

Quantitative Monographs

Can we trade on company visits in China?

Indicator for money flows

By studying a unique dataset that records different types of investors' company visits in China, we have found evidence that around the visits of both onshore and offshore investors, fund inflows are positive. Since investors' attention can be limited, we argue that intensified interaction between a company and its investors could create an easier approach to information acquisition and attract a higher level of investor attention and stronger money inflows.

Can we trade on it?

Based on the company visit dataset, we create a new factor for stock selection. A simple strategy that goes long the companies visited by both onshore and offshore investors would have generated an excess return of 13% per annum since 2013, after trading costs, and a risk-adjusted return of 1.1.

Screens for the most-visited companies

Figure 1 highlights the most visited companies by onshore and offshore investors. If you are interested in full screens, please contact us.

Figure 1: Top screens by investor type

		.,	P-0			
Top-three	Top-three companies most visited by onshore investors					
Ticker	Company name	Market cap (Rmb bn)	Sector	Number of company visits	Number of onshore investors	Number of offshore investors
002709	TINCI	92.2	Materials	3	592	21
300171	TOFFLON	23.9	Industrials	3	478	14
002241	GOERTEK	139.3	Tech	1	437	50
Top-three companies most visited by offshore investors						
Ticker	Company name	Market cap (Rmb bn)	Sector	Number of company visits	Number of onshore investors	Number of offshore investors

Health Care

Tech

Tech

4

Note: Over past eight weeks as of 27 August 2021. Source: Wind, UBS Quant Research.

9.7

10.9

59.4

Equities

China

Quantitative

Cathy Fang, PhD

Analyst \$1460518100001 cathy.fang@ubs.com +86-213-866 8891

> Lynce Wang Associate \$1460120080001

\$1460120080001 lynce.wang@ubs.com +86-21-38668638

Fabrice Schloegel, PhD

Analyst fabrice.schloegel@ubs.com +65-6495 3257

Paul Winter

Analyst paul-j.winter@ubs.com +61-2-9324 2080

Oliver Antrobus, CFA Analyst oliver.antrobus@ubs.com +61-3-9242 6467

James Cameron

Analyst james-a.cameron@ubs.com +61-2-93242074

Michael Gray

Analyst michael-f.gray@ubs.com +1-212-713 1313

Aaron Guo, CFA

Analyst aaron.guo@ubs.com +852-2971 7705

Amanda Jorgensen Analyst

amanda.jorgensen@ubs.com +44-20-7568 3072

Andreas Schroeder, CFA Analyst

andreas.schroeder@ubs.com +44-20-7568 4432

www.ubs.com/investmentresearch

688366

688088

688036

HAOHAI

ARCSOFT

TRANSSION

This report has been prepared by UBS Securities Asia Limited. **ANALYST CERTIFICATION AND REQUIRED DISCLOSURES, including information on the Quantitative Research Review published by UBS, begin on page 11.** The views in this report are based on UBS's proprietary quantitative models. These views are made independently of the recommendations of UBS's fundamental equity research analysts. UBS does and seeks to do business with companies covered in its research reports. As a result, 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.

94

203

62

53

Summary

We use the *Wind Institution's Field Research Dataset* to study investor visits to China A-share listed companies. It contains the detailed records of visits by both onshore and offshore investors, and also covers a variety of investor-corporate communication activities such as company tours, earnings calls and press conferences. It is a unique dataset in China with which to study the interaction between investors and corporate management.

Unique dataset

The information content of company visits is a topic of interest for both academics and practitioners. Han et al. (2018)¹ found ample evidence showing that private access to company management could facilitate a better approach to information acquisition, while Cheng et al. (2019)² documented strong and positive market reactions around corporate site visits, suggesting these activities can be positively associated with companies' future performance.

Consistent with these academic findings, we document recurrent and frequent interaction between investors and listed companies, and in addition to stock market reactions, we also found accelerating money inflows around company visits. This is consistent with the hypothesis of limited investor attention, which states that since investors' attention tends to be limited, easier access to information acquisition could attract more investor attention and bring in stronger fund flows.

Indicator for fund flows

Based on the company visit dataset, we create a new stock selection model. A strategy that goes long the companies with visits over the past eight weeks and hold for the subsequent eight weeks, would have generated reasonable turnover of \sim 700% pa, and an excess return of 11% pa (8% post t-costs) since 2013.

Can we trade on it?

Last, we aggregate the company visits by different types of investors, and highlight the top-ranking screens ranked by the visits from:

- Onshore China mutual funds
- Offshore investment companies
- Both onshore and offshore investors

Backtests show that initially, tracking the onshore investors' visits would have generated more alpha but in recent years, the performance of offshore managers' visits has been greater. Moreover, we demonstrate that by selecting the companies that received both onshore and offshore investor visits, we are able to create a portfolio with more consistent performance, which is 13% pa since 2013, post t-costs, and a risk-adjusted return of 1.1. This also provides a new source for alpha, which is both statistically and economically significant even after controlling for the generic factors.

Combine onshore and offshore insights

¹ Han, B., D. Kong, S. Liu (2018), Do analysts gain an informational advantage by visiting listed companies? *Contemporary Accounting Research*

² Cheng, Q., F. Du, B. Y. Wang, X. Wang (2019), Do corporate site visits impact stock prices? *Contemporary Accounting Research*

Data description

In China, data on company visits are available to the general public. Since 2009, Chinese A-share listed companies in their annual reports have been documenting visits from all interested parties, including analysts from brokerage firms as well as individual and institutional investors from both onshore and offshore markets.

Unique dataset in China

From 2012, companies started to disclose records of company visits via online platforms³, with an average announcement delay of only one day. This timely disclosure serves as a unique dataset to study China's equity markets.

In this report, we use *Wind Institution's Field Research Dataset*, which summarises the records of company visits since 2012. Specifically, this dataset covers a variety of company visit activities, such as on-site tours and virtual calls, press conferences, earnings announcement calls and one-to-one communication.

