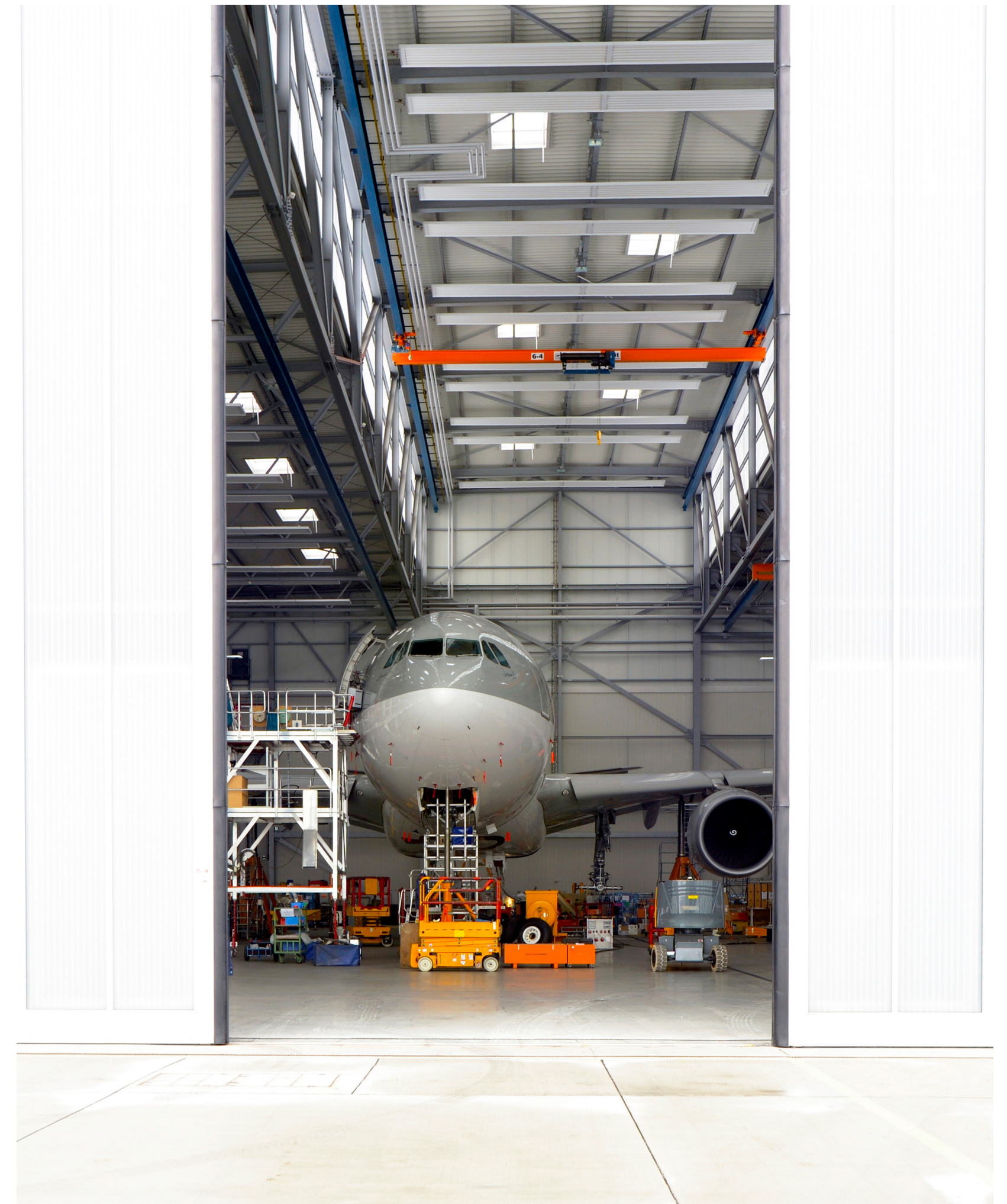


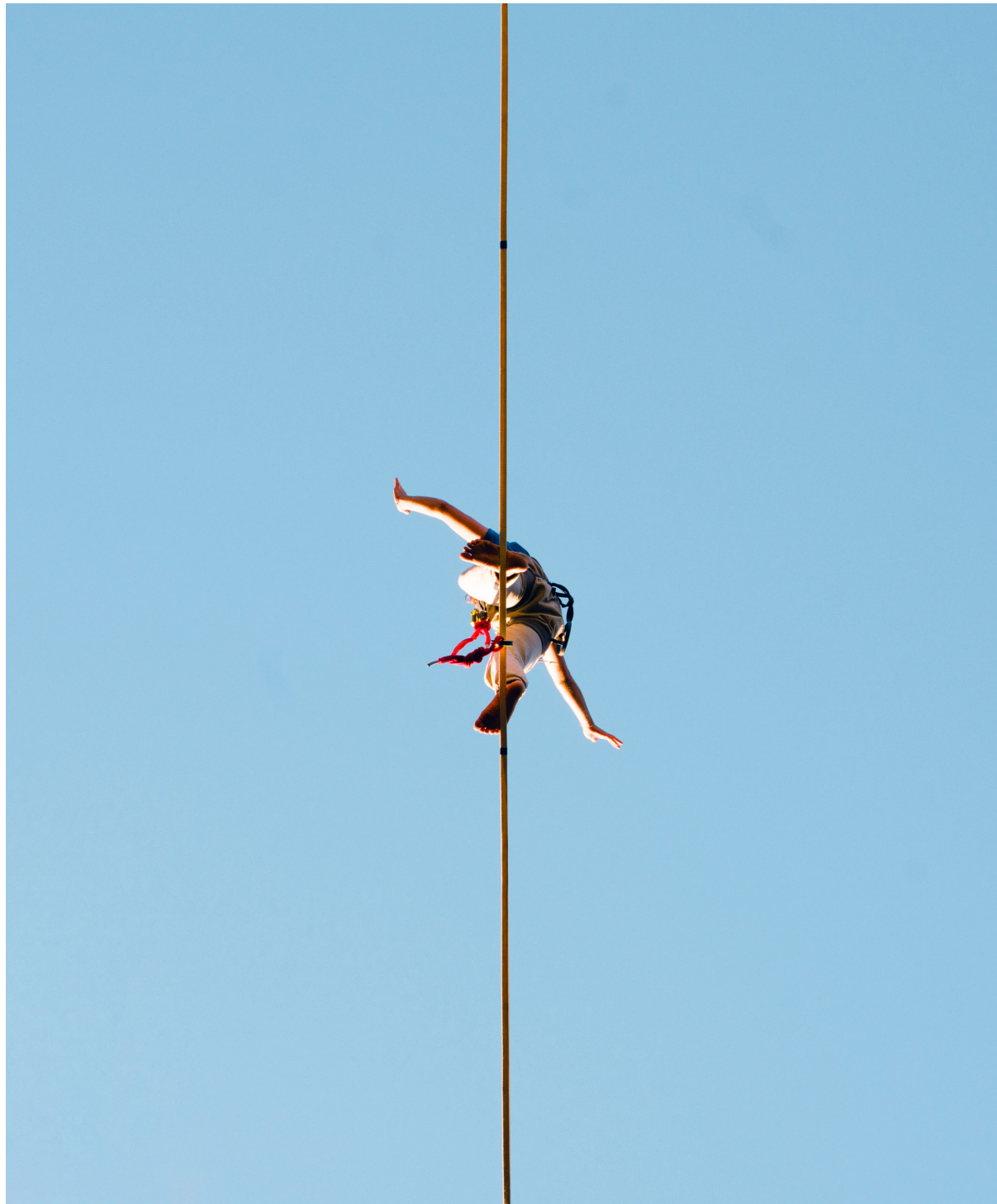
FrontLine research paper:

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PRIVATE EQUITY IN THE COVID-19 YEAR



INTRODUCTION



We are delighted to share with you our latest Frontline analysis, looking at how private capital markets have reacted to the global economic disruption so far this year. For those of you attending our Client Conference in mid-November, it will be familiar. The analysis covers the first half of 2020, and it is fascinating reading.

From a structural perspective, this professionally managed asset-class is doing precisely what many investors want: paying close attention to market, without over-reacting. But eventually, reality bites, and our data shows some quite shocking regional divergences in private market performance, surprising variations and some underperformance vis-à-vis various public market equivalents, and resilience elsewhere. While folklore and the data suggest that post-crisis vintages tend to do well, the relatively low levels of capital calls in recent years may also limit downsides for those already invested.

There is plenty of material here for both the cautious and the optimist alike.

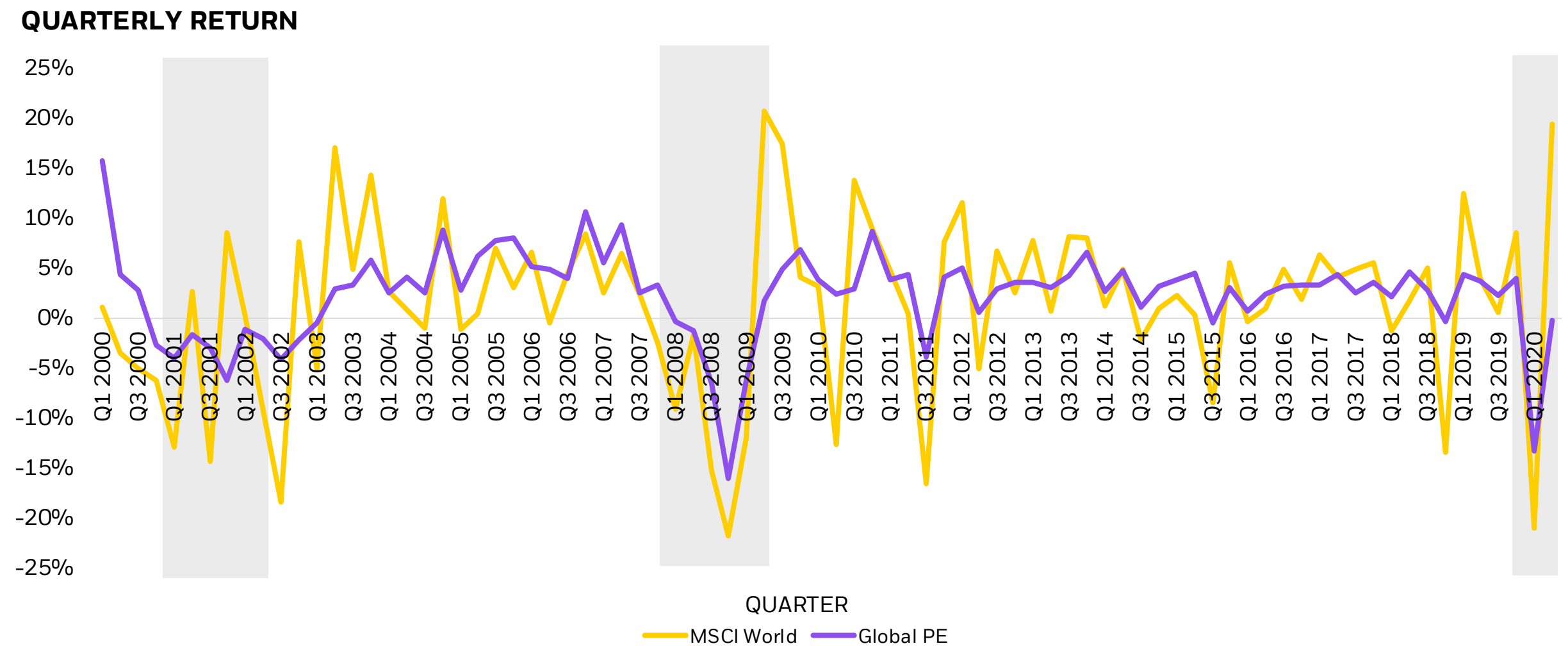
Faced with an event of such radical uncertainty such as Covid-19, the following does not constitute a prediction or even a precise exposition of the current situation. This year has fundamentally altered the way people go about their daily lives, and the time-lags and moving parts inherent in fund investment make precision impossible. So please treat what follows, not as data, but rather as insight!

