Resetting the Clock on Private Equity Performance

How the DARC methodology applies
fixed income valuation techniques
to private equity to solve its
performance puzzle

This paper illustrates how and why an innovative time-weighted total return performance measurement methodology aims to become a standard to evaluate private market investments. The Duration Adjusted Return on Capital (DARC) explains and overcomes the limitations of the traditional metrics adopted in the industry. It puts private equity in the context of all other asset classes, from the perspective of investors, without compromising its distinctive features. DARC enables perfect apple-to-apple performance comparability.

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Objective

The duration-adjusted return on capital (DARC) has been developed to address IRR's (and PMEs and Alphas) limitations as a metric for private equity performance, and allow better understanding from an investor (Limited Partner) perspective.

Explaining and upgrading the information set of investors

In addition to that, DARC explains and complements the information provided by IRR, which remains in the General Partners' toolkit. Chart 1 shows how DARC reconciles IRR with time, for a representative private equity fund.

The apparent proximity of the data points shows that, while DARC is a more accurate measure that evolves the information set available to investors, it also captures the IRR's basics.

One can think of DARC as a "translation tool," but it indeed is a robust performance calculation methodology that frames the same components of the IRR in the time-weighted context of all other asset classes. Time is up: the IRR is dead, long live the IRR.

The relevance of time for investors

DARC's methodology, and the concept of duration, adds the critical and absent time framework to the IRR and gives an understanding of:

1. The *when*, on average, the average return from the measured investments that the IRR represents starts to be earned.
2. The *how long* that return is earned for.

Both pieces of information are crucial because performance numbers are useful to investors only if they help them understand how much money they are making. An IRR of 15%, say, does not mean that investors are making 15 cents for every dollar invested in annualized terms, which is what time-weighted performance metrics return.

The fact is that IRR figures do not inform investors about the two points above. In *Inside Private Equity*, the authors briefly introduce the concept and provide an approximation of IRR's net duration – the *how long*. Others have developed public-market equivalent (PME)-like proxy estimations of the *when*.

Chart 1: DARC reframing IRR
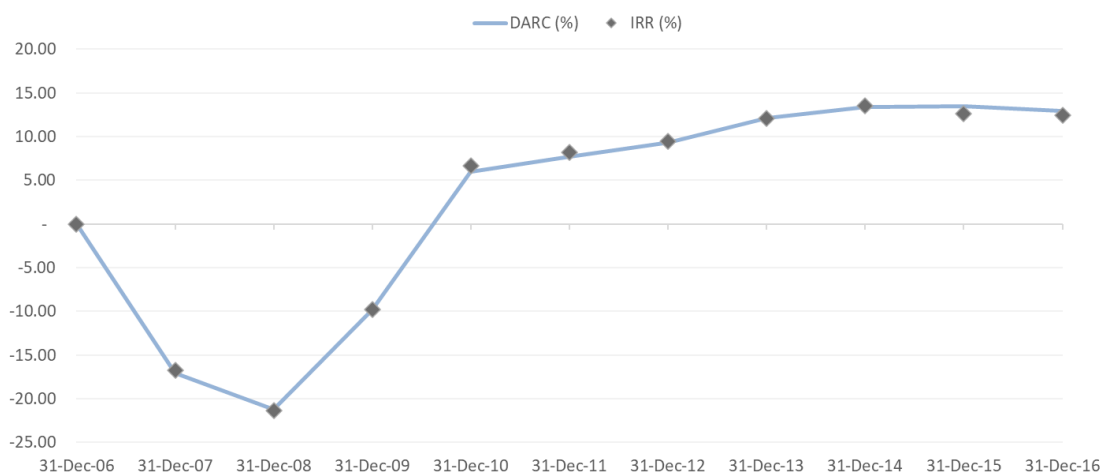
Nevertheless, without precise information about the *when* and the *how long* – and, importantly, over which time horizon – the adopted performance metrics won't give an accurate sense of how much money investors are making (or losing) without any ambiguous approximations.

DARCs methodology illuminates IRR's shortcomings. IRR does not show that its approximate performance numbers refer to a forward-forward transaction – i.e., the cash in– and outflows happen on average at a later time than the initial subscription of commitment or the closing of the private equity fund.

To fully explain the returns, considering the impact of dry powder and of eventual credit and subscription lines, a precise time transfer mechanism with time stamps for the *when* and the *how long* is required. The investment horizon may be set ex ante by the interested investor if, for example, it is an expected liability situation that the investment is supposed to match.

