UBS

Private markets education

Venture capital

Chief Investment Office GWM | **19 February 2019** 4:00 pm GMT
Jay Lee, CIO Strategist; **Karim Cherif**, Strategist

- Venture capital managers finance startup companies that they deem to have the potential for disruptive innovation.
- VC investments are often concentrated in the technology and healthcare/life sciences sectors.
- VC fund managers seek to earn a return premium above public markets through an active approach to identifying and establishing early-stage business models.

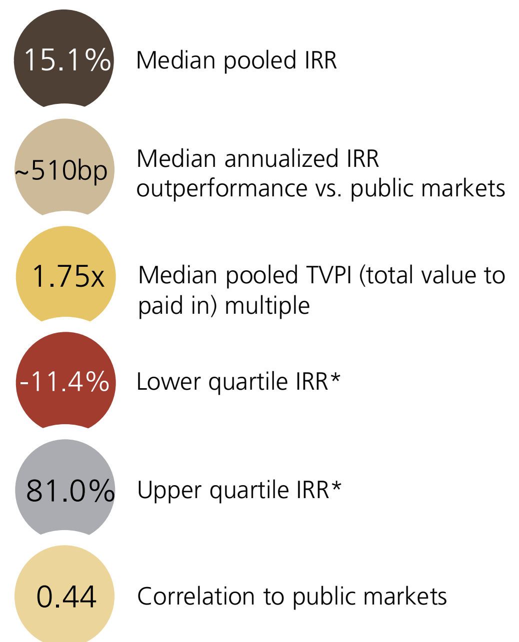
Source: Fotolia

This report is part of a series of short primers on specific private market strategies. You will find more information on the client portal. You can also contact your advisor for assistance.

Venture capital buyout in a nutshell

- Venture capital firms finance company development through minority investments in early-stage companies.
- Target companies are typically pre-revenue/product/profit startups, seeking to establish their business models.
- VC firms often specialize in specific verticals, geographies, and technologies. Expertise in these areas is critical in evaluating the success of future business potential, given the high failure rate.
- Although acquiring minority stakes, VC firms have a high level of involvement with their portfolio companies, including defining product strategy, providing strategic and operational guidance, and sourcing industry connections.
- Venture fund managers typically expect that, in a given fund, the returns from a smaller number of high-multiple "home run" companies will more than offset the losses from all the unsuccessful companies.
- Venture capital delivered a median 15.1% pooled vintage year internal rate of return (IRR) and 1.75x total value to paid-in (TVPI) over the 1993–2014 period. The standard deviation of vintage year IRR was 30.95% and 1.48x on a TVPI basis, the highest among private equity strategies.
- VC strategies outperformed public markets by about 510 basis points when observing public market equivalent (PME) returns over the 1993–2014 period. The return premium is skewed higher due to the dot-com bubble during the mid-to-late 90s.
- Given the early-stage nature of VC targets, returns are generally less linked to economic cycles versus other private equity strategies, though dynamics within the tech and life sciences sectors can drive sentiment in the space.
- VC strategies can provide a source of absolute returns to portfolios by providing access to potentially disruptive companies at the forefront of innovation.
- With significant differences in manager performance, key risks include high idiosyncratic exposure, sector concentration, and exit timing. Other, more general private market risks also apply, including significant illiquidity, limited control, and high fees.

Venture capital in a nutshell



Source: Based on historical data between 1993-2014 using Cambridge Associates data, UBS estimates. *Quartile IRR's reflect minimum and maximum value across vintage years.

This report has been prepared by UBS Switzerland AG. Please see important disclaimers and disclosures at the end of the document.

What does the venture capital strategy do?

Venture capital (VC) has remained around 13–14% of private market assets under management (AUM) over the past 10 years. Venture capital firms finance company development through minority investments in early-stage companies. Three sub-strategies exist, including early-, mid-, and late-stage VC, which corresponds to the proof of concept, commercialization, and scaling-up stages of a company lifecycle.

