

GLOBAL PRIVATE EQUITY PERFORMANCE SERIES 2020

An international comparison of major markets



Introduction

2019 was a positive year for global private equity performance, with most regions seeing rising returns as well as falling risk. In fact, every market operating below the risk/return trendline saw performance improvements during the year, with the exception of Eastern Europe and Russia.

It was also the year the Nordics overtook traditional leaders Benelux and the UK, to become the world's top performing private equity market, helping Western Europe consolidate its global lead in private equity. This was in a year when most of the very top performers saw modest declines in returns, including the UK, the US, Benelux and the Nordics, as well as China and Hong Kong.

Meanwhile, France improved its private equity performance above the risk/return trendline, while Spain crossed the psychological 8% threshold, slightly below it.

In the sub-asset class of venture capital, the US remains the stand-out leader on the back of internet-era gains, but its active funds also saw performance improvement during 2019. China and Hong Kong venture funds show similarly impressive return performance, but with the additional attraction of a much narrower range of outcomes among funds – a paper advantage that may wear off as this very young market sees more investments realised over the coming years. Western European VC funds further strengthened their position above the trendline, closely tracked by Southern European VC, albeit at a lower return and risk level.

Benelux retained its crown as king of the buyout markets in 2019, but the Nordics closed the gap with a strong year for exits, to take a close second. French buyouts also had a strong year for distributions and performance, while its top quartile funds pulled away further from the bottom quartile. This trend was even more pronounced in Spain, where the top 5% of funds now outstrip the bottom 5% by 1.24x.

DACH funds remain well below the trendline, but active funds in the region saw a remarkable jump in performance, giving reason for optimism. On the face of it, Italy is even further below the trendline, but 2019 saw an interesting evolution among active Italian funds with a TVPI multiple rise of 1.4x, while trimming a year from its average time-to-liquidity, juicing IRR performance. However, few can beat the British LBO market's velocity of capital, at around 3 years.

The opposite is the case further east, with Eastern Europe and Russian funds taking nearly 5 years to return capital, depressing (in IRR terms) an otherwise solid cash-on-cash performance.



Geographical Definition

In this report, the method for geographical allocation of funds is based on the location of the investee company, rather than that of the private equity investor. This choice was made to allow for an explicit comparison of different geographical strategies in private equity investment decision-making. For a fund to be classified as invested in a particular region, at least 70% of the fund's assets has to be invested into that region. If not, the fund would be classified as investing in a region with a broader geographical span. Broader geographical categories also encompass individual countries and sub-regions that naturally belong to the broader geography.



Reporting Currency

For each geographical group of funds, the returns are calculated in terms of the local currency in which the cash distributions and residual valuations were reported in order to neutralize foreign exchange effects.



Measuring Return

This study will use the time-sensitive internal rate of return, and the multiple of invested capital. Pooled average return indicators will be used to assess the performance of a given set of funds.



Measuring Risk

This study defines risk as the difference in performance between the best and worst performing funds in any given region. It uses two measures: one of 'extreme' selection risk, which refers to the difference between the average performance of top and bottom 5% performers and 'most frequent selection risk', for the difference in either IRR or TVPI between the top and bottom quartile funds. The former helps to assess overall selection risk, while the second neutralizes any statistical outliers.



Measuring Maturity

The maturity of a market is measured as a proportion of total value generated for the investors that has been distributed back. It is a ratio of capital distributed-to-paid-in (DPI) and total-value-paid-in (TVPI).

¹ A fund that has at least 70% of portfolio value invested in French companies is considered to have "France" as a geographical strategy. If it has 40% of portfolio invested in French companies, 35% in UK companies and the rest in other regions, it is considered to have "Western Europe" as a strategy.

MAIN FINDINGS



1.1 VENTURE CAPITAL

BENELUX

Despite a significant performance improvement, VC funds from Benelux are still evolving significantly below the trendline. These funds record an IRR of 1.02% and a modest TVPI of 1.05x. The extreme selection risk decreased by 3.1 percentage points, while the most frequent selection risk increased by 1.6 percentage points, mainly driven by a worsening in the performance of bottom-quartile funds.

FRANCE

The performance of French VC funds improved slightly and remain close to the trendline. The TVPI increased to 1.32x and the IRR to a 4.5%. The extreme selection risk (measured in terms of TVPI) increased by 0.17x. While the performance of both the top 5% and bottom 5% of funds improved, the top 5% progressed relatively more. Active funds have improved even more significantly. The TVPI of the top 5% of funds increased notably, from 2.08x to 2.5x.

NORDICS

Active and liquidated funds jointly recorded a TVPI of 1.43x and an IRR of 4.6%. Although the spread in both IRR and TVPI between the top and bottom 5% performing funds increased over 2019, this market preserved its position on the lower end of the extreme manager selection risk, thus lingering around the trendline.

DACH

Although still below the trendline, DACH VC funds recorded the highest increase of both their IRR and TVPI among all the regions. This evolution was led by active funds. Their IRR increased by 2.35 percentage points to a still modest 3.3%. Should they replicate such an increase in the coming year, DACH VC funds would reach the trendline.

ITALY

Italian VC funds continued to record an exceptionally good performance with a TVPI of 1.41x and an IRR of 10.9%. The Italian market is also characterized by a very short time required to reach liquidity (3.35 years).

SPAIN

VC funds in Spain moved closer to the trendline due to significant improvement of the TVPI of active funds, now standing at 1.61x. The most frequent selection risk increased from both the TVPI and IRR perspectives, due to a strong increase in performance of top-quartile funds. One challenge for Spanish VC funds could be their rather long time-to-liquidity. It increased year-on-year by 0.68 year and is now reaching 6.94 years.

EASTERN EUROPE AND RUSSIA

The main characteristic of VC funds in Eastern Europe and Russia is their low level of maturity, pointing at a fairly recent period of activity. Funds have realized only 30% of their value. As a consequence, performance and risk figures should be interpreted with caution. The TVPI has nevertheless passed the break-even point at 1.07x, and the IRR reached 1.3%. Active funds perform slightly better, with a TVPI of 1.17x and an IRR of 3.6%. In both cases, this market is placed below the trendline.

ISRAEL

The discrepancy between active and liquidated VC funds is probably the highest in Israel. Combined, they generate a TVPI of 1.28x and an IRR of 3.4%, a modest improvement from last year. Active funds achieved a TVPI of 1.49x and an IRR of 6.2%, which places them just below the trendline. Top-quartile funds led the increase of performance, leading to an increase in the most frequent selection risk by 0.29x.

CHINA AND HONG KONG

Chinese and Hong Kongese VC funds are among the best performing in the world. They maintained an attractive risk-return profile with a TVPI of 1.72x and an IRR of 10.40%. With only 39% of value distributed to investors, it still has most of its value captured in NAVs. It is, therefore, still a fairly young market. The selection risk is encouraging, especially the most extreme one. Even the bottom 5% of funds nearly break even. If confirmed, this risk-return profile would make of Chinese VC funds an attractive investment proposition.

APAC

Asian and Pacific region in our sample consists of Chinese and HK, Japanese and Singaporean markets. Its VC market is dominated by Chinese and HK VC funds, thus generating the historical performance similar to the one delivered by these two geographies (TVPI of 1.64x and IRR of 9.97%). This entire region is somewhat more mature (44% of value paid back to investors) and it also brings slightly wider manager selection risk spreads. On the other hand, while Chinese market did not experience any change in TVPI over the course of 2019, the APAC region experienced a slight improvement in its performance of +0.04x.

The UK

British VC funds recorded a small increase of performance in 2019. A closer examination shows that this was the result of two opposing forces. Active funds had a great year, improving their TVPI from 1.43x to 1.58x and their IRR from 6% to 8.3%. On the other hand, a few additions to the pool of liquidated funds account for the overall drop in their performance. Focusing on active funds alone, the UK are above the global average in terms of performance. As for both risk metrics, no significant changes are recorded, keeping the UK on the more conservative side of the risk-return spectrum.

The US

The US preserved its position as the best-performing VC market globally with an IRR of 14.3%. A significant part of this result can be explained by the golden VC era of early 2000s. Leaving them aside, the active pool of funds improved their performance since last year, reaching a TVPI of 1.65x and an IRR of 8.2%. Both the top 5% and the top-quartile funds increased their TVPI from, respectively 3.05x to 3.16x, and 1.82x to 2.01x. As a result, both types of spreads widened. US liquidated funds retained their leadership position, with a performance of 1.71x TVPI and 17.5% of IRR.

1.2 LEVERAGED BUYOUT

BENELUX

The Benelux remained at the top of the game, driven by the exceptional performance of active funds. They achieved the highest IRR of all markets, closely followed by Nordic funds, with a significant difference in terms of risks. The Benelux is well above the trendline in all performance metrics, but its selection risk is also high. In particular, if its TVPI is one of the best globally (1.81x), its most frequent selection risk is by far the highest among the group of countries (1.01x).

FRANCE

French LBO funds registered an increase in TVPI of 0.08x, leading to a historical average of 1.69x. The increase of performance of top-quartile funds combined with the slight worsening in performance of the bottom-quartile ones lead to a widening of the TQ-BQ TVPI spread to 0.73x. French LBO funds increased significantly their distributions, leading to a sharp increase in maturity: 76% of the total value was distributed to investors.

NORDICS

The Nordic LBO market maintained its attractive risk-return profile, reaching a TVPI of 1.91x and an IRR of 16.3% (the 'most frequent' selection risk amounting to 15.4% and 0.82x). The performance of active funds improved from 1.87x to 1.96x, with a high level of distributions: the maturity is at 83%. The overall average time-to-liquidity of active and liquidated funds is 4.3 years.

DACH

The headline performance for DACH LBO funds remained steady during the year, with selection risk increasingly slightly as the top 5% of funds did better. But this masks a major disconnect between active and liquidated funds. Active funds recorded

a remarkable jump in TVPI to 1.60x (improving by 0.31x) and IRR to 10.9% (increasing by 5.13 percentage points). Liquidated funds went in the opposite direction with a severe decline of their average performance, after 5 DACH focused LBO funds were liquidated upon the exits that did not deliver as expected. The DACH market still has a long way to move close to the trendline.

ITALY

When active and liquidated funds are jointly considered, it seems that Italy's LBO market has not changed much in the past year. Upon closer examination, however, the TVPI of active funds has improved significantly to 1.4x with a reduction in both measures of selection risk. The time-to-liquidity of active funds has also decreased by nearly one year, pointing towards significant new investments (the maturity decreased by 8%). It now stands at 3.02 years, which is the lowest level recorded globally.

SPAIN

Spanish LBO funds stayed close to the trendline. Funds slightly increased their average performance to reach a TVPI of 1.52x. The time-to-liquidity decreased to 4.8 years. The selection of Spanish funds is challenging. Both selection risks increased, especially the extreme one, now standing at 1.24x. This is notably due to the top 5% funds, which have increased substantially their performance in comparison with 2018.

EASTERN EUROPE AND RUSSIA

Eastern European LBO funds are slow burning. This has significant consequences in terms of performance analysis. Looking at their overall TVPI (1.37x), they manage to reach the trendline, but they stay well below that line from an IRR perspective (7.1%). However, the maturity of LBO funds is relatively low, at 59%. Liquidated

LBO funds needed a longer time to sell their assets (4.93 years). They also recorded a higher performance (1.55x) than active funds (1.34x). Longer time-to-liquidity and higher realized performance could be interpreted as a sign that active funds could deliver better returns in the future, assuming that they follow the footsteps of realised predecessors.

ISRAEL

Israeli LBO funds are at the conservative end of the risk-return trendline, as both return measures are relatively low and the extreme selection risk measure is among the highest recorded. Active and liquidated funds have a TVPI of 1.25x and an IRR of 4.8%, with a difference between top quartile and bottom quartile fund performance being only 0.37x and 714 basis points. The active LBO funds also outperform those liquidated, reaching the TVPI of 1.53x and IRR of 10.7%.

CHINA AND HONG KONG

Chinese and Hong Kongese LBO funds are positioned well above the trendline, with a TVPI at 1.60x and an IRR equal to 9.9%. However, this performance remains somewhat hypothetical, as funds have a maturity level of just 58%, significantly below the global average of 75%. The most frequent and extreme selection risks declined over the past year, contributing to an already attractive risk-return profile. The IRR spread between the top and bottom quartiles is limited to 745 basis points.

APAC

LBO market in APAC region has delivered TVPI of 1.51x and IRR of 9.28%, which combined with relatively low manager selection risk provides a solid risk-return ratio for investors. Given the low maturity level (only 63% of returns paid back to investors), the market can progress further in the

near future. Both extreme and the most frequent manager selection risk measures have declined in 2019.

The UK

British LBO funds maintained their position at the higher end of the return spectrum, with a TVPI of 1.62x and an IRR of 15.6%. A significant share of the value has already been distributed in the full sample, given a maturity level of 83%. British funds distribute rather quickly, as shown by their particularly low time-to-liquidity of 3.3 years. It is even lower for liquidated funds at just 2.9 years. The bottom quartile of active funds increased its performance, therefore contributing to a reduction in the most frequent selection risk of 0.17x (TVPI) and six percentage points (IRR).

The US

The overall TVPI of US LBO funds remained stable year-on-year, at 1.58x. The IRR of active and liquidated funds fell on aggregate by just 14 basis points to 12.1%. No significant changes were noticeable regarding selection risks. While active funds still have not reached the historical performance records of the liquidated ones, in both categories, the US LBO market is still comfortably placed around the trendline.

