Deutsche Bank
Research

North America
United States

TMT
Payments, Processors, & IT Services

Industry

Payments Expert Call

Date
5 April 2020

Industry Update

Dire Small Business Warning

Bryan Keane
Research Analyst
+1-415-617-4246

Korey Marcello
Research Analyst
+1-904-527-6235

Marcel Abend
Research Associate
+1-904-645-4197

Small Business needs help urgently

We hosted a conference call with Toby Scammel, Founder & CEO of Womply, to discuss the evolving negative impact from COVID-19 on US small business sales and the challenges with the US small business stimulus plan. Scammel described the current small business situation pessimistically, with small business owners panicked, confused and running out of time. Through robust data insights, gathered across its +450k merchant commerce platform and payment partnerships, Womply has seen small business physical transaction revenue drop -25% Y/Y in recent days. Small businesses are critical to the US economy making up ~$10trn in GDP and ~55% of jobs but are also the most vulnerable and hardest entities for the gov't to reach. In addition, with the gov't using traditional SBA and bank rails to deliver stimulus (Friday was first day to start applying for loans), Scammel was cautious on the current plan's ability to reach small businesses effectively and in time. Urgently, he believes pushing funds through fintechs such as SQ and PYPL as well as card processors like FIS, GPN, and FISV to small businesses faster could be one of the only viable solutions (gov't needs to embrace this method immediately). Please see body for detailed data on current trends, stimulus, and let us know if you are interested in a replay and slides for the call.

Significant small business headwinds could worsen

Some of the hardest hit sectors include transportation, arts/entertainment, lodging, restaurants/bars, health/beauty, and auto sales/services. Restaurant sales are down 50-70% with data from OpenTable showing table reservations falling to zero. Toast POS data shows restaurant revenue down ~73% nationwide. Further, travel and tourism sales are down +80%. Although retail and grocery initially saw a strong boost from panic buying and stocking up on essential goods, those trends have also recently moderated. In addition to overall physical small business sales being down significantly in recent weeks, data from Homebase (+1m employees in the US) shows 60% fewer hours worked from hourly employees (disproportionate impact on hourly workers, minority businesses, and poorer communities) with many local businesses being fully closed. According to Faire survey data, ~70% of independent retailers don't have enough cash, 64% have started reducing inventories, and retailers are expecting a temporary revenue reduction of 50% of more (potential for tens of millions of lost jobs). As lock-downs and shelter in place orders continue, Scammel sees the potential for further weakness with many of the companies now looking for phase 2 of their job cuts. He sees the risk of substantial

Top Picks	
Visa Inc. (V.N),USD151.85	Buy
MasterCard (MA.N),USD237.03	Buy
PayPal (PYPL.OQ),USD92.39	Buy
Square (SQ.N),USD43.72	Buy
Fiserv (FISV.OQ),USD86.19	Buy
Global Payments Inc. (GPN.N),USD126.30	Buy

Source: Deutsche Bank

Companies featured	
Visa Inc. (V.N),USD151.85	Buy
MasterCard (MA.N),USD237.03	Buy
PayPal (PYPL.OQ),USD92.39	Buy
Square (SQ.N),USD43.72	Buy
Fiserv (FISV.OQ),USD86.19	Buy
Fidelity National (FIS.N),USD115.22	Hold
Global Payments Inc. (GPN.N),USD126.30	Buy
Paychex (PAYX.OQ),USD59.55	Hold
Automatic Data Processing (ADP.OQ),USD128.57	Hold

Source: Deutsche Bank

Deutsche Bank Securities Inc.

Distributed on: 05/04/2020 23:24:10 GMT

Deutsche Bank does and seeks to do business with companies covered in its research reports. Thus, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1. MCI (P) 066/04/2019.

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



US business bankruptcies as real, with potential for an over 30% failure rate to be realized without significant small business assistance.

Stimulus leveraging traditional rails despite faster methods

Positively, the CARES Act, signed into law March 27th, provides stimulus for small businesses and individuals. However, the gov't is currently using traditional rails to deliver the funds like banks and the SBA with the timing being crucial. Although Scammel was positive on the treasury and its hard work/talent, historically the SBA track record for delivering funds in a timely manner has been lackluster. For example, the SBA failed to deploy just ~$1bn in funds effectively during Hurricane Sandy with application processing taking 46 days on average, approval rates of 24%, and long delays for disbursement (current rules like 75% of loan going to payroll to be forgiven creating challenges). Additionally, the whole loan process is too convoluted with requirements and risk for small business, so Scammel believes grants or revenue replacement instead of loans are what's required to save small businesses. Positively, players like Womply, SQ, PYPL, Intuit, and Plaid (acquired by V) are coming together and leveraging their unique data to support the gov't. In addition, other fintechs as well as payment processors like FIS and FISV are working to distribute funds faster. Fintechs like SQ Capital, Shopify Capital, and PYPL Working Capital underwrite on existing sales data so they are best suited to revenue replacement.

Womply platform and business model

Womply is a local commerce platform, with a suite of solutions such as CRM and marketing automation, partnering with ~55 of the largest processors, banks and other small business providers (e.g., FIS/WP, GPN/TSS, Elavon, and PaySafe). As a result, the company has robust and diversified data insights across US small businesses primarily into credit card transactions as well as sales data from bank accounts and other sources. The company operates through a SaaS model charging merchants for access to software and also generating revenue share from processing relationships (high 70% gross margins with large % of margin coming from revenue share). Womply has strong software capabilities and has also invested +$150m in the platform to drive data analytics. Merchants benefit from business management and increased sales and processors benefit from better retention.