LOWER VOLATILITY IN PE MARKETS DRIVES DIVERSIFICATION BENEFITS FOR INVESTORS' PORTFOLIOS

A 20-year evolution of quarterly performance for the global PE market (Figure 1) shows much lower volatility than the MSCI World index. This is both expected and advantageous when the markets are experiencing a sudden shock, which may induce the spiraling of liquid assets, forceful fire sales, and similar situations.

It is also worth noting that the quarterly return correlation between global PE market and MSCI world index over the past 20 years stands at 62%, which is higher than the prevailing academic consensus might suggest.

FIGURE 1 – QUARTERLY RETURNS IN THE GLOBAL PE MARKET AND ON THE MSCI WORLD INDEX



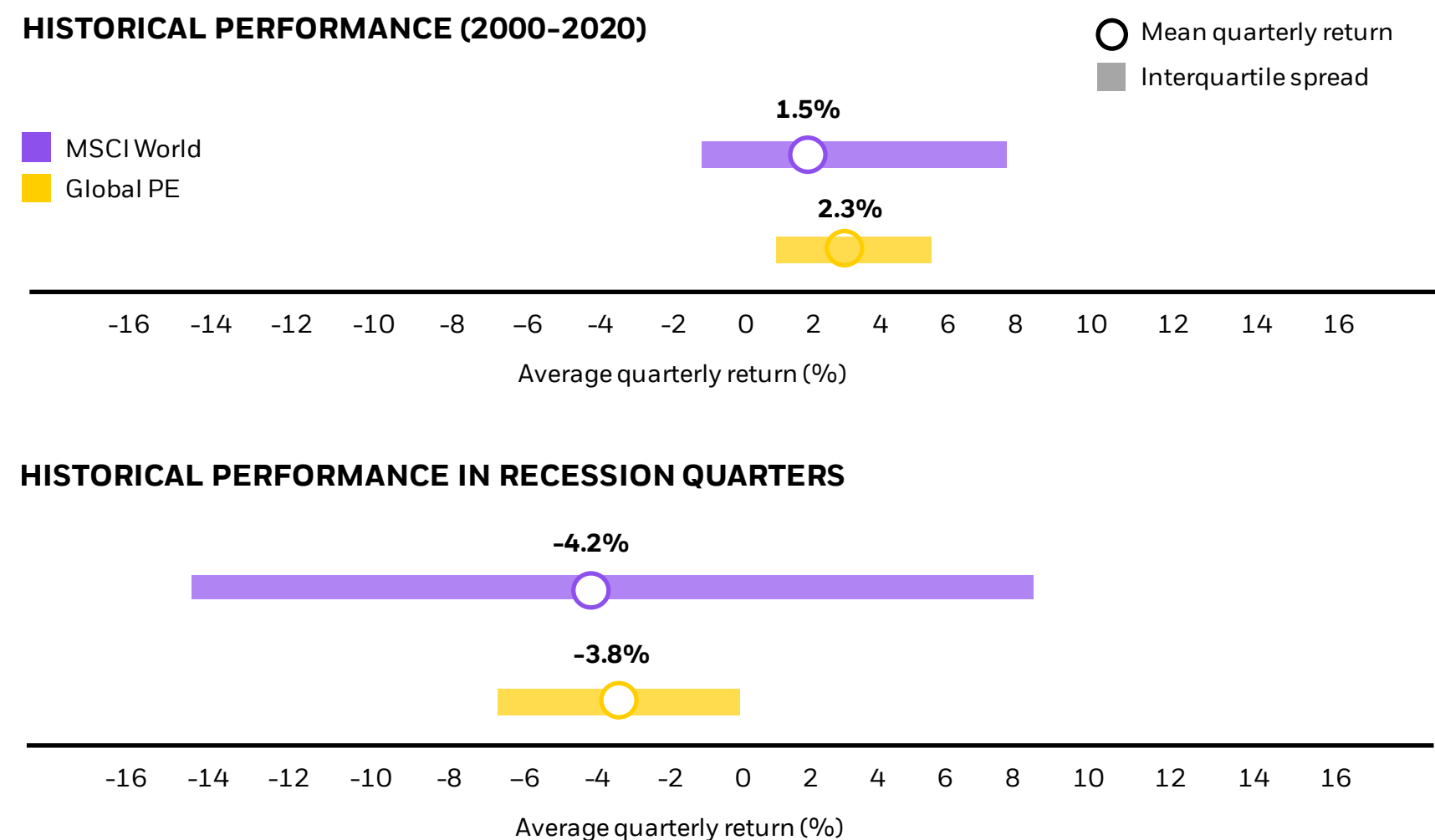
Source: eFront Insight, As of Q2 2020 and MSCI Inc. The chart shows the quarterly end-to-end IRR returns for global PE market which includes LBO and VC funds and quarterly return on MSCI World index. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

GLOBAL PE MARKET RISK – RETURN PROFILE BECOMES EVEN MORE ATTRACTIVE IN THE RECESSION QUARTERS

Over 20-years, PE delivered higher average returns with lower inter-quartile dispersion in returns, relative to the public equity market (Figure 2).

In recessionary quarters, both markets lose value on average. MSCI produces somewhat higher losses, but the jump in dispersion is much more pronounced in the public markets. The MSCI's inter-quartile dispersion rises from 8.4 percentage points (pp) to nearly 23pp, while global PE, rises from 4pp to less than 7pp.

FIGURE 2 – AVERAGE QUARTERLY RETURN AND INTERQUARTILE SPREAD IN PERFORMANCE IN THE GLOBAL PE MARKET IN THE PERIOD 2000-2020 AND IN THE SELECTED RECESSION QUARTERS



Source: eFront Insight. As of Q2 2020 and MSCI Inc. The chart shows the historical average quarterly end-to-end IRR returns for global PE market which includes LBO and VC funds and quarterly return on MSCI World index. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow. Interquartile spread is calculated as a difference between the return of the top quartile performing fund and the bottom performing fund. Recession quarters include 7 quarters in the period Q1 2001 – Q3 2002, 7 quarters in the period Q1 2008 – Q3 2009 and the first two quarters of 2020.

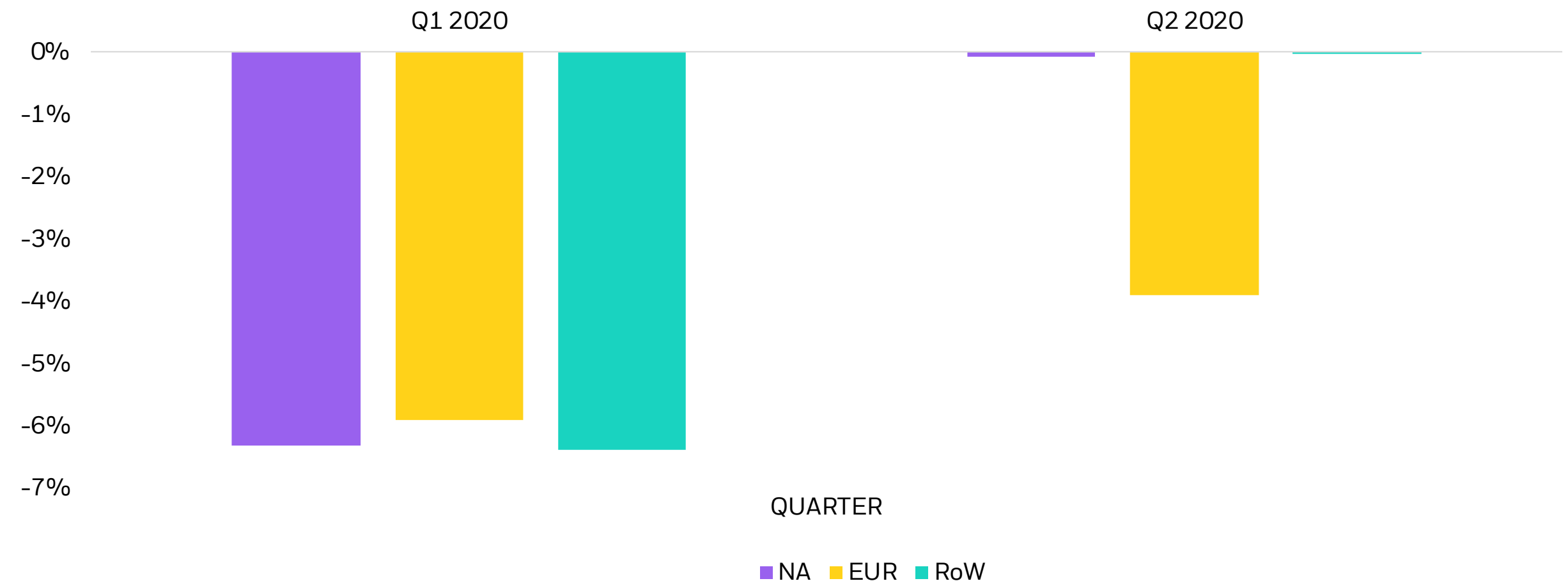
Historical annualized average quarterly return:	<ul style="list-style-type: none"> ■ MSCI World: 5.9% ■ Global PE: 9.3%
Historical standard deviation of returns:	<ul style="list-style-type: none"> ■ MSCI World: 17.5% ■ Global PE: 9.2%
Annual standard deviations during recession quarters:	<ul style="list-style-type: none"> ■ MSCI World: 28.6% ■ Global PE: 10.5%

ADVERSE EFFECTS OF THE Q1 2020 SHOCK ON THE PE MARKETS LAST LONGER IN EUROPE THAN IN OTHER REGIONS

Comparing the performance between different regions (Figure 3), Asian and American markets suffered somewhat heavier losses in the first quarter (more than 6% of value), but, worryingly, the European markets correction continued into the second quarter.