A typical record contains the type and date of event, the announcement date and participants' information—ie, total number of investors and their investor types, positions and names, as well as a detailed script of Q&A.

To gauge how often investors interact with corporate management in China, we have totalled the sample number of events and participants by month over the past years. As shown in Figure 2, there have been more than 700 visits per month, with around 400 companies visited, one to two visits per company on average.

When investors visit a company ...

Moreover, there has been a strong seasonality in event arrangements. The average number of visits can be substantially higher in May, September and November, one month after the earnings-announcement seasons (Figure 3).

Figure 2: Sample number

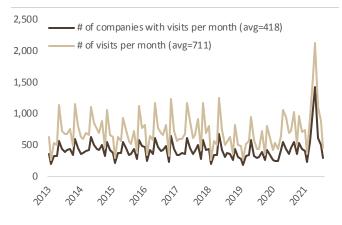
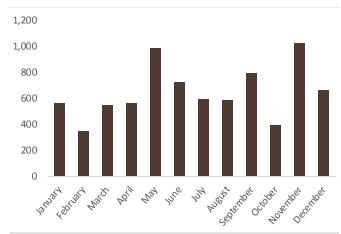


Figure 3: Seasonality



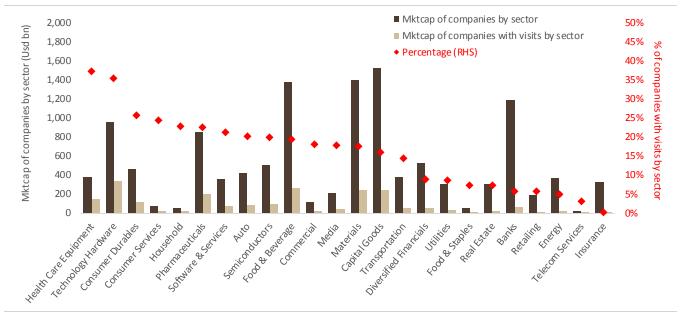
Source: Wind, UBS Quant Research

Source: Wind, UBS Quant Research

Year to date, the three most popular sectors have been health-care equipment, technology hardware and consumer durables, as measured by the percentage of visited companies within each sector (Figure 4). In comparison, the insurance, telecommunication services and energy sectors have received less attention.

³ Such as <u>irm.cninfo.com.cn</u>, <u>sns.sseinfo.com</u> or <u>www.cninfo.com.cn</u>

Figure 4: Which sectors are more popular?



Source: Wind, UBS Quant Research

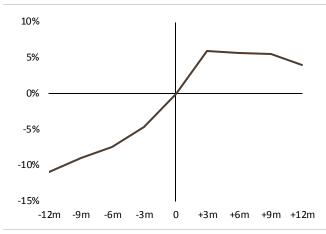
We observe the recurrent and frequent interaction between investors and listed companies, and in the next step we use an event study to detect money flows around the interaction.

... what follows?

We find it unsurprising to see that when investors visit a company, we can usually expect fund inflows to accelerate around the visits. Onshore investor inflows would peak about three months post the visits (Figure 5) while offshore inflows would continue over the following 3 to 12 months, albeit at a slower pace (Figure 6).

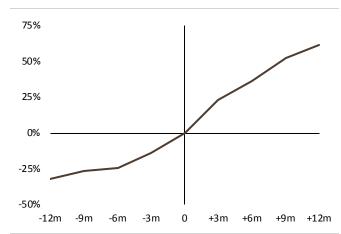
Our findings are consistent with the behavioural hypothesis of limited investor attention, which states that better access to corporate management or business operations facilitates a higher level of investor attention and therefore stronger money flows.

Figure 5: Cumulative net inflows of onshore mutual funds around visits



Source: Wind, UBS Quant Research

Figure 6: Cumulative net inflows of Northbound investors around visits



Source: Wind, UBS Quant Research

Can we trade on it?

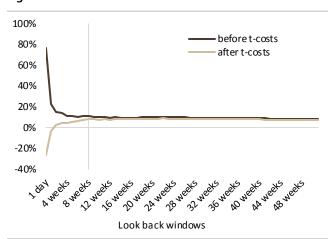
In the above section, we note the frequent interaction between China A-share investors and listed companies, and the interaction results in more investor attention and accelerating money flows.

The next question is whether this is also an indicator for subsequent share prices. In other words, is it profitable to trade on this event?

We start with a simple strategy whereby we long the companies with visits over a variety of look-back periods, ranging from one day to 52 weeks, and holding period also ranges from one day to 52 weeks (Figure 7 and Figure 8). In this way we investigate the impact from strategy turnover, and see if the events can drive share prices in both the short and long term.

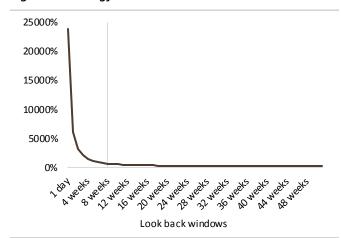
Look back over the past one day to 52 weeks

Figure 7: Annualised excess return



Note: Strategy performance is excess return relative to the benchmark of all China A shares; cap weighted; portfolio is rebalanced daily; look-back and holding periods range from 1 day to 52 weeks. Source: Wind, UBS Quant Research

Figure 8: Strategy turnover



Note: Annualised one-side turnover; portfolio is rebalanced daily; look-back and holding periods range from 1 day to 52 weeks. Source: Wind, UBS Quant Research

As the events have been fairly frequent over the years, for a portfolio on a daily basis of rebalance, we have on average 10-20 events per day. The performance of the daily strategy is remarkable with an excess return of 76% pa (Figure 7), but this is before cost statistics. The strategy turnover is also heavy, with a daily turnover of up to 95% on each side (Figure 8). If we assume 20bps per side, t-costs would wipe out all the returns, as shown in Figure 7.

Strategy turnover can be significantly reduced when we adopt longer look-back and holding periods. Moreover, in the comparatively longer term, the pricing effects hold.

