Wellershoff & Partners

Measuring risk in private markets

Prof Dr Cyril Demaria

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Prof Dr Cyril Demaria

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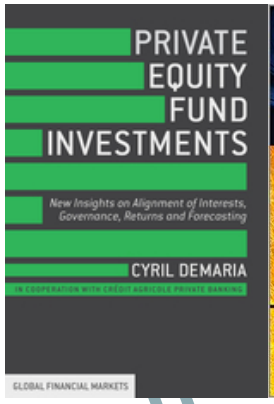
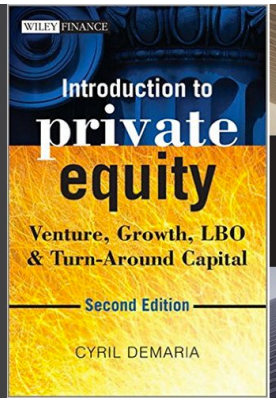
20 years of experience in private markets

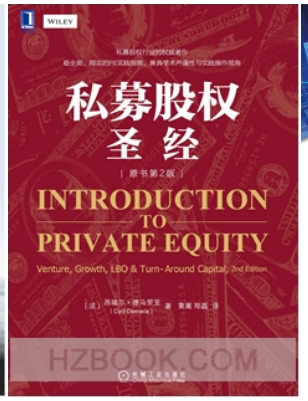
- Research: Executive director in charge of private markets research, UBS WM CIO
- Investments: venture capital fund manager, former CIO of Tiaré Investment Management AG
- Advisor to the President of CASDEN-Banque Populaire, a Swiss pension fund and a MFO
- Expert for SECA, France Invest, InvestEurope and CAIA

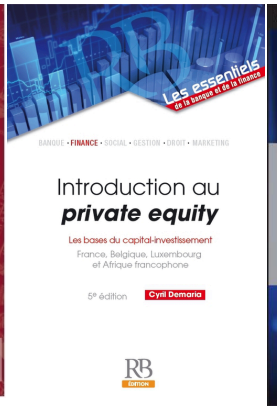
Six books on private equity, among which:

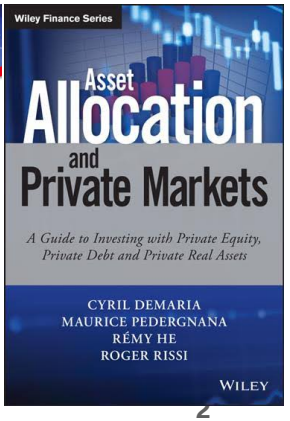
- *Introduction to private equity*, Wiley, 2020, 3d ed. (trans.: Portuguese, Spanish and Mandarin)
- *Asset allocation and private markets*, Wiley, forthcoming 2020
- *Private equity fund investments*, Palgrave, 2015











Agenda

Measuring risk in private markets

1. Asset price volatility is irrelevant to measure risk
2. What matters: potential losses
3. Strategy- and execution-related risk
4. Selection risk
5. What about... liquidity risk?
6. Conclusion

Asset price volatility is irrelevant to measure risk

Not only in private markets, but also in general

Volatility of asset prices is irrelevant to measure risk

Used as a measure of risk, asset price volatility assumes:

- Frequent and seamless tradability (so-called « liquidity »)
- Normal distributions of returns (to run simulations such as Monte-Carlo)

➔ Not applicable to private markets

➔ Instruments used for listed assets are not relevant (nor Sharpe ratios, etc.)

Private market assets are « less liquid » by construction

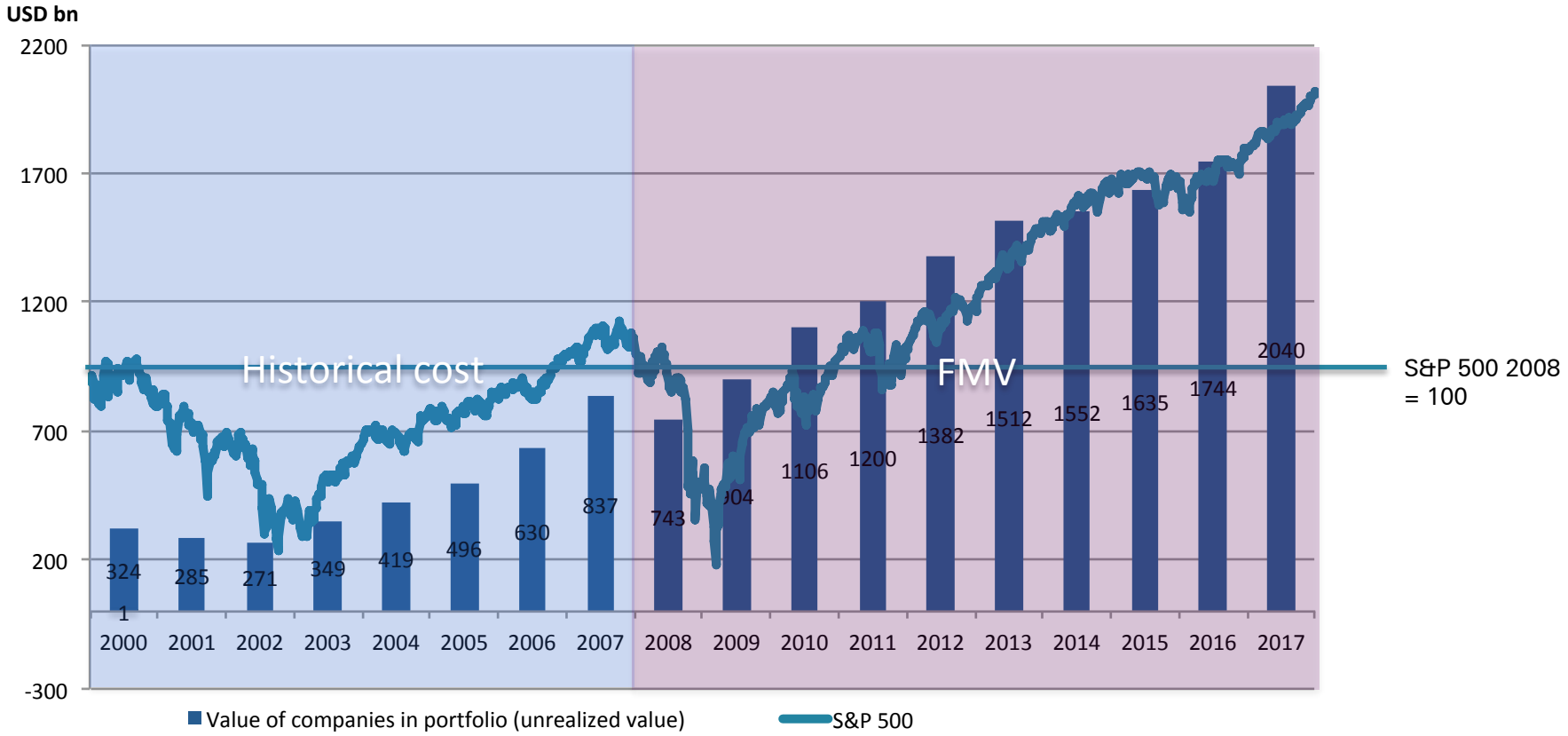
- The liquidity horizon is the **third dimension of investing** (next to risk & return)
- Liquidity horizons are predictable: **the variability around them is the actual risk**

➔ **Focus on what matters to investors: losses of capital and variability of results**

- How much capital could I loose? (simplified value-at-risk assessment)
- How do returns evolve due to macro and other factors? (strategy assessment)
- What is my selection risk? (skillset assessment)
- What is the actual evolution versus the plan? (execution & liquidity risk)
- (Other, yet to be defined: credit risk for leveraged strategies?)