PERFORMANCE ANALYSIS OF THE MAJOR PRIVATE EQUITY MARKETS



2.1. ALL PRIVATE EQUITY FUNDS

Analysis using IRRs

A global overview of private equity markets shows that Nordic countries are the leading market for this asset class, with an IRR of 13.8%. They are overtaking the historical frontrunners, the UK and the Benelux which still generate an IRR of 13% or more.

In 2019, most regions recorded an increase in performance while the selection risk declined (Fig. 1 – the arrows point to the quantitative change in the measures of return and risk during 2019). As a result, the risk-return profile of private equity funds improved. France witnessed a sharp increase in IRR of 66 basis points, to almost reach double figures. Spain did nearly as well, with a 62 basis points increase, leading to an aggregated IRR of 8.2%. In

both cases, top-quartile funds achieved relatively higher performance improvement than their bottom-quartile counterparts, thus increasing the most frequent selection risk.

The overall IRR of Chinese and Hong Kongese funds declined slightly in 2019, from 10.8% to 10.2%. Eastern European and Benelux funds have also experienced a slight reduction of their IRR of 22 basis points each. Figure 1 reveals weak linear relationship between IRR return and the extreme manager selection risk measures across different geographies. A close examination reveals that markets with relatively low maturity, such as APAC and Eastern Europe, also offer the lowest levels of the manager

selection risk spreads. As these markets mature with time, these spreads will most probably become wider, so will the R2 of the trendline become more significant.

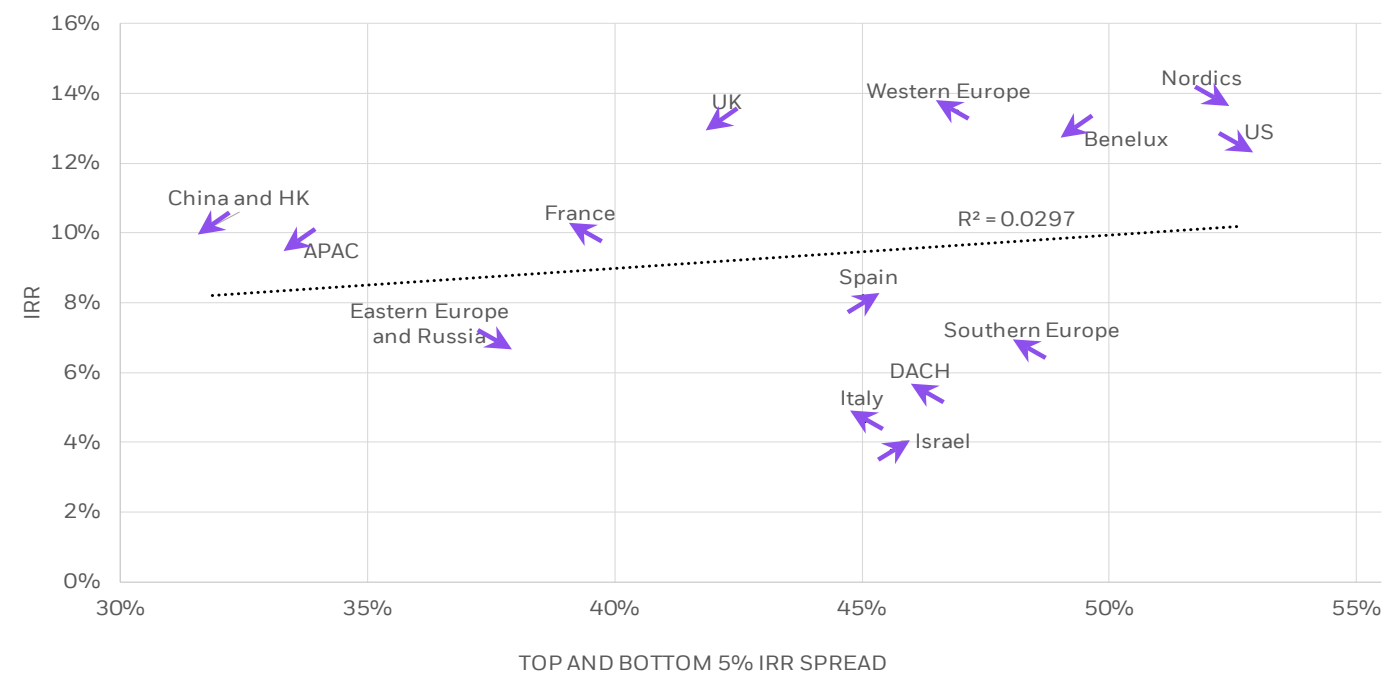
While the regions with the most attractive risk-return profile, that is to say Western Europe, the Nordics, the Benelux, the UK, and the US maintained their IRRs at a high level, there were changes in terms of selection risk. The IRR of Benelux's top-quartile funds dropped to 15.8% from 17.6%. As a result, the most frequent selection risk declined.

At first glance, the Nordic region seems to have experienced a dramatic increase in its most frequent

selection risk of more than five percentage points, pushing it to the far right of the risk-return spectrum (Fig 2). A closer examination shows this shift can be entirely attributed to top-quartile funds. In other words, selection risk increased because of a strong showing of the best funds.

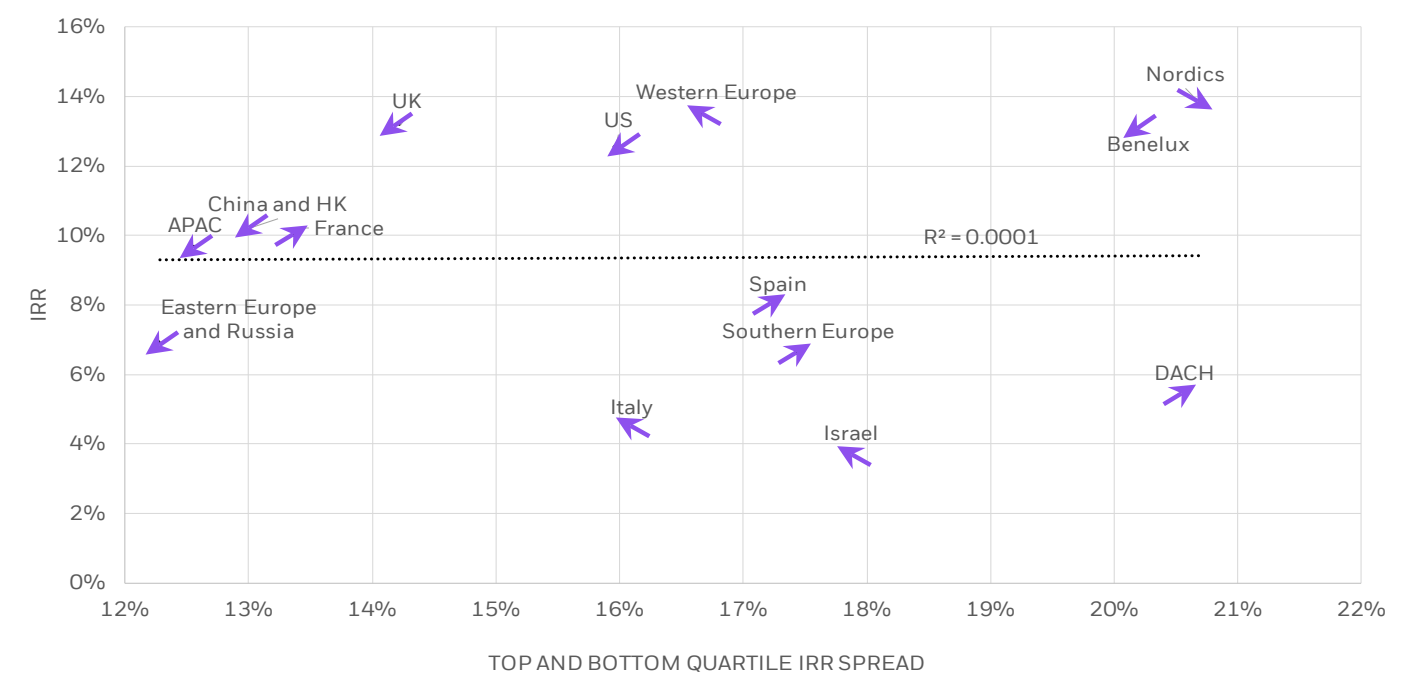
Focusing on countries below the trendline, Spain has noticeably surpassed 8%. As this is the standard performance hurdle rate, this progress can be considered a notable achievement. Funds from the bottom 5% in Eastern Europe and Russia did not have a good year. Their weak performance contributed to the widening of the most extreme selection risk.

Figure 1 – Risk (5%) and return (IRR) analysis of private equity funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 2 – Risk (25%) and return (IRR) analysis of private equity funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.1. ALL PRIVATE EQUITY FUNDS

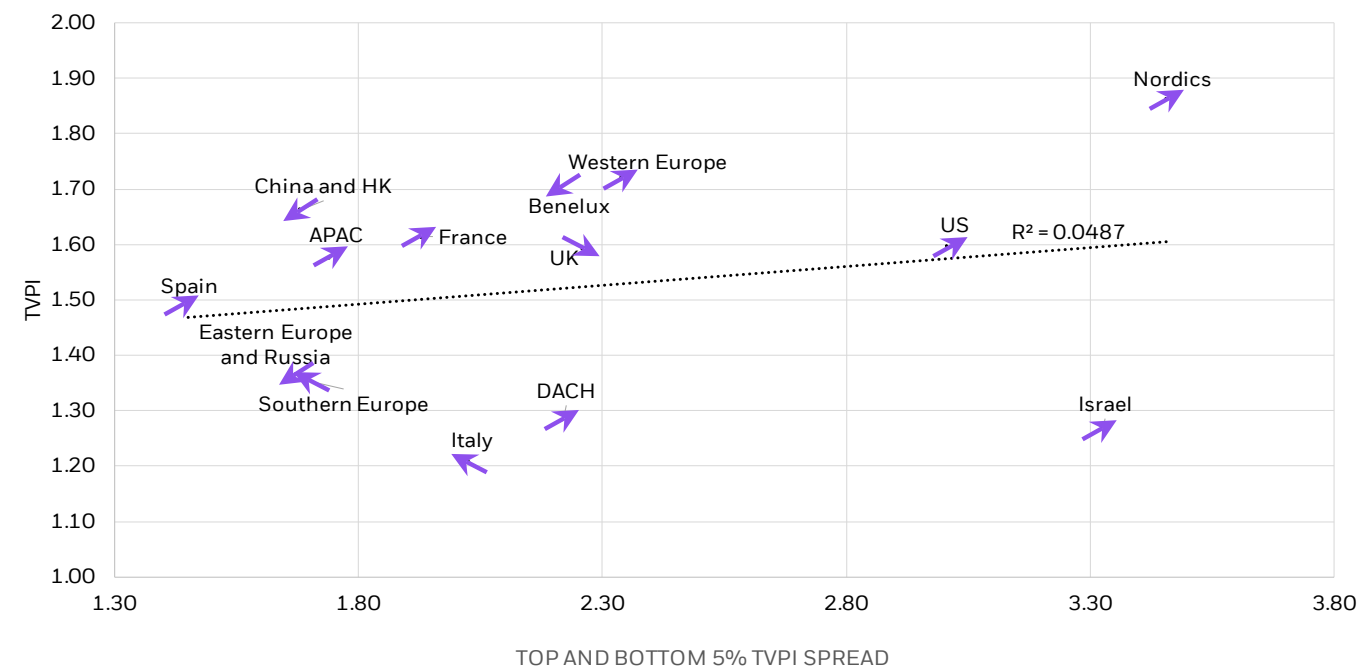
Analysis using multiples of investment (TVPI)

Nordic countries confirmed their global leadership during the year, with a TVPI of 1.86x (Fig. 3). It is the most mature market globally, with around 90% of the value already distributed. This performance is associated with a demanding fund selection: the level of extreme selection risk remained high in 2019 with a spread of 3.46x. Israel also stands out in terms of extreme selection risk, as their top 5% of funds recorded a significant jump in TVPI from 2.76x to 3.56x, thus increasing the extreme selection risk to 3.33x.

The French market experienced the strongest progression of TVPI in 2019, rising from 1.53x to 1.61x. On the other hand, Benelux's TVPI contracted by 0.05x to 1.70x. Developed markets, notably Western Europe, the UK, and the US, maintained their attractive risk-return profiles. The UK's extreme selection risk widened over the past year, as the average of the top 5% performing funds' TVPI increased and the average performance of the bottom 5% worsened.