For example, if we extend a look-back and holding period to 8 weeks, the strategy turnover is reduced to less than 700% pa, with a post-cost annualised return of around 8% (Figure 7). In Figure 9 and Figure 10, we also compare the strategy performance before and after t-costs.

More importantly, we can still get significant alpha out of company visits, even after regressing out the contributions from traditional risk premia—including Market, Size, Value, Price Momentum and Liquidity, as well as Earnings Revisions—as shown in Panel B of Figure 10.

Long companies with visits over past eight weeks

Figure 9: Strategy performance



Note: Strategy performance is excess return relative to the benchmark of all China A shares; cap weighted; portfolio is rebalanced daily; 8-week look-back period. Source: Wind, UBS Quant Research

Figure 10: Performance statistics

	Panel A: Performance statistics			
	Before t-costs	After t-costs		
Annualised excess return	11.0%	8.1%		
Annualised volatility	8.2%	8.4%		
Risk-adjusted excess return	1.3	1.0		
Annualised one-side turnover	685%	-		
	Panel B: Loading on factors			
	Before t-costs	After t-costs		
Market	0.01 (2.57)	0.01 (1.29)		
Size	-0.2 (-11.83)	-0.2 (-10.66)		
Value	-0.3 (-30.15)	-0.3 (-30.65)		
Price momentum	0.01 (0.83)	0.02 (1.33)		
Liquidity	0.1 (7.61)	0.1 (8.34)		
Earnings revisions	0.1 (7.22)	0.1 (5.60)		
Six-Factor alpha	4.9% (2.55)	4.2% (2.14)		

Source: Wind, UBS Quant Research

To conclude, we demonstrated that it can be profitable to trade on the signal of company visits. A typical strategy with look-back and holding periods of 8 weeks can generate significant excess returns after trading costs. Moreover, this signal provides an alternative alpha source for stock selection after controlling for traditional quant factors.

Onshore investors versus offshore

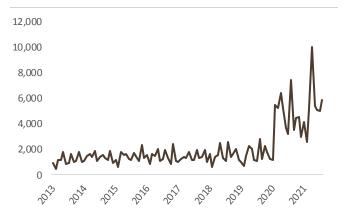
As shown in the above sections, our dataset discloses a wide range of information related to the investors interacting with listed companies. Therefore, in the following section we explore the details of investor identity and focus on a comparison between onshore and offshore investors.

In Figure 11 and Figure 12, we summarise the number of onshore versus offshore investors who have participated in company visits in China, by month, since 2013.

Investor attention: onshore vs offshore

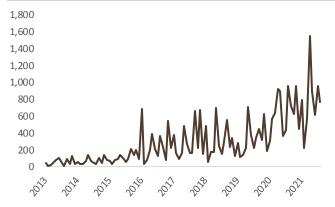
During the earlier years, there could be 1,000-2,000 onshore investors joining tours and calls with corporate management and brokerage analysts every month (Figure 11).

Figure 11: Number of onshore visitors



Source: Wind, UBS Quant Research

Figure 12: Number of offshore visitors

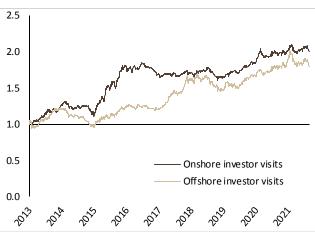


Source: Wind, UBS Quant Research

Moreover, there was a sharp rise in the number of onshore participants in early 2020, as shown in Figure 11. This was when on-site visits turned into online calls and virtual conferences due to the outbreak of COVID-19, and interaction became accessible to more participants as travel costs were reduced. In May 2021, we witnessed another spike in company visits as it was a very first annual reporting season when COVID-19 spread largely contained in China.

Meanwhile, offshore participation has been growing steadily over time, with fewer than 50 investors per month in 2013, but more than 1,000 per month in recent years (Figure 12).

Figure 13: Which is more informative?



Note: Strategy performance is excess return relative to benchmark of all China A shares, cap weighted; portfolio is rebalanced daily; 8-week look-back period. Source: Wind. UBS Quant Research

Figure 14: Performance statistics, after t-costs

		On shore investor visits	Offshore investor visits
Since 13	Annualised excess return	8.6%	7.3%
	Annualised volatility	8.7%	10.2%
	Risk-adjusted excess return	1.0	0.7
Before 17	Annualised excess return	14.7%	5.2%
	Annualised volatility	10.7%	11.0%
	Risk-adjusted excess return	1.4	0.5
Since 17	Annualised excess return	3.8%	9.1%
	Annualised volatility	6.5%	9.5%
	Risk-adjusted excess return	0.6	1.0

Source: Wind, UBS Quant Research

In Figure 13 and Figure 14, we compare the performance of strategies that go long the companies with onshore investor visits on the one hand and the companies with offshore investor visits on the other. Since 2017, the strategy based on offshore samples has generated an annualised excess return of 9%, relative to all China A shares. By comparison, the excess return has halved before 2017.

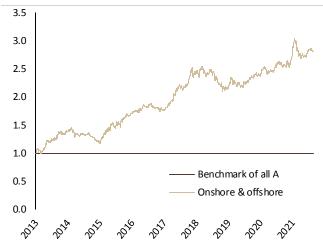
Considering the difference in onshore versus offshore histories, we find it unsurprising that offshore investors' attention was less informative in the earlier years and more informative in recent years. In a following step, we could combine the insights of both onshore and offshore investors.

Figure 15 and Figure 16 show a strategy that goes long the companies that receive visits from both onshore and offshore investors. This results in a strategy that delivers more consistent outperformance, with an excess return of 13% pa since 2013, and risk-adjusted return at 1.1. This supports our hypothesis that when the insights of onshore and offshore investors intersect, it acts as a stronger indicator for future outperformance.