PE: less volatile than the stock exchange

Compared quarterly evolution of major stock indexes and PE NAV



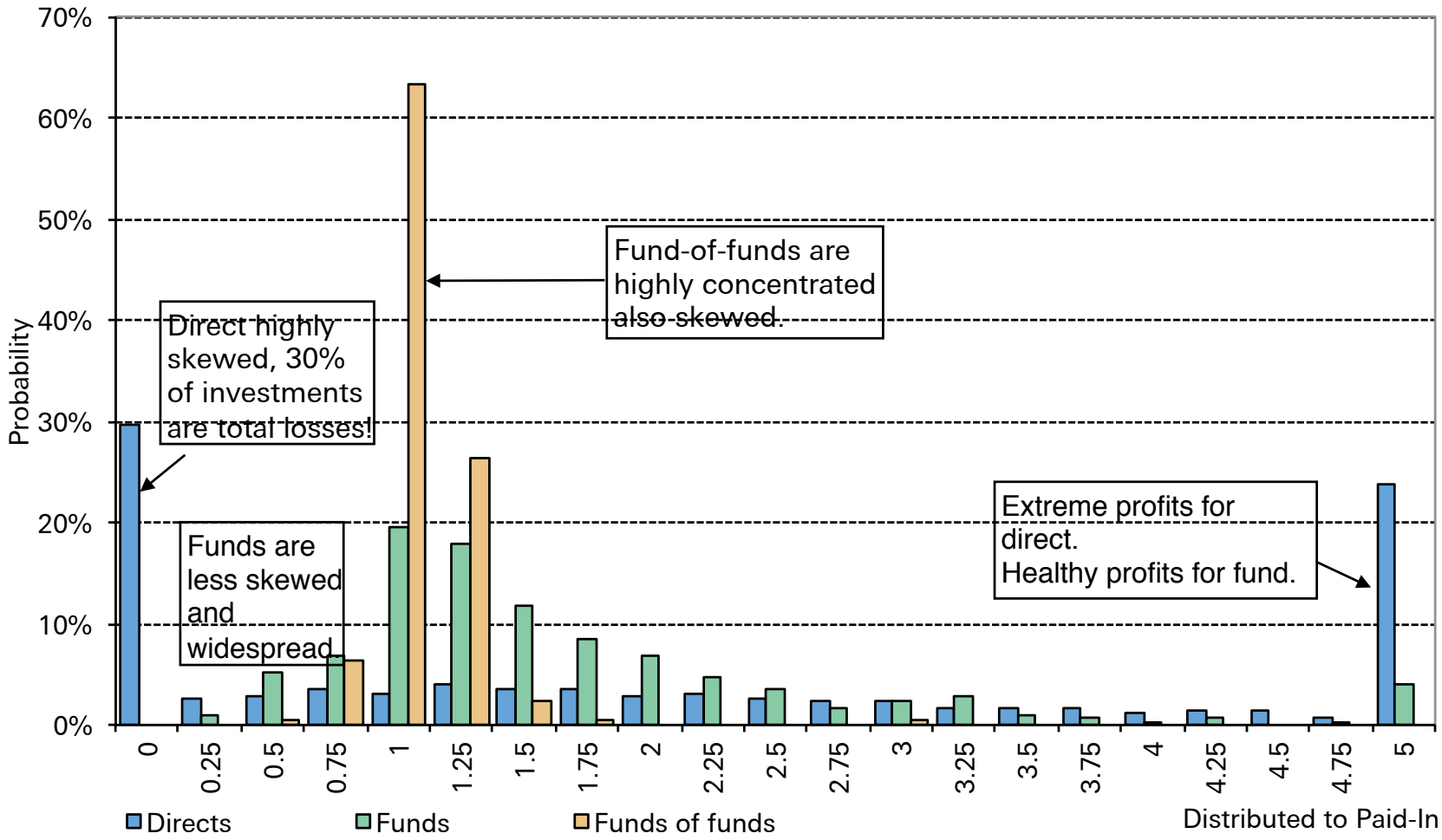
- Since 2007, LBO and Growth capital funds apply mark-to-market rules
- VC, distressed debt and turn-around capital keep the historical cost rule

➔ Volatility is not a relevant measure of risk in PE (illiquidity + fund shield)

Source: Preqin, S&P, Wellershoff & Partners, 2018.

Performance distribution is not normal

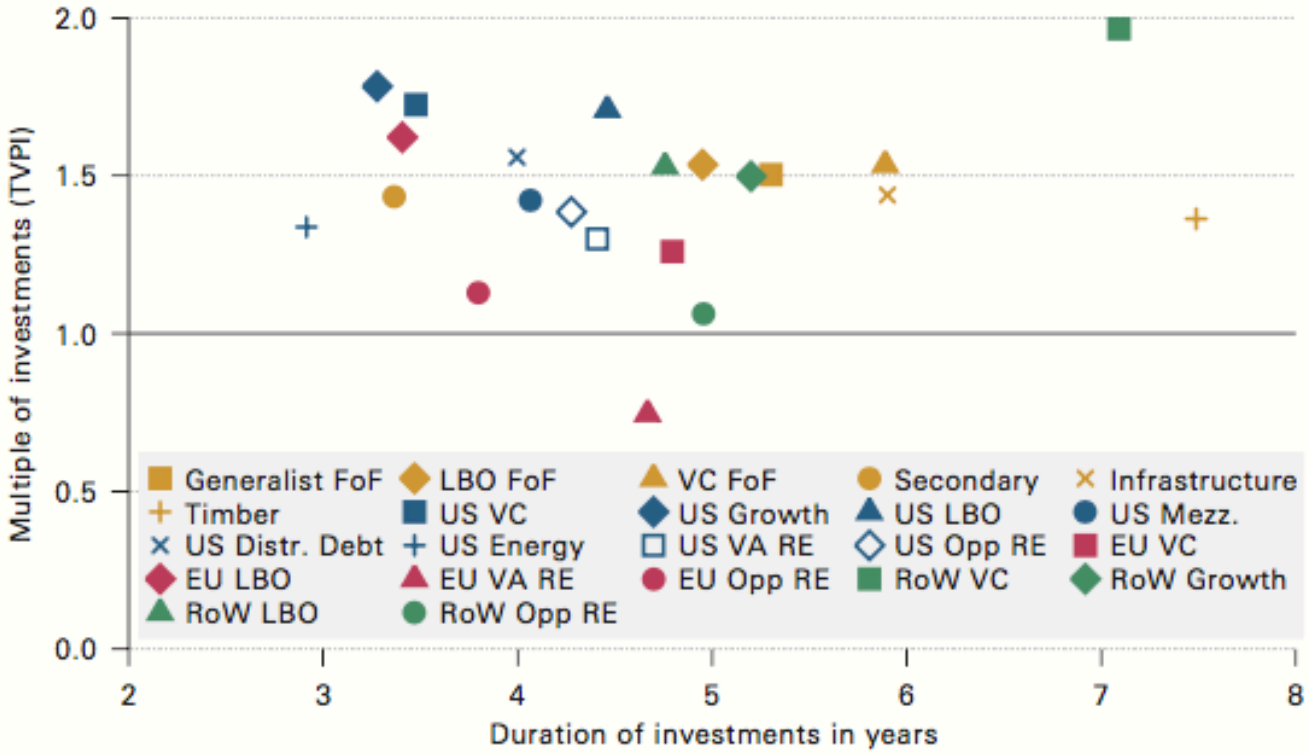
Dispersion of returns in VC direct (US), funds (Europe) and funds of funds (generalist)