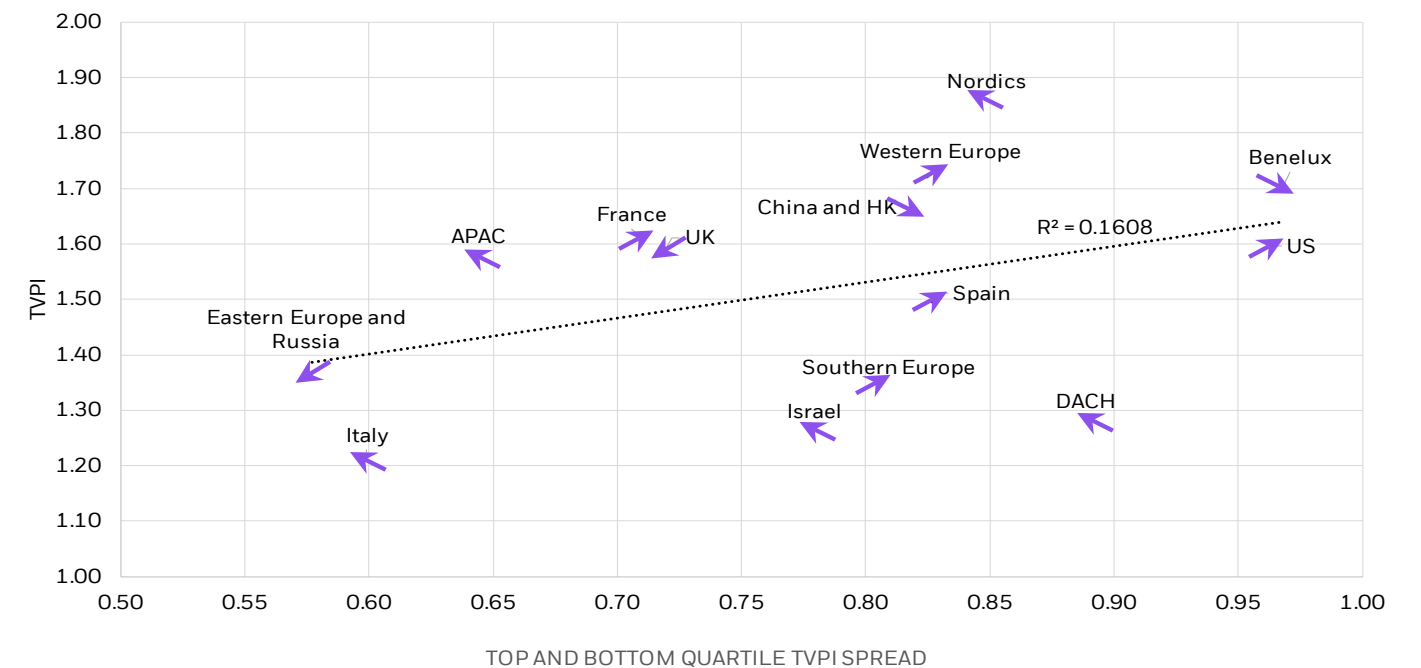
The Chinese and Hong Kongese private equity markets remained attractive with a TVPI of 1.66x. However, as they gradually mature, the most frequent selection risk – the performance gap between the top and bottom quartiles funds – has risen (Fig. 4). The top quartile performed better in 2019 than in 2018, and the bottom-quartile performance declined. The proportion of realized value remained still the lowest globally at 47%.

Figure 3 – Risk (5%) and return (TVPI) analysis of private equity funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 4 – Risk (25%) and return (TVPI) analysis of private equity funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.2 VENTURE CAPITAL FUNDS

Analysis using IRRs

US venture capital funds maintained their global leadership in 2019 with an IRR of 14.3% and no significant changes in selection risk levels. The large sample size combined with a significant proportion of liquidated funds explains the stability. The solid performance of funds which could capitalise on the Internet boom provides some elements of explanation of the high performance of the overall sample.

Italian venture capital funds retained their position, in 2019, as having the most aggressive risk-return profile (Fig. 5). The market produced

an IRR of 10.9% combined with a high extreme selection risk of nearly 80%. Selecting the best performing funds, and avoiding the worst, matters a lot in Italy.

Chinese and HK VC funds stand far above the trendline, and on the very far left, recording an IRR in excess of 10% with a very low level of extreme selection risk. The performance is still largely unrealized, with a maturity level of 40%, which explains the lack of dispersion of fund managers. As start-up valuations increased across the board, all the managers in the sample saw their NAVs

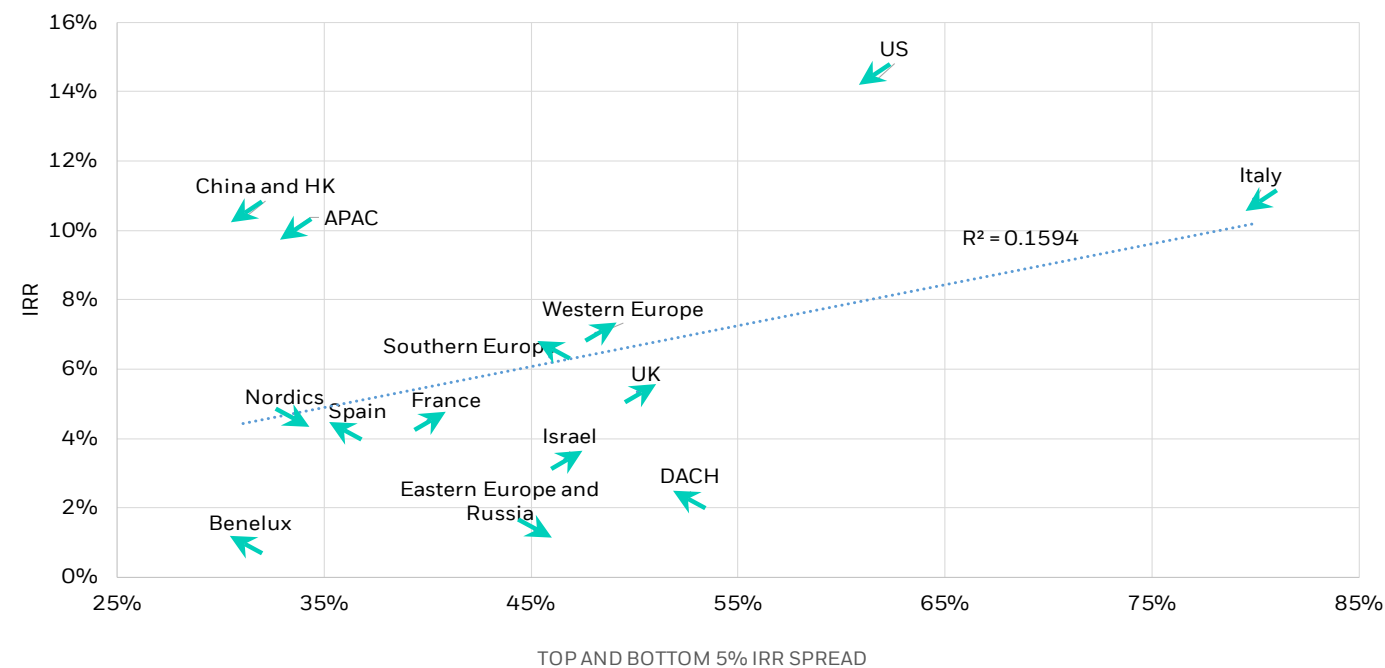
increase. APAC VC funds are more mature, with having more than 44% of the value paid back to investors and delivering almost 10% of IRR.

DACH-focused VC funds improved by the most significant margin. Their IRR grew from 0.7% to 2.2%. Despite such improvement, these funds still remain under the trendline. Here again, the maturity is fairly low, at 42%.

In Israel, funds with VY 2009-2016 saw their maturity increase from 23% to 39%. Spanish and French funds distributed 6% of their total

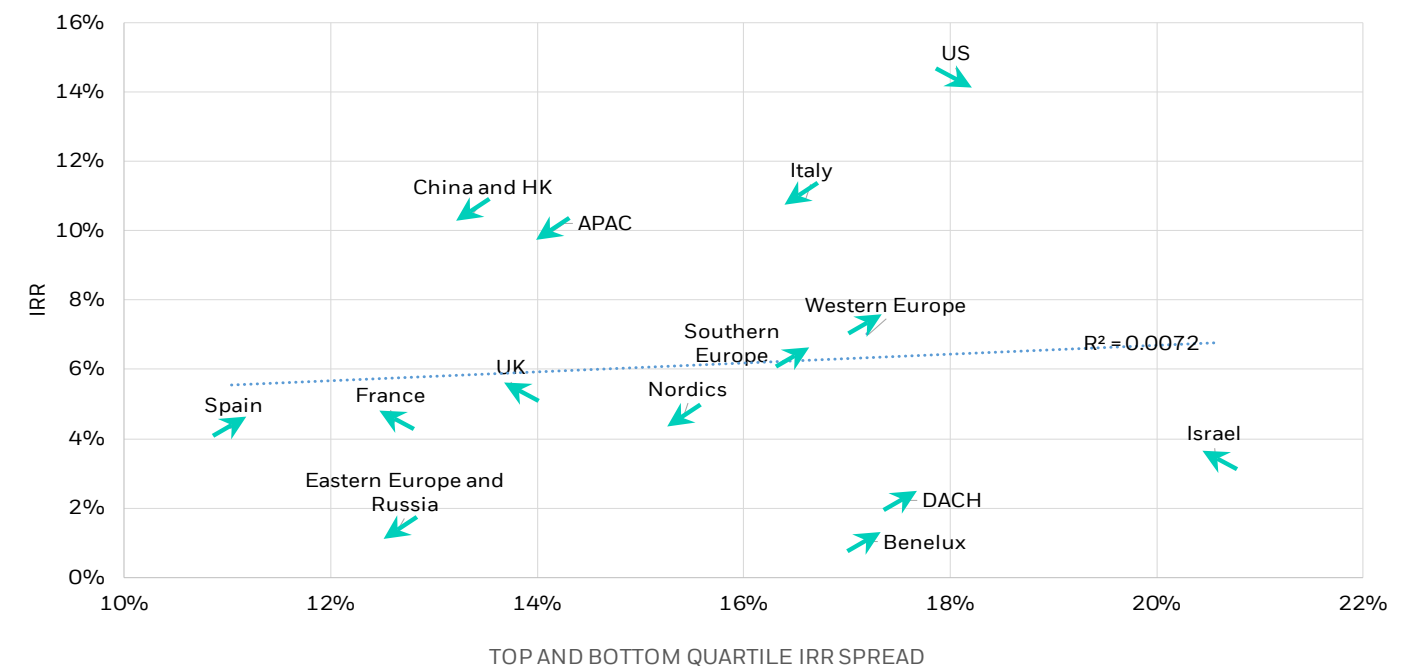
value over the course of 2019, while there were no significant changes found in other developed markets.

Figure 5 – Risk (5%) and return (IRR) analysis of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 6 – Risk (25%) and return (IRR) analysis of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.2 VENTURE CAPITAL FUNDS

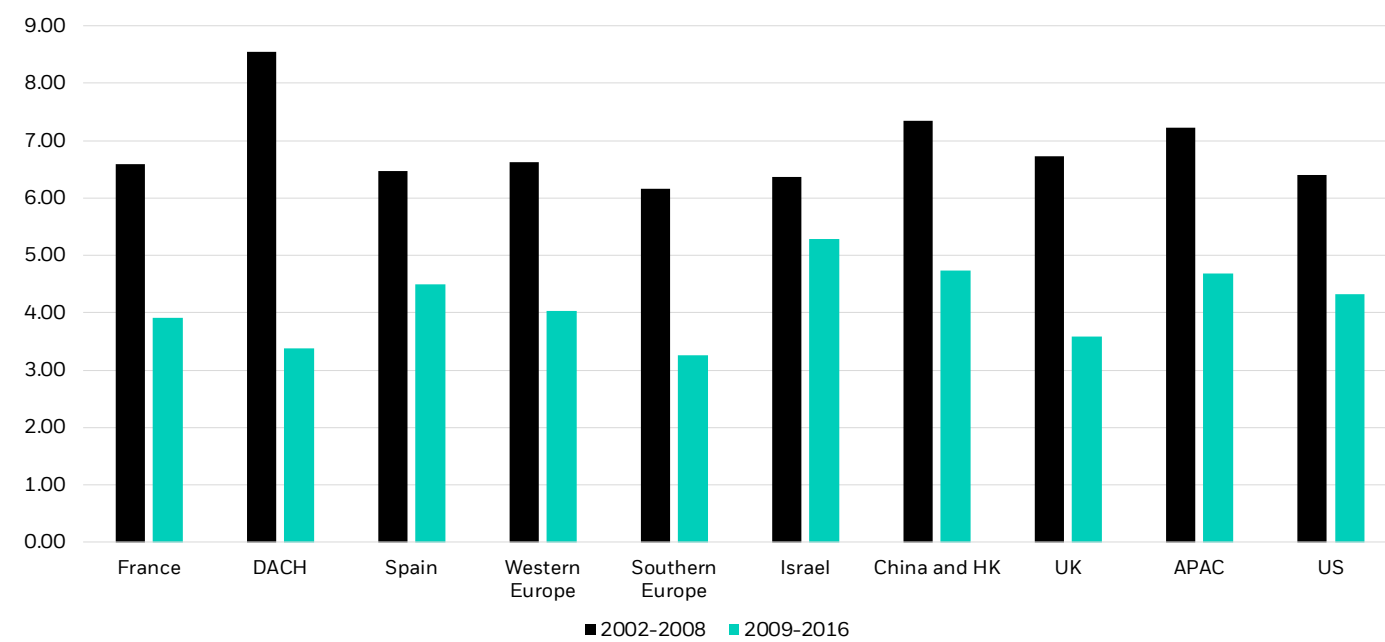
Analysis using IRRs

When putting IRRs in relation to the most frequent selection risk (Fig. 6), the modest positive relationship vanishes almost entirely. This fact emphasizes that IRRs are not necessarily the best metric to assess a risk-return profile, especially in VC. Moreover, the sample embeds active funds, which distort this time-sensitive metric. In particular, IRR spreads are more challenging to assess as they increase with fund maturity.