Last, we assess the portfolio exposure to generic factors and demonstrate that our new signal contributes to additional alpha. Panel B in Figure 16 shows that in general, the new signal exhibits some small but significant loading on Value, Liquidity and Earnings Revisions. Yet after controlling for typical quant factors, the strategy still generates an alpha of 7.8% that is both statistically and economically significant.

Combining both insights

Figure 15: Where do onshore and offshore intersect?



Note: Strategy performance is excess return, after costs, relative to all China Ashares, cap weighted; portfolio is rebalanced daily; 8-week look-back period. Source: Wind, UBS Quant Research

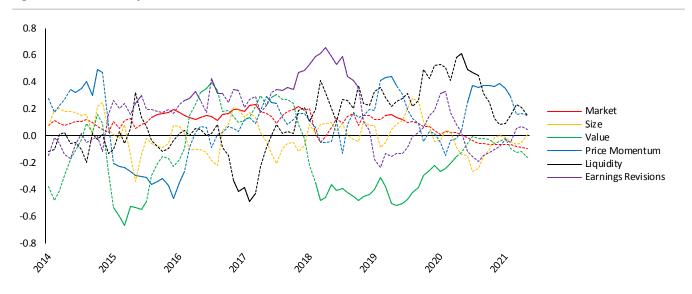
Figure 16: Performance statistics, after t-costs

Onshore & offshore intersection		
Panel A: Performance statistics		
13.2%		
12.2%		
1.1		
1017%		
Panel B: Loading on factors		
0.01 (1.61)		
0.01 (0.42)		
-0.2 (-9.63)		
0.03 (1.43)		
0.2 (5.70)		
0.1 (4.03)		
7.8% (3.21)		

Source: Wind, UBS Quant Research

Figure 17 shows the factor loadings over time. The new portfolio has displayed some exposure to expensive stocks and high earnings revisions, but overall the loadings are small in magnitude, and most of the time we can observe no consistent or significant exposure. We therefore believe that the new company visit portfolio is mostly orthogonal to traditional quant factors, and can provide an alternative source for alpha.

Figure 17: Portfolio exposure to factors



Note: In the above chart we report the loading coefficients of the portfolio returns regressed on the traditional factors, with solid lines representing loadings that are statistically significant at the 5% level, and dotted lines standing for insignificant loadings. Source: Wind, UBS Quant Research

Latest screen

In Figure 18 and Figure 19, we screen out the highest-ranking companies ranked by the participation from onshore investors versus offshore investors.

Figure 18: Top-10 companies most visited by onshore investors

Ticker	Company name	Market cap (Rmb bn)	Sector	Number of company visits	Number of onshore investors	Number of offshore investors
002709	TINCI	92.2	Materials	3	592	21
300171	TOFFLON	23.9	Industrials	3	478	14
002241	GOERTEK	139.3	Tech	1	437	50
002557	QIAQIA FOOD	19.7	Cons Stpls	5	384	43
300896	IMEIK	29.5	Health Care	1	377	41
002906	ADAYO	19.7	Cons Disc	6	360	34
002326	YONGTAI TECH	30.8	Materials	8	344	5
000100	TCL TECH.	92.4	Tech	2	279	18
300296	LEYARD	19.6	Tech	16	276	8
002507	FULING ZHACAI	21.5	Cons Stpls	9	267	50

Note: 8-week look-back period; data as of 27 August 2021. Source: Wind, UBS Quant Research

Figure 19: Top-10 companies most visited by offshore investors

Ticker	Company name	Market cap (US\$ m)	Sector	Number of company visits	Number of onshore investors	Number of offshore investors
688366	HAOHAI	9.7	Health Care	2	94	62
688088	ARCSOFT	10.9	Tech	4	203	53
688036	TRANSSION	59.4	Tech	1	140	53
002241	GOERTEK	139.3	Tech	1	437	50
002507	FULING ZHACAI	21.5	Cons Stpls	9	267	50
688561	QI AN XIN	42.0	Tech	5	167	50
002557	QIAQIA FOOD	19.7	Cons Stpls	5	384	43
300896	IMEIK	29.5	Health Care	1	377	41
002906	ADAYO	19.7	Cons Disc	6	360	34
002410	GLODON	59.6	Tech	3	216	33

Note: 8-week look-back period; data as of 27 August 2021. Source: Wind, UBS Quant Research

Conclusions

In this report we demonstrate that company visits attract investor attention and positive money flows. Moreover, by trading on these events, with a reasonable look-back period to reduce turnover and t-costs, we can find a new source for alpha, which has been fairly consistent over time, and mostly orthogonal to the traditional quant factors and fundamental risk premia.

Valuation Method and Risk Statement

Our quantitative models rely on reported financial statement information, consensus earnings forecasts and share prices. Errors in these numbers are sometimes impossible to prevent (as when an item is misstated by a company). Also, the models employ historical data to estimate the efficacy of stock selection strategies and the relationships among strategies, which may change in the future. Additionally, unusual company-specific events could overwhelm the systematic influence of the strategies used to rank and score stocks.

Required Disclosures

This report has been prepared by UBS Securities Asia Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

For information on the ways in which UBS manages conflicts and maintains independence of its research product; historical performance information; certain additional disclosures concerning UBS research recommendations; and terms and conditions for certain third party data used in research report, please visit https://www.ubs.com/disclosures. The figures contained in performance charts refer to the past; past performance is not a reliable indicator of future results. Additional information will be made available upon request UBS Securities Co. Limited is licensed to conduct securities investment consultancy businesses by the China Securities Regulatory Commission. UBS acts or may act as principal in the debt securities (or in related derivatives) that may be the subject of this report. This recommendation was finalized on: 30 August 2021 07:47 AM GMT. UBS has designated certain Research department members as Derivatives Research Analysts where those department members publish research principally on the analysis of the price or market for a derivative, and provide information reasonably sufficient upon which to base a decision to enter into a derivatives transaction. Where Derivatives Research Analysts co-author research reports with Equity Research Analysts or Economists, the Derivatives Research Analyst is responsible for the derivatives investment views, forecasts, and/or recommendations. Quantitative Research Review: UBS publishes a quantitative assessment of its analysts' responses to certain questions about the likelihood of an occurrence of a number of short term factors in a product known as the 'Quantitative Research Review'. Views contained in this assessment on a particular stock reflect only the views on those short term factors which are a different timeframe to the 12-month timeframe reflected in any equity rating set out in this note. For the latest responses, please click https://neo.ubs.com/quantitative, or speak to your UBS sales representative for access to the report.