Sample: 5000 direct US investments. 300 European VC funds and 618 funds of funds.
Source: Weidig & Mathonet/Thomson VentureXpert, 2003, Wellershoff & Partners/Cambridge Associates, 2017.

The third dimension of investment: liquidity horizon

Dispersion of PE strategies based on their performance and duration



"FoF": funds of funds
"VC ": venture capital
"LBO": leveraged buy-out
"mezz.": mezzanine
"Distr.": distressed
"Opp": opportunistic
"RE": real estate
"VA": value add
"RoW": rest of the world

Colour coding: yellow is global, blue is USA, red is Europe, green is rest of the world.

- PE: time-to-liquidity is generally of 3.5 to 5.5 years
- Possibility to assess the historical and current variation around the reference point

➔ Portfolio construction can benefit from using this dimension

Source : Cambridge Associates, Wellershoff & Partners, 2017.

Consequences

Misleading notions of "illiquidity risk" and "illiquidity premium" to be given up

- "Illiquidity risk" refers to variable and unpredictable shifts in tradeability of assets ➔ not applicable to private markets
- "Illiquidity premium" refers to reward for investors giving up their ability to freely trade assets (fixed income) ➔ not applicable to private equity/real assets

Sources of risk are to be found elsewhere

➢ **Measurable**

- **Historical losses** (frequency and amount)
- **Divergence** from average: pooled returns, top/bottom performers, vintage, liquidity

➢ **More difficult to assess**

- Concentration and contagion risk (diversification)
- Behavioural biases (home, prospect theory, overconfidence, timing, fashion/fads, representativeness, aversion to ambiguity, under-reaction to information, noise)
- Commitment (intrinsic risk)

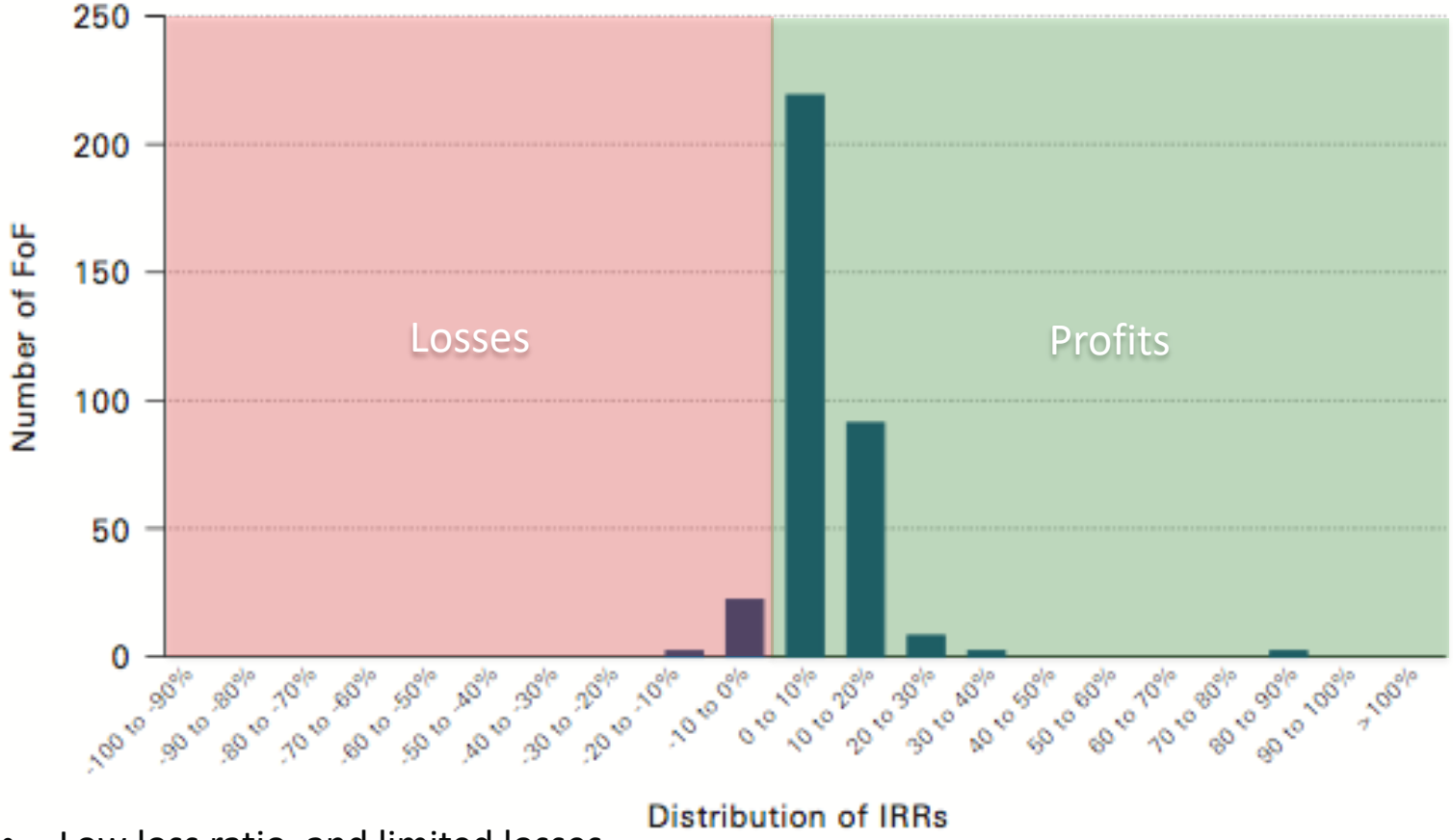
What matters: potential losses

Assessing frequency and amounts at stake

Frequency and losses in private equity

Using funds-of-funds as a proxy for private equity index-fund

Distribution of private equity funds-of-funds based on their IRR



- Low loss ratio, and limited losses
- PE = less risky than listed assets!