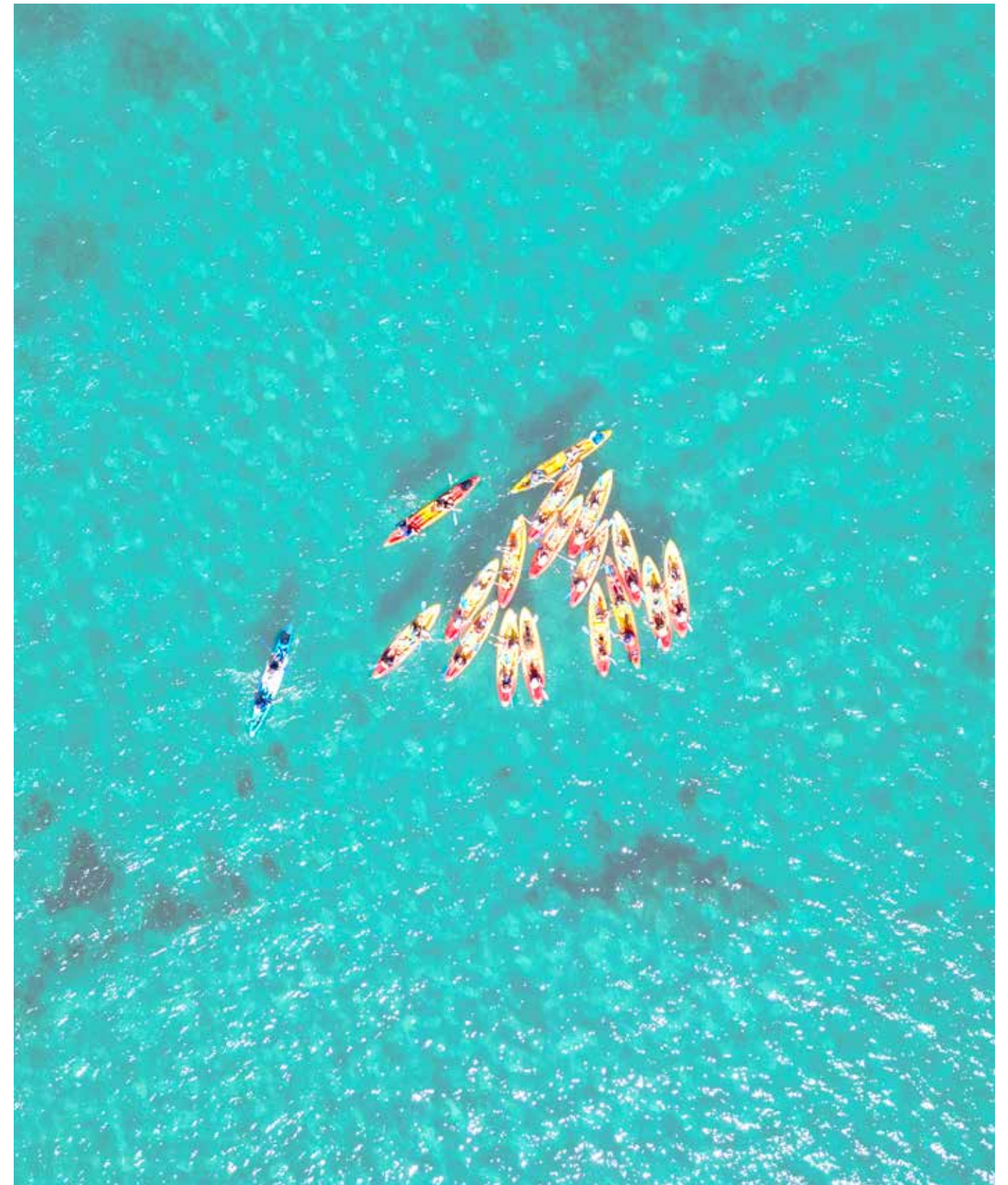
There was a convergence in 2019 of investment durations between the two groups. An increase in time-to-liquidity for VYs 2009-2016 was recorded in the majority of regions, leading to a convergence towards liquidated funds. VC funds usually have a longer duration compared to their LBO peers, a fact which is still very well reflected in the data. (Fig 7 compared to Fig 15).

The data set is divided into two groups of vintage years (VY), using the GFC as a cut-off point between active and liquidated funds (Fig. 7).

Figure 7 – Time-to-liquidity of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019



2.2 VENTURE CAPITAL FUNDS

Analysis using multiples of investment (TVPI)

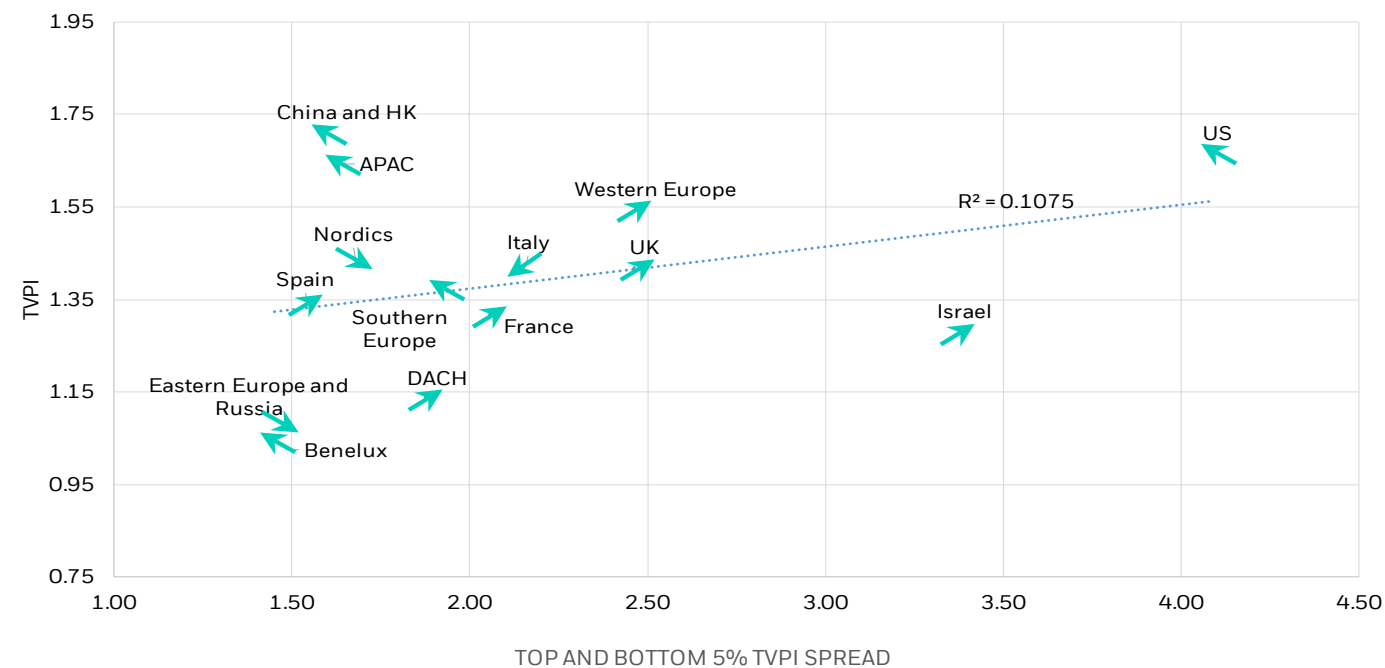
The Chinese and HK and the US VC markets achieved the highest returns, with TVPIs at respectively 1.72x and 1.67x. Extreme selection risk is significantly more pronounced in the US market (Fig. 8). This is partly due to their enormous difference in terms of maturity. The Chinese and HK TVPI is largely unrealised, with only 39% of the value distributed. The TVPI could therefore significantly change in the future. In comparison, US VC funds have distributed over 77% of their total value.

Israel is another market with a very high extreme selection risk. However, at 1.28x its TVPI is slightly below the global average of 1.39x. As a result, its position remains significantly below the trendline. Selection skills are therefore crucial when investing in Israeli VC funds.

In 2019, the most considerable progression of TVPI (+0.1x) has been achieved by DACH and Spanish VC funds. They now stand respectively at 1.14x and 1.34x. Top-quartile DACH funds improved their TVPI, pushing the most frequent selection risk up to 0.92x, a level similar the Israeli (Fig. 9).

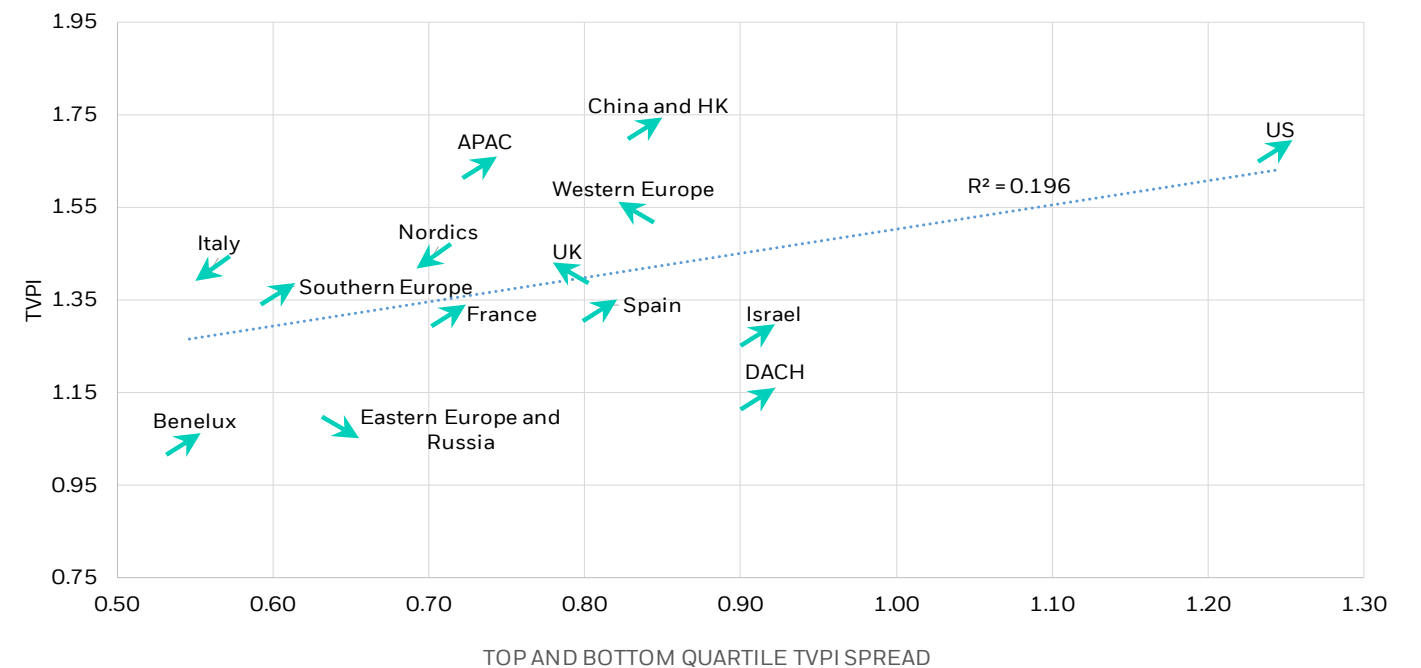
The French (1.32x) and the group of Western European funds (1.55x) tracked closely their DACH and Spanish peers with an increase of TVPI of 0.08x. This development puts France at par with the Southern European TVPI of 1.37x in 2019.

Figure 8 – Risk (5%) and return (TVPI) analysis of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 9 – Risk (25%) and return (TVPI) analysis of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

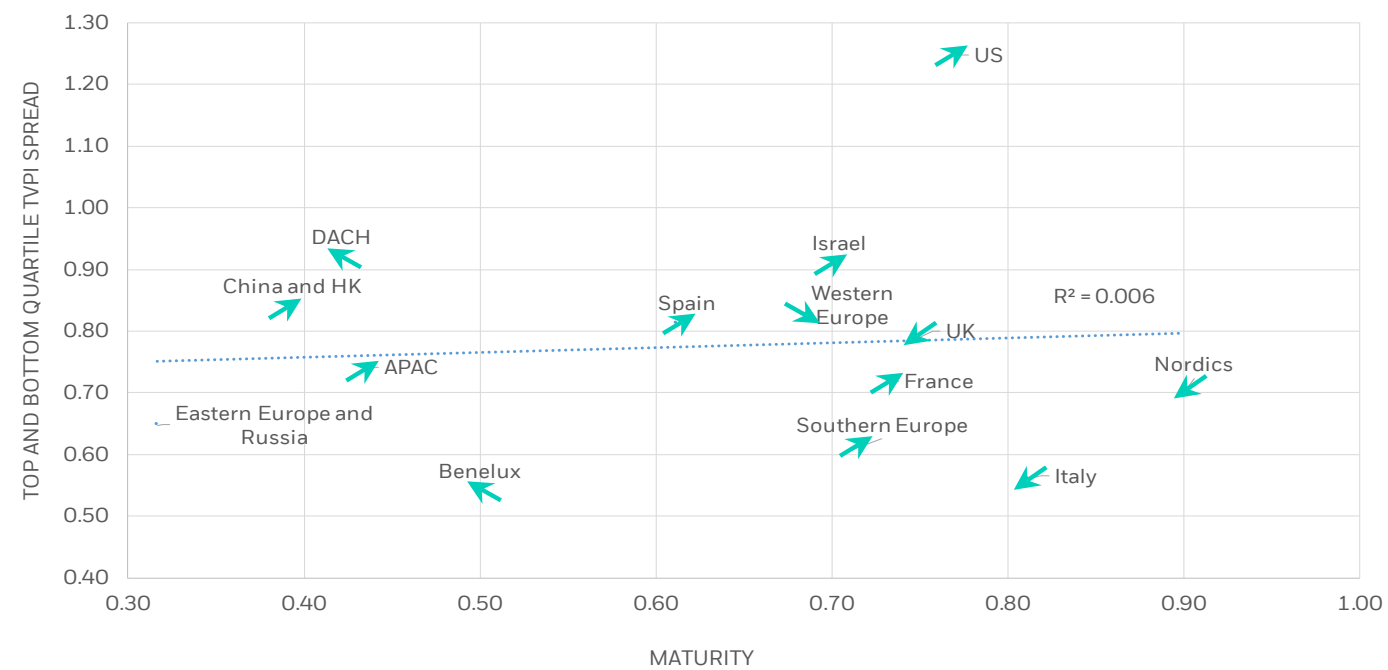
2.2 VENTURE CAPITAL FUNDS

Analysis using multiples of investment (TVPI)

