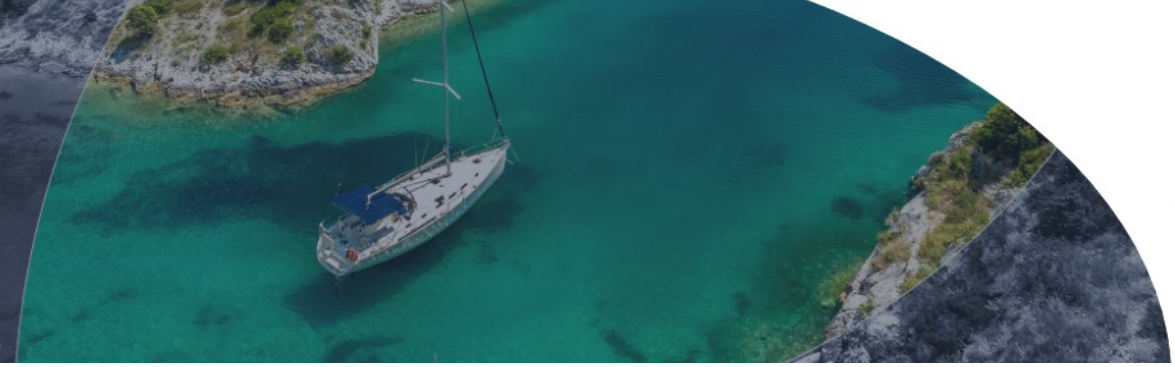


IS IT A GOOD TIME TO INVEST IN THE ÁRTICA FUND?

November, 2021

Dear investors,

Our unitholders often ask us: "Is now a good time to make new contributions to the fund?". Even among ourselves, before this study there was no consensus on the answer: internally, some preferred to wait for the "ideal moment" to invest, while others preferred to invest smaller amounts more frequently.

With this in mind, we decided to simulate the returns of two investment strategies in (A) the Ibovespa index, since the beginning of the Real Plan (July 1994), and (B) the Ártica Long Term FIA fund, since its founding (June 2013): strategy (i) *buy the dip*, in which the exact low point of the index between two peaks is known, and the money earns 100% of the CDI while it is not invested; and (ii) recurring contributions, in which the same amount is invested every month.

Although we intuitively imagined that the first strategy would be far superior to the second, we were surprised to find that the recurring contributions strategy does not lag far behind, even though *buy the dip* assumes the unrealistic situation of having perfect information, and even though interest rates in Brazil have historically been high.

Methodology

For this simulation, we considered an individual who has one thousand reais (in current currency, as of 2021) available to invest every month. In addition, since July 1994, this individual has received an annual salary adjustment equal to the IPCA for the period, which also adjusts the amount available to invest.

For strategy (i) *buy the dip*, the individual buys Ibovespa/Ártica Long Term FIA units exactly at the low point between two *all-time high* periods, that is, at the lowest value between the peaks. During the period in which he does not make this investment, he invests his money in fixed income, earning 85% of the CDI after taxes[1] until a new purchase takes place. In addition, units are never sold once bought (*buy and hold*). Below, the purchase periods and the total cash balance (invested in the CDI) available in the portfolio can be seen graphically for the Ibovespa and Ártica Long Term FIA simulations:

We are assuming a yield of 100% of the CDI and an income tax rate of 15%, resulting in 85% of the CDI net of taxes.