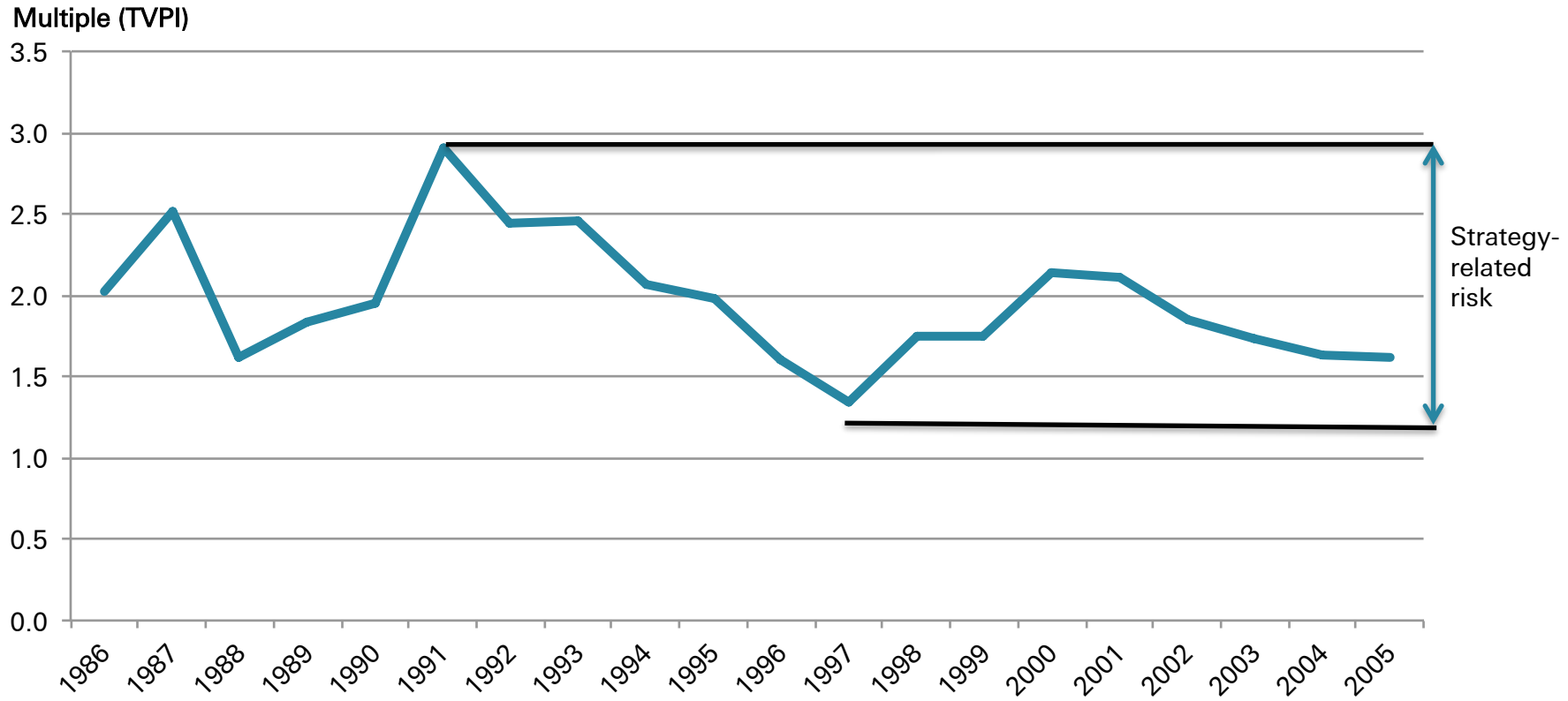
N = 346. Source: Wellershoff & Partners/Cambridge Associates, 2017. Data as of Q2/2016.

Strategy- and execution-related risks

The variation of pooled returns and the divergence of individual vintage years

Strategy-related risk: a macro aspect

Evolution of the pooled average TVPI of global small and mid-size LBO (fully realized)



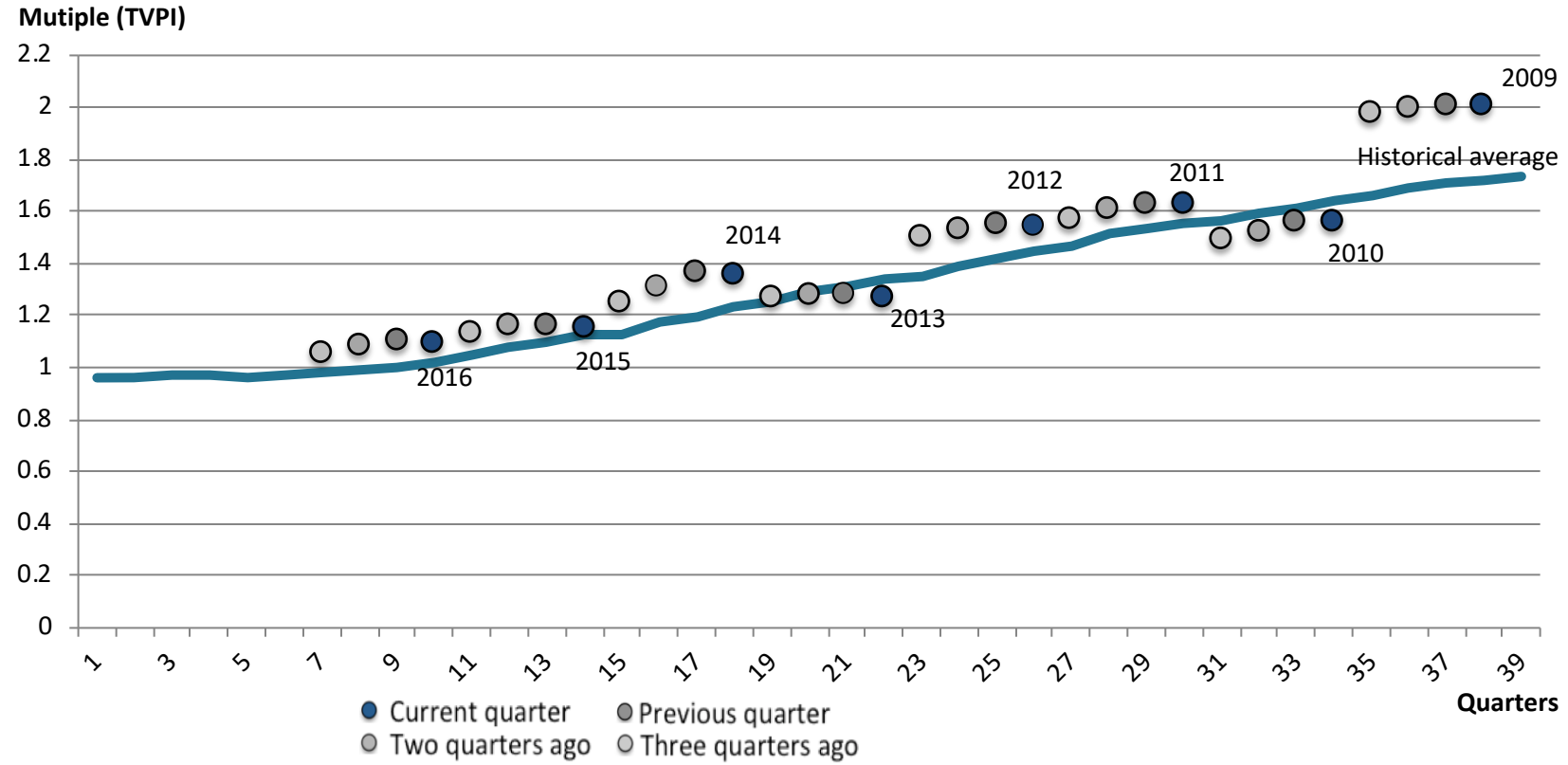
- Significant variation of performance over time (macro-related risk)
- No loss on a pooled-average basis (but CA data is skewed upwards)