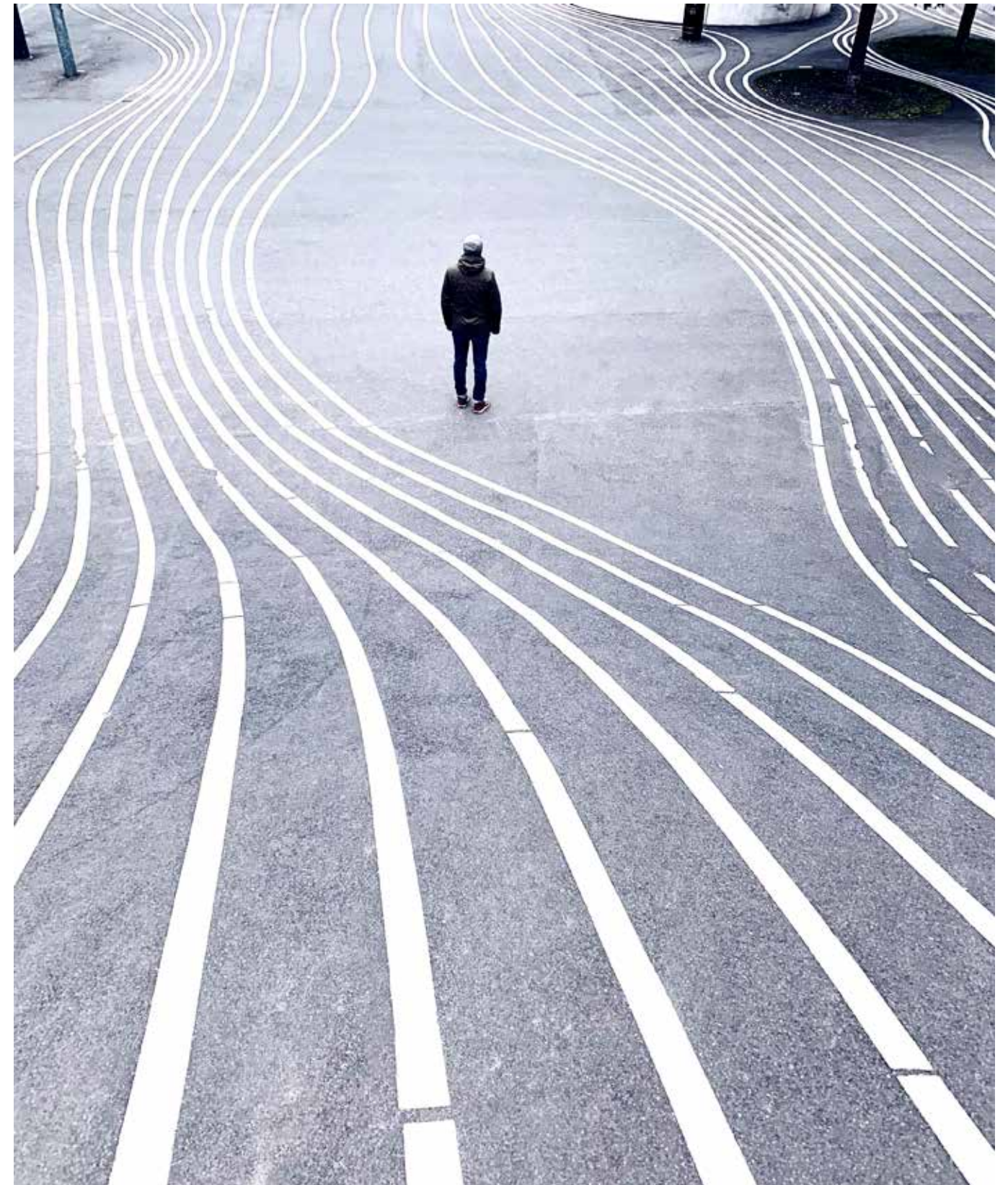
One of the most interesting findings is zero correlation between the most frequent selection risk and the maturity of VC funds across geographies, which is very specific for VC market relative to LBO (Fig. 10).

The addition of new funds to the sample contributed to a decrease in maturity of VC funds from the Benelux and DACH by respectively 21% and 11%. Funds from Eastern Europe and Russia increased the level of distribution from 22% to 32% of total value. Markets in which funds have already distributed more than 60% of their value did not record any notable change.

Figure 10 – Risk (25%) and maturity of VC funds by geographical area



Source: eFront Insight, As of Q4, 2019



2.2 VENTURE CAPITAL FUNDS

Active vs. Liquidated

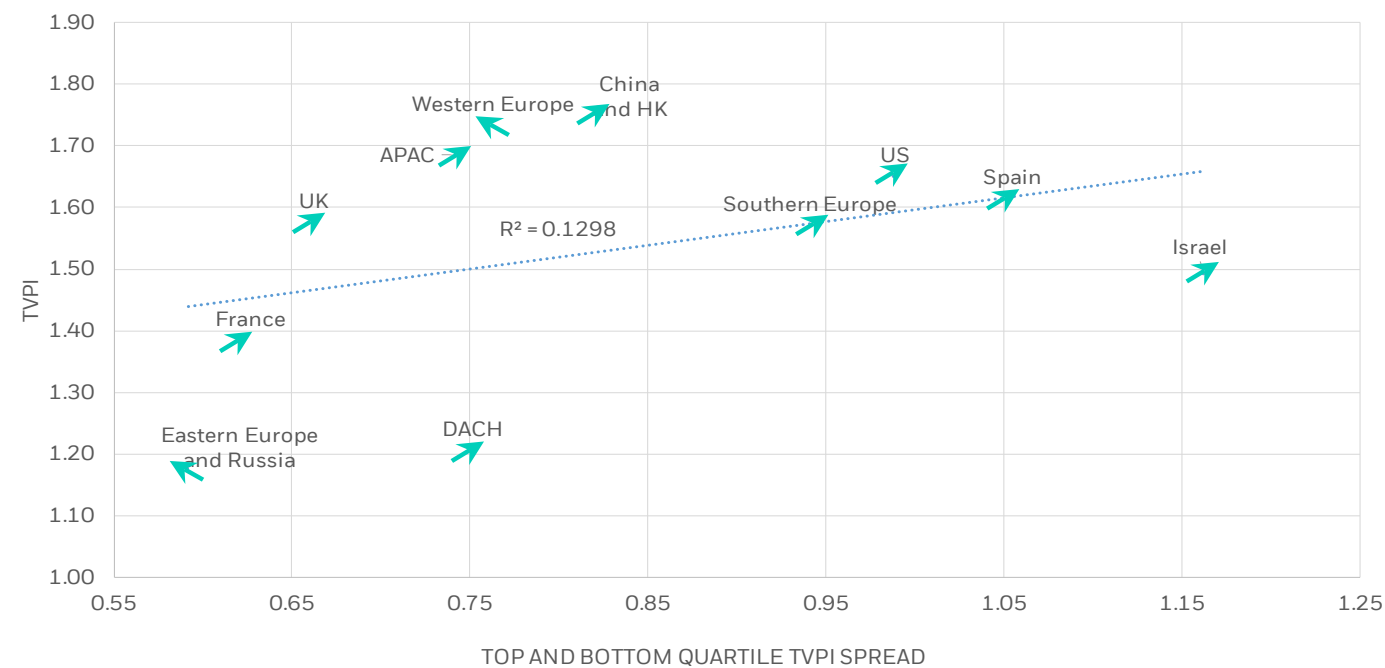
Most geographical regions witnessed a significant increase of TVPI in 2019. British VC funds saw their TVPI increase by 0.15x to 1.58x, a particularly strong progression for a developed market in which active funds are realized at 62%. The TVPI of Spanish funds jumped from 1.4x to 1.61x, surpassing the UK, but at the cost of a higher selection risk level. Western European active VC funds booked a 1.73x TVPI in 2019, significantly higher than the 1.6x registered in 2018.

Active VC funds from Western Europe region experienced the largest reduction in the most

frequent manager selection risk (by 0.04x). At the same time, the funds from a broader region of Southern Europe recorded an increase in the most frequent selection risk of 0.24x.

As for liquidated funds, the changes are mostly concentrated in Western Europe and Israel (Fig. 12). Several Western European VC funds completed their mandates successfully and contributed to an increase in TVPI of 0.12x. The addition of new fully realized VC funds in Israel lead to an increase of TVPI by 0.10x.

Figure 11 – Risk (25%) and return (TVPI) analysis of active VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 12 – Risk (25%) and return (TVPI) analysis of fully realized VC funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.3 LEVERAGED BUYOUT FUNDS

Analysis using IRRs

2019 did not bring a change on the leader board, as the Benelux kept its leading position with an IRR of 16.6%. Although Finland alone scored an even better IRR of 16.8%, overall, the Nordic countries recorded an IRR of 16.3%.

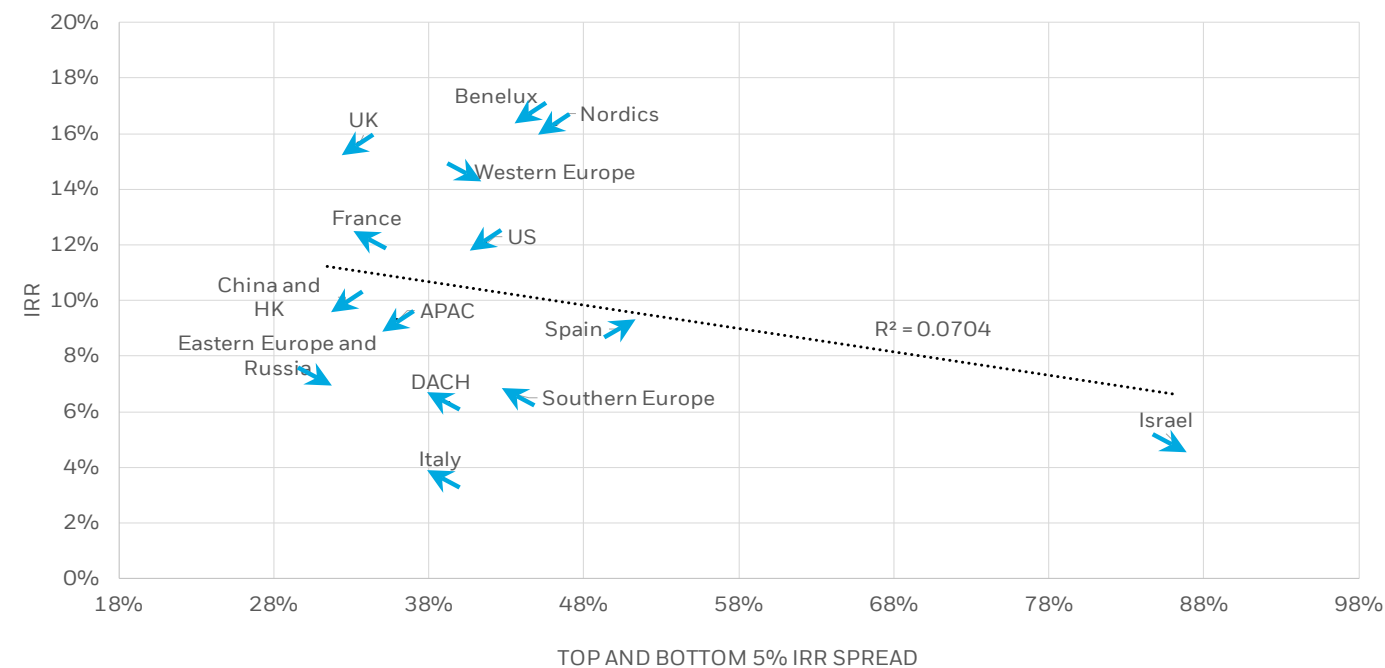
In 2019, Nordic LBO funds registered a massive drop of their extreme selection risk, falling from 67.5% to 46.3%, leaving only Israel on the far right of the spectrum (Fig 13). The Benelux re-emerged as the region with the highest most frequent selection risk, as it was the case two years ago. However, its extreme selection risk decreased significantly (Fig. 13).

France improved its IRR slightly, to reach 12.1%, with a subtle decrease in both risk measurements. Spain recorded an increase of 58 basis points to achieve an IRR of 9.1%. The top 5% of funds recorded a strong increase, leading to a widening of extreme selection risk.

Overall, Western Europe remained stable while the US and the UK experienced respectively a decrease in IRR of 14 and 25 basis points. In 2019, the risk levels in the US remained stable in comparison to 2018. This does not apply to the UK, as top-quartile funds recorded a modest decrease in their performance.