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



Monitoring Impact to Small Businesses

Small Businesses critical to US economy

Small businesses make up ~$10trn in GDP and ~55% of American jobs. Unlike previous financial crises, the massive effect of the economic slowdown began with small businesses shutting off due to lock down and stay at home measures because of COVID-19. As a result, there is no typical trickle down effect on small businesses, and Womply stated that it is truly hard to overstate how bad the impact would be to most American small businesses. "Although the government is going well out of their way to help out, if they don't figure out how to quickly deliver capital to small business owners, the likelihood, could be a mass extinction event". They emphasized the urgency being days and not weeks. In fact, the company is already seeing tons of data (excluding large businesses and accounting for seasonality) showing the devastation to small businesses across industries. Although most industry revenues are down considerably Y/Y, some industries such as Groceries and Retail/Services saw a spike in recent weeks as a result to panic buying. However, Womply expects these to fall over the coming weeks as most consumers' panic buying sprees are over. In addition, there is disproportionate harm to hourly workers, where the amount of hourly workers scheduled to work fell by ~70% just last week.

Stimulus should curb impact and help recovery

The Coronavirus Aid, Relief, and Economic Security Act ("CARES Act"), signed into law on March 27th, provides needed stimulus particularly for small businesses and individuals across the US to manage through the global health crisis. Small businesses will have access to EIDL grants, PPP loans, and SBA disaster loans. Larger businesses will also benefit across certain industries in distress such as the air carriers. In addition, individuals will receive direct payments to help manage through the crisis along with better unemployment insurance.

In particular, as it relates to small businesses, the CARES Act enables Economic Injury Disaster Loans (EIDL) of up to $10k as well as the Paycheck Protection Program (PPP) for companies below 500 employees to get up to $10m. Further, the loans could be forgiven if used primarily for payroll and less than 25% for things like the mortgage/rent and utilities.

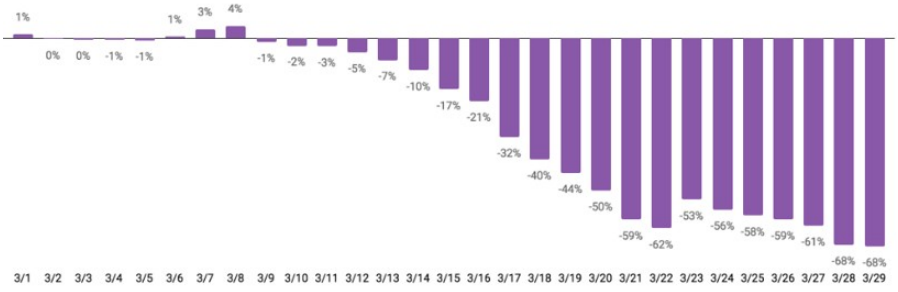
Overall, the current stimulus package (also ongoing discussions of further potential stimulus) should help to stem some of the job losses and small business closures across the country. In addition, depending on the depth and breadth of the economic impact, it could help to spur a more robust recovery post the health crisis which we will monitor. Furthermore, globally, there are multiple countries impacted by COVID-19 that have announced significant stimulus packages.

SMB Hourly Workers

According to data from Homebase, an employee scheduling company for over 100k businesses, the number of SMB employees and amount of hours worked by each has seen a significant decline in March. The latest data shows that the numbers of employees going to work was down ~60% with the number of hours worked down closer to ~70%. Not only are the number of people working much less, but the hours of those that do get to go into work have been significantly cut.

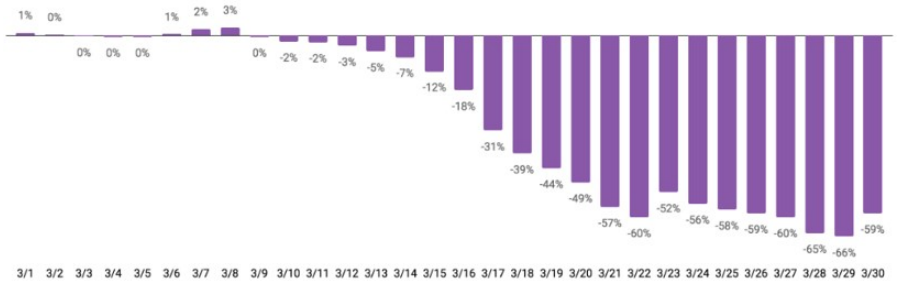
Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Figure 1: Change in hours worked by SMB employees in US



Source : Homebase

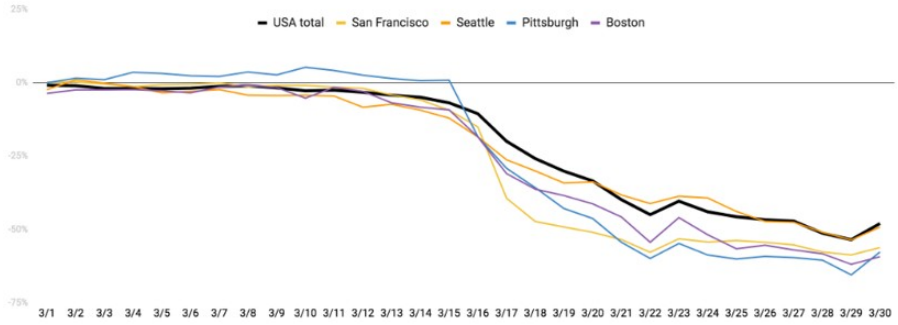
Figure 2: Change in number of hourly SMB employees going to work in the US



Source : Homebase

In addition, Homebase data, not surprisingly, shows that the number of businesses that remain open are significantly decreasing with time. There was a higher percentage of closed businesses among cities with lock-down implementations; however, the total US numbers are quickly following. Furthermore, the company data shows that the US is losing ~$2bn in wages daily with a projected wage loss of ~$60bn on a monthly basis going forward.

Figure 3: Percentage change in number of SMBs open



Source : Homebase

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Figure 4: SMB wage loss



Source : Homebase

COVID-19 impact across all businesses

Across all industries, Womply data shows that the average daily revenue variance for small businesses has been negatively impacted since mid-March. Since the beginning of 2020, revenues have, on average, shown a +8.5% Y/Y growth; however, towards the end of March, the data shows that revenue began falling well below the average and into negative territory reaching a low of -25.6% Y/Y. Not all industries are impacted equally, so it is important to also look at small businesses data across different segments.