Analyst Certification:Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers and were prepared in an independent manner, including with respect to UBS, and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage ¹	IB Services ²
Buy	FSR is > 6% above the MRA.	53%	32%
Neutral	FSR is between -6% and 6% of the MRA.	36%	30%
Sell	FSR is > 6% below the MRA.	11%	21%
Short-Term Rating	Definition	Coverage ³	IB Services ⁴
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 June 2021.

KEY DEFINITIONS:Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. In some cases, this yield may be based on accrued dividends. **Market Return Assumption** (MRA) is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

^{1:}Percentage of companies under coverage globally within the 12-month rating category.

^{2:}Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

^{3:}Percentage of companies under coverage globally within the Short-Term rating category.

^{4:}Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

EXCEPTIONS AND SPECIAL CASES:UK and European Investment Fund ratings and definitions are: Buy: Positive on factors such as structure, management, performance record, discount; **Neutral:** Neutral on factors such as structure, management, performance record, discount; **Sell:** Negative on factors such as structure, management, performance record, discount. **Core Banding Exceptions (CBE):** Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Company Disclosures table in the relevant research piece.

Research analysts contributing to this report who are employed by any non-US affiliate of UBS Securities LLC are not registered/qualified as research analysts with FINRA. Such analysts may not be associated persons of UBS Securities LLC and therefore are not subject to the FINRA restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account. The name of each affiliate and analyst employed by that affiliate contributing to this report, if any, follows.

UBS Securities Co. Limited: Cathy Fang, PhD; Lynce Wang. **UBS AG, Singapore Branch:** Fabrice Schloegel, PhD. **UBS Securities Australia Ltd:** Paul Winter; Oliver Antrobus, CFA; James Cameron. **UBS Securities LLC:** Michael Gray. **UBS AG Hong Kong Branch:** Aaron Guo, CFA. **UBS AG London Branch:** Amanda Jorgensen; Andreas Schroeder, CFA.

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report. For a complete set of disclosure statements associated with the companies discussed in this report, including information on valuation and risk, please contact UBS Securities LLC, 1285 Avenue of Americas, New York, NY 10019, USA, Attention: Investment Research.

Global Disclaimer

This document has been prepared by UBS Securities Asia Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

This Document is provided solely to recipients who are expressly authorized by UBS to receive it. If you are not so authorized you must immediately destroy the Document.

Global Research is provided to our clients through UBS Neo, and in certain instances, UBS.com and any other system or distribution method specifically identified in one or more communications distributed through UBS Neo or UBS.com (each a system) as an approved means for distributing Global Research. It may also be made available through third party vendors and distributed by UBS and/or third parties via e-mail or alternative electronic means. The level and types of services provided by Global Research to a client may vary depending upon various factors such as a client's individual preferences as to the frequency and manner of receiving communications, a client's risk profile and investment focus and perspective (e.g., market wide, sector specific, long-term, short-term, etc.), the size and scope of the overall client relationship with UBS and legal and regulatory constraints.

All Global Research is available on UBS Neo. Please contact your UBS sales representative if you wish to discuss your access to UBS Neo.

When you receive Global Research through a system, your access and/or use of such Global Research is subject to this Global Research Disclaimer and to the UBS Neo Platform Use Agreement (the "Neo Terms") together with any other relevant terms of use governing the applicable System.

When you receive Global Research via a third party vendor, e-mail or other electronic means, you agree that use shall be subject to this Global Research Disclaimer, the Neo Terms and where applicable the UBS Investment Bank terms of business (https://www.ubs.com/qlobal/en/neqalinfo2/disclaimer.html). In addition, you consent to UBS processing your personal data and using cookies in accordance with our Privacy Statement (https://www.ubs.com/qlobal/en/neqale/cookie-management.html). and cookie notice (https://www.ubs.com/qlobal/en/nepage/cookie-management.html).

If you receive Global Research, whether through a System or by any other means, you agree that you shall not copy, revise, amend, create a derivative work, provide to any third party, or in any way commercially exploit any UBS research provided via Global Research or otherwise, and that you shall not extract data from any research or estimates provided to you via Global Research or otherwise, without the prior written consent of UBS.

In certain circumstances (including for example, if you are an academic or a member of the media) you may receive Global Research otherwise than in the capacity of a client of UBS and you understand and agree that (i) the Global Research is provided to you for information purposes only; (ii) for the purposes of receiving it you are not intended to be and will not be treated as a "client" of UBS for any legal or regulatory purpose; (iii) the Global Research must not be relied on or acted upon for any purpose; and (iv) such content is subject to the relevant disclaimers that follow.

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who 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 or would subject UBS to any registration or licensing requirement within such jurisdiction.

This document is a general communication and is educational in nature; it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Nothing in this document constitutes a representation that any investment strategy or recommendation is suitable or appropriate to an investor's individual circumstances or otherwise constitutes a personal recommendation. By providing this document, none of UBS or its representatives has any responsibility or authority to provide or have provided investment advice in a fiduciary capacity or otherwise. Investments involve risks, and investors should exercise prudence and their own judgment in making their investment decisions. None of UBS or its representatives is suggesting that the recipient or any other person take a specific course of action or any action at all. By receiving this document, the recipient acknowledges and agrees with the intended purpose described above and further disclaims any expectation or belief that the information constitutes investment advice to the recipient or otherwise purports to meet the investment objectives of the recipient. The financial instruments described in the document may not be eligible for sale in all jurisdictions or to certain categories of investors.