1

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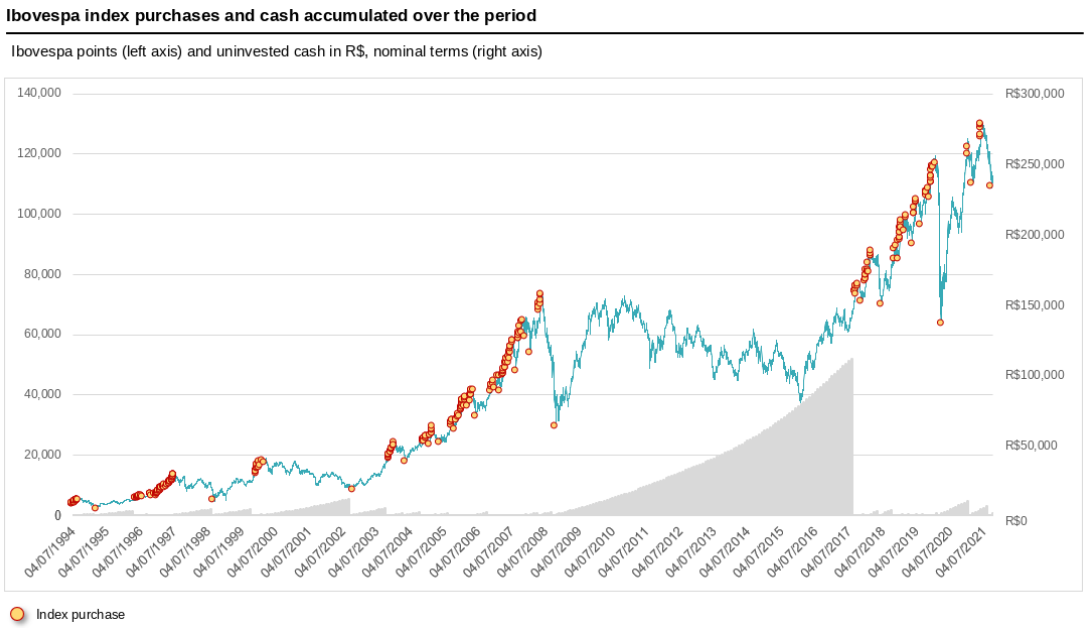


Chart 1.A – Purchases under strategy (i) *buy the dip* - Ibovespa

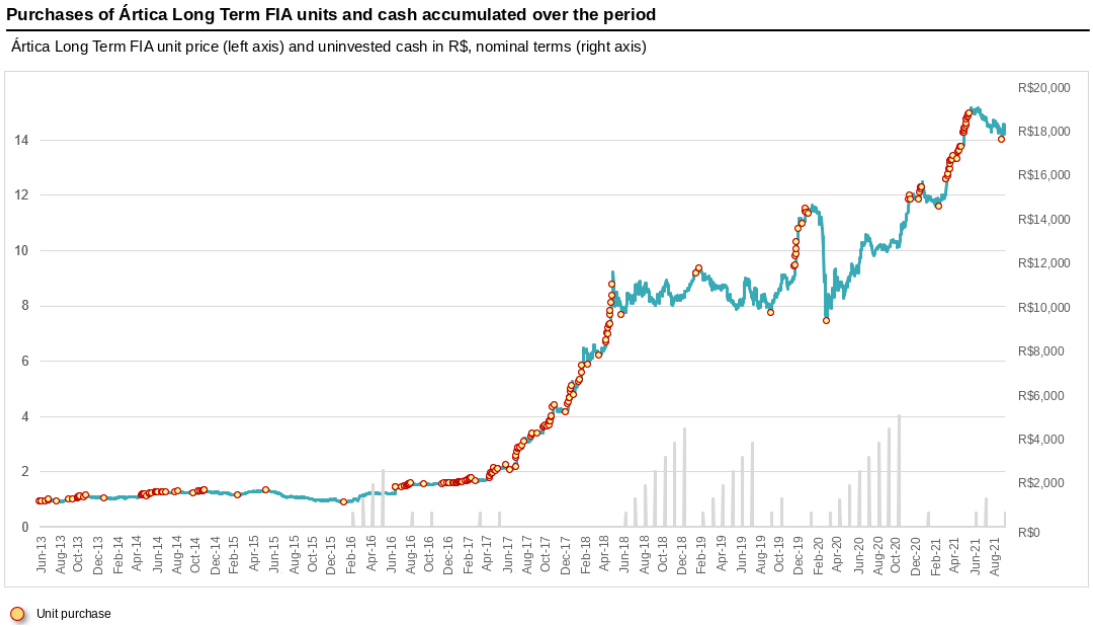


Chart 1.B – Purchases under strategy (i) buy the dip – Ártica Long Term FIA

For the second strategy, recurring contributions, on the first day of every month the individual invests all the money available in Ibovespa units, regardless of market conditions. Below, the purchase periods can be seen graphically for the Ibovespa and Ártica Long Term FIA:

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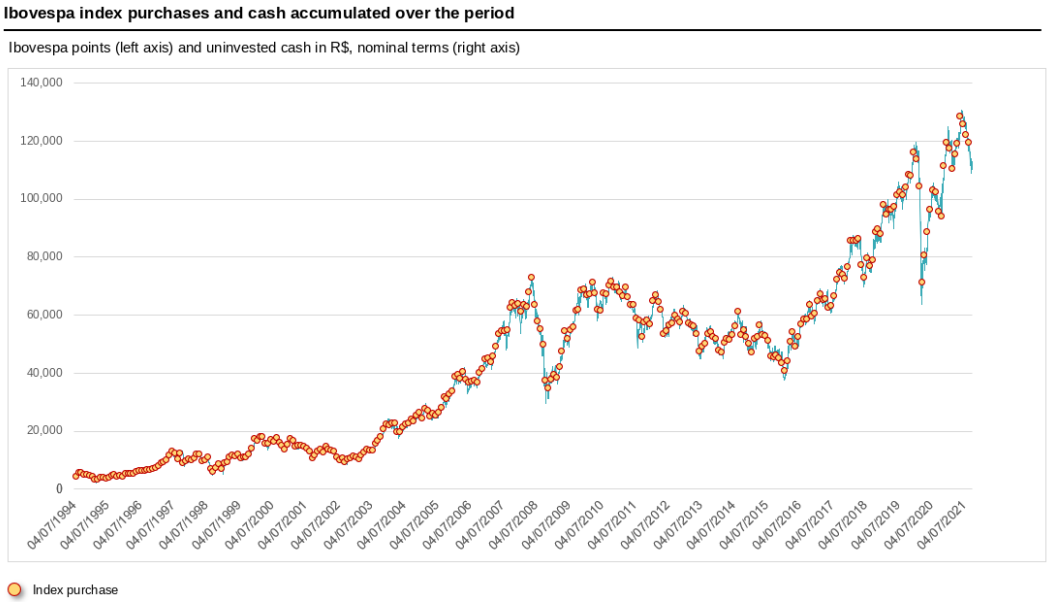


Chart 2.A – Purchases under strategy (ii) recurring contributions - Ibovespa

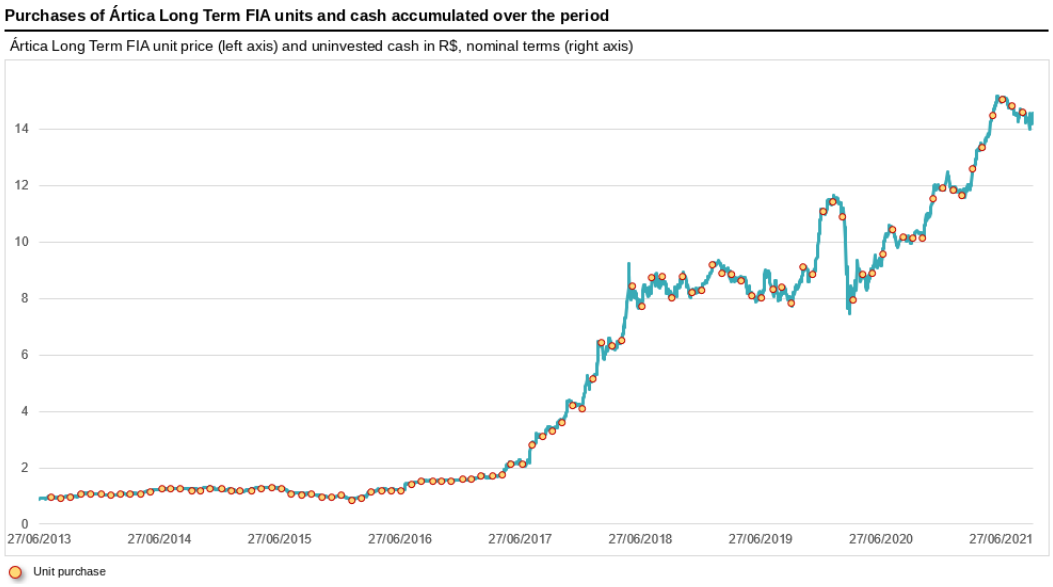


Chart 2.B – Purchases under strategy (ii) recurring contributions – Ártica Long Term FIA