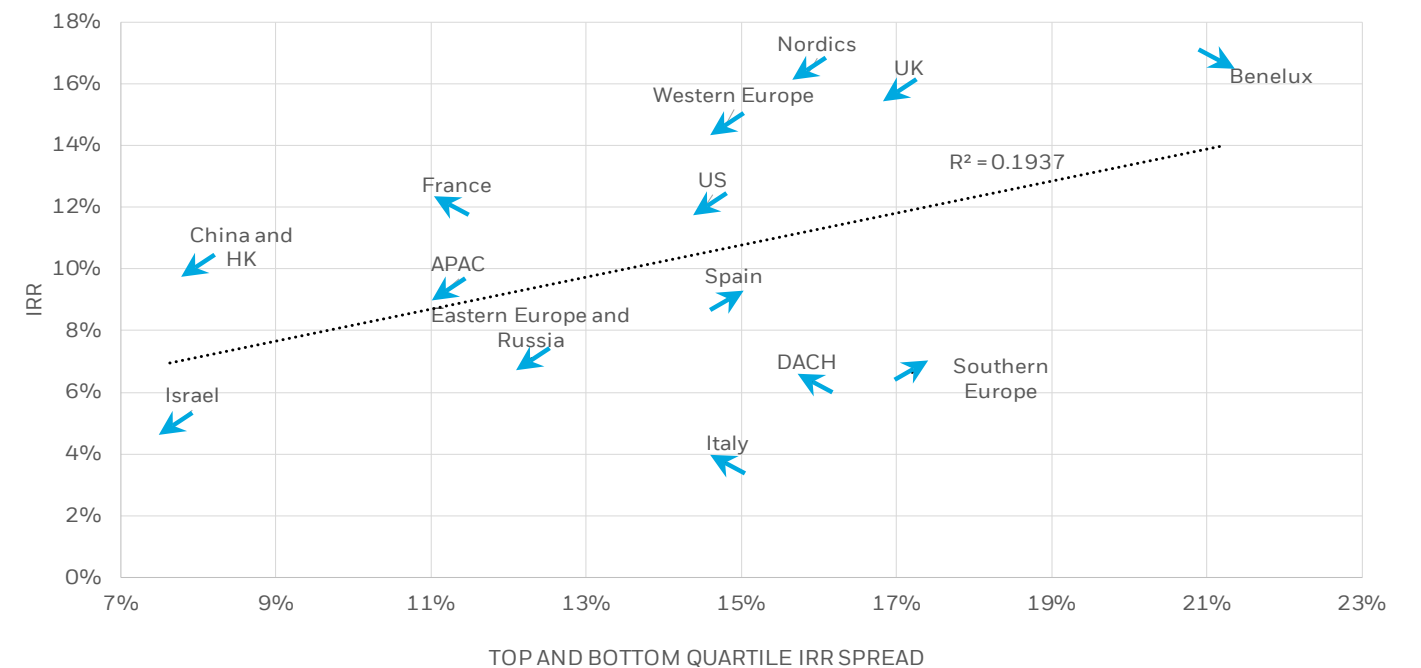
Despite IRR falling 52 basis points during 2019 (now at 9.91%), Chinese and HK BO funds remain attractive due to their low levels of selection risk. The extreme and the most frequent selection risks in China are 32.6% and 7.4%. As a matter of comparison, the global averages are respectively 43% and 14%. Still, this is a relatively young market, so the dispersion of funds is still limited. As funds mature, selection risk will materialize. A broader region – APAC – delivered 9.28% of IRR historically.

Figure 13 – Risk (5%) and return (IRR) analysis of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 14 – Risk (25%) and return (IRR) analysis of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.3 LEVERAGED BUYOUT FUNDS

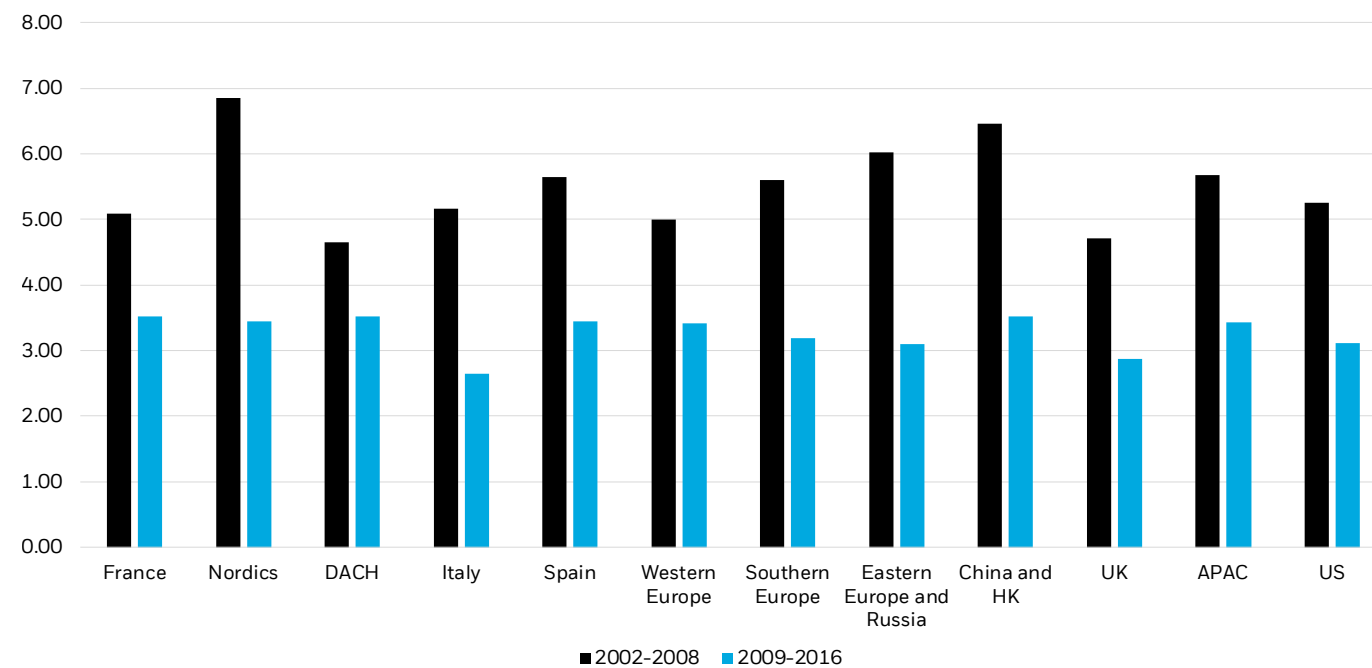
Analysis using IRRs

Given the time-weighted nature of IRRs, it is helpful to consider the speed at which different regions return capital.

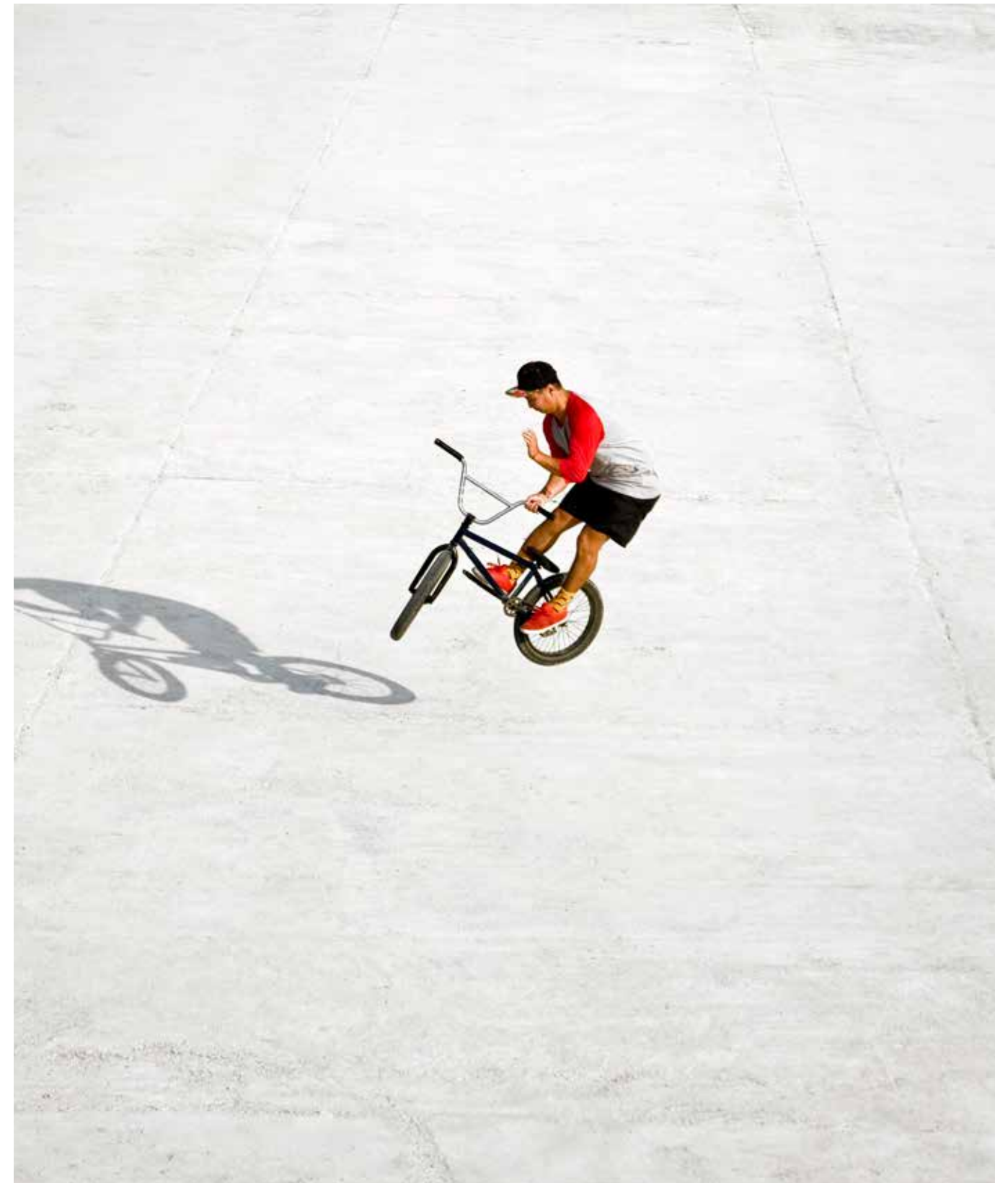
As in the previous edition, we are using the global financial crisis as the cut-off point. There was a rise in both IRR and multiples of investment between 2002 and 2008. A sharp drop in valuations in 2008 was subsequently followed by expansionary macro policies that prompted a favorable exit market for buyout deals.

A sharp difference in the number of years required to generate liquidity across all geographic markets between the two periods, 2002-2008 and 2009-2016, persists (Fig. 15). Before the global financial crisis, the duration of an LBO investment was 5.5 years, while at present, it takes only 3.3 years for an average global LBO fund to generate liquidity. Two standard explanations emerge. First, some investments made by the second group are probably very recent, and thus skewing the data, as the cut-off date is close to the investment date. Also, funds of the first group are likely to have delayed their exits, waiting for a recovery after the 2008-2009 crisis.

Figure 15 – Time-to-liquidity of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019



2.3 LEVERAGED BUYOUT FUNDS

Analysis using multiples of investment (TVPI)

Using TVPI multiples strengthen the link between selection risk and performance of the global LBO market. Contrasting with the results using IRRs, regions are grouped closer to the trendline when using multiples of invested capital.

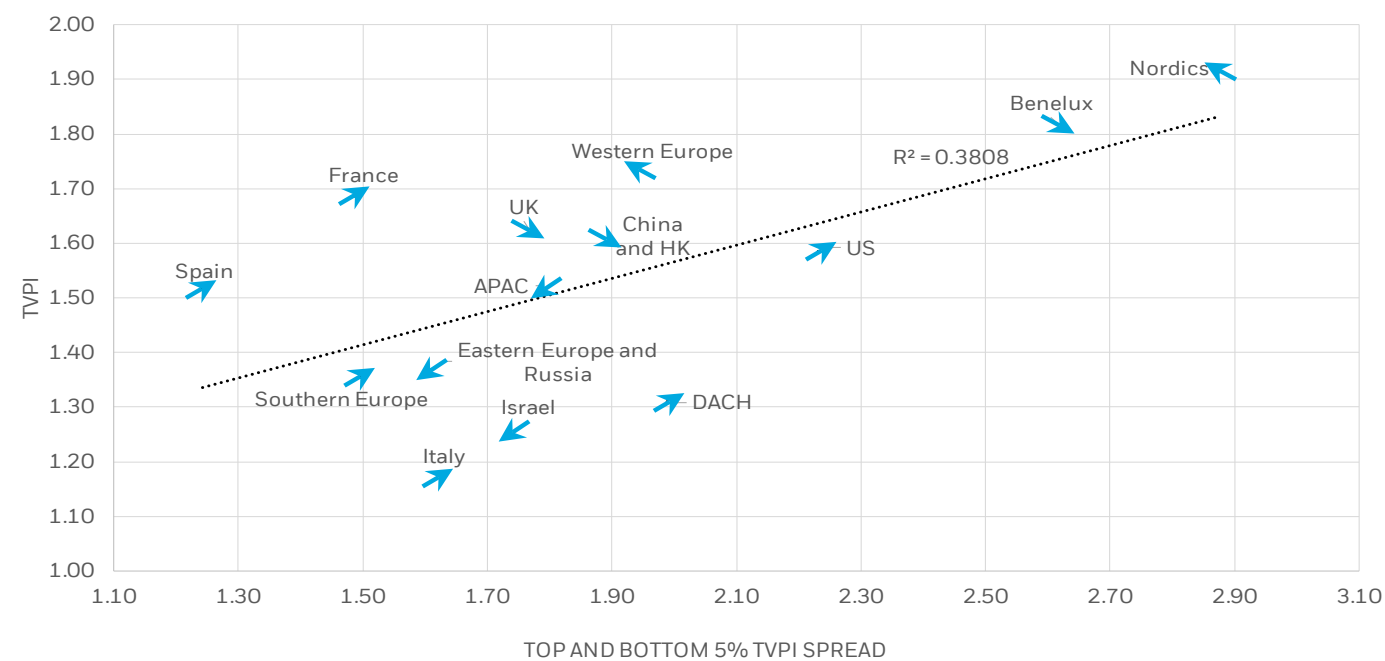
Among the well-positioned markets, France had the best year, with a TVPI improving by 0.08x to reach 1.69x. This was driven by realizations, with the average maturity of the French LBO funds increasing by six percentage points. Bottom quartile funds did not keep pace with their better-performing peers, thus widening the spread associated with most frequent selection risk (Fig. 17).