Options, structured derivative products and futures (including OTC derivatives) are not suitable for all investors. Trading in these instruments is considered risky and may be appropriate only for sophisticated investors. Prior to buying or selling an option, and for the complete risks relating to options, you must receive a copy of "The Characteristics and Risks of Standardized Options." You may read the document at http://www.theocc.com/publications/risks/riskchap1.jsp or ask your salesperson for a copy. Various theoretical explanations of the risks associated with these instruments have been published. Supporting documentation for any claims, comparisons, recommendations, statistics or other technical data will be supplied upon request. Past performance is not necessarily indicative of future results. Transaction costs may be significant in option strategies calling for multiple purchases and sales of options, such as spreads and straddles. Because of the importance of tax considerations to many options transactions, the investor considering options should consult with his/her tax advisor as to how taxes affect the outcome of contemplated options transactions.

Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates or other market conditions. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument referred to in the document. For investment advice, trade execution or other enquiries, clients should contact their local sales representative.

The value of any investment or income may go down as well as up, and investors may not get back the full (or any) amount invested. Past performance is not necessarily a guide to future performance. Neither UBS nor any of its directors, employees or agents accepts any liability for any loss (including investment loss) or damage arising out of the use of all or any of the Information.

Prior to making any investment or financial decisions, any recipient of this document or the information should take steps to understand the risk and return of the investment and seek individualized advice from his or her personal financial, legal, tax and other professional advisors that takes into account all the particular facts and circumstances of his or her investment objectives.

Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. There is no representation that any transaction can or could have been effected at those prices, and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by UBS or any other source may yield substantially different results.

No representation or warranty, either expressed or implied, is provided in relation to the accuracy, completeness or reliability of the information contained in any materials to which this document relates (the "Information"), except with respect to Information concerning UBS. The Information is not intended to be a complete statement or summary of the securities, markets or developments referred to in the document. UBS does not undertake to update or keep current the Information. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas or groups, personnel or other representative of UBS. Any statements contained in this report attributed to a third party represent UBS's interpretation of the data, information and/or opinions provided by that third party either publicly or through a subscription service, and such use and interpretation have not been reviewed by the third party. In no circumstances may this document or any of the Information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following numposes:

- (i) valuation or accounting purposes;
- (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or
- (iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees.

By receiving this document and the Information you will be deemed to represent and warrant to UBS that you will not use this document or any of the Information for any of the above purposes or otherwise rely upon this document or any of the Information.

UBS has policies and procedures, which include, without limitation, independence policies and permanent information barriers, that are intended, and upon which UBS relies, to manage potential conflicts of interest and control the flow of information within divisions of UBS and among its subsidiaries, branches and affiliates. For further information on the ways in which UBS manages conflicts and maintains independence of its research products, historical performance information and certain additional disclosures concerning UBS research recommendations, please visit https://www.ubs.com/disclosures.

Research will initiate, update and cease coverage solely at the discretion of UBS Research Management, which will also have sole discretion on the timing and frequency of any published research product. The analysis contained in this document is based on numerous assumptions. All material information in relation to published research

reports, such as valuation methodology, risk statements, underlying assumptions (including sensitivity analysis of those assumptions), ratings history etc. as required by the Market Abuse Regulation, can be found on UBS Neo. Different assumptions could result in materially different results.

The analyst(s) responsible for the preparation of this document may interact with trading desk personnel, sales personnel and other parties for the purpose of gathering, applying and interpreting market information. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues; however, compensation may relate to the revenues of UBS and/or its divisions as a whole, of which investment banking, sales and trading are a part, and UBS's subsidiaries, branches and affiliates as a whole.

For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms under English law or, if not carried out by UBS in the UK the law of the relevant jurisdiction in which UBS determines it carries out the activity) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this document. For financial instruments admitted to trading on a non-EU regulated market: UBS may act as a market maker save that where this activity is carried out in the US in accordance with the definition given to it by the relevant laws and regulations, such activity will be specifically disclosed in this document. UBS may have issued a warrant the value of which is based on one or more of the financial instruments referred to in the document. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein; such transactions or positions may be inconsistent with the opinions expressed in this document. Within the past 12 months UBS AG, its affiliates or subsidiaries may have received or provided investment services and activities or ancillary services as per MiFID II which

may have given rise to a payment or promise of a payment in relation to these services from or to this company.

Where Global Research refers to "UBS Evidence Lab Inside" or has made use of data provided by UBS Evidence Lab you understand that UBS Evidence Lab is a separate department to Global Research and that UBS Evidence Lab does not provide research, investment recommendations or advice. UBS Evidence Lab may provide services to