Figure 5: All businesses - daily average revenue Y/Y



Source : Womply

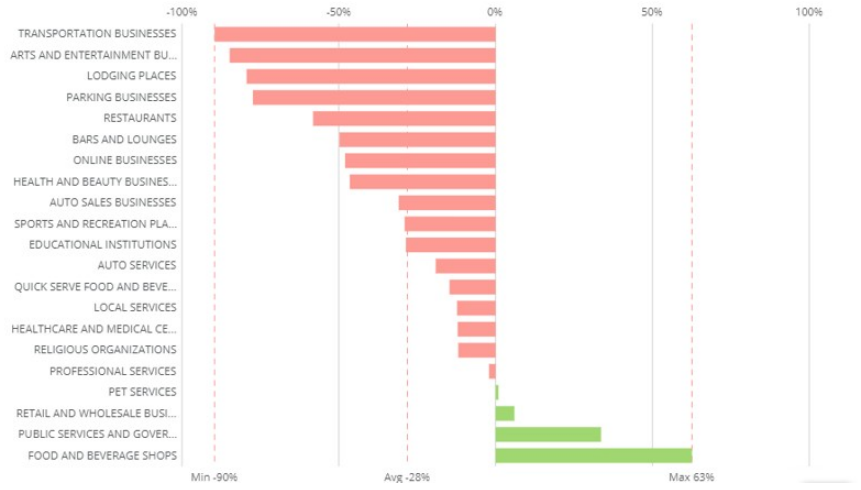
Industry Y/Y Variance

For the week ended 03/30, Womply data shows how each industry's average revenue (rolling seven day period) performed in comparison to the same week in the previous year. The data shows that on average, small businesses were down 28% Y/Y, with impacts as high as -90% Y/Y for transportations businesses while food and beverage shops held up on a net basis (+63% Y/Y) even though restaurants have suffered significantly. However, the numbers have gotten much worse in the past 2 weeks and the number of industries that turned to negative has significantly

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

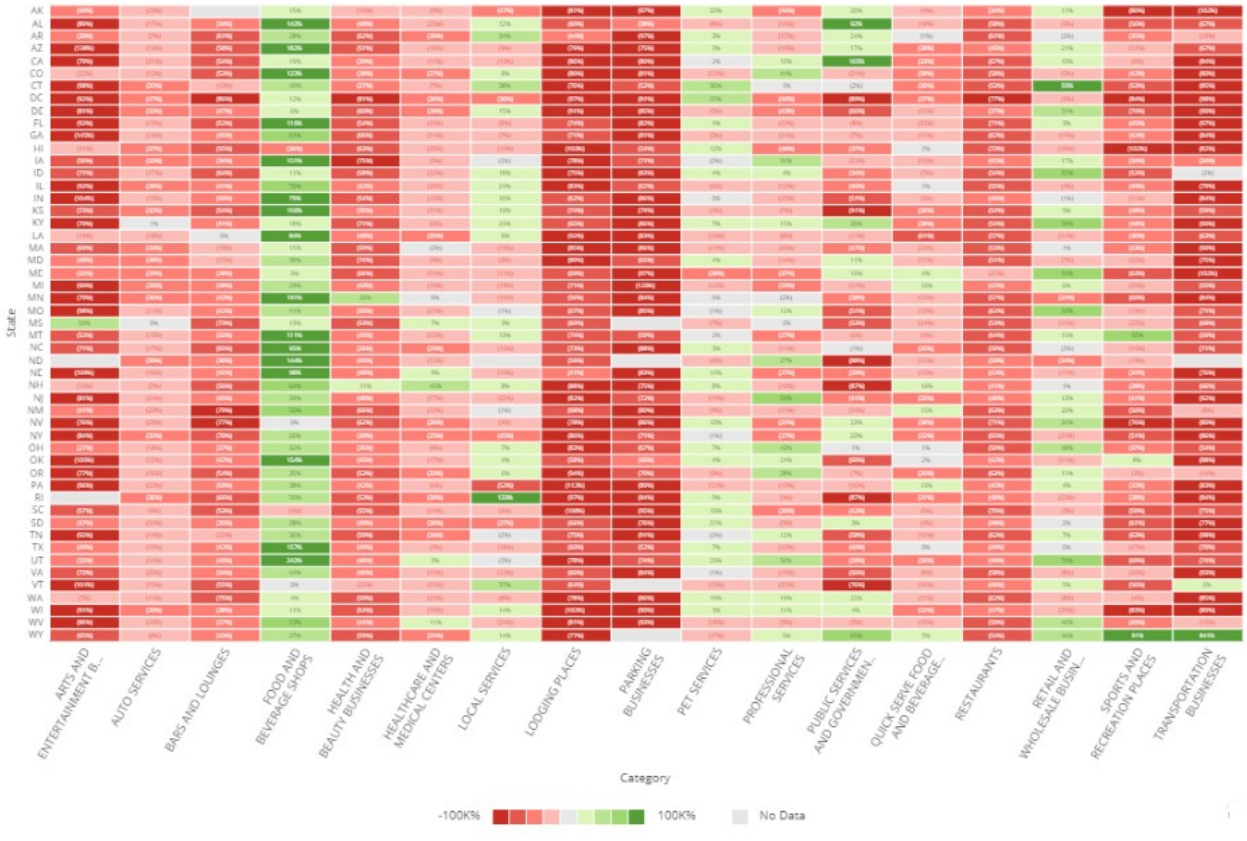
increased. This is a trend that is expected to continue as businesses remain closed, where even the segments that showed positive growth last week could soon fall below zero.