The performance of Chinese and Hong Kongese, as well as Benelux LBO funds slightly contracted to respectively 1.60x and 1.81x. As Chinese and HK funds mature further, their average TVPI could increase further from an already strong performance.

Overall, Western European LBO funds improved further by increasing their performance and decreasing selection risks, further away from an already favourable position above the trendline. US funds remained stable in terms of TVPI, set at 1.58x in 2019.

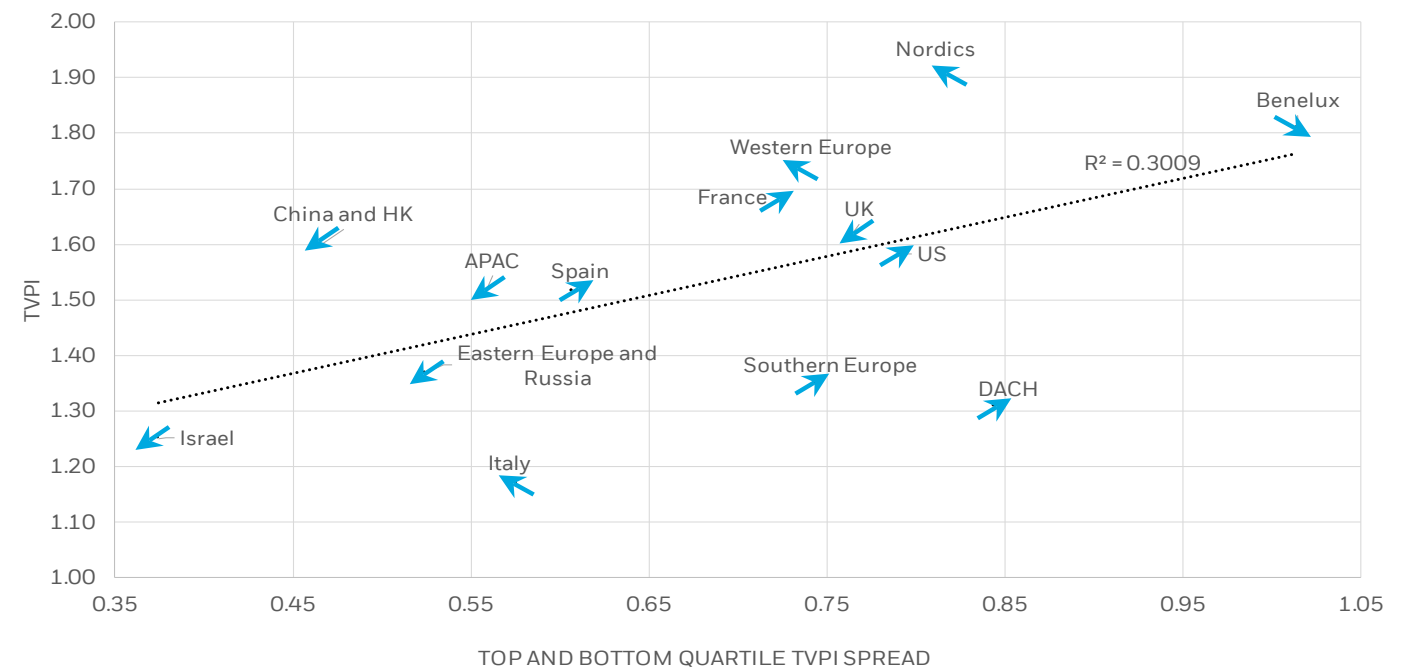
In 2018, Spain and Southern Europe recorded the lowest extreme selection risks of the sample. This is still the case in 2019, but the spread increased respectively by 0.15x and 0.01x. They are still both placed at the most conservative end of the extreme selection risk spectrum (Fig 16).

Figure 16 – Risk (5%) and return (TVPI) analysis of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 17 – Risk (25%) and return (TVPI) analysis of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.3 LEVERAGED BUYOUT FUNDS

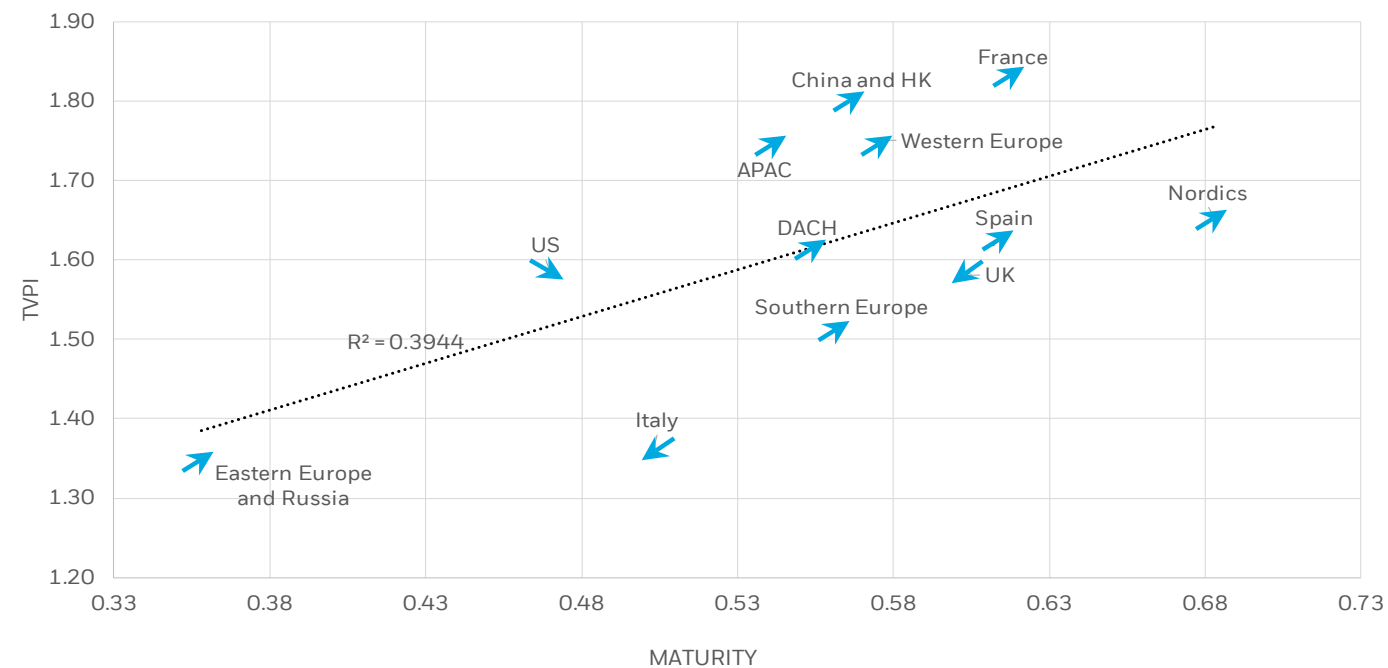
Analysis using multiples of investment (TVPI)

2019 was a great year for exits in most of the regions. The maturity of the French market grew from 43% to 62%, pointing at a strong level of realisations (Fig. 18). The Nordics region also recorded a dramatic increase from 50% to 68%, while Spain reached 61% from the last year's 49%. In the case of Eastern Europe and Russia, the increase was from 30% to 36%. China and HK, often considered as a less mature markets, are catching up with an increase of fund maturity from 51% to 57%.

Figure 19 illustrates a very strong positive relationship between the most frequent selection risk and maturity of the funds. As funds distribute, their true performance crystalizes and the dispersion increases. As distributions increase, the most visibly affected are top-quartile funds, which experience a relatively stronger performance improvement than their bottom-quartile peers.

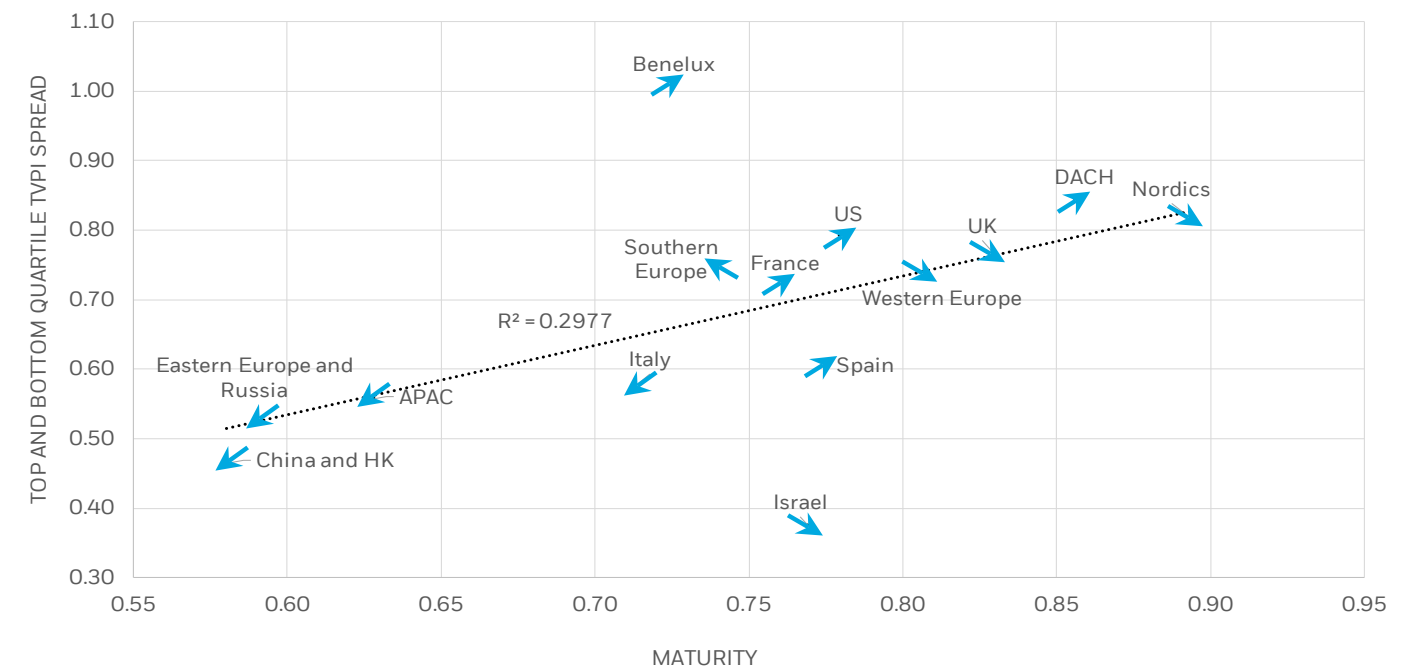
Developed LBO markets such as the US, the UK, and Western Europe in general did not experience any significant change in maturity. This is due to their long history of LBO activity and large sample sizes (including a significant share of liquidated funds). A shift in the average figures would require a significant market disruption.

Figure 18 – Performance and maturity of LBO funds by geographical area – Vintage years 2009-2016



Source: eFront Insight, As of Q4, 2019

Figure 19 – Risk (25%) and maturity of LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

2.3 LEVERAGED BUYOUT FUNDS

Active vs. Liquidated

Figures 20 and 21 provide a comparison of active and liquidated LBO funds. As a first observation, fully realized funds are aggregated closer to the trendline with a lower dispersion. Active funds are much more spread around. If this is confirmed as funds mature, this would mark a significant market shift.