Target VC investments

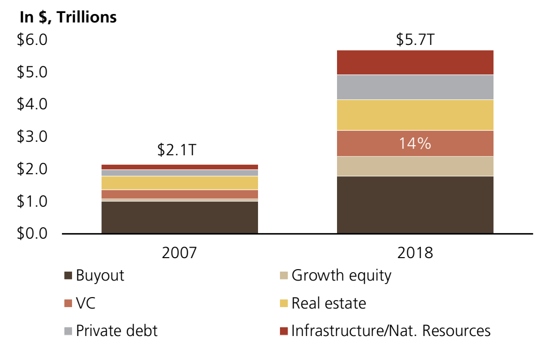
- Target companies are typically pre-revenue/product/profit startups with high technological risk. Targets seek to establish their business models and to raise investments in R&D, equipment, and intellectual property.
- VC firms often specialize in specific verticals, geographies, and technologies. Expertise in these areas is critical in evaluating the success of future business models, given the high failure rate.
- VC firms often team up with other investors to create an investment syndicate, creating synergies in industry knowledge and networks.
- Valuation for startups is not as straightforward as for mature buyout companies given the lack of cash flows. VC investors typically rely on market multiples to determine the terminal value of an investment and will seek returns in excess of a pre-defined multiple at the time of exit.
- Given the high-risk, high-reward nature of the strategy, VC funds tend to have a higher number of portfolio companies versus other private equity strategies.
- Venture fund managers typically expect that in a given fund, the returns from a smaller number of high-multiple "home run" companies will more than offset the losses from all the unsuccessful companies.

Leverage, holding period, and exit

- VC managers rarely use leverage to deploy capital.
- Startups raise capital in multiple successive rounds of financing and valuation dynamics evolve as the company progresses from the initial seed investment to subsequent series rounds. They may participate in one or more future financing rounds to maintain their percentage stake in a company.
- Although acquiring minority stakes, VC firms tend to have a high level of involvement with their portfolio companies, providing formal and informal counsel on strategic and operational matters and providing industry connections.
- VC managers often incorporate certain provisions to influence strategy and protect investments, including board representation, anti-dilution measures, conversion rights to common equity, and tag-along provisions that protect VC investors.
- A holding period for a VC investment can range from 5–10 years, with total fund duration around 12–13 years, at the longer end versus other PE strategies.
- The most common exit method is through an M&A transaction. The second most common is via an IPO. There are pros and cons to either method, with IPOs requiring lengthy and expensive registration requirements, but often able to command higher return realization.

Fig. 1: The private market industry has grown rapidly in the last decade

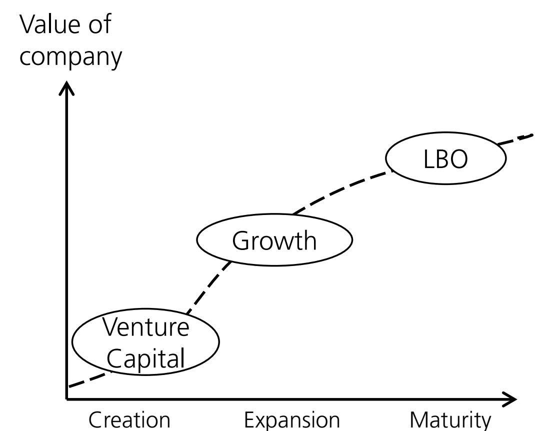
With USD 800bn USD, VC has remained 13–14% of private markets by AUM



Source: Preqin. Total exposure (unrealized value + dry powder) as of year-end for 2007, 30 June for 2018

Fig. 2: Investing in a company's life cycle

VC investors typically seek to invest in startup businesses



Source: UBS

Sources of value add

Venture capital funds aim to add value to their portfolio investments via the following:

- **Identifying successful businesses with limited track records:** Given the high failure rate of VC investments (60% of deals deliver MOIC, or multiple of invested capital, <1x), the manager's ability to identify early-stage companies that can become successful businesses is critical.
- **Providing confidence to next round of investors:** Certain high-profile VC firms can provide a vote of confidence for the next round of investors. VC firms can also source potential investors.
- **Developing product strategy:** VC firms help commercialize a product by formulating the company's value proposition and sales strategy, starting from proof of concept to establishing a successful installed base.
- **Establishing key customers:** VC firms use their network by identifying key customer groups to establish a foothold into the market. A successful entry can help the portfolio company earn a solid reputation for further opportunities.
- **Building depth in management team:** With management teams often lacking depth, VC firms help hire and establish complete teams including C-suite positions and middle management layers upon successful funding rounds.
- **Managing exit process:** VC firms tap into its transaction experience by assembling a pool of candidate acquirers, proposing potential synergies with those acquirers, conducting negotiations on behalf of the ownership syndicate, and preparing for public listing if exiting through an IPO.