United Kingdom: This material is distributed by UBS AG, London Branch to persons who are eligible counterparties or professional clients. UBS AG, London Branch is authorised by the Prudential Regulation Authority and subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Europe: Except as otherwise specified herein, these materials are distributed by UBS Europe SE, a subsidiary of UBS AG, to persons who are eligible counterparties or professional clients (as detailed in the Bundesanstalt fur Finanzdienstleistungsaufsicht (BaFin) Rules and according to MIFID) and are only available to such persons. The information does not apply to, and should not be relied upon by, retail clients. UBS Europe SE is authorised by the European Central Bank (ECB) and regulated by the BaFin and the ECB. Germany: Where an analyst of UBS Europe SE has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE. In all cases it is distributed by UBS Europe SE and UBS AG, London Branch. Luxembourg, the Netherlands, Belgium and Ireland: Where an analyst of UBS Europe SE has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE. In all cases it is distributed by UBS Europe SE and UBS AG, London Branch. Turkey: Distributed by UBS AG, London Branch. No information in this document is provided for the purpose of offering, marketing and sale by any means of any capital market instruments and services in the Republic of Turkey. Therefore, this document may not be considered as an offer made or to be made to residents of the Republic of Turkey. UBS AG, London Branch is not licensed by the Turkish Capital Market Board under the provisions of the Capital Market Law (Law No. 6362). Accordingly, neither this document nor any other offering material related to the instruments/services may be utilized in connection with providing any capital market services to persons within the Republic of Turkey without the prior approval of the Capital Market Board. However, according to article 15 (d) (ii) of the Decree No. 32, there is no restriction on the purchase or sale of the securities abroad by residents of the Republic of Turkey. **Poland:** Distributed by UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddzial w Polsce regulated by the Polish Financial Supervision Authority. Where an analyst of UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddział w Polsce has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddział w Polsce. Russia: Prepared and distributed by UBS Bank (OOO). "Should not be construed as an individual Investment Recommendation for the purpose of the Russian Law " - Federal Law #39-FZ ON THE SECURITIES MARKET Articles 6.1-6.2. Switzerland: Distributed by UBS AG to persons who are institutional investors only. UBS AG is regulated by the Swiss Financial Market Supervisory Authority (FINMA). Italy: Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Europe SE, Italy Branch. Where an analyst of UBS Europe SE, Italy Branch has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE, Italy Branch. France: Prepared by UBS Europe SE and UBS Europe SE and UBS Europe SE, Trance Branch. Where an analyst of UBS Europe SE, France Branch has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE, France Branch. Spain: Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Europe SE, Spain Branch. Where an analyst of UBS Europe SE, Spain Branch has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE, Spain Branch. Sweden: Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Europe SE, Sweden Branch. Where an analyst of UBS Europe SE, Sweden Branch has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE, Sweden Branch. South Africa: Distributed by UBS South Africa (Pty) Limited (Registration No. 1995/011140/07), an authorised user of the JSE and an authorised Financial Services Provider (FSP 7328). Saudi Arabiæ This document has been issued by UBS AG (and/or any of its subsidiaries, branches or affiliates), a public company limited by shares, incorporated in Switzerland with its registered offices at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH-8001 Zurich. This publication has been approved by UBS Saudi Arabia (a subsidiary of UBS AG), a Saudi closed joint stock company incorporated in the Kingdom of Saudi Arabia under commercial register number 1010257812 having its registered office at Tatweer Towers, P.O. Box 75724, Riyadh 11588, Kingdom of Saudi Arabia. UBS Saudi Arabia is authorized and regulated by the Capital Market Authority to conduct securities business under license number 08113-37. **UAE** / **Dubai:** The information distributed by UBS AG Dubai Branch is only intended for Professional Clients and/or Market Counterparties, as classified under the DFSA rulebook. No other person should act upon this material/communication. The information is not for further distribution within the United Arab Emirates. UBS AG Dubai Branch is regulated by the DFSA in the DIFC. UBS is not licensed to provide banking services in the UAE by the Central Bank of the UAE, nor is it licensed by the UAE Securities and Commodities Authority. **Israel:** This Material is distributed by UBS AG, London Branch. UBS Securities Israel Ltd is a licensed Investment Marketer that is supervised by the Israel Securities Authority (ISA). UBS AG, London Branch and its affiliates incorporated outside Israel are not licensed under the Israeli Advisory Law. UBS may engage among others in issuance of Financial Assets or in distribution of Financial Assets of other issuers for fees or other benefits. UBS AG, London Branch and its affiliates may prefer various Financial Assets to which they have or may have an Affiliation (as such term is defined under the Israeli Advisory Law). Nothing in this Material should be considered as investment advice under the Israeli Advisory Law. This Material is being issued only to and/or is directed only at persons who are Eligible Clients within the meaning of the Israeli Advisory Law, and this Material must not be furnished to, relied on or acted upon by any other persons. **United States** Distributed to US persons by either UBS Securities LLC or by UBS Financial Services Inc., subsidiaries of UBS AG; or by a group, subsidiary or affiliate of UBS AG that is not registered as a US broker-dealer (a 'non-US affiliate') to major US institutional investors only. UBS Securities LLC or UBS Financial Services Inc. accepts responsibility for the content of a report prepared by another non-US affiliate when distributed to US persons by UBS Securities LLC or UBS Financial Services Inc. All transactions by a US person in the securities mentioned in this report must be effected through UBS Securities LLC or UBS Financial Services Inc., and not through a non-US affiliate. UBS Securities LLC is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule"), and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule. (Canada: Distributed by UBS Securities Canada Inc., a registered investment dealer in Canada and a Member-Canadian Investor Protection Fund, or by another affiliate of UBS AG that is registered to conduct business in Canada or is otherwise exempt from registration. Brazil: Except as otherwise specified herein, this material is prepared by UBS Brasil CCTVM S.A 1 to persons who are eligible investors residing in Brazil, which are considered to be Investidores Profissionais, as designated by the applicable regulation, mainly the CVM Instruction No. 539 from the 13th of November 2013 (determines the duty to verify the suitability of products, services and transactions with regards to the client's profile). ¹UBS Brasil CCTVM S.A. is a subsidiary of UBS BB Servicos de Assessoria Financeira e Participacoes S.A. ("UBS BB"). UBS BB is an association between UBS AG and Banco do Brasil, of which UBS AG is the majority owner. **Mexico:** This report has been distributed and prepared by UBS Casa de Bolsa, S.A. de C.V., a subsidiary of UBS AG. This document is intended for distribution to institutional or sophisticated investors only. Research reports only reflect the views of the analysts responsible for the report. Analysts do not receive any compensation from the persons or entities different from UBS Casa de Bolsa, S.A. de C.V., or different from entities belonging to the same financial group or business group of such Hong Kong: Distributed by UBS Securities Asia Limited. Please contact local licensed persons of UBS Securities Asia Limited in respect of any matters arising from, or in connection with, the analysis or document Singapore: Distributed by UBS Securities Pte. Ltd. [MCI (P) 003/08/2020 and Co. Reg. No.: 198500648C] or UBS AG, Singapore Branch. Please contact UBS Securities Pte. Ltd., an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110); or UBS AG, Singapore Branch, an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110) and a wholesale bank licensed under the Singapore Banking Act (Cap. 19) regulated by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with, the analysis or document. The recipients of this document represent and warrant that they are accredited and institutional investors as defined in the Securities and Futures Act (Cap. 289). Japan: Distributed by UBS Securities Japan Co., Ltd. to professional investors (except as otherwise permitted). Where this report has been prepared by UBS Securities Japan Co., Ltd., UBS Securities Japan Co., Ltd. is the author, publisher and distributor of the report. Distributed by UBS AG, Tokyo Branch to Professional Investors (except as otherwise permitted) in relation to foreign exchange and other banking businesses when relevant. **Australia:** Clients of UBS AG: Distributed by UBS AG (ABN 47 088 129 613 and holder of Australian Financial Services License No. 231087). Clients of UBS Securities Australia Ltd: Distributed by UBS Securities Australia Ltd (ABN 62 008 586 481 and holder of Australia Financial Services License No.