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Results

Using October 1, 2021 as the end date of the analysis, we obtain the following results for different start dates:

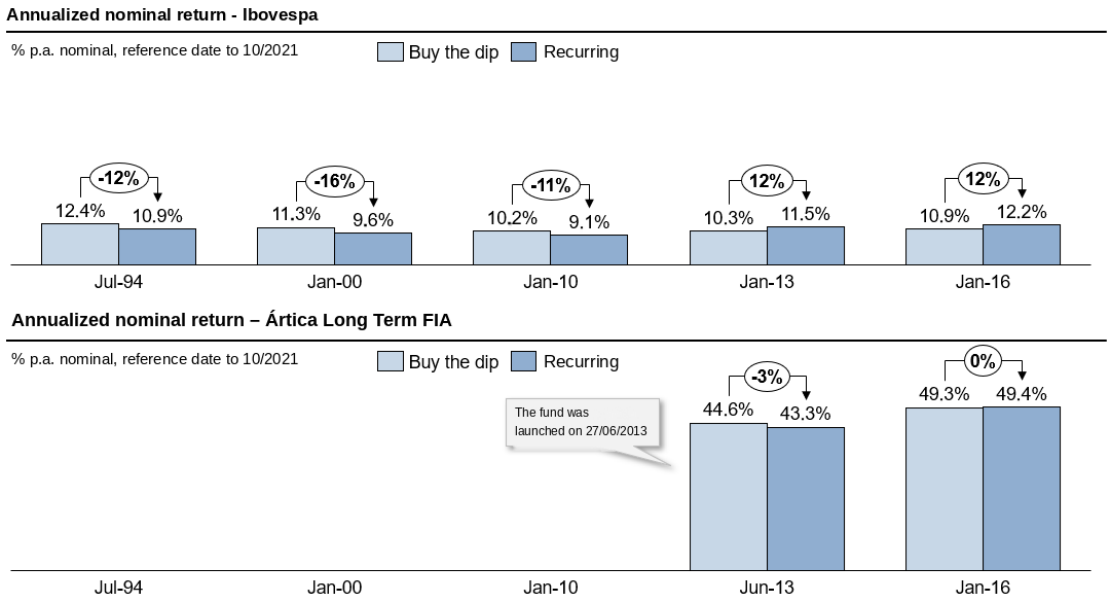
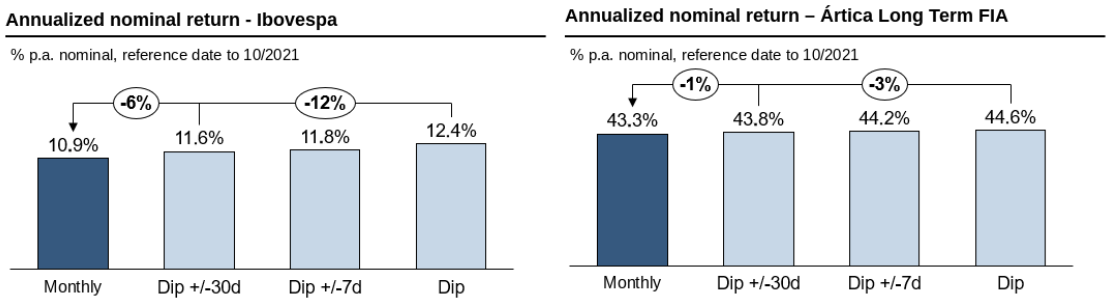


Chart 3 – Strategy results for different start dates

Since the Real Plan, for the Ibovespa, the *buy the dip* strategy delivered a nominal annual return of 12.4%, 1.5 p.p. above the recurring contributions strategy; in other words, the recurring strategy delivered 88% of the total return of the *buy the dip* strategy. For Ártica Long Term FIA, since its founding in June 2013, the recurring contributions strategy delivered 97% of the return of the *buy the dip* strategy, which returned 44.6%.