Performance analysis

Introduction to vintage year returns

- Private market returns are assessed using vintage year performance, which reflects the sum of all cash flows (contributions, distributions) from funds incepted in the referenced year.
- For example, if hypothetical fund ABC reported vintage year 2005 IRR of 15%, ABC was incepted in 2005 and the IRR reflects all investment activity performed over the course of its lifecycle: contributions and distributions made in 2005, 2006, 2007, etc., until the end of the fund, which typically lasts 12–13 years.
- If hypothetical fund XYZ reported vintage year 2008 TVPI of 1.3x, the fund returned USD 1.30 for every USD 1 invested through the duration of the fund's life.

Historical performance and comparisons versus public market returns

- Using Cambridge Associates data, venture capital delivered a median 15.1% pooled vintage year IRR and 1.75x TVPI over the 1993–2014 period.
- The standard deviation of vintage year IRR was 30.95% and 1.48x on a TVPI basis over the 1993–2014 period.

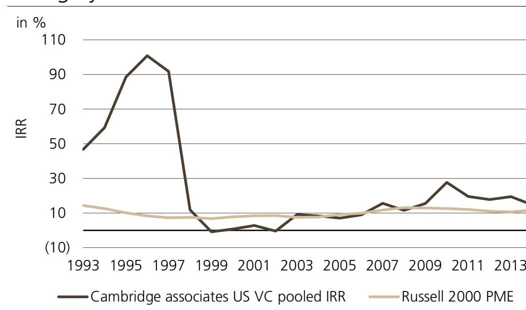
Table 1: Median pooled performance for vintage years 1993–2014

	Global Buyout	Global Growth	US VC
Median Pooled IRR (%)	16.11	12.80	15.10
Std Deviation IRR (%)	5.37	10.01	30.95
Median Pooled TVPI	1.71x	1.66x	1.75x
Std Deviation TVPI	0.27x	0.59x	1.48x

Source: Cambridge Associates, UBS

Fig. 3: VC pooled IRR vs. MSCI ACWI PME

VC has outperformed public markets in 15 out of 22 vintage years between 1993 and 2014



Source: Cambridge Associates, UBS

- VC strategies outperformed public markets when observing public market equivalent (PME) returns. With the median Russell 2000 PME of 10%, VC outperformed listed equities by about 510bps over the 1993–2014 period.
- However, we note that this return premium is skewed higher due to the dot-com bubble during the mid-to-late 90s. When measuring the return premium post dot-com bubble/bust (2003–2014), the median premium narrows to 270bps net of fees.
- VC outperformed the Russell 2000 PME in 15 out of 22 vintage years during the 1993–2014 period.
- We observe significant differences in lower quartile versus upper quartile performance of VC funds, indicating elevated dispersion between fund managers and highlighting the importance of manager due diligence.

How do VC returns compare versus other private equity strategies?

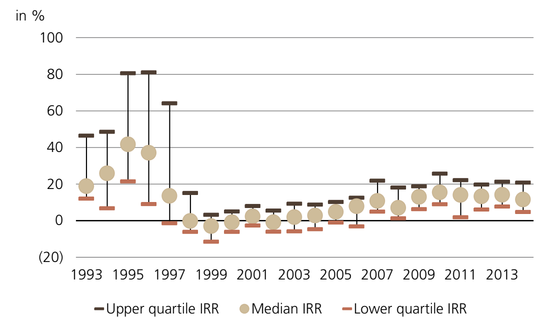
- VC generated the highest median TVPI, and median IRR in between that of buyout and growth equity.
- VC funds target startup stage companies. As a consequence, VC returns exhibit the highest variability versus other strategies when observing the standard deviation in IRR and TVPI multiples.
- Per vintage year, VC returns show the highest amount of outlier years versus other strategies. VC recorded the only negative IRR vintage years.