FIGURE 3 – QUARTERLY PERFORMANCE IN THE GLOBAL PE MARKET IN Q1 AND Q2 2020 IN DIFFERENT REGIONS

QUARTERLY RETURN



Source: eFront Insight, As of Q2 2020. The chart shows the quarterly end-to-end IRR returns for North American, European and Rest of World PE markets which include LBO and VC funds. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

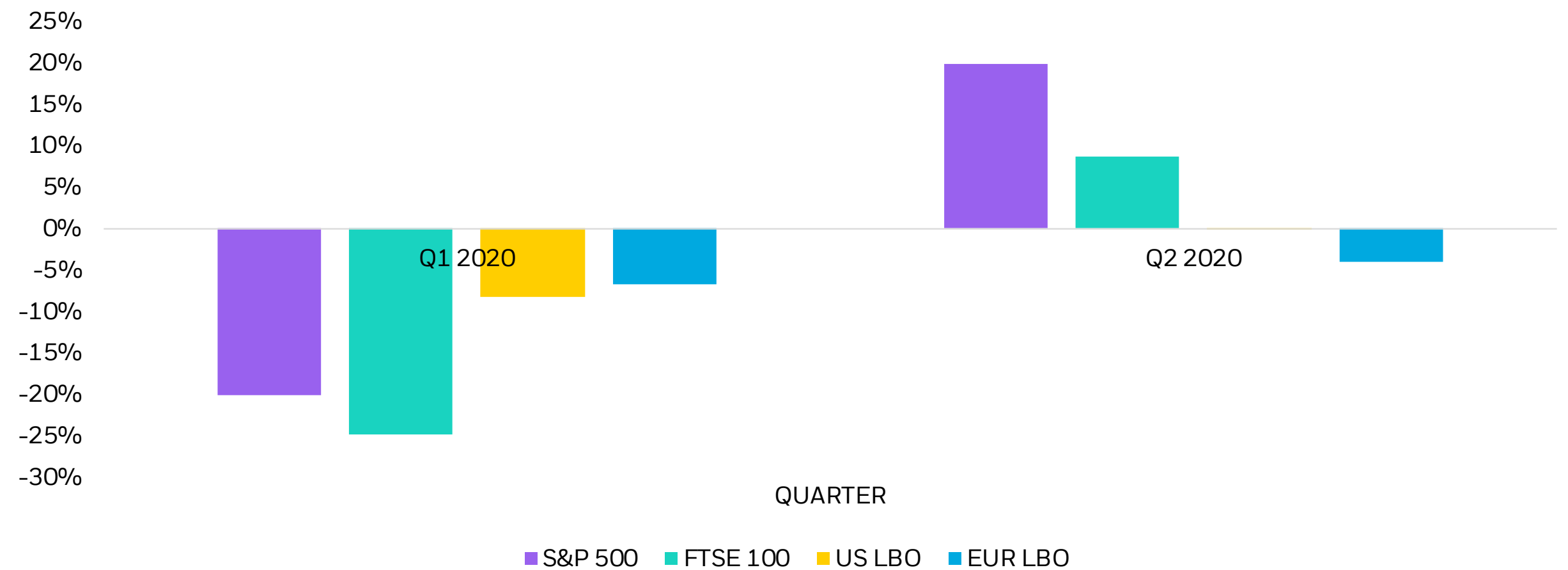
US AND EUR LBO MARKETS STAY COMPOSED AMID PUBLIC MARKET SHOCK IN Q1 2020

A closer look at the first two quarters of 2020 in the LBO market shows that both US and EUR LBO markets suffered less than their public counterparts in Q1 (Figure 4).

Similarly, they did not enjoy the same improvement as public markets in Q2, as the long-term effects of COVID-19 lockdowns on portfolio companies' operations became more evident.

FIGURE 4 – QUARTERLY PERFORMANCE IN THE US AND EUROPEAN LBO MARKET AND IN THE US AND EUROPEAN PUBLIC EQUITY INDEXES IN Q1 AND Q2 2020

QUARTERLY RETURN



Source: eFront Insight, As of Q2 2020, FED St. Louis and LSE. The chart shows the quarterly end-to-end IRR returns for US and European LBO markets respectively and quarterly return on S&P 500 and FTSE 100 indexes. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

DIVERSE H1 PERFORMANCE DISCREPANCY BETWEEN US AND EUROPEAN PUBLIC AND PRIVATE MARKETS

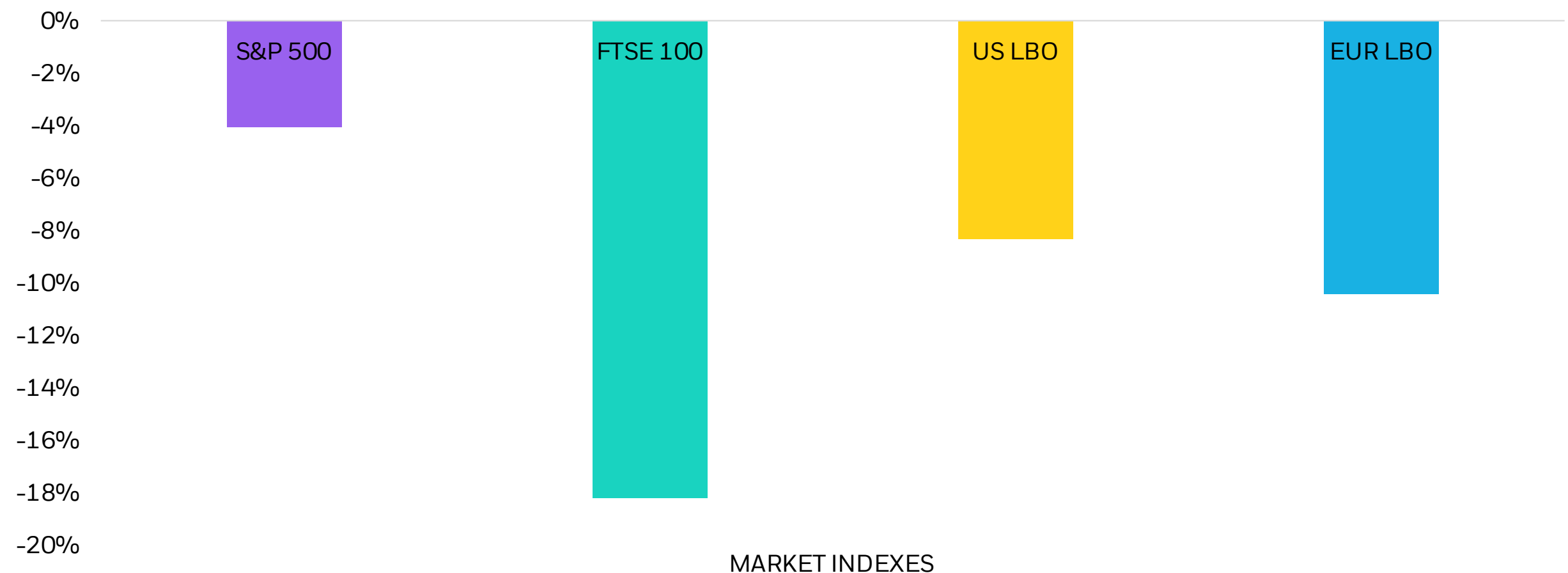
Aggregating returns across the first two quarters shows that Europe's public and private markets underperformed the US.

In addition, US LBOs suffered a larger aggregate loss than US public markets (-8.3% versus -4%). Whereas, with a loss of more than 18%, the FTSE 100 lost almost twice as much as the aggregate loss of European LBOs, at -10.4%.

These divergent data points suggest a discrepancy in performance evolution across asset classes and geographies (Figure 5).

FIGURE 5 – QUARTERLY PERFORMANCE IN THE US AND EUROPEAN LBO MARKET AND IN THE US AND EUROPEAN PUBLIC EQUITY INDEXES AGGREGATED OVER Q1 AND Q2 2020

AGGREGATED RETURN IN Q1 AND Q2



Source: eFront Insight, As of Q2 2020, FED St. Louis and LSE. The chart shows the quarterly end-to-end IRR returns for US and European LBO markets respectively and the quarterly returns on S&P 500 and FTSE 100 indexes, all accumulated over Q1 and Q2 in 2020. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

GLOBAL VC MARKET SUFFERED ONLY A MODERATE ADVERSE EFFECT OF THE ECONOMIC SLOWDOWN IN Q1

The same analysis of global venture capital shows it suffered only a moderate adverse effect of the economic slowdown in H1.

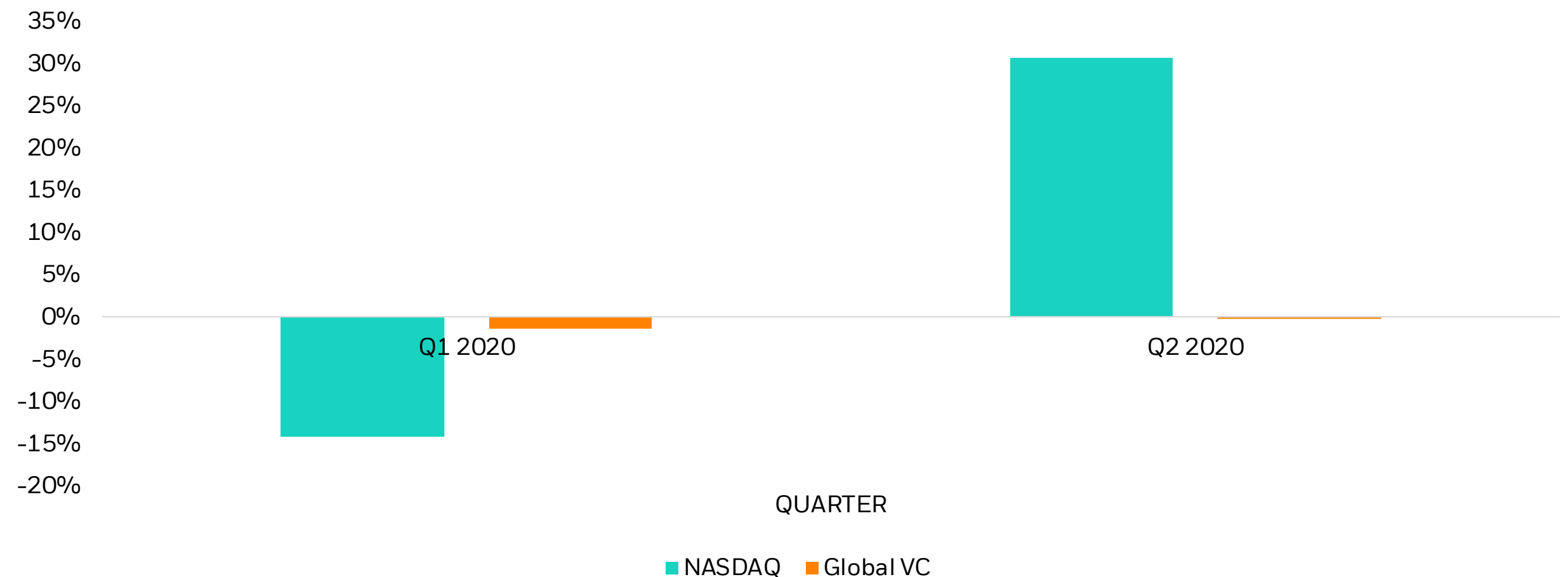
The global VC market lost just 1.37% of its value in Q1 and remained stable in Q2 (Figure 6).