➔ Important for portfolio construction and scenario modelling

Source: Cambridge Associates, Wellershoff & Partners, 2018.

Strategy-related risk: individual vintage years

Evolution of the TVPI of active LBO funds compared to historical average



- Tracks active vintage years ➔ benchmarks VY and individual funds
- Usable to assess opportunities on the secondary market as well

➔ Use for tactical purpose and active portfolio management

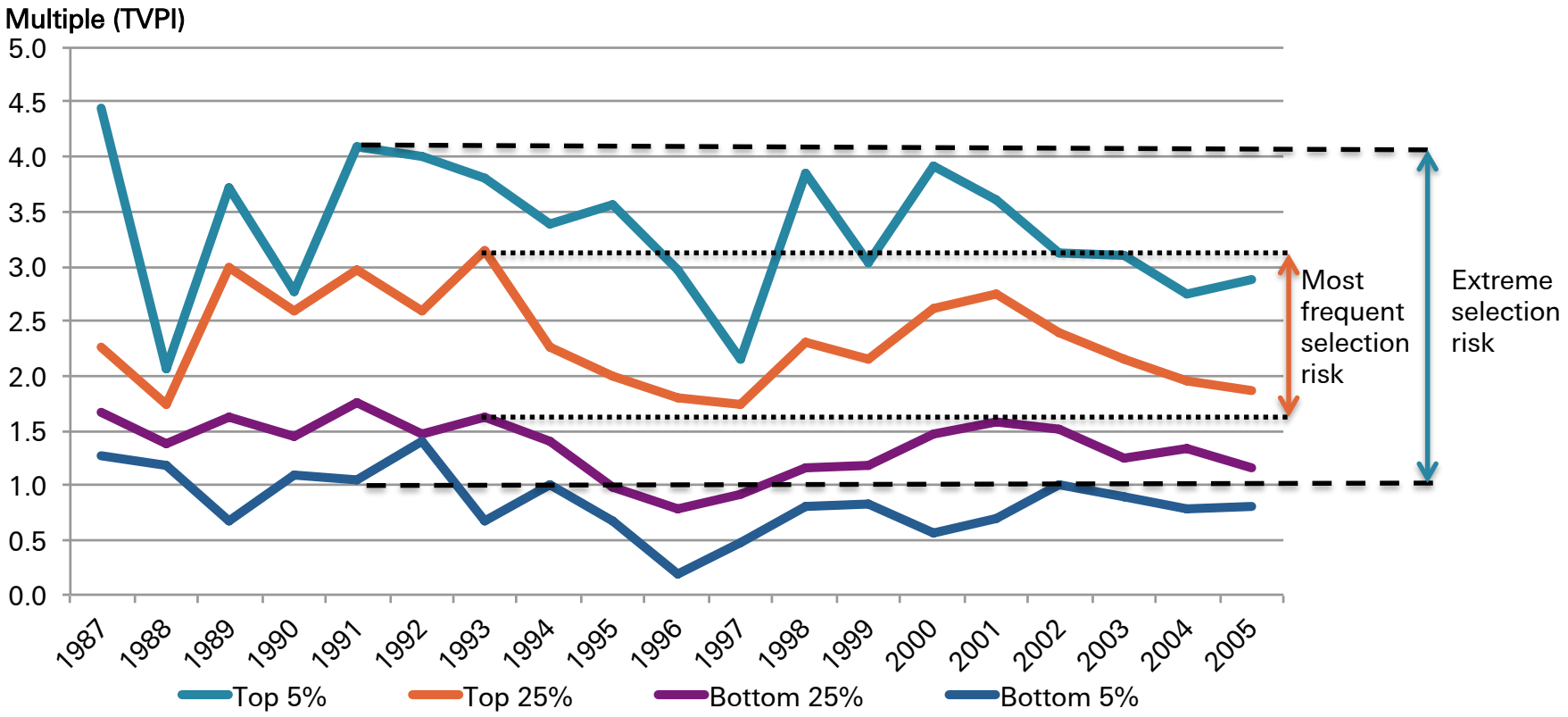
Source: eFront Insight, Wellershoff & Partners, 2018.

Selection risk

Extreme and most frequent selection risk

Assessing selection risk

Evolution of the top/bottom 5% & 25% TVPI of small and mid-size LBO (fully realized)