Venture capital and the business cycle

- Given the early-stage nature of VC targets, returns are susceptible to idiosyncratic risk and are generally less linked to economic cycles compared to other private equity strategies.
- However, the market environment can influence company revenue growth, entry/exit valuations, IPO/M&A sentiment, and levels of dry powder.
- Sentiment in the technology and healthcare/life sciences can drive strategy returns given deal activity concentration in these sectors.
- VC returns were highest during the 1996 vintage year. This period preceded a strong rise in valuation multiples leading up to the dot-com bubble.
- VC returns were lowest during the dot-com bubble, with (1)–2% IRR for 1999–2002 vintages.
- VC managers mostly underperformed public markets before and during prior market peaks.
- When observing performance before the financial crisis, VC returns in 2006–2007 vintage years outperformed the Russell 2000 PME by about 145bps. Additionally, before the dot-com bubble in 1999–2000, these vintage years underperformed the Russell 2000 PME by about 740bps.
- When observing performance during the financial crisis, VC returns in the 2008 vintage year underperformed the Russell 2000 PME by 160bps. Additionally, during the dot-com bubble in 2001–2002, these vintage years underperformed the Russell 2000 PME by 730bps.

Fig. 4: VC return dispersion per vintage year

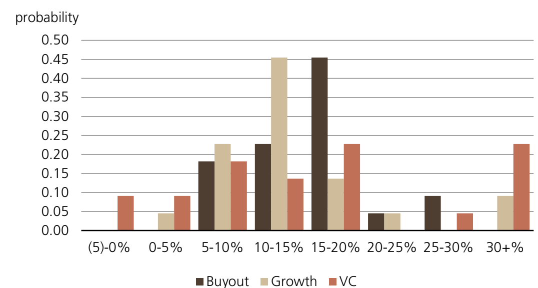
High level of dispersions within each vintage year show importance of manager selection



Source: Cambridge Associates, UBS

Fig. 5: Return distribution across private equity strategies for vintage years 1993-2014

VC vintage year returns displayed the widest dispersion versus other PE strategies



Source: Cambridge Associates, UBS

Venture capital in your portfolio

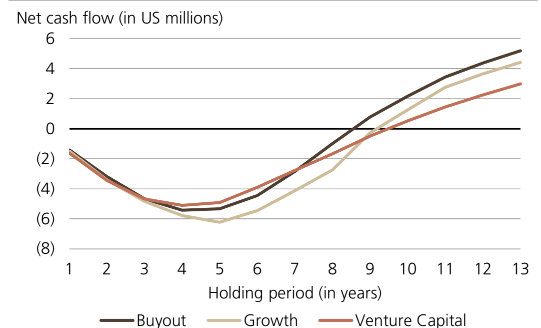
- VC strategies are less correlated to equity markets versus that of buyout or growth equity strategies and can provide a differentiated source of returns to investor portfolios.
- VC strategies can provide a source of absolute returns to portfolios by providing access to potentially disruptive companies at the forefront of innovation.
- The types of companies targeted by VC mangers typically do not trade on public markets due to their unproven business models.
- VC funds have taken 9–10 years to break even when measuring historical cash flows. This duration is longer than that of buyout strategies given that investment in earlier stage companies can take longer to develop and realize value.
- VC fund managers seek to earn a return premium through an active approach to identifying and partnering with companies to establish successful business models.

Risks

- Risks of investing in VC funds include blind pool structure, potential for unwanted or unintended sector risks or concentration, and competition for investment opportunities from strategic buyers and other VC firms.
- Given the complex nature of pooling together financial, business, and managerial resources, there are execution risks in enacting transformational change, particularly as a minority investor.
- VC investments are historically riskier versus other private equity strategies, with around 60% of deals returning a TVPI below 1x. Fund returns will be dependent on outlier investments that generate enough to offset losses in the portfolio.
- VC fund managers may encounter dilution on their investments upon subsequent fund raising rounds. Improved valuation of underlying investments can offset this dilution.
- Startup companies are vulnerable to business and financial risk given high sensitivity to competitive pressure and limited financial resources. Sector exposure tends to tilt toward technology and healthcare/life sciences areas
- Ability of private equity funds to exit portfolio company investments and return capital to investors is dependent on prevailing equity market conditions.
- Other, more general private market risks also apply, including significant illiquidity of fund vehicles, limited control, disclosure, and transparency on underlying holdings, and high fees. These risks cannot be fully eliminated, but can be reduced through extensive institutional due diligence and rigorous investment and monitoring processes.