Proper performance calculation is about averaging "quantities" over time

The litmus test of DARC's advantage is its precise additivity (and averaging) feature as visualized in the Table 1 below. It shows the individual and average – pooled and synthetic – performance of three investments, which could be portfolio companies or private equity funds. DARC, IRR, and TVPI are all calculated for a valuation date set at 31 December 2017.

The top of the table includes inputs for cash flows, dates, and amounts, with negative numbers for contributions in blue, positive figures for the distributions in black. The Pooled case is simply the arithmetic sum of the cash flows of the three prior investments, while the Synthetic case is calculated using DARC methodology.

Table 1: Three Hypothetical Investments: DARC, IRR, and TVPI

Investments	Investment 1		Investment 2		Investment 3		Pooled		Synthetic	
	2010-05-06	-10.00	2010-05-06		2010-05-06		2010-05-06	-10.00	2011-08-08	-25.01
	2011-02-07		2011-02-07	-20.00	2011-02-07		2011-02-07	-20.00	2012-03-08	-30.00
	2012-01-10	-10.00	2012-01-10		2012-01-10	-40.00	2012-01-10	-50.00	2012-01-10	-40.00
	2013-04-09	-5.00	2013-04-09		2013-04-09		2013-04-09	-5.00	2014-12-02	45.00
	2014-05-08		2014-05-08	-10.00	2014-05-08		2014-05-08	-10.00	2016-03-29	72.99
	2014-09-10	35.00	2014-09-10		2014-09-10		2014-09-10	35.00	2015-12-21	49.97
	2015-03-11		2015-03-11		2015-03-11	10.00	2015-03-11	10.00		
	2015-09-16	10.00	2015-09-16		2015-09-16		2015-09-16	10.00		
	2015-11-17		2015-11-17	5.00	2015-11-17	30.00	2015-11-17	35.00		
	2016-03-09		2016-03-09	63.00	2016-03-09		2016-03-09	63.00		
	2016-10-10		2016-10-10		2016-10-10	5.00	2016-10-10	5.00		
	2017-04-11		2017-04-11	5.00	2017-04-11	5.00	2017-04-11	10.00		
Valuation Date	**2017-12-31**									
Weight		26.335%		31.57%		42.10%		100.00%		100.00%
Duration c (days)		585.00		798.00		740.00				718.00
Duration d (days)		1,797.00		2,280.00		2,181.00				2,121.00
Net Duration (days)		1,212.00		1,482.00		1,441.00		1,403.00		1,403.00
Synth Contr @DurC	2011-08-08	-25.01	2012-03-08	-30.00	2012-01-10	-40.00	2011-12-19	-95.01	2011-12-19	-95.01
Synth Distr @DurD	2014-12-02	45.00	2016-03-29	72.99	2015-12-21	49.97	2015-10-22	167.90	2015-10-22	167.90
Horizon DaRC (ann'd s.i.)		**7.87%**		**11.99%**		**3.06%**		**7.621%**		**7.621%**
DaRC		**19.35%**		**24.48%**		**5.80%**		**15.967%**		**15.967%**
IRR		18.81%		23.13%		5.83%		15.80%		16.05%
TVPI (x)		1.80		2.43		1.25		1.77		1.77

DARC's methodology uses the duration mechanism to determine the modeled synthetic transactions that are at the basis of any financial instrument valuation: zero coupon – one bullet contribution, one bullet distribution – like in fixed income. These are equivalent to the stream of cash flows they represent.

The bottom of the chart illustrates the details of the synthetic transactions, dates, and amounts, using the same conventions of the raw data, as well as the output calculations for DARC, IRR, and Horizon DARC, or the annualized rate of return that investors can expect to earn (and actually receive) over the predetermined time horizon.

DARC and IRR are indeed quite similar: they both represent the period return produced during the timespan when the capital is deployed. But DARC only carries along the precise timespan "ID card" information.

The informative advantage of DARC

This ID card makes DARC and Horizon DARC two sides of the same coin that can be reconciled at any time – in pooled and synthetic form. The synthetic model represents the pooled sum through the duration characteristics.

How DARC and Horizon DARC yields of our representative fund move over time is visualized in Chart 2 below. The implicit difference? DARC is the rate of return the invested capital produces over time for the net duration – the difference of the durations of Distributions (DurD) and Contributions (DurC) – while Horizon DaRC is the actual annualized rate of return that investors earn for the predetermined time horizons.

Horizon DARC then is a true yield curve where the 7% plot at the end of 2014 shown by the light blue arrow is the annualized-since-inception return. It represents the actual total return yield that investors earn from the investment in the fund.