Considerations and conclusion

A few considerations must be made regarding the results obtained. The first is that it is simply impossible to consistently predict the perfect *timing* for the contributions under the *buy the dip* strategy. If the contributions were made 30 days early, the recurring strategy would achieve 94% of the return of the *buy the dip* strategy for the Ibovespa, as can be seen in the chart below, which simulates the annualized nominal returns if the contribution consistently varied by +/- days relative to the date of the *dip*, for the Ibovespa and for Ártica Long Term FIA:



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Chart 4 – Strategy results for different timing errors

This result is interesting because it shows, especially for the Ibovespa, that a small deviation already brings the return close to that of recurring contributions. For Ártica Long Term FIA, given the consistency of its results, the variation is smaller, since the units delivered good returns across different entry points[2]. In this context, we must also consider that, as human beings, we will certainly fail in our investment discipline at some point during the wealth accumulation period. A slip in the "*buy the dip*" strategy, such as missing one or two windows for a new contribution, can have a much greater impact on the portfolio's final return than one or two months in which we are unable to make a recurring contribution. Another consequence is that the stress of watching the market closely, trying to predict whether it has already hit *bottom*, does not seem to be worth the expected extra return.

The second consideration is that interest rates in Brazil in the late 1990s and early 2000s were structurally higher, which boosted the return on the uninvested money under the *buy the dip* strategy. From the beginning of the Real Plan in 1994 to the end of 2010, the CDI returned 21% p.a. Even with the more recent upward trend in Brazilian interest rates, the market consensus still points to an interest rate of 10.25% p.a. at the end of 2022, well below the historical average.

The third consideration is that, if the Ibovespa had a more continuous upward trend and we excluded periods in which the stock market suffered sharp *drawdowns*, the recurring contributions strategy would be even closer to the *buy the dip* strategy.

Within the firm, we often ask ourselves about the ideal strategy for contributing to Ártica Long Term FIA. It is worth remembering that a significant share of the personal wealth of many of Ártica's partners and employees is invested in the fund. Among our founding partners, there are those who have historically advocated recurring contributions and those who preferred to wait for moments of apparently greater discount to invest. We analyzed the return for both, and the result was surprising: for the first, who made 51 contributions since the fund's inception, the annualized IRR is 41.4%. For the second, who made 23 contributions seeking to be more precise in times of decline, the annualized IRR is 40.0%.

The purpose of this letter is not to give a definitive answer on the subject, and we recognize that the research is not exhaustive. But the main finding holds: the recurring contributions strategy delivers a return sufficiently close to the best possible *timing*, does not require frantic monitoring of the stock market and of political news, and frees up room for your professional and personal development, while *compounding* does its work.

[2]Past performance is not a guarantee of future returns.

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Fund characteristics

ÁRTICA LONG TERM FUNDO DE INVESTIMENTO DE AÇÕES (the "Fund"), managed by Ártica Gestão de Recursos Ltda., is an equity investment fund regulated by CVM Instruction 555/2014. CNPJ: 18.302.338/0001-63

Target audience

The Fund is intended exclusively for qualified investors (under CVM Instruction 555/2014) seeking long-term-focused returns.

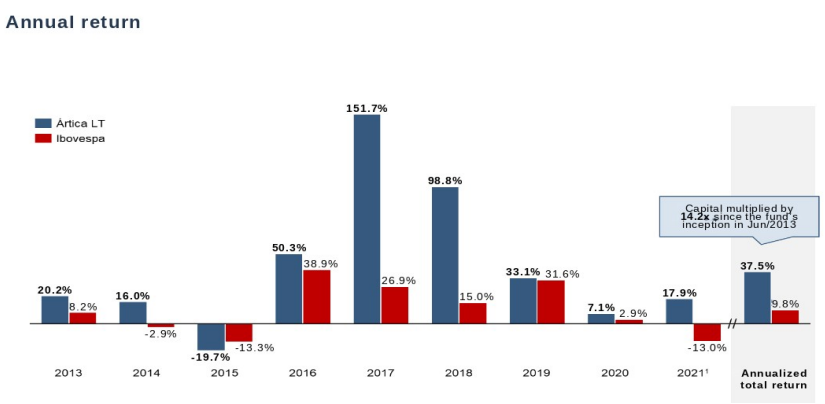
Fund objective

The Fund's objective is to provide its unitholders, over the medium and long term, with capital gains by investing its resources primarily in the stock market, without pursuing a high correlation with any specific equity index available.