At the same time, the NASDAQ composite index rose more than 30% in Q2, recovering its loss from Q1 and generating a net positive return for shareholders.

This finding appears to be coherent, as there might not have been much VC investment activity during the pandemic.

FIGURE 6 – QUARTERLY PERFORMANCE IN THE GLOBAL VC MARKET AND OF THE NASDAQ COMPOSITE INDEX IN Q1 AND Q2 2020

QUARTERLY RETURN



Source: eFront Insight, As of Q2 2020 and NASDAQ. The chart shows the quarterly end-to-end IRR returns for global VC market and the quarterly returns on NASDAQ Composite index. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

RELATIVELY LONG CYCLE OF VC INVESTMENTS COMMANDS FOLLOWING THE COVID-19 IMPACT OVER LONGER TERM

As a result, the NASDAQ rose 12.1% in the first six months of 2020. Given that tech companies comprise almost 50% of this market, and that the pandemic has made the adoption of technological innovations for everyday life essential, this is not a surprise (Figure 7).

More unexpected, the Global VC did record a net loss over the same period.

FIGURE 7 – QUARTERLY PERFORMANCE IN THE GLOBAL VC MARKET AND OF THE NASDAQ COMPOSITE INDEX AGGREGATED OVER Q1 AND Q2 2020

TOTAL RETURN IN Q1 AND Q2



Source: eFront Insight, As of Q2 2020 and NASDAQ. The chart shows the quarterly end-to-end IRR returns for global VC market and the quarterly return on NASDAQ Composite index, both accumulated over Q1 and Q2 in 2020. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

THIS MARKET DOWNTURN IS DIFFERENT FROM BEFORE – FAST REBOUND OF PUBLIC MARKETS

How does this downturn compare with that of 2008?

We selected seven quarters during the global financial crisis (GFC) plus the first two quarters of 2020 and plotted the quarterly returns of public equity and LBO markets in US and Europe (Figure 8). In the GFC, losses were most severe in Q4 2008 and the losses in private markets were comparable to those of public indices.

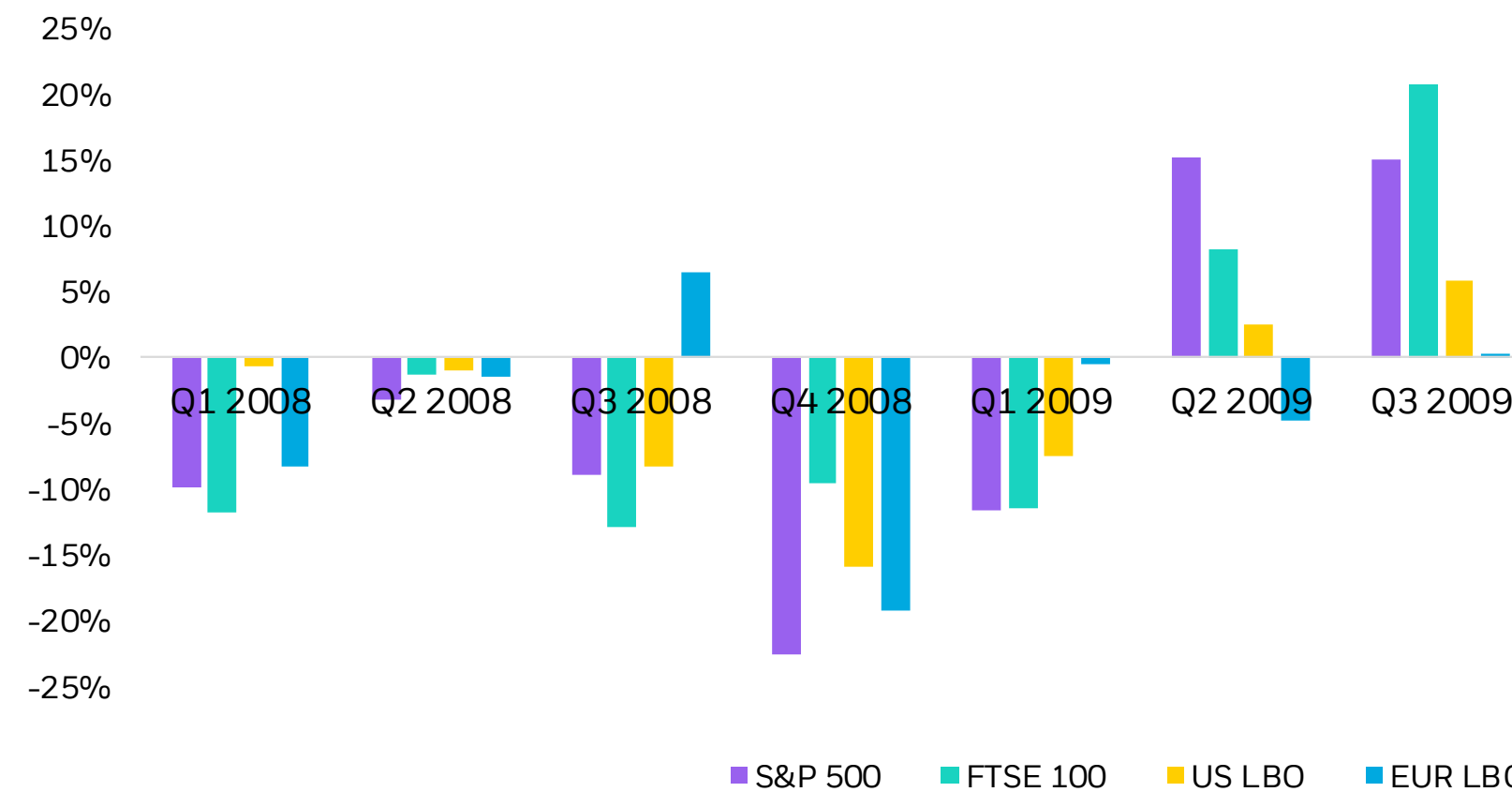
However, this was not the case in Q1 2020. The explanation lies in the exogenous nature of the latest shock, which was not a result of inherent structural imbalances.

Also, as the pandemic progressed, visibility and the understanding of its parameters increased, allowing for better planning and adaptation to the new situation.

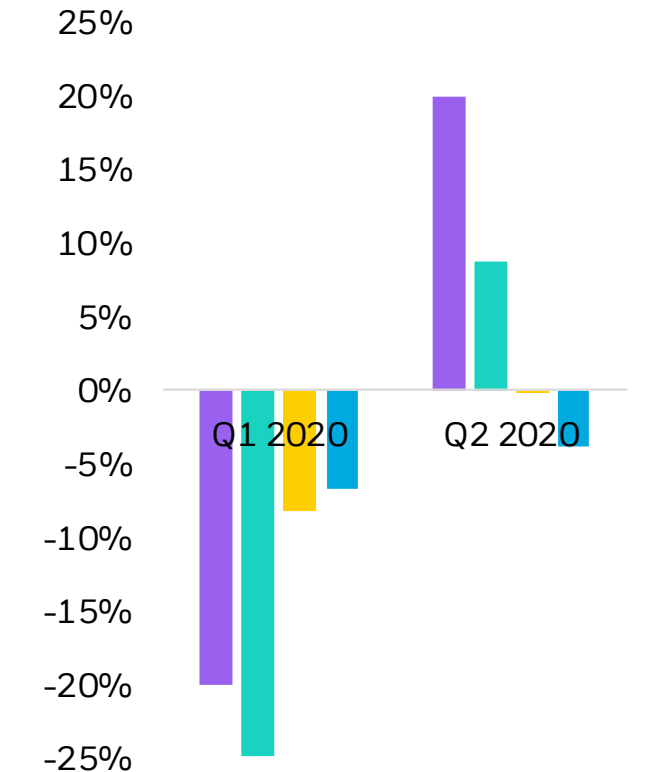
FIGURE 8 – QUARTERLY PERFORMANCE IN THE US AND EUROPEAN LBO MARKET AND IN THE US AND EUROPEAN PUBLIC EQUITY INDEXES IN RECESSIONARY QUARTERS

QUARTERLY RETURN

Great Financial Crisis



Covid-19 Downturn



Source: eFront Insight, As of Q2 2020, FED St. Louis and LSE. The chart shows the quarterly end-to-end IRR returns for US and European LBO markets respectively and quarterly return on S&P 500 and FTSE 100 indexes. An end-to-end return calculation is a standard IRR calculated over a set period rather than since inception. The starting period for an end-to-end IRR will convert the ending NAV to a negative value and consider it as the initial cash flow.