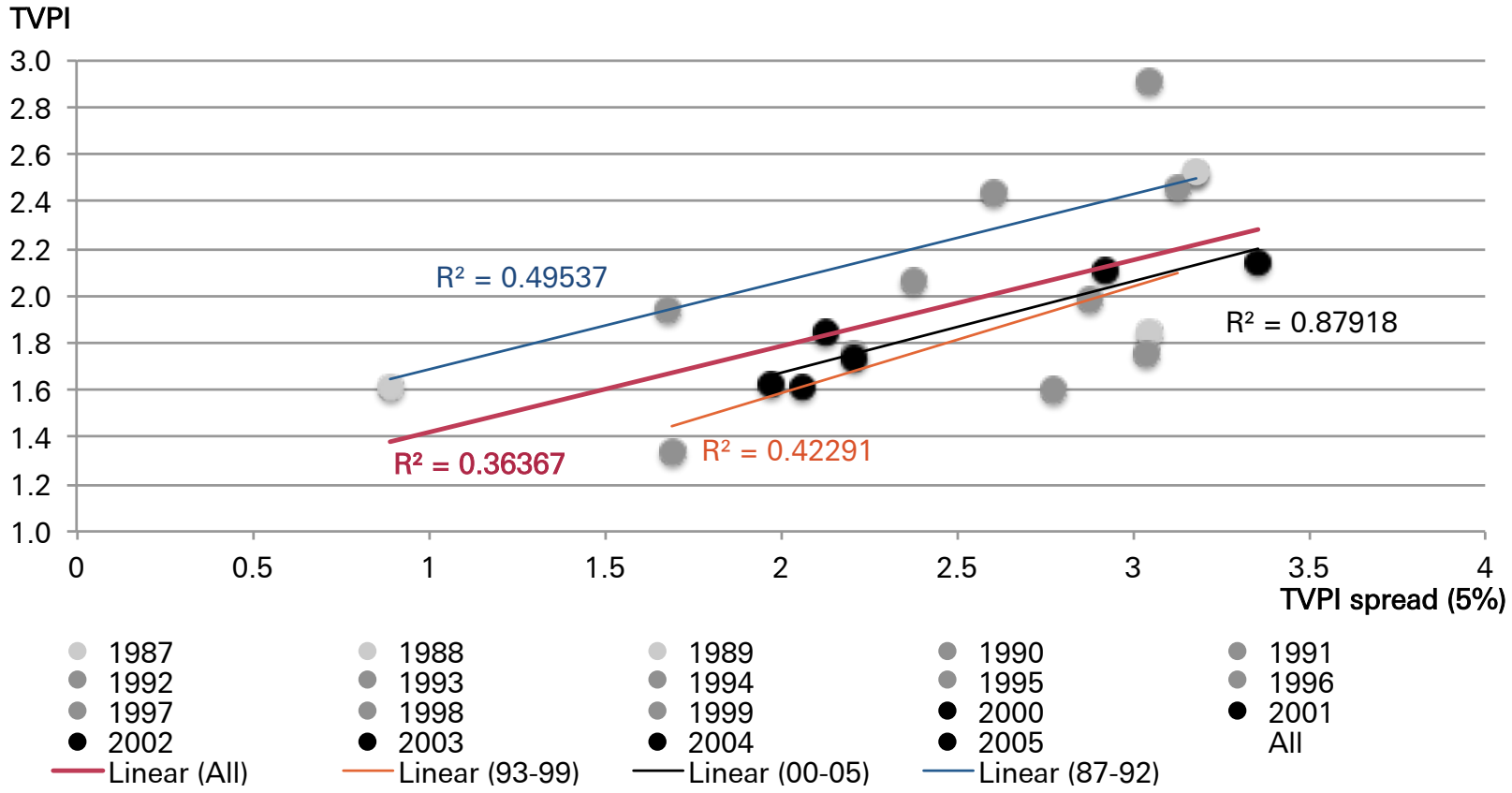
- Selection risk is not symmetrical, nor constant
- Even worse performers can do well… and are more stable ➔ less « risky »?

➔ Higher performers exhibit a higher dispersion

Source: Cambridge Associates, Wellershoff & Partners, 2018.

The acid test: risk and return correlation (1/2)

Correlation of TVPI and TVPI spread (5%) of small and mid-size LBO (1986-2005)



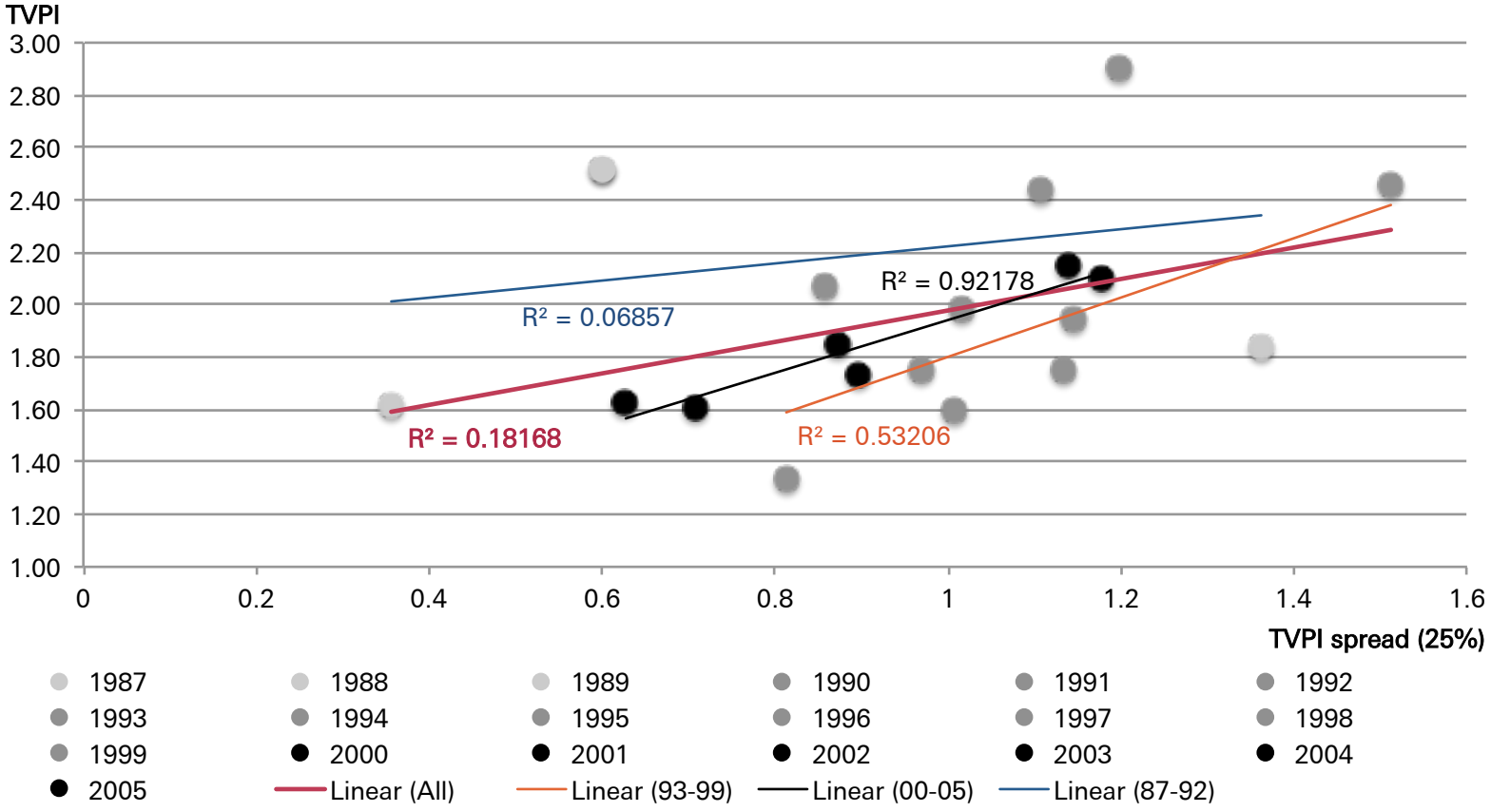
- There is a direct link between TVPI and extreme selection risk
- Risk is related to the maturity of funds ➔ limits the assessment of recent funds

➔ Possible to calculate a simplified/adjusted equivalent of Sharpe/Sortino ratios?