Chart 2: DARC vs. Horizon DARC
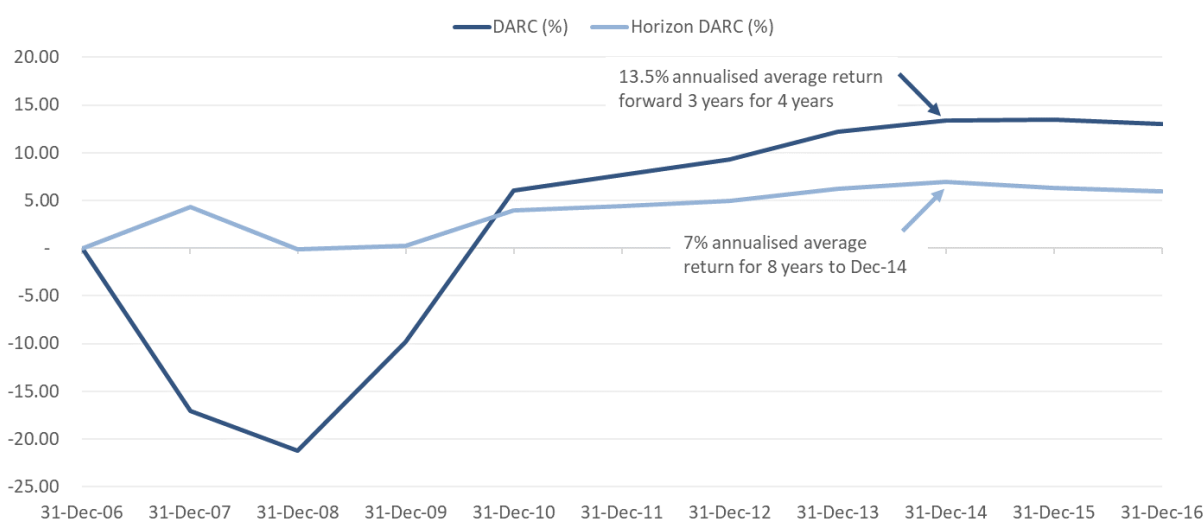
DARC's line in Chart 2 only shows the return for the net duration as it materializes while the fund matures. Consequently, the 13.5% plot at the end of 2014 shown by the blue arrow is the DARC recorded with the information available as of that date for the Net Duration of approximately four years (1,422 days), shown in Chart 3 below.

The practical implications
It is impossible to replicate the computations above using IRRs and PMEs. Why? Because these methodologies lack additivity and time transferability properties. In fact, the non-homogeneous timeframes and notional references of cash flows they use in their calculations mean that their averages and rankings are mathematically incorrect. In other words, IRR quartiles are essentially meaningless.

Moreover, calculations based on IRR, PME, and cash flows of average returns, risk premia, alpha, and dispersion, among other variables, may have to be revised in academic studies. And finally, existing private equity indices are not accurately representing the underlying physical investments.

That is why DARC's duration time stamps are critical for preserving the time-weighted value of money and for opening for proper indices and better benchmarking applications.

Chart 3: DurC vs. DurD

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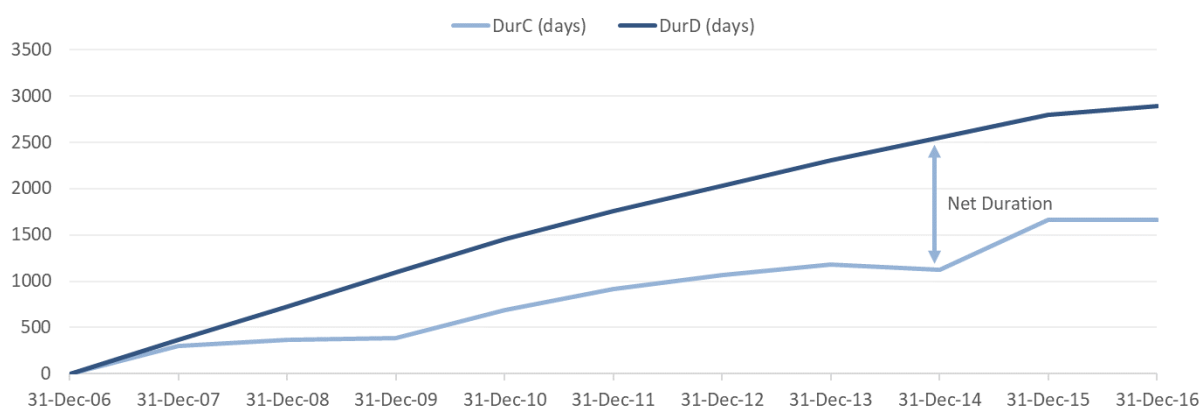
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