Figure 6: Industry impacts for week ended 3/30/20



Source : Womply

Figure 7: Industry impacts by state for week ended 3/30/20



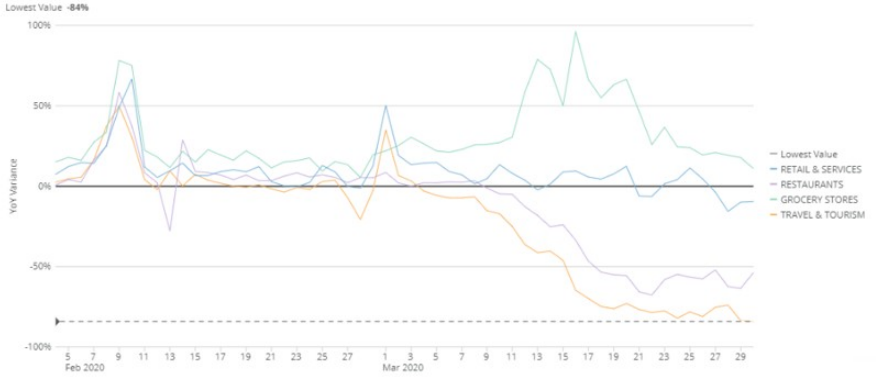
Source : Womply

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Top Level Industries

Amongst the top level industries namely Retail & Services, Restaurants, Grocery Stores and Travel and Tourism, there have been widely differing impacts thus far as a result of the virus. The data shows that up until March the industries were overlapping pretty closely; however, beginning in March, with a more pronounced impact in 2H, we see that Travel & Tourism as well Restaurants plummeted. Retail & Services was slightly impacted but not as much with sales growth dropping into negative territory in the more recent weeks. Furthermore, the data shows how Grocery Stores sales rose sharply mid-March, likely due to panic consumption; however, towards the end of March sales began to slow down significantly as consumers satisfied their hoarding needs.

Figure 8: Top level industries - daily average revenue Y/Y



Source : Womply

Restaurants/Bars

The restaurant industry is a vertical that has seen significant impacts to their in person sales. YTD daily sales have on average shown 2.8% Y/Y growth, however growth dropped of fairly quickly shortly after the first week of March reaching a minimum of -66% Y/Y growth. However, there has certainly been a fair amount of substitution of purchases, where customers that were previously purchasing in a restaurant shifted to buying through PostMates, UberEats or other delivery services causing Womply to lose visibility. Bars showed very similar results to Restaurants; however, there was a slight lift in the final days of March that was interestingly not seen in the Restaurants vertical. Last week, states across the US showed the devastation to Restaurants & Bars for the most part being down over 50% Y/Y in comparison to the same week in 2019, with an emphasis on states with lock-down or stay-at-home orders (e.g., California, New York, Florida).

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Figure 9: Restaurant - Daily average revenue Y/Y



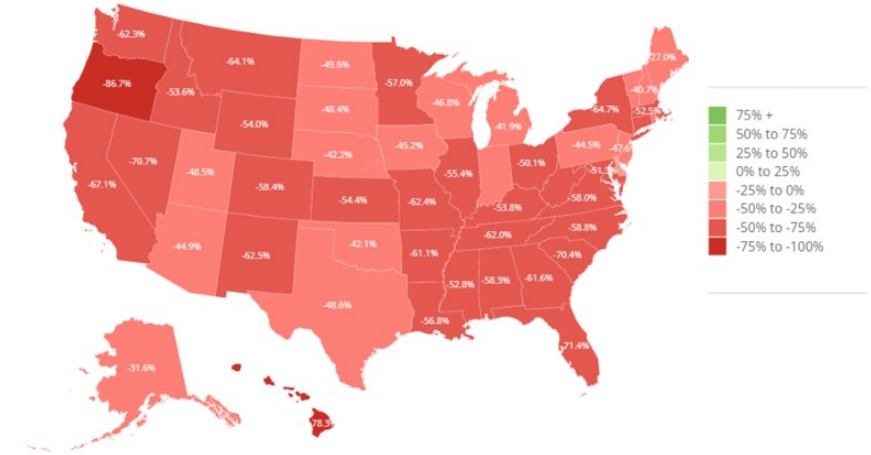
Source : Womply

Figure 10: Restaurant - Daily average revenue Y/Y



Source : Womply

Figure 11: Restaurant - Average revenue Y/Y for the week ended 03/30 by state

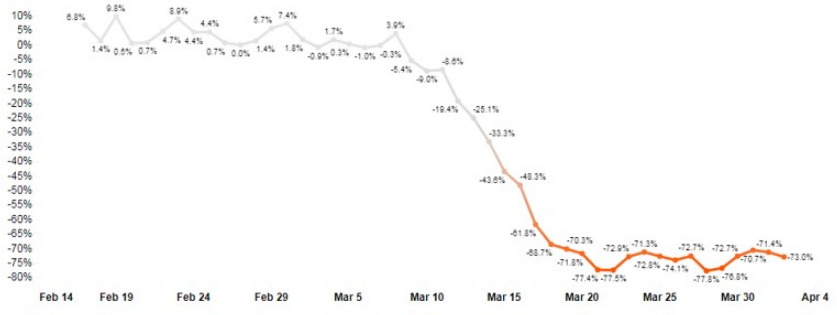


Source : Womply

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

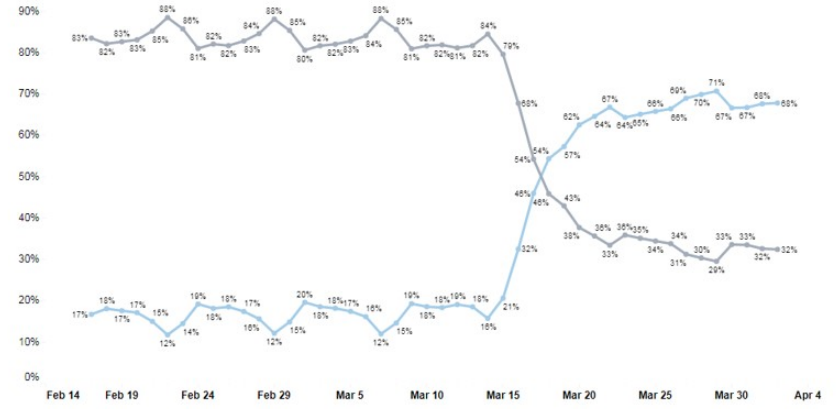
Toast, a private POS platform for restaurants publishes a live dashboard showing restaurant daily sales variance Y/Y capturing takeout orders and off-premise dining as well. The data shows that while there has been a shift to off-premise dining, there is still a considerable decline factoring that in, with sales going from being relatively level at the beginning of the year to down 70-80% towards the end of March.