Source: Cambridge Associates, Wellershoff & Partners, 2019.

The acid test: risk and return correlation (2/2)

Correlation of TVPI and TVPI spread (25%) of small and mid-size LBO (1986-2005)



- There is a direct link between TVPI and most frequent selection risk
- As time goes by and the industry matures, the relationship increases

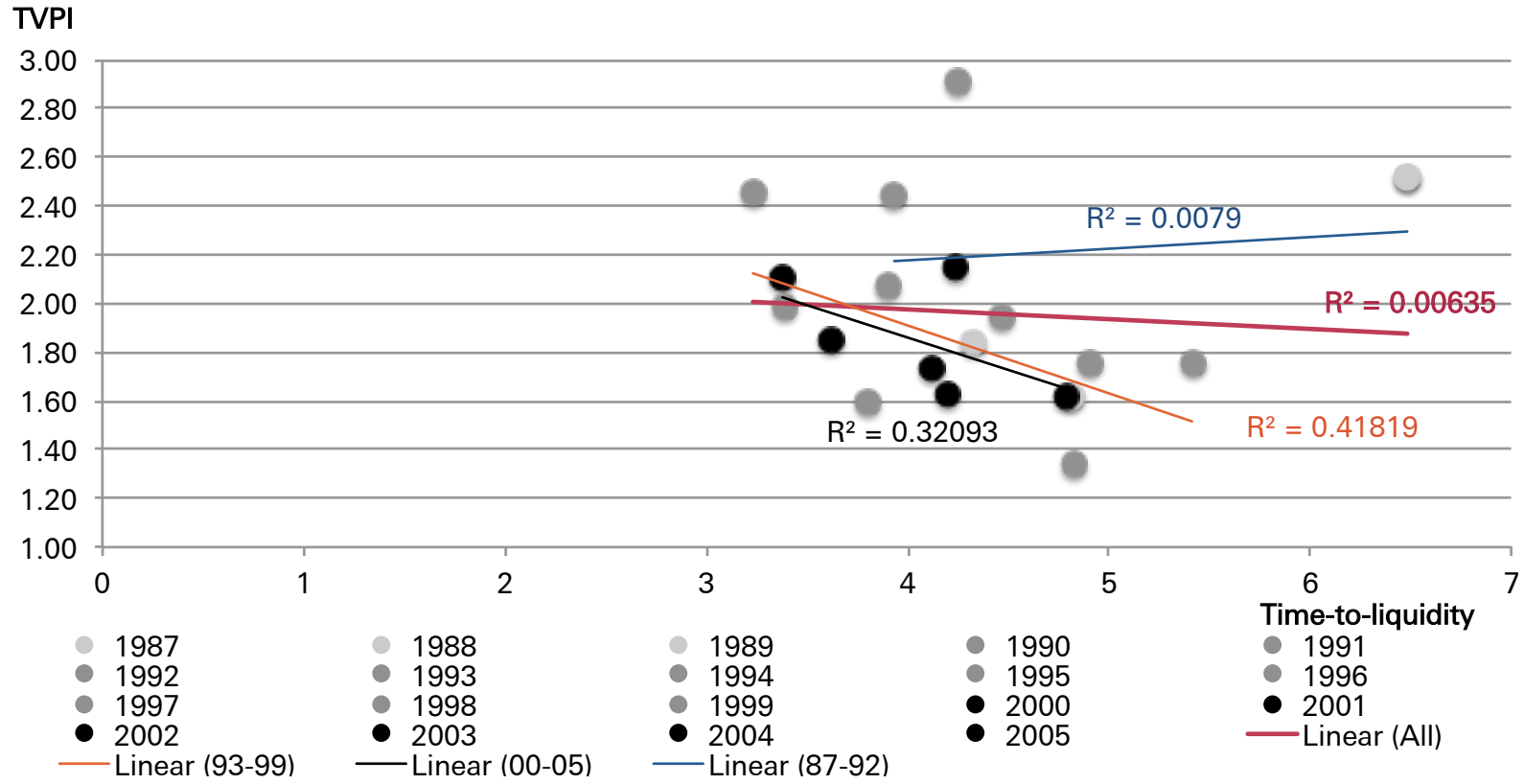
Source: Cambridge Associates, Wellershoff & Partners, 2019.

What about... liquidity risk?

Liquidity is a dimension of investment: risk can be assessed

Liquidity: independent from returns

Correlation of TVPI and time-to-liquidity of small and mid-size LBO (1986-2005)



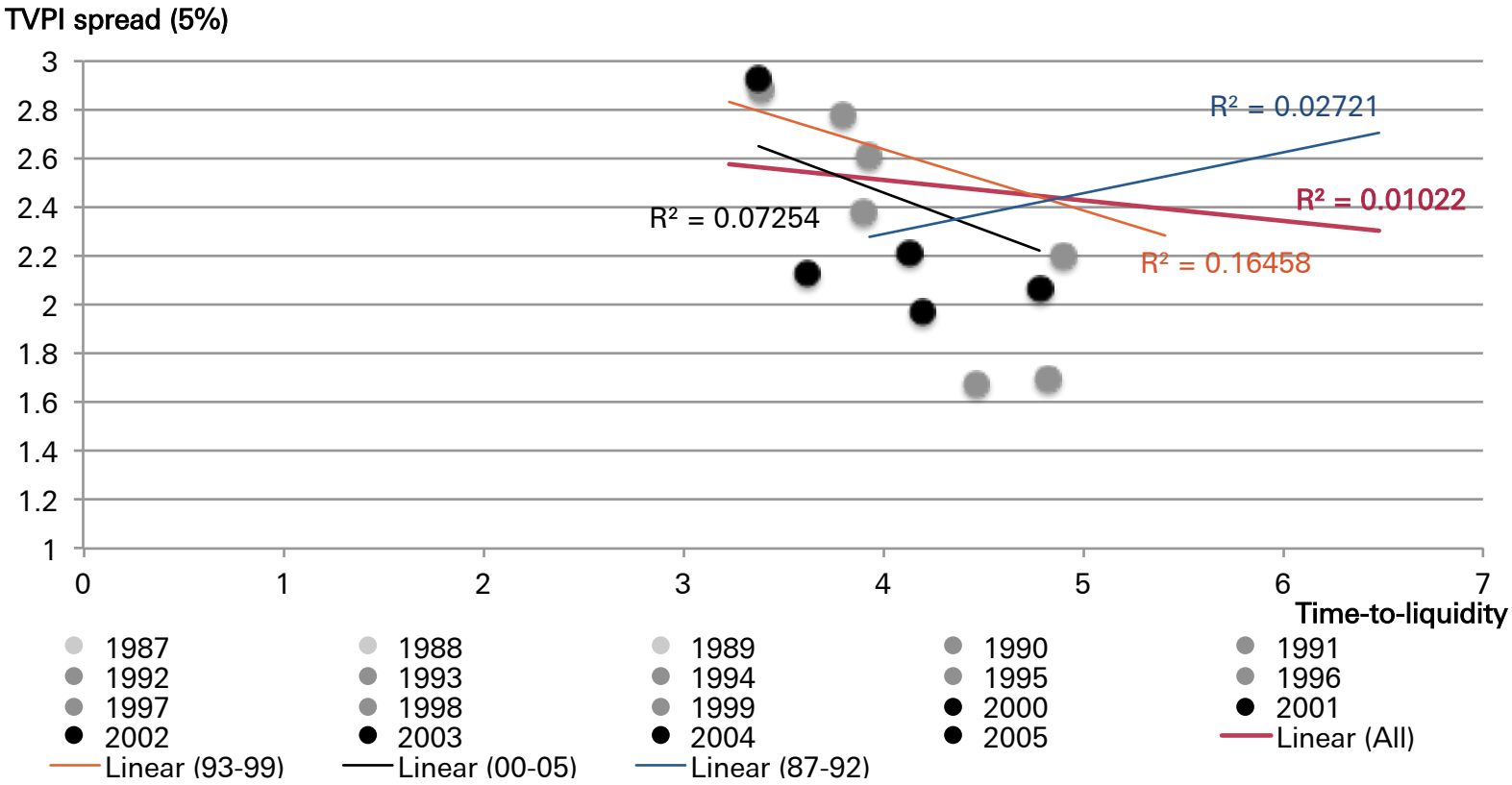
- No relationship between performance and time-to-liquidity