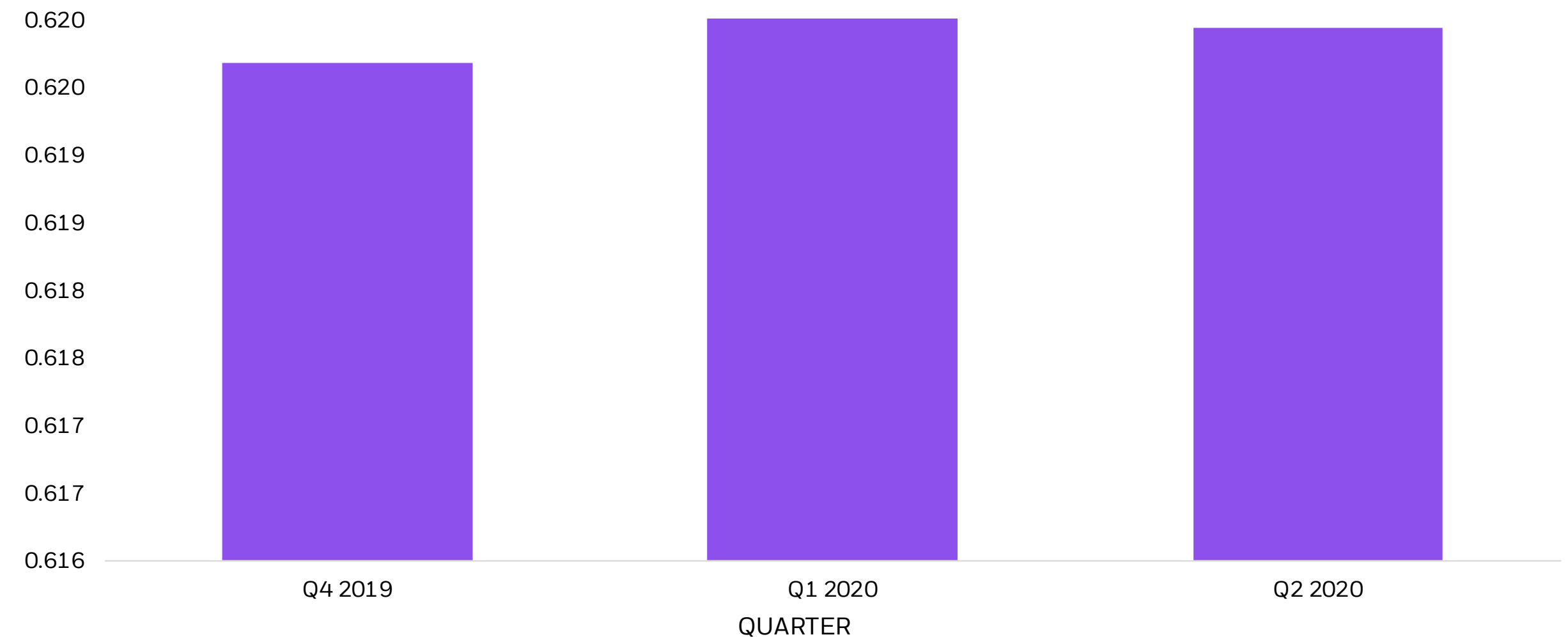
H1 BROUGHT NO SIGNIFICANT CHANGE IN THE MANAGER SELECTION RISK IN THE COMBINED LBO AND VC MARKET

Manager selection risk is defined as the difference between top and bottom quartile performing funds' TVPI returns.

Looking at the global PE market which combines both the LBO and the VC market, there is no significant change in the performance spread. It appears that the top and the bottom performing funds were affected symmetrically by the economic shock during the first semester.

FIGURE 9 – EVOLUTION OF THE INTERQUARTILE SPREAD IN PERFORMANCE IN THE GLOBAL PE MARKET

TOP AND BOTTOM QUARTILE FUND TVPI SPREAD



Source: eFront Insight, As of Q2 2020. The chart displays the evolution of the difference in the TVPI return of the top and the bottom quartile fund for the global PE industry. All the funds in the sample are sorted by the TVPI return and then the top and bottom quartile performing funds are selected. The difference in their performance is used as a proxy for the dispersion in performance across the universe of PE fund managers.

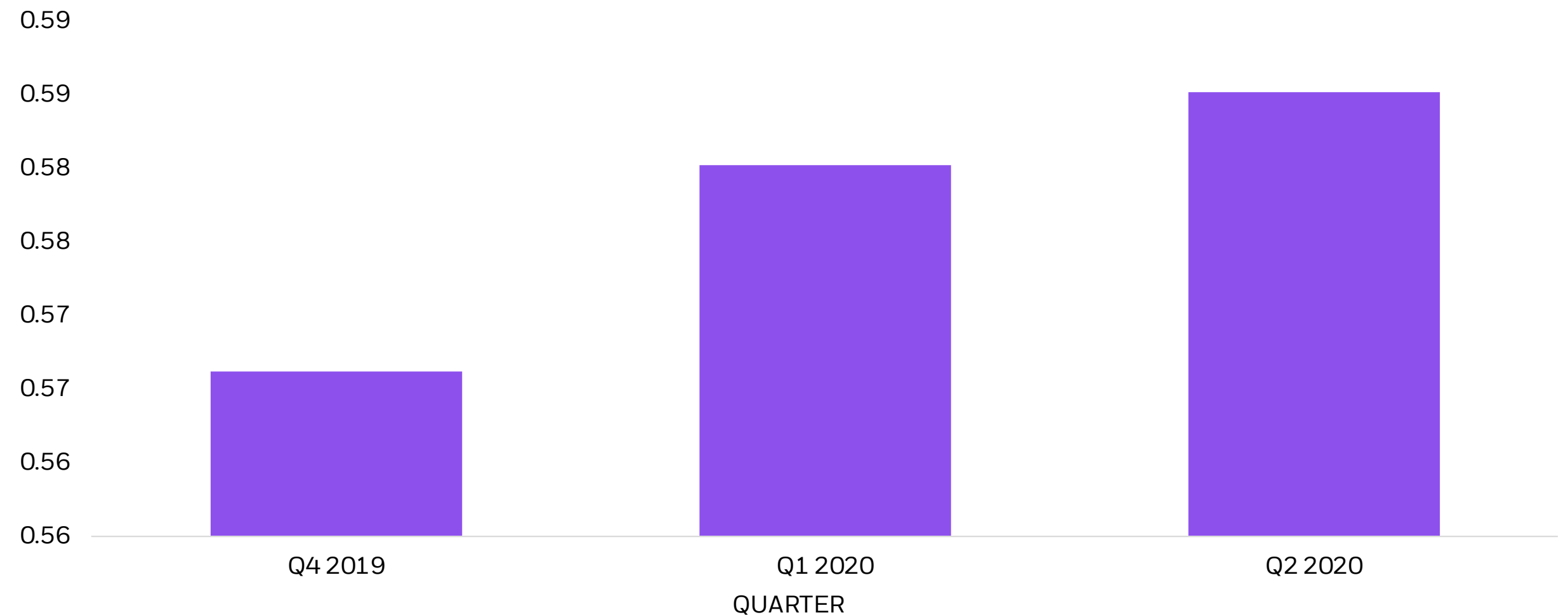
LBO MARKET SAW A MODERATE DIVERGENCE IN TOP AND BOTTOM QUARTILE PERFORMING FUNDS MONEY MULTIPLE RETURNS

Despite an increasing trend in the manager selection risk in the global LBO market, the economic magnitude of this increase is very modest. It rose from 0.57x to 0.59x (Figure 10).

As the economic consequences of the current health crisis unfold asymmetrically across sectors, selection risk could further increase in H2 2020.

FIGURE 10 – EVOLUTION OF THE INTERQUARTILE SPREAD IN PERFORMANCE IN THE GLOBAL LBO MARKET

TOP AND BOTTOM QUARTILE FUND TVPI SPREAD



Source: eFront Insight, As of Q2 2020. The chart displays the evolution of the difference in the TVPI return of the top and the bottom quartile fund for the active funds in the global LBO industry. All the funds in the sample are sorted by the TVPI return and then the top and bottom quartile performing funds are selected. The difference in their performance is used as a proxy for the dispersion in performance across the universe of PE fund managers.

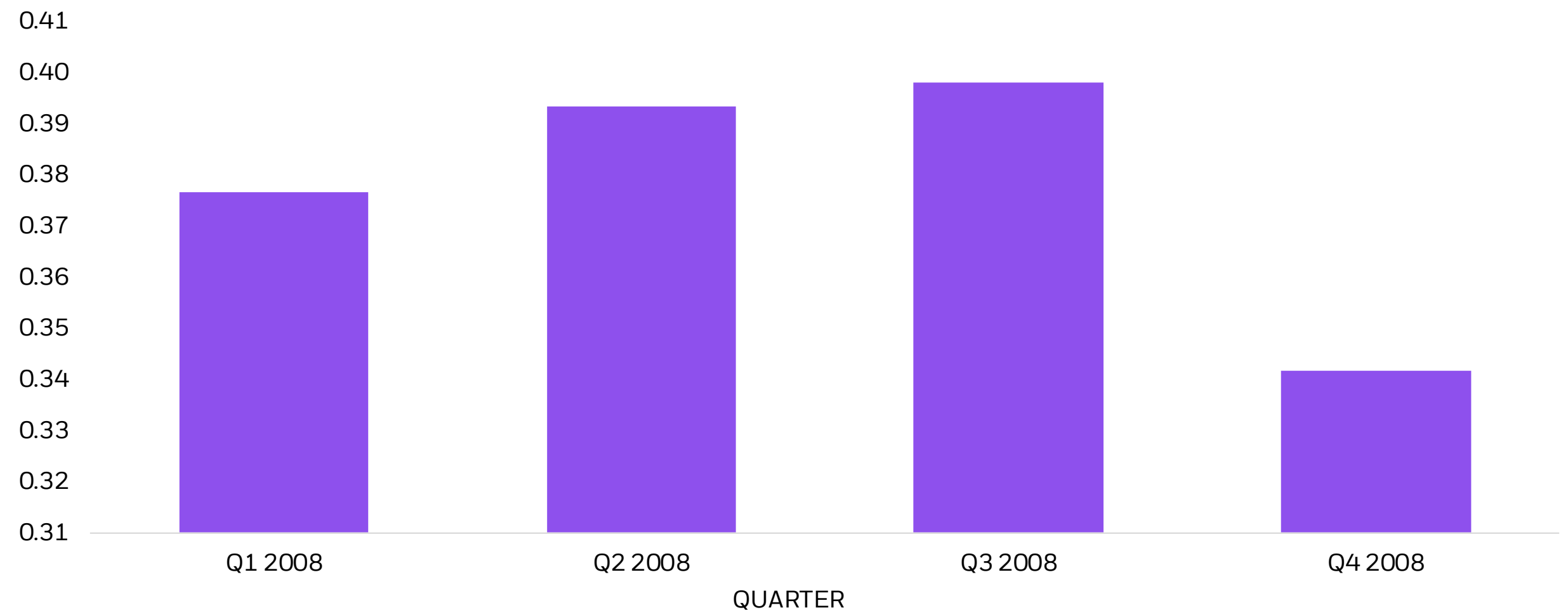
...BUT GFC INDICATES THIS COULD BE FURTHER ADJUSTED IN COMING QUARTERS

The second and the third quarter in 2008 saw an increase in the manager selection risk due to bottom performing funds experiencing heavier losses than the bottom performing ones (Figure 11).

Q4 2008 saw a sharp drop in the TVPI spread as top performing funds had their return correcting by 0.16x over only one quarter.