Figure 12: Restaurants - Daily average revenue Y/Y



Source : Toast

Figure 13: Shift from in restaurant dining to off premise



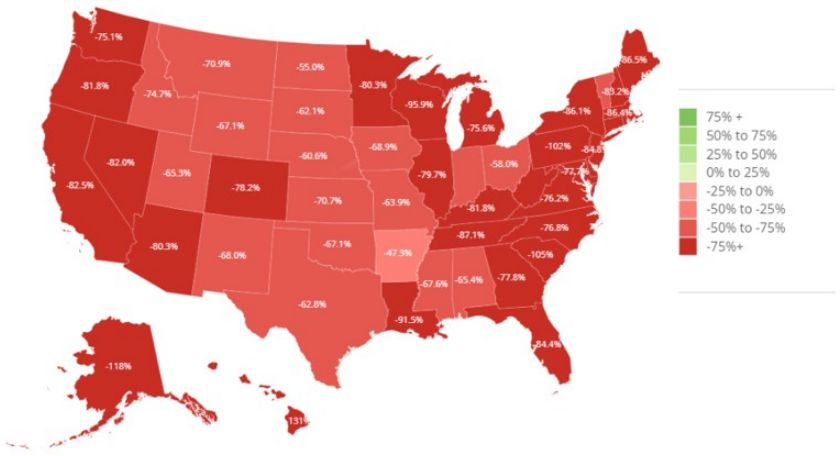
Source : Toast

Travel & Tourism

It is no surprise that among the industries most affected is Travel and Tourism (lodging places, parking businesses, and transportation businesses). Devastation is widespread across all states in the US, with revenues being generally down 75%+ Y/Y last week. Looking at lodging businesses in particular, although revenues on a daily basis were down for the most part YTD (average -36.5%), this figure more than doubled towards the back end of March reaching growth as low as -85.5% Y/Y.

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Figure 14: Travel & Tourism - Average revenue Y/Y for the week ended 03/30 by state



Source : Womply

Figure 15: Lodging - Daily average revenue Y/Y



Source : Womply

Retail

Retail shops have seen a lot of volatility moving between positive and negative, which Womply attributed being largely due to the denominator (previous years sales). The data shows that there was a significant panic buying trend in Retail ~2 weeks ago, and in many cases that has come to an end as more stores are closing and consumers are done panic buying (should be reflected in the numbers soon enough). Last week, across the US, Retail & Services (wide ranging category that includes retail shops and local services) across the states was widely distributed, with some states being significantly up and other significantly down. However, for the most part the data shows sales in the states were either slightly up or down in the single-digits range.

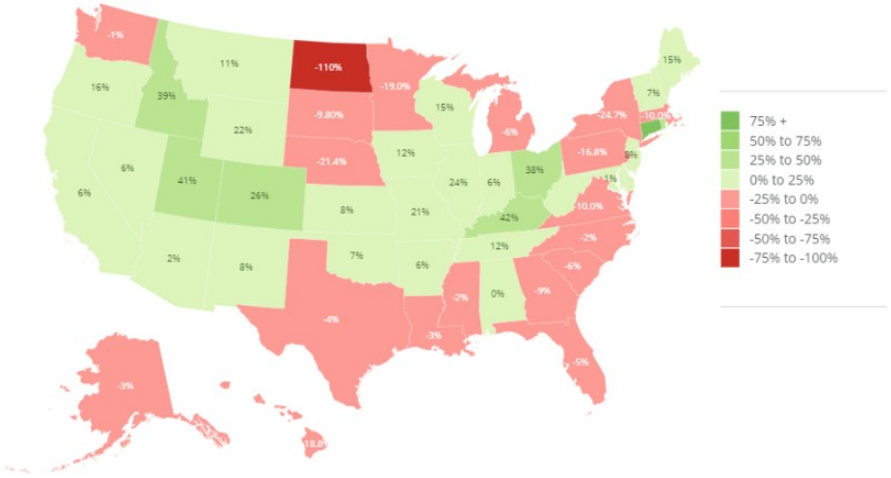
Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Figure 16: Retail - Daily average revenue Y/Y



Source : Womply

Figure 17: Retail & Services - Average revenue Y/Y for the week ended 03/30 by state



Source : Womply

Interestingly, firearm and sporting good stores saw a sharp increase in revenues starting in mid March, showing up to +200% Y/Y growth; however, the figures have been gradually decreasing over time and are likely to continue doing so.

Figure 18: Firearm and Sporting Goods - Daily average revenue Y/Y



Source : Womply

Grocery stores

Similar to Retail, Grocery as well saw a huge spike following the initial virus fears in mid-March and then began to level off to normalized levels towards the end of the

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

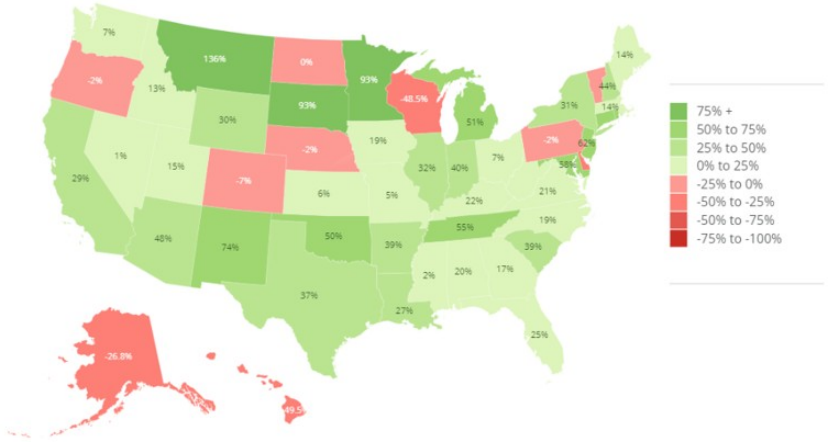
month once consumers were through panic buying. Data across the states from last week shows that most states are still seeing positive growth; however, this is expected to come down to normalized levels over time.