➔ Relationship independent of the period considered

Source: Cambridge Associates, Wellershoff & Partners, 2018.

Liquidity: independent from risks

Correlation of TVPI spread and time-to-liquidity of small/mid-size LBO (1986-2005)



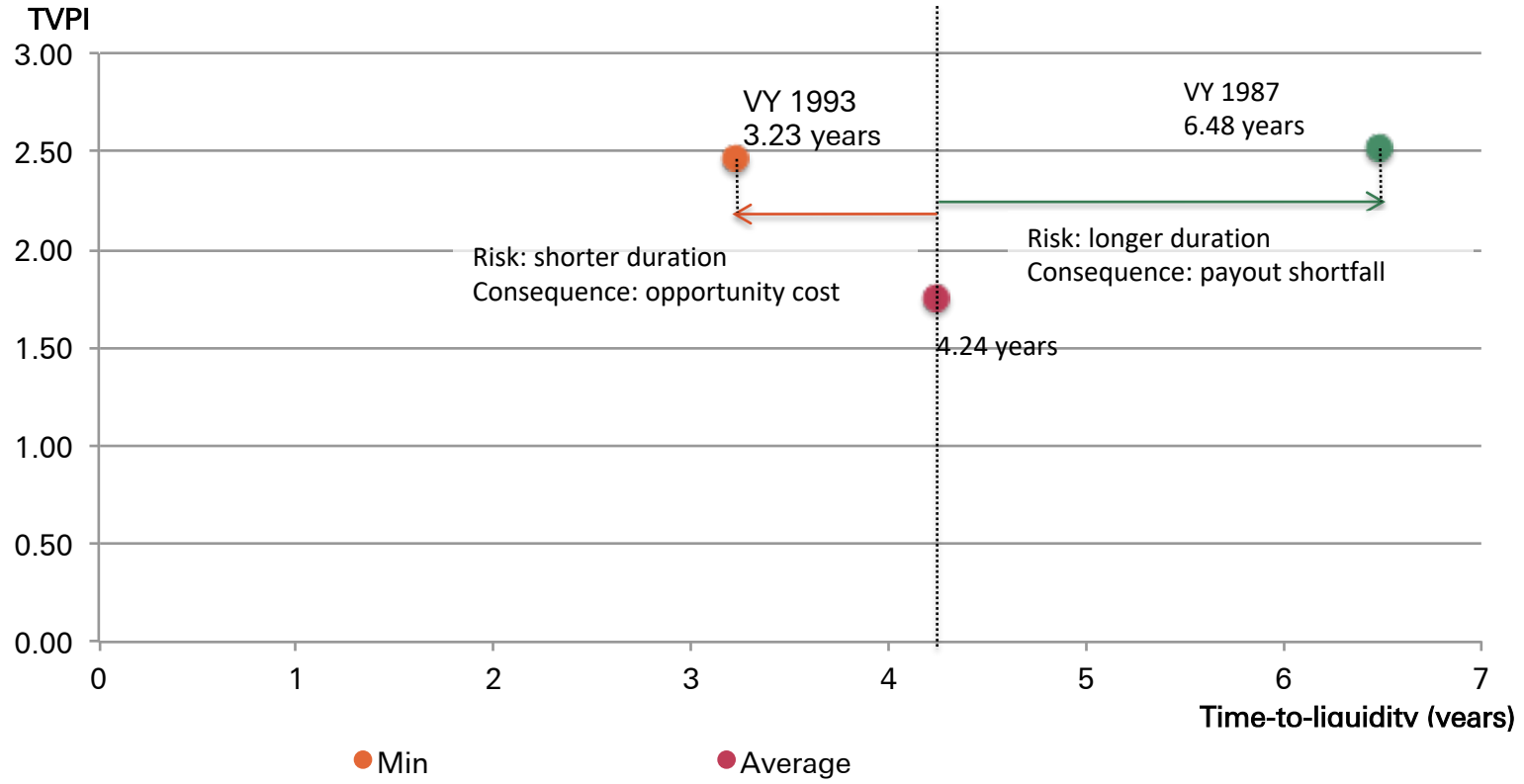
- No relationship between risk and time-to-liquidity

➔ Liquidity is not a risk in itself, but there is a liquidity risk. How to assess it?

Source: Cambridge Associates, Wellershoff & Partners, 2018.

Liquidity: measuring risks

Relationship TVPI and time-to-liquidity of small/mid-size LBO (1986-2005)



- Liquidity risk can be understood as a continuum: 3.23 to 6.48 years
- Average is 4.24 years, the pivot for portfolio construction

➔ Lower and higher liquidity thresholds are the risk to consider

Source: Cambridge Associates, Wellershoff & Partners, 2018.

Conclusion

Conclusion

Positive features of these instruments

- They can be applied to listed assets
- They are compatible with mid- to long-term investment horizons
- They support the set-up of ratios (Sortino equivalent) with bespoke thresholds (0, minimum return)

More pratical measures could be identified

- Concentration risk
- Pro-cyclicality
- Under-reaction
- Vintage auto-correlations

Note: this is a **work in progress**, product of a book under way

Thank you for your attention!