FIGURE 11 – EVOLUTION OF THE INTERQUARTILE SPREAD IN PERFORMANCE IN THE GLOBAL LBO MARKET AT THE ONSET OF THE GFC

TOP AND BOTTOM QUARTILE FUND TVPI SPREAD



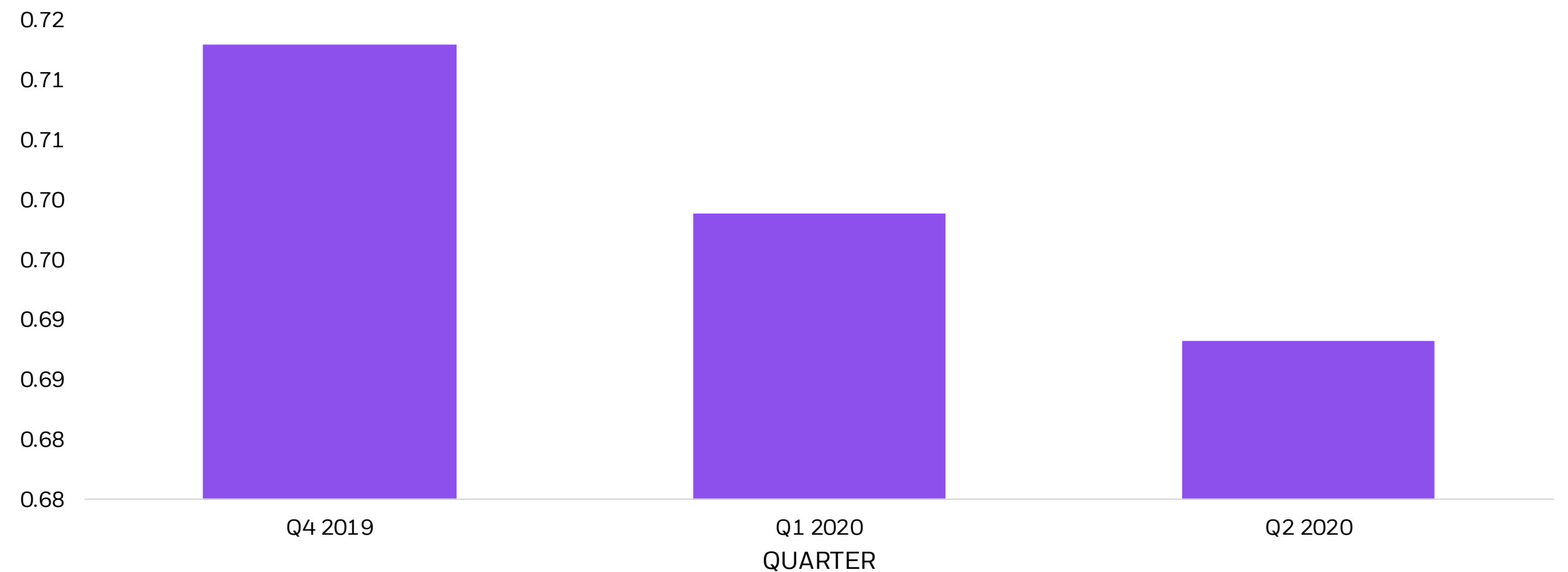
Source: eFront Insight, As of Q2 2020. The chart displays the evolution of the difference in the TVPI return of the top and the bottom quartile fund for the active funds in the global LBO industry. All the funds in the sample are sorted by the TVPI return and then the top and bottom quartile performing funds are selected. The difference in their performance is used as a proxy for the dispersion in performance across the universe of PE fund managers.

BY CONTRAST TO LBO MARKET, VC SEES A STEADY DECLINE IN THE MANAGER SELECTION RISK IN H1 2020

By contrast, the venture capital market recorded a steady decline in manager selection risk over the first half of the year. Even though the economic magnitude of this reduction is marginal, it was driven by the relatively higher correction in the top-performing end of the VC market (Figure 12).

FIGURE 12 – EVOLUTION OF THE INTERQUARTILE SPREAD IN PERFORMANCE IN THE GLOBAL VC MARKET

TOP AND BOTTOM QUARTILE FUND TVPI SPREAD



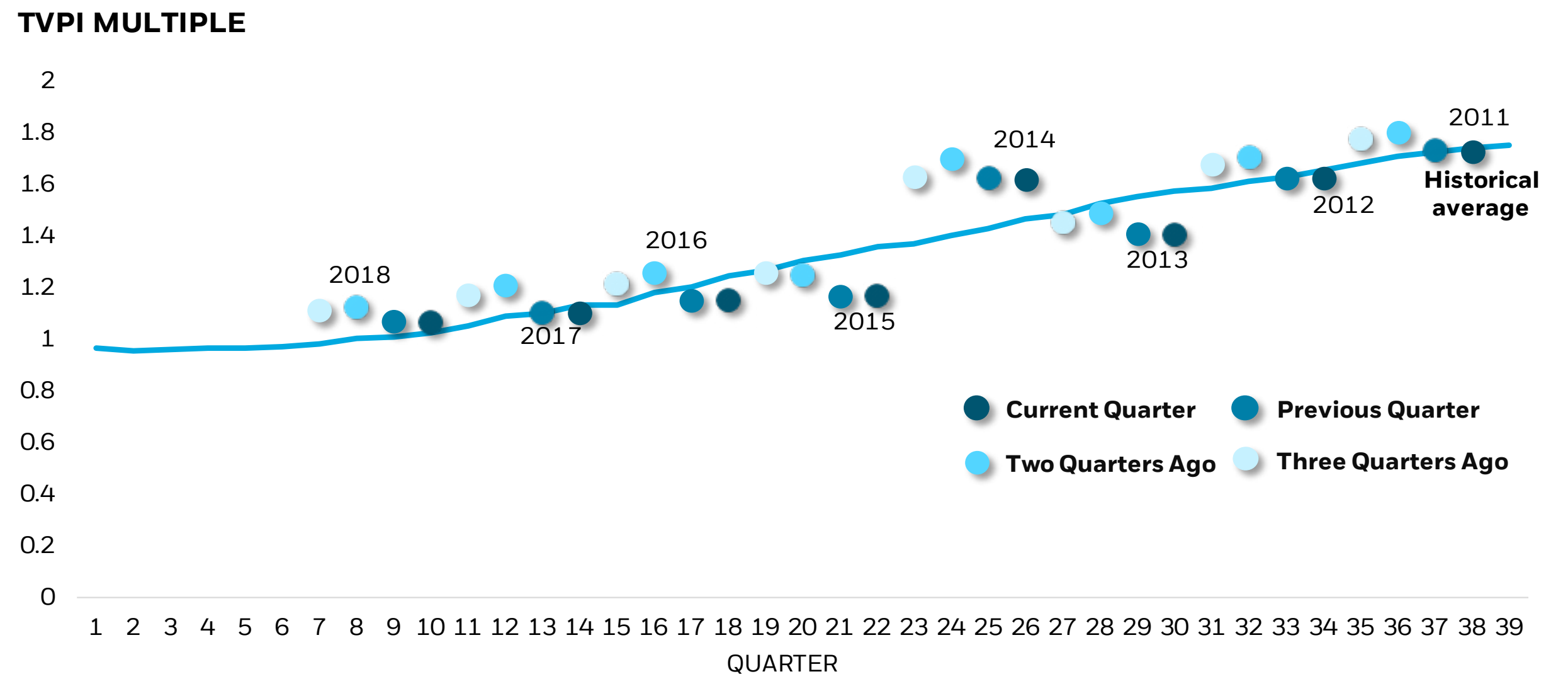
Source: eFront Insight, As of Q2 2020. The chart displays the evolution of the difference in the TVPI return of the top and the bottom quartile fund for the active funds in the global VC industry. All the funds in the sample are sorted by the TVPI return and then the top and bottom quartile performing funds are selected. The difference in their performance is used as a proxy for the dispersion in performance across the universe of PE fund managers.

GLOBAL LBO MARKET - H1 2020 STRUCK THE VINTAGE YEARS 2013-2017 HARDER THAN THE VY 2018

This chart shows the average money multiple in a relationship with the age of a fund, measured in quarters. It is to be expected that the blue curve showing the historical average has a positive slope because the money multiple is accumulating over time with every new distribution (Figure 13).

It also shows that the vintage year 2014 is well above this average, while 2013 and 2015 are struggling to perform. They were especially hit during the first two quarters which moved them further away from the expected performance. The youngest vintage year (2018) was somewhat spared, as well as those relatively mature ones such as 2011 and 2012.

FIGURE 13 – QUARTERLY TVPI MULTIPLE IN THE GLOBAL LBO MARKET ACROSS VINTAGE YEARS



Source: eFront Insight, As of Q2 2020. The chart displays pooled average TVPI during the current and past three quarters for the global LBO funds grouped within their vintage year. TVPIs provide a perspective on realized and unrealized returns. TVPIs of active funds at a certain stage of their development can usefully be compared with the TVPIs of fully realized funds at the same stage of their development.

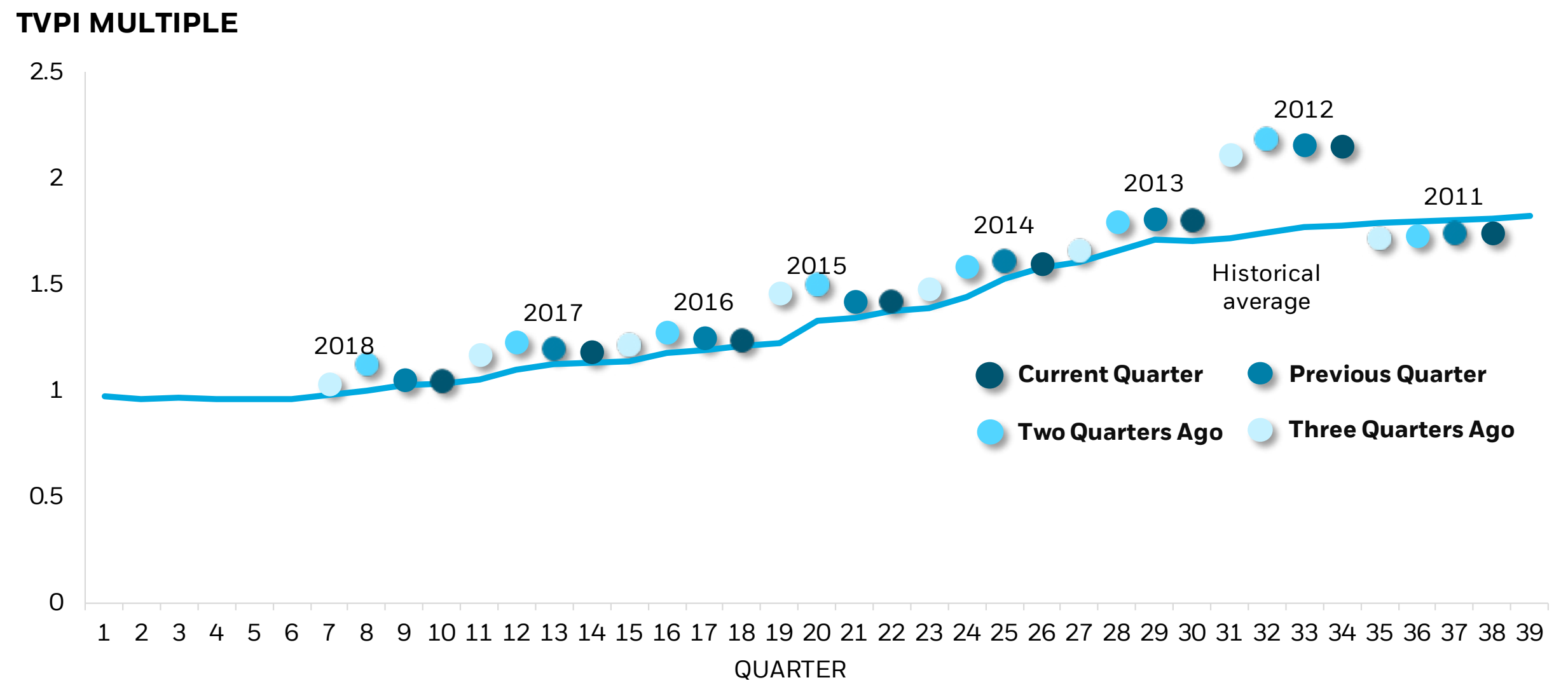
GLOBAL VC MARKET – THE H1 IMPACT ON PERFORMANCE RELATIVELY MILD ACROSS VINTAGE YEARS

The impact of the economic slowdown in the first half was relatively mild across all the vintage years in the global VC market (Figure 14).

