	RJA	RJL
Strong Buy and Outperform (Buy)	55%	61%	21%	21%
Market Perform (Hold)	41%	36%	12%	22%
Underperform (Sell)	4%	3%	6%	0%

** Columns may not add to 100% due to rounding.*

Suitability Ratings (SR)

Medium Risk/Income (M/INC) Lower to average risk equities of companies with sound financials, consistent earnings, and dividend yields above that of the S&P 500. Many securities in this category are structured with a focus on providing a consistent dividend or return of capital.

Medium Risk/Growth (M/GRW) Lower to average risk equities of companies with sound financials, consistent earnings growth, the potential for long-term price appreciation, a potential dividend yield, and/or share repurchase program.

High Risk/Income (H/INC) Medium to higher risk equities of companies that are structured with a focus on providing a meaningful dividend but may face less predictable earnings (or losses), more leveraged balance sheets, rapidly changing market dynamics, financial and competitive issues, higher price volatility (beta), and potential risk of principal. Securities of companies in this category may have a less predictable income stream from dividends or distributions of capital.

High Risk/Growth (H/GRW) Medium to higher risk equities of companies in fast growing and competitive industries, with less predictable earnings (or losses), more leveraged balance sheets, rapidly changing market dynamics, financial or legal issues, higher price volatility (beta), and potential risk of principal.

High Risk/Speculation (H/SPEC) High risk equities of companies with a short or unprofitable operating history, limited or less predictable revenues, very high risk associated with success, significant financial or legal issues, or a substantial risk/loss of principal.

Raymond James Relationship Disclosures

Certain affiliates of the RJ Group expect to receive or intend to seek compensation for investment banking services from all companies under research coverage within the next three months.

Stock Charts, Target Prices, and Valuation Methodologies

Valuation Methodology: The Raymond James methodology for assigning ratings and target prices includes a number of qualitative and quantitative factors, including an assessment of industry size, structure, business trends, and overall attractiveness; management effectiveness; competition; visibility; financial condition; and expected total return, among other factors. These factors are subject to change depending on overall economic conditions or industry- or company-specific occurrences.

Target Prices: The information below indicates our target price and rating changes for the subject companies over the past three years.

Risk Factors

General Risk Factors: Following are some general risk factors that pertain to the business of the subject companies and the projected target prices and recommendations included on Raymond James research: (1) Industry fundamentals with respect to customer demand or product/ service pricing could change and adversely impact expected revenues and earnings; (2) Issues relating to major competitors or market shares or new product expectations could change investor attitudes toward the sector or this stock; (3) Unforeseen developments with respect to the management, financial condition or accounting policies or practices could alter the prospective valuation; or (4) External factors that affect the U.S. economy, interest rates, the U.S. dollar or major segments of the economy could alter investor confidence and investment prospects. International investments involve additional risks such as currency fluctuations, differing financial accounting standards, and possible political and economic instability.

Additional Risk and Disclosure information, as well as more information on the Raymond James rating system and suitability categories, is available at raymondjames.bluematrix.com/sellside/Disclosures.action**. Copies of research or Raymond James' summary policies relating to research analyst independence can be obtained by contacting any Raymond James & Associates or Raymond James Financial Services office (please see RaymondJames.com for office locations) or by calling 727-567-1000, toll free 800-237-5643.**

International Disclosures

For clients in the United Kingdom:

For clients of Raymond James Financial International Limited (RJFI): This document and any investment to which this document relates is intended for the sole use of the persons to whom it is addressed, being persons who are Eligible Counterparties or Professional Clients as described in the FCA rules or persons described in Articles 19(5) (Investment professionals) or 49(2) (high net worth companies, unincorporated associations, etc.) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended)or any other person to whom this promotion may lawfully be directed. It is not intended to be distributed or passed on, directly or indirectly, to any other class of persons and may not be relied upon by such persons and is, therefore, not intended for private individuals or those who would be classified as Retail Clients.

For clients of Raymond James Investment Services, Ltd.: This report is for the use of professional investment advisers and managers and is not intended for use by clients.

For purposes of the Financial Conduct Authority requirements, this research report is classified as independent with respect to conflict of interest management. RJFI, and Raymond James Investment Services, Ltd. are authorised and regulated by the Financial Conduct Authority in the United Kingdom.

For clients in France:

This document and any investment to which this document relates is intended for the sole use of the persons to whom it is addressed, being persons who are Eligible Counterparties or Professional Clients as described in "Code Monetaire et Financier" and Reglement General de l'Autorite des marches Financiers. It is not intended to be distributed or passed on, directly or indirectly, to any other class of persons and may not be relied upon by such persons and is, therefore, not intended for private individuals or those who would be classified as Retail Clients.

For clients of Raymond James Euro Equities: Raymond James Euro Equities is authorised and regulated by the Autorite de Controle Prudentiel et de Resolution and the Autorite des Marches Financiers.

For institutional clients in the European Economic Area (EEA) outside of the United Kingdom:

This document (and any attachments or exhibits hereto) is intended only for EEA institutional clients or others to whom it may lawfully be submitted.

For Canadian clients:

This report is not prepared subject to Canadian disclosure requirements, unless a Canadian analyst has contributed to the content of the report. In the case where there is Canadian analyst contribution, the report meets all applicable IIROC disclosure requirements.