Among the significant developments in 2019, the TVPI of the DACH-focused and fully realized funds decreased from 1.4x to 1.12x. Realized funds newly added to the liquidated sample offered a disappointing performance. As these

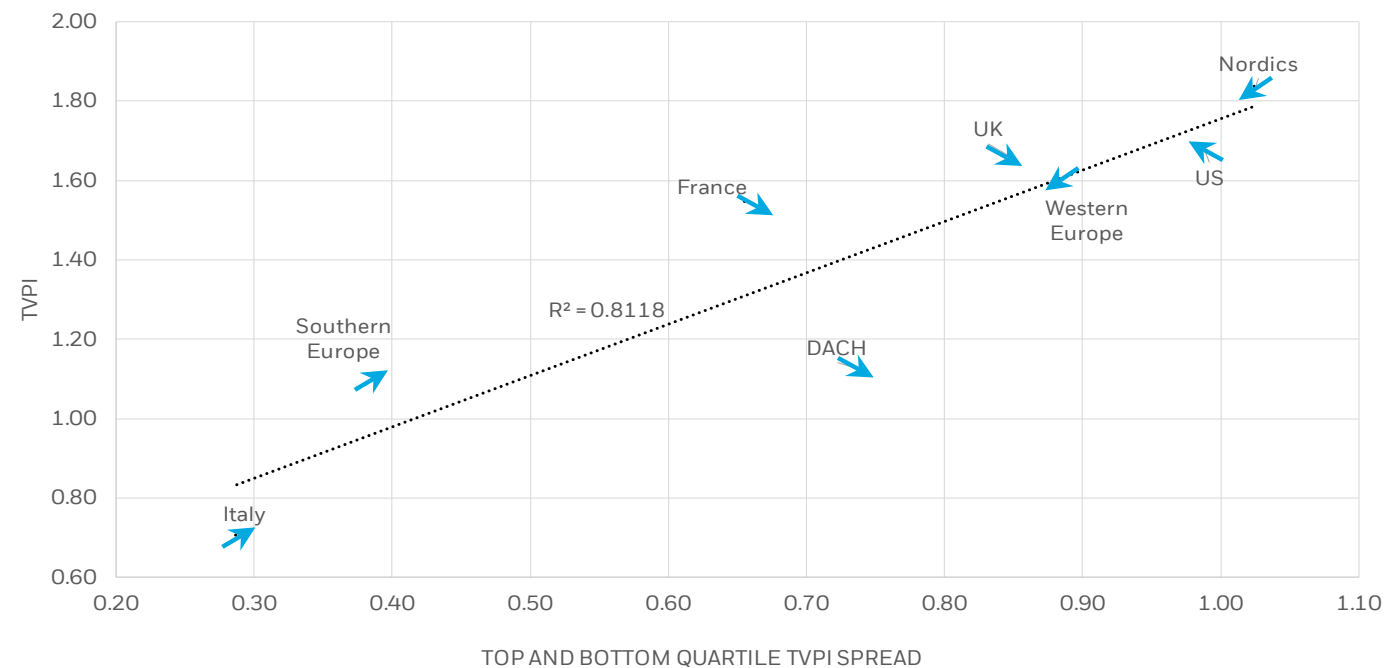
funds left the pool of active funds, the TVPI of the latter increased by 0.31x. The shift of poor performers from active to liquidated status in 2019 has significantly changed the overall performance picture for the two groups.

The pool of liquidated funds focused on the South European LBO deals saw their average TVPI increase by 0.1x to 1.1x.

Looking at the universe of active funds, Nordic and French LBO funds improved markedly their TVPI to respectively 1.96x (+0.09x) and 1.71x

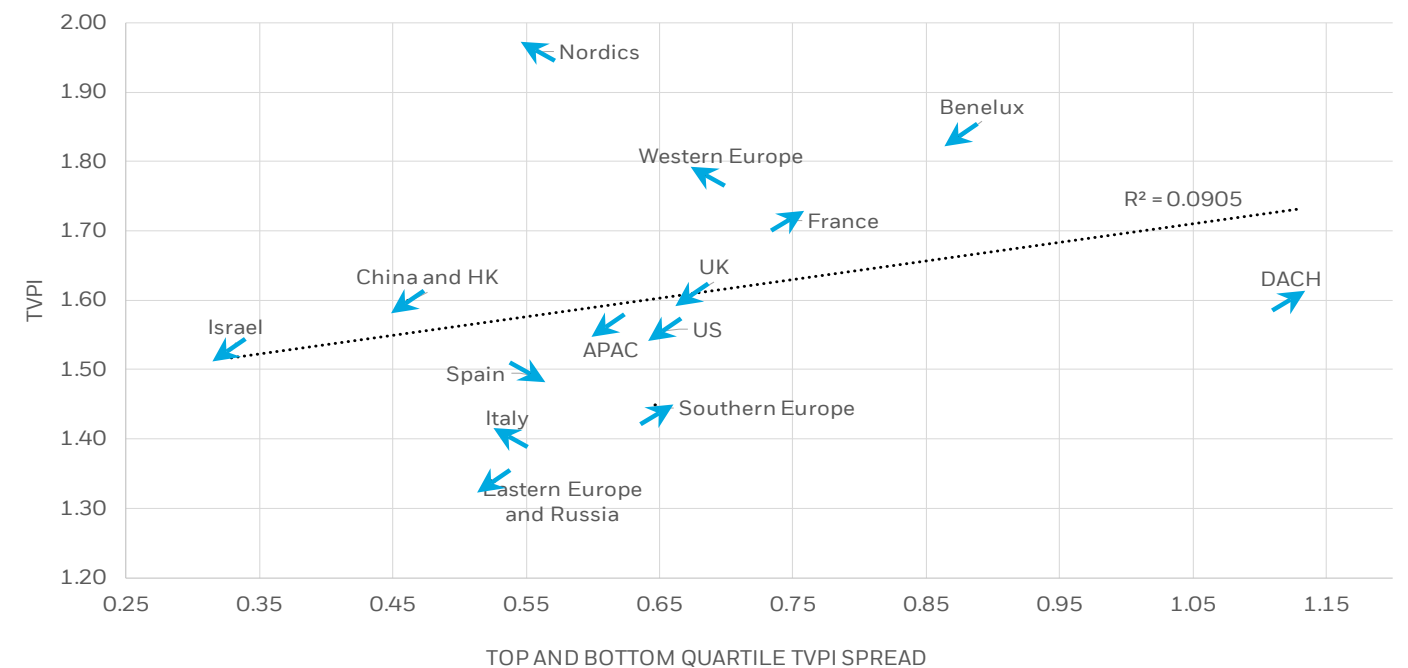
(+0.10x). Nordic funds also registered a decrease in the most frequent selection risk, thus further strengthening their status as the market with the best risk-return profile. Although LBO funds in developed markets, such as the UK and the US, experienced slight reduction in performance, they kept their position around the trendline.

Figure 20 – Risk (25%) and return (TVPI) analysis of fully realized LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

Figure 21 – Risk (25%) and return (TVPI) analysis of active LBO funds by geographical area



Source: eFront Insight, As of Q4, 2019

| METHODOLOGY



Methodology

Fig. 1 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the average IRR of the top 5% performers and the average IRR of the bottom 5% performers as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, both LBO and VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of private equity investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 2 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the IRR of the top quartile performer and the IRR of the bottom quartile performer as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, both LBO and VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of private equity investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 3 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the average TVPI of the top 5% performers and the average TVPI of the bottom 5% performers is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, both LBO and VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of private equity investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 4 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, both LBO and VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of private equity investments in each geographical region. The direction of the arrows

points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 5 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the average IRR of the top 5% performers and the average IRR of the bottom 5% performers as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of venture capital strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 6 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the IRR of the top quartile performer and the IRR of the bottom quartile performer as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of venture capital strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest,

that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 7 is based on the calculated Time-to-liquidity (measured as a function of TVPI and IRR, to extract the time necessary to achieve the second from the first). The purpose is for each geographical group of funds, to identify the time necessary to generate liquidity, whether through exits, dividend recaps, but also write offs and compare it with other geographical groups. Two subsamples of funds are included in the analysis. The first subsample includes the funds of the vintage years (2002-2008) and the second one the funds of the vintage years (2009-2016). In terms of the strategy, only VC funds are represented in the figure.

Fig. 8 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the average TVPI of the top 5% performers and the average TVPI of the bottom 5% performers is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of venture capital strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

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Fig. 9 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of venture capital strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 10 is based on the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer, which is used as a measure of fund selection risk, and the Maturity of a fund, which is calculated as a ratio of the capital distributed (distributed to paid-in, DPI) and TVPI. This pool of funds includes both active and liquidated funds. All available vintages are included in the analysis. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to represent the relation between the maturity of funds in each geographical group and the level of selection risk involved with investing in those funds. The direction of the arrows points to the change in the risk and maturity that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk

and maturity in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 11 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. This pool of funds is restricted to those that are still active. All available vintages of active funds are included in the analysis. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-return profile of unrealized venture capital funds in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 12 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. This pool of funds is restricted to those that are fully realized. All available vintages of liquidated funds are included in the analysis. In terms of the investment strategy, only VC funds are represented in the figure. The purpose is to exhibit the risk-

return profile of fully realized venture capital funds in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 13 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the average IRR of the top 5% performers and the average IRR of the bottom 5% performers as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of buyout strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 14 is based on Internal rate of return (IRR) as a measure of return performance and the difference between the IRR of the top quartile performer and the IRR of the bottom quartile performer as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average IRR is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of buyout strategy investments in each geographical region. The direction of the arrows points to the change in

the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 15 is based on the calculated Time-to-liquidity (measured as a function of TVPI and IRR, to extract the time necessary to achieve the second from the first). The purpose is for each geographical group of funds, to identify the time necessary to generate liquidity, whether through exits, dividend recaps, but also write offs and compare it with other geographical groups. Two subsamples of funds are included in the analysis. The first subsample includes the funds of the vintage years (2002-2008) and the second one the funds of the vintage years (2009-2016). In terms of the strategy, only LBO funds are represented in the figure.

Fig. 16 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the average TVPI of the top 5% performers and the average TVPI of the bottom 5% performers is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of buyout strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over

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the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 17 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. For each geographical group of funds of all the vintages available, the average TVPI is calculated. This pool of funds includes both active and liquidated funds. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of buyout strategy investments in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 18 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date and Maturity, which is calculated as a ratio of the capital distributed (distributed to paid-in, DPI) and TVPI. The fund's maturity reflects the portion of the total value generated for the investor that has already been distributed in a form of cash. The pool of funds is restricted to those of the vintage years (2009-2016). In terms of the strategy, only LBO funds are represented in the figure. The purpose is to exhibit the relation between the maturity of the group

of funds and their performance. The direction of the arrows points to the change in the return and maturity that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both return and maturity in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 19 is based on the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer, which is used as a measure of fund selection risk, and the Maturity of a fund, which is calculated as a ratio of the capital distributed (distributed to paid-in, DPI) and TVPI. This pool of funds includes both active and liquidated funds. All available vintages are included in the analysis. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to represent the relation between the maturity of funds in each geographical group and the level of selection risk involved with investing in those funds. The direction of the arrows points to the change in the risk and maturity that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and maturity in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 20 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. This pool of funds is restricted to those that are fully realized. All available vintages of liquidated funds are included in the analysis. In terms of

the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of fully realized buyout funds in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

Fig. 21 is based on a multiple of invested capital (total value to paid-in, TVPI), defined as the sum of capital distributed and the residual net asset values, in relation to the total amount of capital paid-in to the fund up to date. TVPI is used as a measure of the performance of the funds, whereas the difference between the TVPI of the top quartile performer and the TVPI of the bottom quartile performer is used as a measure of fund selection risk. This pool of funds is restricted to those that are still active. All available vintages of active funds are included in the analysis. In terms of the investment strategy, only LBO funds are represented in the figure. The purpose is to exhibit the risk-return profile of unrealized buyout funds in each geographical region. The direction of the arrows points to the change in the risk and return that occurred over 2019. For example, if the arrow is pointed toward southwest, that indicates that both risk and return in a given region have reduced over the past year. The size of arrows is not indicative of magnitude of the change.

The aim of this report is to provide readers with elements of analysis and understanding of the private finance universe, based only on data collected by eFront Insight. It does not intend to draw any definitive conclusion, nor judge the performance of fund managers.

By providing a guided reasoning, this report hopes to contribute to the overall progress of understanding of the asset class in an annual format, with all the limits that this entails.

How eFront Insight Can Help Limited Partners in Downturns

This paper was produced using eFront Insight which offers data services that collect and validate cash-flows from thousands of unique funds that are then used on an anonymized basis to generate net return calculations and provide an Industry benchmark.

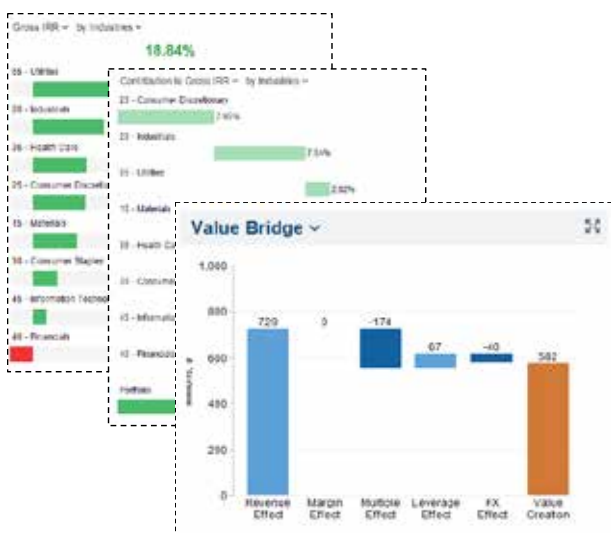
Additionally, eFront Insight provides Limited Partners with a rich data set relating to their portfolio funds and underlying holdings, sourced directly from General Partners and enriched with 3rd party feeds including Public indices, and media sources.

This data set can be interrogated via eFront Insights powerful UI consisting of out of the box analytics, configurable tear sheets, and API interoperability.

Limited Partners are leveraging the platform to generate superior insight regarding Private Markets as a whole, via the industry benchmark, and through unrivalled detail and transparency in relation to their performance and exposures across all investment levels.

The data and toolkit available within eFront Insight enables Investors to assess the constituents of their private market exposure, and attribute performance across multiple dimensions, enabling the assessment of drivers and effects created through changing market conditions and the private market correlations to public markets.

Company level financial data provides sophisticated value creation bridge analysis at the underlying holdings level enabling LPs to evaluate the impact of operational changes and macroeconomic events on the residual value in their portfolios.



TO LEARN MORE ABOUT EFRONT INSIGHT, **DOWNLOAD THE BROCHURE** OR **CONTACT US.**

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