Figure 19: Grocery - Daily average revenue Y/Y



Source : Womply

Figure 20: Grocery- Average revenue Y/Y for the week ended 03/30 by state



Source : Womply

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.

Appendix 1

Important Disclosures

*Other information available upon request

*Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors . Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at https://research.db.com/Research/Disclosures/CompanySearch. Aside from within this report, important risk and conflict disclosures can also be found at https://research.db.com/Research/Topics/Equities?topicId=RB0002. Investors are strongly encouraged to review this information before investing.

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst about the subject issuers and the securities of those issuers. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Bryan Keane.

Equity Rating Key

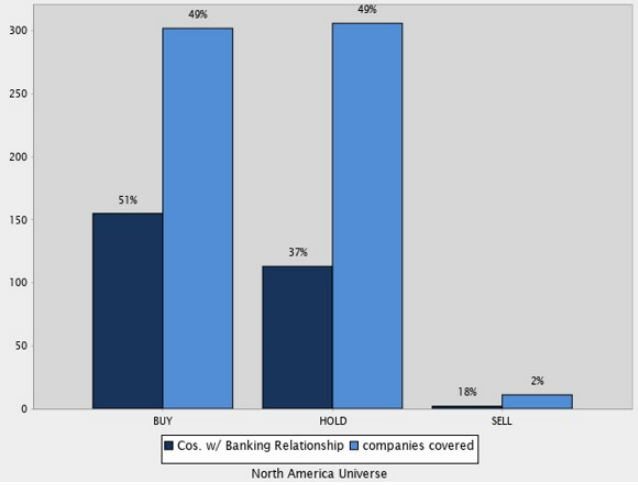
Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus pro-jected dividend yield) , we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock.

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

Newly issued research recommendations and target prices supersede previously published research.

Equity rating dispersion and banking relationships



Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



Additional Information

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively 'Deutsche Bank'). Though the information herein is believed to be reliable and has been obtained from public sources believed to be reliable, Deutsche Bank makes no representation as to its accuracy or completeness. Hyperlinks to third-party websites in this report are provided for reader convenience only. Deutsche Bank neither endorses the content nor is responsible for the accuracy or security controls of those websites.

If you use the services of Deutsche Bank in connection with a purchase or sale of a security that is discussed in this report, or is included or discussed in another communication (oral or written) from a Deutsche Bank analyst, Deutsche Bank may act as principal for its own account or as agent for another person.

Deutsche Bank may consider this report in deciding to trade as principal. It may also engage in transactions, for its own account or with customers, in a manner inconsistent with the views taken in this research report. Others within Deutsche Bank, including strategists, sales staff and other analysts, may take views that are inconsistent with those taken in this research report. Deutsche Bank issues a variety of research products, including fundamental analysis, equity-linked analysis, quantitative analysis and trade ideas. Recommendations contained in one type of communication may differ from recommendations contained in others, whether as a result of differing time horizons, methodologies, perspectives or otherwise. Deutsche Bank and/or its affiliates may also be holding debt or equity securities of the issuers it writes on. Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking, trading and principal trading revenues.

Opinions, estimates and projections constitute the current judgment of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank provides liquidity for buyers and sellers of securities issued by the companies it covers. Deutsche Bank research analysts sometimes have shorter-term trade ideas that may be inconsistent with Deutsche Bank's existing longer-term ratings. Some trade ideas for equities are listed as Catalyst Calls on the Research Website (https://research.db.com/Research/) , and can be found on the general coverage list and also on the covered company's page. A Catalyst Call represents a high-conviction belief by an analyst that a stock will outperform or underperform the market and/or a specified sector over a time frame of no less than two weeks and no more than three months. In addition to Catalyst Calls, analysts may occasionally discuss with our clients, and with Deutsche Bank salespersons and traders, trading strategies or ideas that reference catalysts or events that may have a near-term or medium-term impact on the market price of the securities discussed in this report, which impact may be directionally counter to the analysts' current 12-month view of total return or investment return as described herein. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a recipient thereof if an opinion, forecast or estimate changes or becomes inaccurate. Coverage and the frequency of changes in market conditions and in both general and company-specific economic prospects make it difficult to update research at defined intervals. Updates are at the sole discretion of the coverage analyst or of the Research Department Management, and the majority of reports are published at irregular intervals. This report is provided for informational purposes only and does not take into account the particular investment objectives, financial situations, or needs of individual clients. It is not an offer or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Target prices are inherently imprecise and a product of the analyst's judgment. The financial instruments discussed in this report may not be suitable for all investors, and investors must make their own informed investment decisions. Prices and availability of financial instruments are subject to change without notice, and investment transactions can lead to losses as a result of price fluctuations and other factors. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Performance calculations exclude transaction costs, unless otherwise indicated. Unless otherwise indicated, prices are current as of the end of the previous trading session and are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is also sourced from Deutsche Bank, subject companies, and other parties.

The Deutsche Bank Research Department is independent of other business divisions of the Bank. Details regarding our organizational arrangements and information barriers we have to prevent and avoid conflicts of interest with respect to our research are available on our website (https://research.db.com/Research/) under Disclaimer.

Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor who is long fixed-rate instruments (thus receiving these cash flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or liquidation of positions), and settlement issues related to local clearing houses are also important risk factors. The sensitivity of fixed-income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. The index fixings may – by construction – lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. Funding in a currency that differs from the currency in which coupons are denominated carries FX risk. Options on swaps (swaptions) the risks typical to options in addition to the risks related to rates movements.

Derivative transactions involve numerous risks including market, counterparty default and illiquidity risk. The appropriateness

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



of these products for use by investors depends on the investors' own circumstances, including their tax position, their regulatory environment and the nature of their other assets and liabilities; as such, investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. The risk of loss in futures trading and options, foreign or domestic, can be substantial. As a result of the high degree of leverage obtainable in futures and options trading, losses may be incurred that are greater than the amount of funds initially deposited – up to theoretically unlimited losses. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option, investors must review the 'Characteristics and Risks of Standardized Options", at http://www.optionsclearing.com/about/publications/character-risks.jsp. If you are unable to access the website, please contact your Deutsche Bank representative for a copy of this important document.