In general, with exception of 2011, all the vintage years are outperforming the long-term average for the asset class.

Vintage years 2015 and 2018 experienced the strongest correction that brought their performance close to the historical average.

FIGURE 14 – QUARTERLY TVPI MULTIPLE IN THE GLOBAL VC MARKET ACROSS VINTAGE YEARS



Source: eFront Insight, As of Q2 2020. The chart displays pooled average TVPI during the current and past three quarters for the global VC funds grouped within their vintage year. TVPIs provide a perspective on realized and unrealized returns. TVPIs of active funds at a certain stage of their development can usefully be compared with the TVPIs of fully realized funds at the same stage of their development.

HISTORICAL RECORD POINTS AT OUTPERFORMANCE OF POST-DOWNTURN VINTAGE YEARS IN THE LBO MARKET

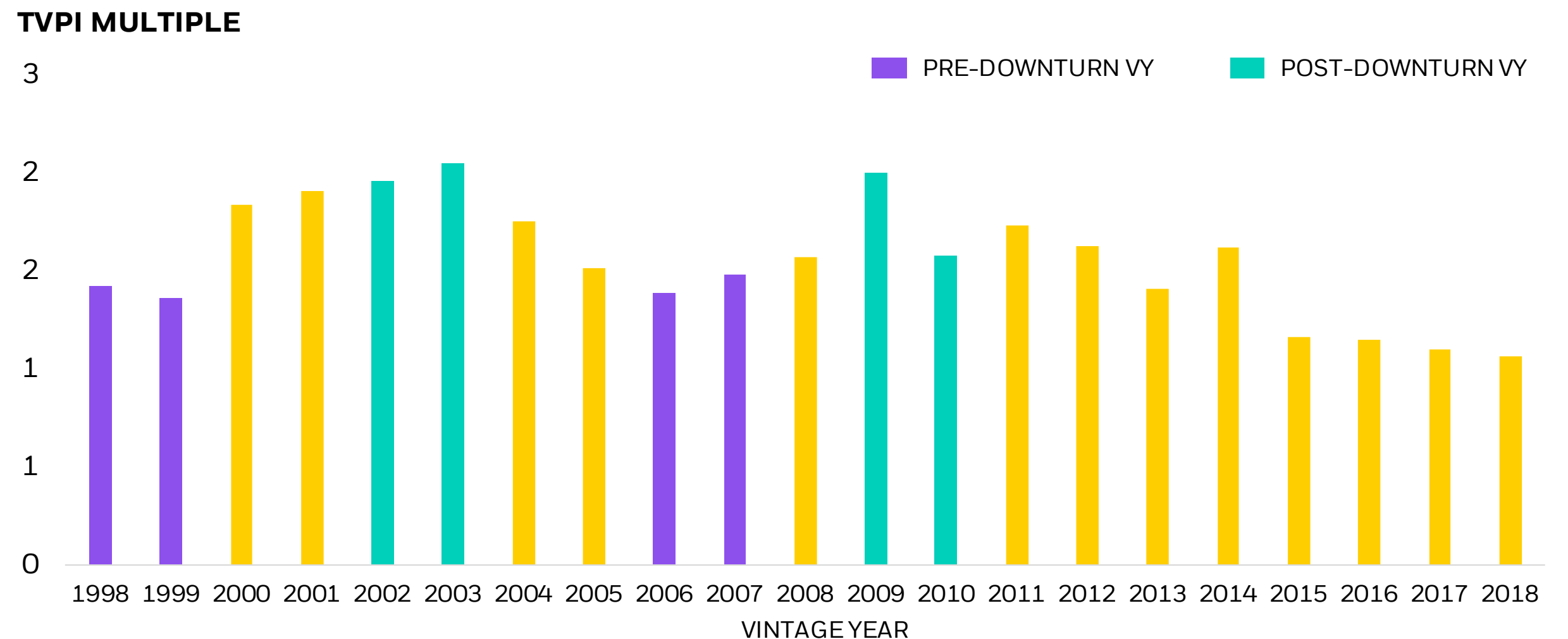
This asymmetry can be explained by lower entry valuations and by benefits of expansionary macro policies that promote economic growth. The performance of VYs 2010 and 2011 is blurred by the sovereign debt crisis that hit Europe in 2010 and damaged its exit environment.

Similarly, pre-downturn vintage years underperform the historical average.

That may be explained by the intensive fundraising activity prior to downturn.

The relationship between fundraising level and performance is negative due to high competition for targets and the resulting high purchasing costs for portfolio companies.

FIGURE 15 – TVPI MULTIPLE OF GLOBAL LBO FUNDS ACROSS VINTAGE YEARS



Source: eFront Insight, As of Q2 2020. The chart displays pooled average TVPI for the funds grouped by their vintage year.

RELATIVELY LOW LEVEL OF CAPITAL CALLS FOR VINTAGE YEARS 2017 & LATER MAY INSULATE FROM THE ADVERSE EFFECTS OF THE DOWNTURN

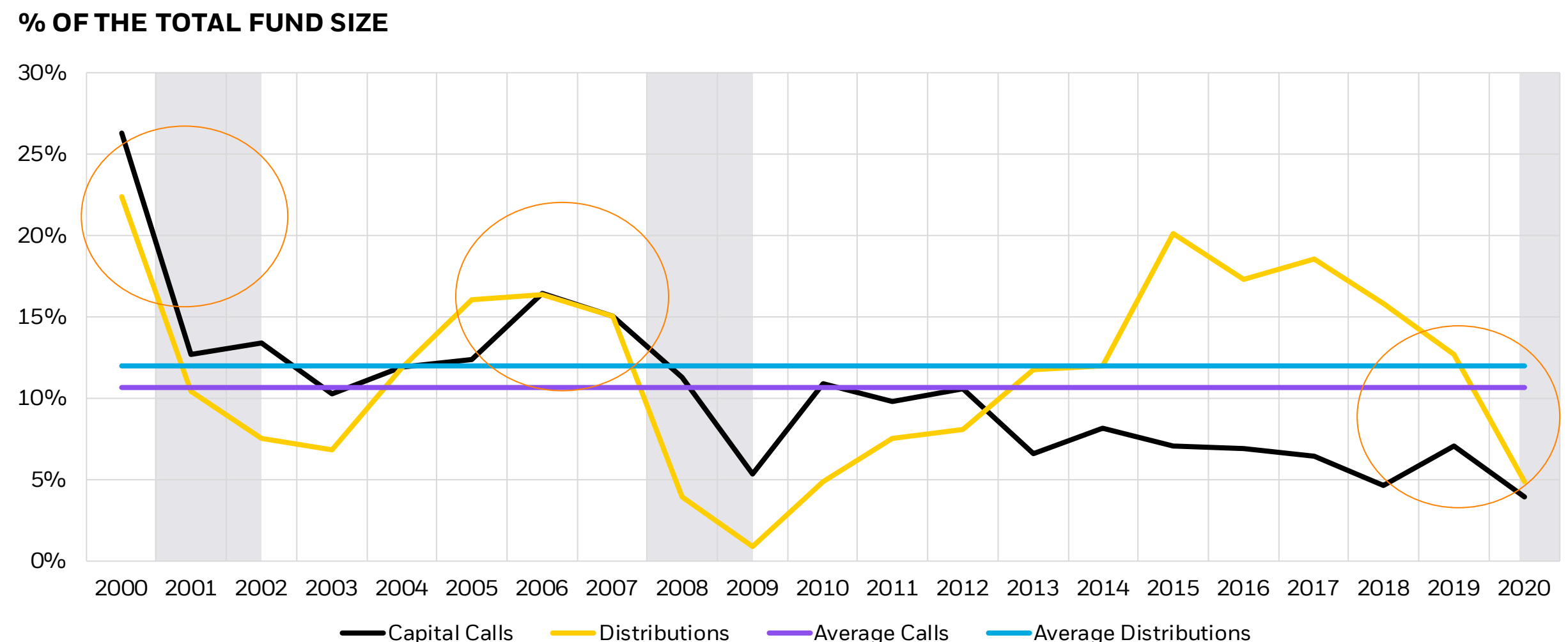
Looking at the early 2000s and the GFC, the level of capital calls was peaking in the years just prior to the shock. At that time, the annual capital calls made 15%, 20% or even 25% relative to the total fund size. In 2020 the capital calls were lingering around 5%.