Fig. 6: Cumulative net cash flows of various private equity strategies ("J" curve)

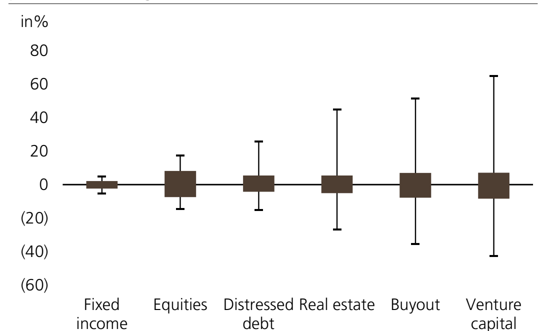
VC strategies typically last to break even versus other PE strategies



Source: Preqin, UBS. Figures normalized to USD 10m commitment

Fig. 7: Public vs. private manager fund returns

VC exhibits highest dispersion compared to other private strategies and traditional markets



Source: Preqin, Bloomberg, UBS. Dispersion of fund returns relative to median performance. Data references 1995-2015 for private market funds, 1995-2017 for traditional equity and fixed income funds

Appendix

Selected definitions

- **Correlation**: the degree to which the fluctuations of one variable are similar to those of another.
- **Leverage**: the use of borrowed capital or instruments to increase the potential return (but also potential losses) of an investment, a simple example is a mortgage used in real estate transactions.
- **Leveraged buyout funds**: a private equity strategy using borrowed capital to gain control of a company.
- **Illiquidity premia**: the premium that an investor can demand depending on how difficult it is to convert the underlying security can be converted to cash.
- **Multiples**: a term that measures some aspect of a company's financial well-being, determined by dividing one metric by another metric. The metric in the numerator is typically larger than the one in the denominator, because the top metric is usually supposed to be many times larger than the bottom metric.
- **Multiple expansion**: describes the way a particular valuation metric increases to reflect a higher value assigned to an underlying investment.
- **Value add**: describes the operational, business, or structural improvements private market managers seek through underlying portfolio investments.
- **Cash flows**: cash flow is the net amount of cash and cash-equivalents being transferred into and out of a fund.
- **Public Market Equivalent (PME):** a method that converts public market returns to a benchmark that can be compared to private market returns.
- **IRR**: a return method used to evaluate private market investments and reflects the discount rate at which the present value of an investment's future cash flow equals the cost of the investment.
- **TVPI (Total Value to Paid In**): a return metric that describes the total capital distributed back to the investor + residual value left in the fund divided by invested capital.
- **Exit**: the time period in which an investor can convert holdings into cash to be liquidated over a designated period of time.
- **IPO**: the first sale of stock by a private company to the public. Also referred to as an "initial public offering."
- **Standard deviation**: a measure of the degree to which individual values vary from the distribution mean. The higher the number, the greater the risk.
- **Dry powder**: refers to cash reserves kept on hand by a private markets firm to cover future obligations, purchase assets or make acquisitions.
- **J-curve**: illustrates a period of initial negative cash flows (contributions) towards positive cash flows (distributions back to the investor) over a period of time.
- **Sponsor**: the general partner in a limited partnership who organizes and signs up investors.
- **Secondary buyout**: describes a sale between private market firms
- **Trade sale/strategic sale**: describes a sale of a business to another business operating in a similar industry.
- **Senior debt**: loans or debt securities that have claim prior to junior obligations and equity on a corporation's assets in the event of liquidation.

- **Junior debt**: loan or security that ranks below other loans or securities with regard to claims on assets or earnings. In the case of borrower default, creditors who own subordinated debt won't be paid out until after senior debt holders are paid in full.
- **Vintage year**: is the year in which the first influx of investment capital is delivered to a project or company. This marks when capital is contributed by venture capital, a private equity fund or a partnership drawing down from its investors.
- **M&A**: mergers and acquisitions is a general term that refers to the consolidation of companies or assets through various types of financial transactions. M&A can include a number of different transactions, such as mergers, acquisitions, consolidations, tender offers, purchase of assets and management acquisitions.
- **Blind pool**: money collected from several people which is put into a fund and invested for their profit. It is left unspecified which properties are to be acquired.
- **Unit economics**: a measure of direct revenues and costs on a unit basis for a particular business model.
- **Minority stake**: reflects a non-controlling interest that is less than 50% of a particular entity.
- **Spin off**: describes the separation of an independent company from a larger parent.
- **Control provisions**: designed to provide a level of influence over significant operational and business matters.
- **Redemption rights**: gives investors the right to force a company to repurchase their shares after a period of time.
- **Idiosyncratic risk**: risk associated with a narrow set of factors pertaining to a particular company. Risk that has little association with overall market risk.
- **Tag-along provisions**: provides a minority shareholder the right to join in on a sale of a company that is initiated by a majority shareholder.