Participants in foreign exchange transactions may incur risks arising from several factors, including the following: (i) exchange rates can be volatile and are subject to large fluctuations; (ii) the value of currencies may be affected by numerous market factors, including world and national economic, political and regulatory events, events in equity and debt markets and changes in interest rates; and (iii) currencies may be subject to devaluation or government-imposed exchange controls, which could affect the value of the currency. Investors in securities such as ADRs, whose values are affected by the currency of an underlying security, effectively assume currency risk.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. Aside from within this report, important conflict disclosures can also be found at https://research.db.com/Research/ on each company's research page. Investors are strongly encouraged to review this information before investing.

Deutsche Bank (which includes Deutsche Bank AG, its branches and affiliated companies) is not acting as a financial adviser, consultant or fiduciary to you or any of your agents (collectively, "You" or "Your") with respect to any information provided in this report. Deutsche Bank does not provide investment, legal, tax or accounting advice, Deutsche Bank is not acting as your impartial adviser, and does not express any opinion or recommendation whatsoever as to any strategies, products or any other information presented in the materials. Information contained herein is being provided solely on the basis that the recipient will make an independent assessment of the merits of any investment decision, and it does not constitute a recommendation of, or express an opinion on, any product or service or any trading strategy.

The information presented is general in nature and is not directed to retirement accounts or any specific person or account type, and is therefore provided to You on the express basis that it is not advice, and You may not rely upon it in making Your decision. The information we provide is being directed only to persons we believe to be financially sophisticated, who are capable of evaluating investment risks independently, both in general and with regard to particular transactions and investment strategies, and who understand that Deutsche Bank has financial interests in the offering of its products and services. If this is not the case, or if You are an IRA or other retail investor receiving this directly from us, we ask that you inform us immediately.

In July 2018, Deutsche Bank revised its rating system for short term ideas whereby the branding has been changed to Catalyst Calls ("CC") from SOLAR ideas; the rating categories for Catalyst Calls originated in the Americas region have been made consistent with the categories used by Analysts globally; and the effective time period for CCs has been reduced from a maximum of 180 days to 90 days.

United States: Approved and/or distributed by Deutsche Bank Securities Incorporated, a member of FINRA, NFA and SIPC. Analysts located outside of the United States are employed by non-US affiliates that are not subject to FINRA regulations.

Germany: Approved and/or distributed by Deutsche Bank AG, a joint stock corporation with limited liability incorporated in the Federal Republic of Germany with its principal office in Frankfurt am Main. Deutsche Bank AG is authorized under German Banking Law and is subject to supervision by the European Central Bank and by BaFin, Germany's Federal Financial Supervisory Authority.

United Kingdom: Approved and/or distributed by Deutsche Bank AG acting through its London Branch at Winchester House, 1 Great Winchester Street, London EC2N 2DB. Deutsche Bank AG in the United Kingdom is authorised by the Prudential Regulation Authority and is subject to limited regulation by the Prudential Regulation Authority and Financial Conduct Authority. Details about the extent of our authorisation and regulation are available on request.

Hong Kong SAR: Distributed by Deutsche Bank AG, Hong Kong Branch except for any research content relating to futures contracts within the meaning of the Hong Kong Securities and Futures Ordinance Cap. 571. Research reports on such futures contracts are not intended for access by persons who are located, incorporated, constituted or resident in Hong Kong. The author(s) of a research report may not be licensed to carry on regulated activities in Hong Kong and, if not licensed, do not hold themselves out as being able to do so. The provisions set out above in the 'Additional Information' section shall apply to the fullest extent permissible by local laws and regulations, including without limitation the Code of Conduct for Persons Licensed or Registered with the Securities and Futures Commission. This report is intended for distribution only to 'professional investors' as defined in Part 1 of Schedule of the SFO. This document must not be acted or relied on by persons who are not professional investors. Any investment or investment activity to which this document relates is only available to professional investors and will be engaged only with professional investors.

India: Prepared by Deutsche Equities India Private Limited (DEIPL) having CIN: U65990MH2002PTC137431 and registered office at 14th Floor, The Capital, C-70, G Block, Bandra Kurla Complex Mumbai (India) 400051. Tel: + 91 22 7180 4444. It is registered by the Securities and Exchange Board of India (SEBI) as a Stock broker bearing registration no.: INZ000252437;

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



Merchant Banker bearing SEBI Registration no.: INM000010833 and Research Analyst bearing SEBI Registration no.: INH000001741. DEIPL may have received administrative warnings from the SEBI for breaches of Indian regulations. Deutsche Bank and/or its affiliate(s) may have debt holdings or positions in the subject company. With regard to information on associates, please refer to the "Shareholdings" section in the Annual Report at: https://www.db.com/ir/en/annual-reports.htm.

Japan: Approved and/or distributed by Deutsche Securities Inc.(DSI). Registration number - Registered as a financial instruments dealer by the Head of the Kanto Local Finance Bureau (Kinsho) No. 117. Member of associations: JSDA, Type II Financial Instruments Firms Association and The Financial Futures Association of Japan. Commissions and risks involved in stock transactions - for stock transactions, we charge stock commissions and consumption tax by multiplying the transaction amount by the commission rate agreed with each customer. Stock transactions can lead to losses as a result of share price fluctuations and other factors. Transactions in foreign stocks can lead to additional losses stemming from foreign exchange fluctuations. We may also charge commissions and fees for certain categories of investment advice, products and services. Recommended investment strategies, products and services carry the risk of losses to principal and other losses as a result of changes in market and/or economic trends, and/or fluctuations in market value. Before deciding on the purchase of financial products and/or services, customers should carefully read the relevant disclosures, prospectuses and other documentation. 'Moody's', 'Standard Poor's', and 'Fitch' mentioned in this report are not registered credit rating agencies in Japan unless Japan or 'Nippon' is specifically designated in the name of the entity. Reports on Japanese listed companies not written by analysts of DSI are written by Deutsche Bank Group's analysts with the coverage companies specified by DSI. Some of the foreign securities stated on this report are not disclosed according to the Financial Instruments and Exchange Law of Japan. Target prices set by Deutsche Bank's equity analysts are based on a 12-month forecast period.