Two possible explanations for low capital calls include:

- Funds not rushing to deploy capital early at the peak of the market
- The use of equity bridge financing

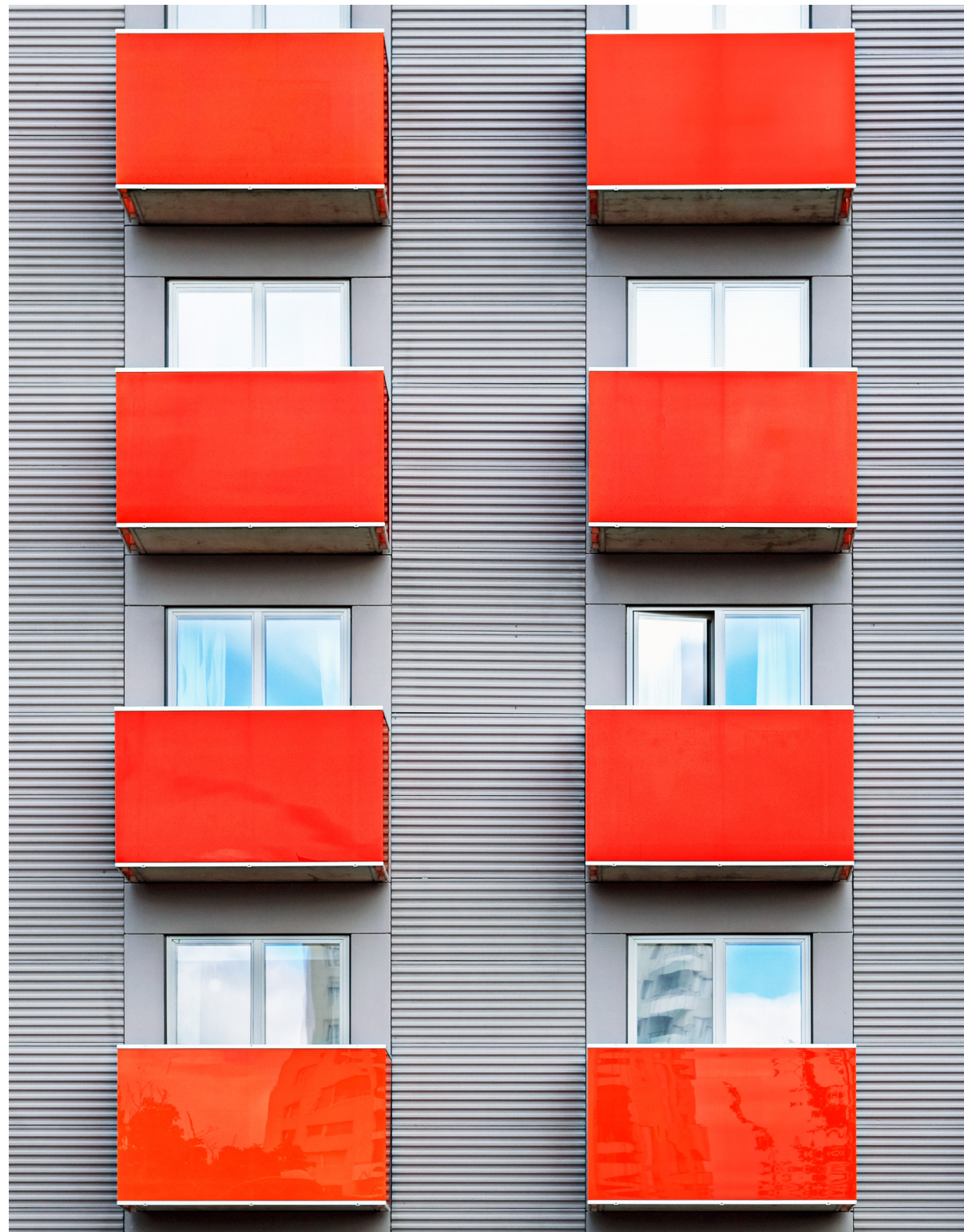
If it is the former, that may be good news for GPs and their investors, as this behavior may insulate the industry from the adverse effects of the downturn.

FIGURE 16 – CAPITAL CALLS AND DISTRIBUTIONS DYNAMICS IN THE GLOBAL LBO MARKET



Source: eFront Insight, As of Q2 2020. The chart displays the sum of calls and the sum of distributions that took place in the given quarter divided by the total fund size at each quarter.

CONCLUSION



The global PE market showed higher resiliency and lower volatility over the first two quarters of 2020 than what we witnessed in the public equity markets. However, the underreaction of private markets exhibited in a very bad Q1 was not followed by the performance bounce back that public markets went through in Q2.

Adverse effects of the Q1 economic slowdown lasted longer in the European PE market than in other regions. There is also a diverse evolution of US and European LBO market performance benchmarked against their public market counterparts.

The LBO market saw a moderate divergence in the top and bottom performing fund performance. Conversely, the VC end of the private market recorded a decline in the manager selection risk, which is quite counterintuitive.


Each vintage year has recorded a decrease in the multiple of invested capital during the first semester, with vintage years 2013 and 2015 taking the hardest hit.


The relatively low level of capital calls for vintage years 2017 and later recorded in the data may insulate that group of funds from the economic slowdown's adverse effects.

HOW EFRONT INSIGHT RESEARCH MODULE HELPS LIMITED PARTNERS

Managing private market programs during downturns requires access to private market cash-flow data and a granular view of your portfolio holdings.

Through access to a historical private market data set, investors can:

 Identify trends that occurred during past crises

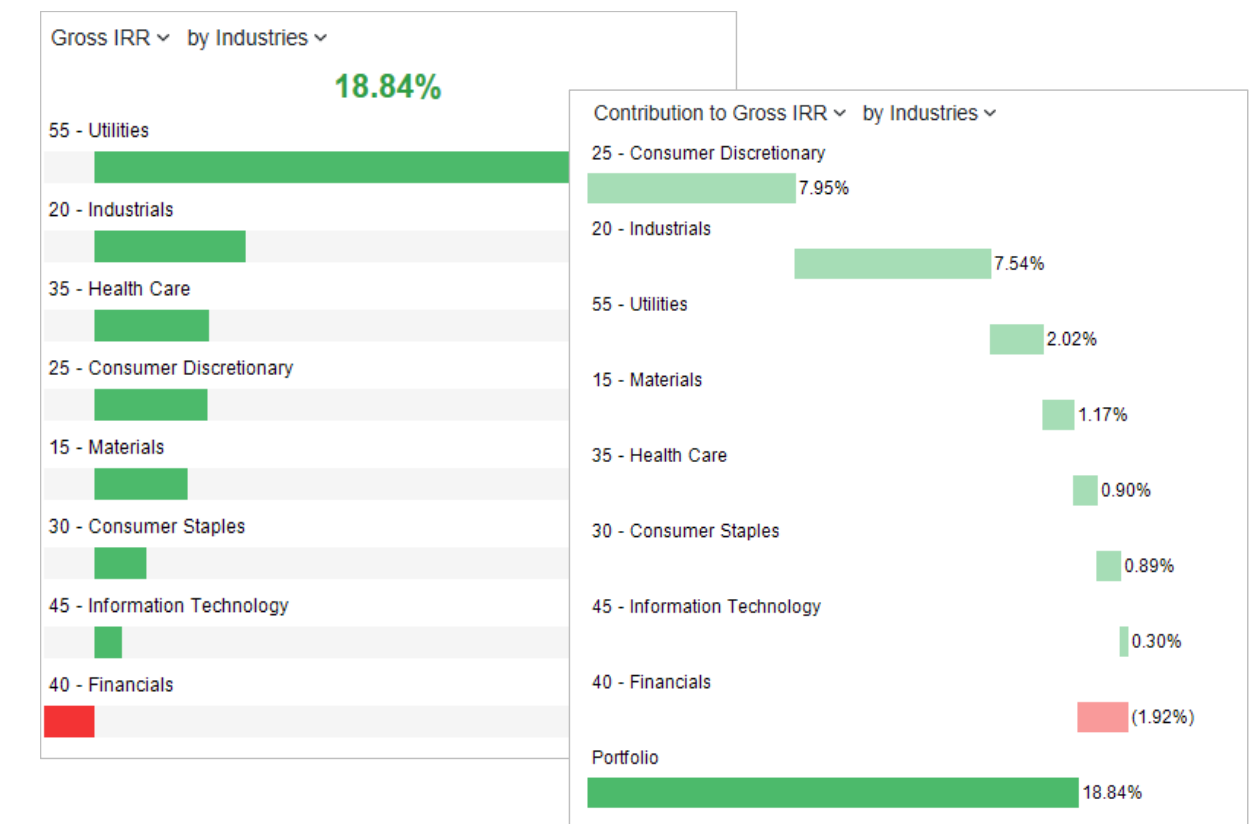
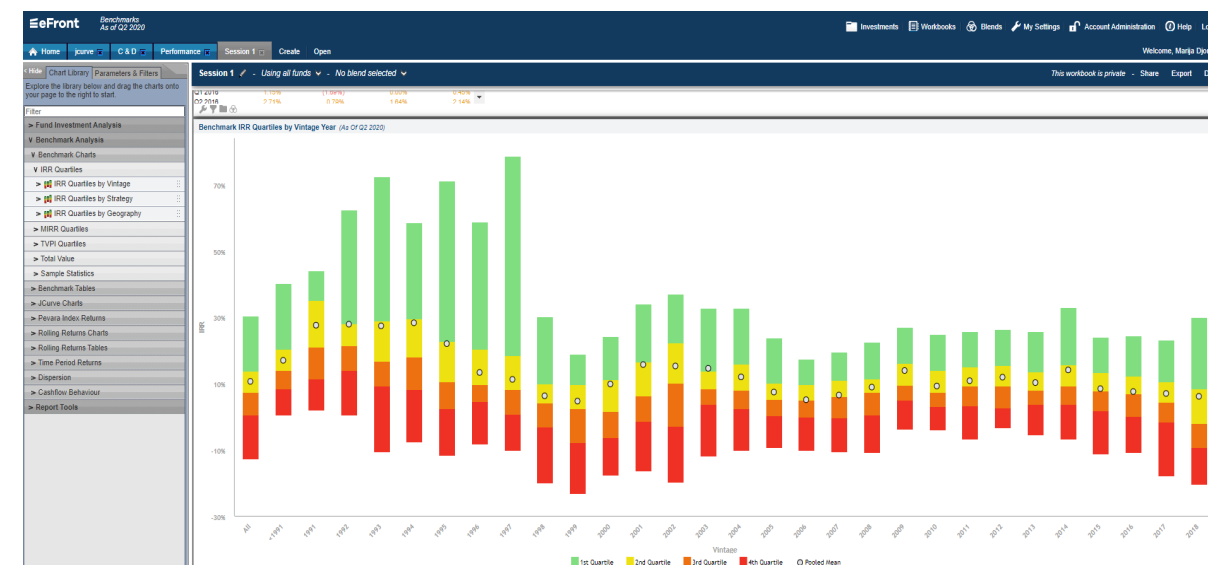
 Provide insights around the potential route to take through the current crisis.

The eFront Insight platform portfolio view is enriched with a universe of private market cashflows and public indices, and delivered into our cloud solution.

The data is then parsed through our calculation engine and exposed via a suite of analytics that enables our clients to thoroughly examine the data across various dimensions, including sectors, geographies and strategies.

Using Insight's Research module, our clients can directly examine their own investments and private markets as a whole both today and through history.

This combination of data and tools provides our clients with a detailed understanding of how previous crises and trends have historically impacted the market and their portfolio, ultimately providing essential fact-based support and guidance through the decision-making process within their investment lifecycle.



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eFront is the leading technology solution for alternative investment management, covering the needs of all alternative investment professionals end-to-end, from fundraising and portfolio construction to investment management and reporting. With more than 850 clients in 48 countries, eFront services clients worldwide across all major alternative asset classes. In 2019, eFront was acquired by BlackRock and integrated with Aladdin®, its investment technology, bringing together public and private asset classes to deliver the industry-leading multi-asset investment platform.