Non-Traditional Assets

Non-traditional asset classes are alternative investments that include hedge funds, private equity, real estate, and managed futures (collectively, alternative investments). Interests of alternative investment funds are sold only to qualified investors, and only by means of offering documents that include information about the risks, performance and expenses of alternative investment funds, and which clients are urged to read carefully before subscribing and retain. An investment in an alternative investment fund is speculative and involves significant risks. Specifically, these investments (1) are not mutual funds and are not subject to the same regulatory requirements as mutual funds; (2) may have performance that is volatile, and investors may lose all or a substantial amount of their investment; (3) may engage in leverage and other speculative investment practices that may increase the risk of investment loss; (4) are long-term, illiquid investments, there is generally no secondary market for the interests of a fund, and none is expected to develop; (5) interests of alternative investment funds typically will be illiquid and subject to restrictions on transfer; (6) may not be required to provide periodic pricing or valuation information to investors; (7) generally involve complex tax strategies and there may be delays in distributing tax information to investors; (8) are subject to high fees, including management fees and other fees and expenses, all of which will reduce profits.

Interests in alternative investment funds are not deposits or obligations of, or guaranteed or endorsed by, any bank or other insured depository institution, and are not federally insured by the Federal Deposit Insurance Corporation, the Federal Reserve Board, or any other governmental agency. Prospective investors should understand these risks and have the financial ability and willingness to accept them for an extended period of time before making an investment in an alternative investment fund and should consider an alternative investment fund as a supplement to an overall investment program.

In addition to the risks that apply to alternative investments generally, the following are additional risks related to an investment in these strategies:

- Hedge Fund Risk: There are risks specifically associated with investing in hedge funds, which may include risks associated with investing in short sales, options, small-cap stocks, "junk bonds," derivatives, distressed securities, non-U.S. securities and illiquid investments.
- Managed Futures: There are risks specifically associated with investing in managed futures programs. For example, not all managers focus on all strategies at all times, and managed futures strategies may have material directional elements.
- Real Estate: There are risks specifically associated with investing in real estate products and real estate investment trusts. They involve risks associated with debt, adverse changes in general economic or local market conditions, changes in governmental, tax, real estate and zoning laws or regulations, risks associated with capital calls and, for some real estate products, the risks associated with the ability to qualify for favorable treatment under the federal tax laws.
- Private Equity: There are risks specifically associated with investing in private equity. Capital calls can be made on short notice, and the failure to meet capital calls can result in significant adverse consequences including, but not limited to, a total loss of investment.
- Foreign Exchange/Currency Risk: Investors in securities of issuers located outside of the United States should be aware that even for securities denominated in U.S. dollars, changes in the exchange rate between the U.S. dollar and the issuer's "home" currency can have unexpected effects on the market value and liquidity of those securities. Those securities may also be affected by other risks (such as political, economic or regulatory changes) that may not be readily known to a U.S. investor.

Appendix

UBS Chief Investment Office's ("CIO") investment views are prepared and published by the Global Wealth Management business of UBS Switzerland AG (regulated by FINMA in Switzerland) or its affiliates ("UBS").

The investment views have been prepared in accordance with legal requirements designed to promote the **independence of investment research.**

Generic investment research – Risk information:

This publication is **for your information only** and is not intended as an offer, or a solicitation of an offer, to buy or sell any investment or other specific product. The analysis contained herein does not constitute a personal recommendation or take into account the particular investment objectives, investment strategies, financial situation and needs of any specific recipient. It is based on numerous assumptions. Different assumptions could result in materially different results. Certain services and products are subject to legal restrictions and cannot be offered worldwide on an unrestricted basis and/or may not be eligible for sale to all investors. All information and opinions expressed in this document were obtained from sources believed to be reliable and in good faith, but no representation or warranty, express or implied, is made as to its accuracy or completeness (other than disclosures relating to UBS). All information and opinions as well as any forecasts, estimates and market prices indicated are current as of the date of this report, and are subject to change without notice. Opinions expressed herein may differ or be contrary to those expressed by other business areas or divisions of UBS as a result of using different assumptions and/or criteria. 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 purposes (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 otherwise rely on any of the information for any of the above purposes. UBS and any of its directors or employees may be entitled at any time to hold long or short positions in investment instruments referred to herein, carry out transactions involving relevant investment instruments in the capacity of principal or agent, or provide any other services or have officers, who serve as directors, either to/for the issuer, the investment instrument itself or to/for any company commercially or financially affiliated to such issuers. At any time, investment decisions (including whether to buy, sell or hold securities) made by UBS and its employees may differ from or be contrary to the opinions expressed in UBS research publications. Some investments may not be readily realizable since the market in the securities is illiquid and therefore valuing the investment and identifying the risk to which you are exposed may be difficult to quantify. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, divisions or affiliates of UBS. Futures and options trading is not suitable for every investor as there is a substantial risk of loss, and losses in excess of an initial investment may occur. Past performance of an investment is no guarantee for its future performance. Additional information will be made available upon request. Some investments may be subject to sudden and large falls in value and on realization you may receive back less than you invested or may be required to pay more. Changes in foreign exchange rates may have an adverse effect on the price, value or income of an investment. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information. Tax treatment depends on the individual circumstances and may be subject to change in the future. UBS does not provide legal or tax advice and makes no representations as to the tax treatment of assets or the investment returns thereon both in general or with reference to specific client's circumstances and needs. We are of necessity unable to take into account the particular investment objectives, financial situation and needs of our individual clients and we would recommend that you take financial and/or tax advice as to the implications (including tax) of investing in any of the products mentioned herein.

This material may not be reproduced or copies circulated without prior authority of UBS. Unless otherwise agreed in writing UBS expressly prohibits the distribution and transfer of this material to third parties for any reason. UBS accepts no liability whatsoever for any claims or lawsuits from any third parties arising from the use or distribution of this material. This report is for distribution only under such circumstances as may be permitted by applicable law. For information on the ways in which CIO manages conflicts and maintains independence of its investment views and publication offering, and research and rating methodologies, please visit www.ubs.com/research.

Additional information on the relevant authors of this publication and other CIO publication(s) referenced in this report; and copies of any past reports on this topic; are available upon request from your client advisor.

Important Information about Sustainable Investing Strategies: Incorporating environmental, social and governance (ESG) factors or Sustainable Investing considerations may inhibit the portfolio manager's ability to participate in certain investment opportunities that otherwise would be consistent with its investment objective and other principal investment strategies. The returns on a portfolio consisting primarily of ESG or sustainable investments may be lower than a portfolio where such factors are not considered by the portfolio manager. Because sustainability criteria can exclude some investments, investors may not be able to take advantage of the same opportunities or market trends as investors that do not use such criteria. Companies may not necessarily meet high performance standards on all aspects of ESG or sustainable investing issues; there is also no guarantee that any company will meet expectations in connection with corporate responsibility, sustainability, and/or impact performance.

Distributed to US persons by UBS Financial Services Inc. or UBS Securities LLC, subsidiaries of UBS AG. UBS Switzerland AG, UBS Europe SE, UBS Bank, S.A., UBS Brasil Administradora de Valores Mobiliarios Ltda, UBS Asesores Mexico, S.A. de C.V., UBS Securities Japan Co., Ltd, UBS Wealth Management Israel Ltd and UBS Menkul Degerler AS are affiliates of UBS AG. UBS Financial Services Incorporated of Puerto Rico is a subsidiary of UBS Financial Services Inc. UBS Financial Services Inc. accepts responsibility for the content of a report prepared by a non-US affiliate when it distributes reports to US persons. All transactions by a US person in the securities mentioned in this report should be effected through a US-registered broker dealer affiliated with UBS, and not through a non-US affiliate. The contents of this report have not been and will not be approved by any securities or investment authority in the United States or elsewhere. UBS Financial Services Inc. 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.

External Asset Managers / External Financial Consultants: In case this research or publication is provided to an External Asset Manager or an External Financial Consultant, UBS expressly prohibits that it is redistributed by the External Asset Manager or the External Financial Consultant and is made available to their clients and/or third parties.
Version 01/2019. CIO82652744
© UBS 2019. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.