other internal and external clients.

231098). This Document contains general information and/or general advice only and does not constitute personal financial product advice. As such, the Information in this document has been prepared without taking into account any investor's objectives, financial situation or needs, and investors should, before acting on the Information, consider the appropriateness of the Information, having regard to their objectives, financial situation and needs. If the Information contained in this document relates to the acquisition, or potential acquisition of a particular financial product by a 'Retail' client as defined by section 761G of the Corporations Act 2001 where a Product Disclosure Statement would be required, the retail client should obtain and consider the Product Disclosure Statement relating to the product before making any decision about whether to acquire the product. New Zealand: Distributed by UBS New Zealand Ltd. UBS New Zealand Ltd is not a registered bank in New Zealand. You are being provided with this UBS publication or material because you have indicated to UBS that you are a "wholesale client" within the meaning of section 5C of the Financial Advisers Act 2008 of New Zealand (Permitted Client). This publication or material is not intended for clients who are not Permitted Clients (non-permitted Clients). If you are a non-permitted Client you must not rely on this publication or material. If despite this warning you nevertheless rely on this publication or material, you hereby (i) acknowledge that you may not rely on the content of this publication or material and that any recommendations or opinions in such this publication or material are not made or provided to you, and (ii) to the maximum extent permitted by law (a) indemnify UBS and its associates or related entities (and their respective Directors, officers, agents and Advisors) (each a 'Relevant Person') for any loss, damage, liability or claim any of them may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material and (b) waive any rights or remedies you may have against any Relevant Person for (or in respect of) any loss, damage, liability or claim you may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material. **Korea:** Distributed in Korea by UBS Securities Pte. Ltd., Seoul Branch. This report may have been edited or contributed to from time to time by affiliates of UBS Securities Pte. Ltd., Seoul Branch. This material is intended for professional/institutional clients only and not for distribution to any retail clients. **Malaysia:** This material is authorized to be distributed in Malaysia by UBS Securities Malaysia Sdn. Bhd (Capital Markets Services License No.: CMSL/A0063/2007). This material is intended for professional/institutional clients only and not for distribution to any retail clients. India: Distributed by UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000. It provides brokerage services bearing SEBI Registration Number: INZ000259830; merchant banking services bearing SEBI Registration Number: INM000010809 and Research Analyst services bearing SEBI Registration Number: INH000001204. UBS AG, its affiliates or subsidiaries may have debt holdings or positions in the subject Indian company/companies. Within the past 12 months, UBS AG, its affiliates or subsidiaries may have received compensation for non-investment banking securitiesrelated services and/or non-securities services from the subject Indian company/companies. The subject company/companies may have been a client/clients of UBS AG, its affiliates or subsidiaries during the 12 months preceding the date of distribution of the research report with respect to investment banking and/or non-investment banking securities-related services and/or non-securities services. With regard to information on associates, please refer to the Annual Report at: http://www.ubs.com/global/en/about_ubs/investor_relations/annualreporting.html Taiwan: Except as otherwise specified herein, this material may not be distributed in Taiwan. Information and material on securities/instruments that are traded in a Taiwan organized exchange is deemed to be issued and distributed by UBS Securities Pte. LTD., Taipei Branch, which is licensed and regulated by Taiwan Financial Supervisory Commission. Save for securities/instruments that are traded in a Taiwan organized exchange, this material should not constitute "recommendation" to clients or recipients in Taiwan for the covered companies or any companies mentioned in this document. No portion of the document may be reproduced or quoted by the press or any other person without authorisation from UBS. Indonesia: This report is being distributed by PT UBS Sekuritas Indonesia and is delivered by its licensed employee(s), including marketing/sales person, to its client. PT UBS Sekuritas Indonesia, having its registered office at Sequis Tower Level 22 unit 22-1, Jl. lend. Sudirman, kav. 71, SCBD lot 11B, Jakanta 12190, Indonesia, is a subsidiary company of UBS AG and licensed under Capital Market Law no. 8 year 1995, a holder of broker-dealer and underwriter licenses issued by the Capital Market and Financial Institution Supervisory Agency (now Otoritas Jasa Keuangan/OJK). PT UBS Sekuritas Indonesia is also a member of Indonesia Stock Exchange and supervised by Otoritas Jasa Keuangan (OJK). Neither this report nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens except in compliance with applicable Indonesian capital market law's and regulations. This report is not an offer of securities in Indonesia and may not be distributed within the territory of the Republic of Indonesia or to Indonesian citizens in circumstance which constitutes an offering within the meaning of Indonesian capital market laws and regulations.

The disclosures contained in research documents produced by UBS AG, London Branch or UBS Europe SE shall be governed by and construed in accordance with English law.

UBS specifically prohibits the redistribution of this document in whole or in part without the written permission of UBS and in any event UBS accepts no liability whatsoever for any redistribution of this document or its contents or the actions of third parties in this respect. Images may depict objects or elements that are protected by third party copyright, trademarks and other intellectual property rights. © UBS 2021. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.