Korea: Distributed by Deutsche Securities Korea Co.

South Africa: Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10).

Singapore: This report is issued by Deutsche Bank AG, Singapore Branch (One Raffles Quay #18-00 South Tower Singapore 048583, 65 6423 8001), which may be contacted in respect of any matters arising from, or in connection with, this report. Where this report is issued or promulgated by Deutsche Bank in Singapore to a person who is not an accredited investor, expert investor or institutional investor (as defined in the applicable Singapore laws and regulations), they accept legal responsibility to such person for its contents.

Taiwan: Information on securities/investments that trade in Taiwan is for your reference only. Readers should independently evaluate investment risks and are solely responsible for their investment decisions. Deutsche Bank research may not be distributed to the Taiwan public media or quoted or used by the Taiwan public media without written consent. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation to trade in such securities/instruments. Deutsche Securities Asia Limited, Taipei Branch may not execute transactions for clients in these securities/instruments.

Qatar: Deutsche Bank AG in the Qatar Financial Centre (registered no. 00032) is regulated by the Qatar Financial Centre Regulatory Authority. Deutsche Bank AG - QFC Branch may undertake only the financial services activities that fall within the scope of its existing QFCRA license. Its principal place of business in the QFC: Qatar Financial Centre, Tower, West Bay, Level 5, PO Box 14928, Doha, Qatar. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available only to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Russia: The information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a license in the Russian Federation.

Kingdom of Saudi Arabia: Deutsche Securities Saudi Arabia LLC Company (registered no. 07073-37) is regulated by the Capital Market Authority. Deutsche Securities Saudi Arabia may undertake only the financial services activities that fall within the scope of its existing CMA license. Its principal place of business in Saudi Arabia: King Fahad Road, Al Olaya District, P.O. Box 301809, Faisaliah Tower - 17th Floor, 11372 Riyadh, Saudi Arabia.

United Arab Emirates: Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated by the Dubai Financial Services Authority. Deutsche Bank AG - DIFC Branch may only undertake the financial services activities that fall within the scope of its existing DFSA license. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are available only to Professional Clients, as defined by the Dubai Financial Services Authority.

Australia and New Zealand: This research is intended only for 'wholesale clients' within the meaning of the Australian Corporations Act and New Zealand Financial Advisors Act, respectively. Please refer to Australia-specific research disclosures and related information at https://australia.db.com/australia/content/research-information.html Where research refers to any particular financial product recipients of the research should consider any product disclosure statement, prospectus or other applicable disclosure document before making any decision about whether to acquire the product. In preparing this report, the primary analyst or an individual who assisted in the preparation of this report has likely been in contact with the company that is the subject of this research for confirmation/clarification of data, facts, statements, permission to use company-sourced material in the report, and/or site-visit attendance. Without prior approval from Research Management, analysts may not

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



accept from current or potential Banking clients the costs of travel, accommodations, or other expenses incurred by analysts attending site visits, conferences, social events, and the like. Similarly, without prior approval from Research Management and Anti-Bribery and Corruption ("ABC") team, analysts may not accept perks or other items of value for their personal use from issuers they cover.

Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published without Deutsche Bank's prior written consent.

Backtested, hypothetical or simulated performance results have inherent limitations. Unlike an actual performance record based on trading actual client portfolios, simulated results are achieved by means of the retroactive application of a backtested model itself designed with the benefit of hindsight. Taking into account historical events the backtesting of performance also differs from actual account performance because an actual investment strategy may be adjusted any time, for any reason, including a response to material, economic or market factors. The backtested performance includes hypothetical results that do not reflect the reinvestment of dividends and other earnings or the deduction of advisory fees, brokerage or other commissions, and any other expenses that a client would have paid or actually paid. No representation is made that any trading strategy or account will or is likely to achieve profits or losses similar to those shown. Alternative modeling techniques or assumptions might produce significantly different results and prove to be more appropriate. Past hypothetical backtest results are neither an indicator nor guarantee of future returns. Actual results will vary, perhaps materially, from the analysis.

Copyright © 2020 Deutsche Bank AG

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.



David Folkerts-Landau
Group Chief Economist and Global Head of Research

Pam Finelli
Global Chief Operating Officer
Research

Anthony Klarman
Global Head of
Debt Research

Michael Spencer
Head of APAC Research

Steve Pollard
Head of Americas Research
Global Head of Company
Research

Gerry Gallagher
Head of European
Company Research

Andreas Neubauer
Head of Germany Research

Peter Milliken
Head of APAC
Company Research

Jim Reid
Global Head of
Thematic Research

Francis Yared
Global Head of Rates Research

George Saravelos
Global Head of FX Research

Peter Hooper
Global Head of
Economic Research

International Production Locations

Deutsche Bank AG
Deutsche Bank Place
Level 16
Corner of Hunter & Phillip Streets
Sydney, NSW 2000
Australia
Tel: (61) 2 8258 1234

Deutsche Bank AG
Equity Research
Mainzer Landstrasse 11-17
60329 Frankfurt am Main
Germany
Tel: (49) 69 910 00

Deutsche Bank AG
Filiale Hongkong
International Commerce Centre,
1 Austin Road West,Kowloon,
Hong Kong
Tel: (852) 2203 8888

Deutsche Securities Inc.
2-11-1 Nagatacho
Sanno Park Tower
Chiyoda-ku, Tokyo 100-6171
Japan
Tel: (81) 3 5156 6000

Deutsche Bank AG London
1 Great Winchester Street
London EC2N 2EQ
United Kingdom
Tel: (44) 20 7545 8000

Deutsche Bank Securities Inc.
60 Wall Street
New York, NY 10005
United States of America
Tel: (1) 212 250 2500

Provided for the exclusive use of Marissa Neuman at ICR, LLC. on 05-Apr-2020 11:42 PM.