ANBIMA classification	Equities (Free)
Manager	Ártica Gestão de Recursos Ltda.
Administrator / custodian	BTG Pactual Serviços Financeiros S.A. DTVM
Minimum investment	R$20.0 thousand
Additional investment	R$1.0 thousand
Minimum balance	R$10.0 thousand
Management fee	2% p.a.
Performance fee	20% of excess return over the Ibovespa (high-water mark)
Subscription conversion	D + 1 (business day)
Redemption conversion	D + 89 (calendar days)
Settlement	D + 1 (after conversion)
Taxation (income tax)	15% of gains upon redemption (no come-cotas)

Current net assets	R$149.9 million
12-month average net assets	R$128.7 million
Cumulative return	1,316.8%
12-month return	38.4%
36-month return	61.7%

Annual return



Monthly return

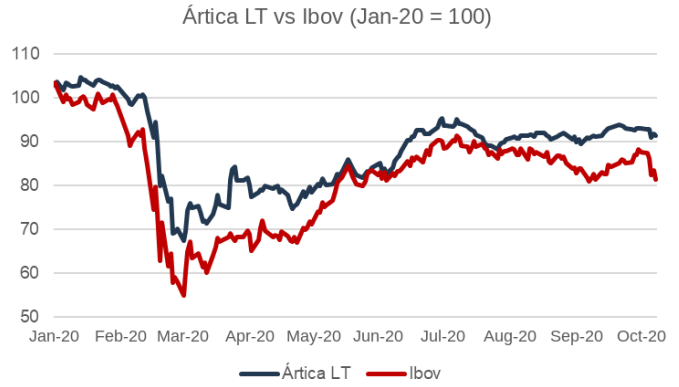
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Cumulative
2013	Ártica LT	-	-	-	-	-	2.2%	6.7%	(5.2%)	8.8%	8.3%	(1.0%)	(0.3%)	20.2%	20.2%
	Ibovespa	-	-	-	-	-	(11.3%)	1.6%	3.7%	4.7%	3.7%	(3.3%)	(1.9%)	8.2%	8.2%
2014	Ártica LT	(4.5%)	2.9%	2.2%	(0.9%)	4.2%	7.7%	1.2%	0.9%	(1.2%)	(1.2%)	6.2%	(1.7%)	16.0%	39.4%
	Ibovespa	(7.5%)	(1.1%)	7.1%	2.4%	(0.8%)	3.8%	5.0%	9.8%	(11.7%)	1.0%	0.2%	(8.6%)	-2.9%	5.0%
2015	Ártica LT	(4.4%)	(3.6%)	3.4%	5.1%	1.3%	(4.2%)	(10.6%)	(2.9%)	0.2%	(8.7%)	0.5%	3.5%	-19.7%	12.0%
	Ibovespa	(6.2%)	10.0%	(0.8%)	9.9%	(6.2%)	0.6%	(4.2%)	(8.3%)	(3.4%)	1.8%	(1.6%)	(3.9%)	-13.3%	-8.9%
2016	Ártica LT	(9.7%)	2.8%	20.9%	4.7%	1.8%	(0.7%)	16.1%	7.8%	(0.3%)	(1.0%)	1.6%	0.6%	50.3%	68.3%
	Ibovespa	(6.8%)	5.9%	17.0%	7.7%	(10.1%)	6.3%	11.2%	1.0%	0.8%	11.2%	(4.7%)	(2.7%)	38.9%	26.5%
2017	Ártica LT	2.0%	3.7%	1.4%	2.6%	20.4%	1.7%	27.9%	9.4%	8.7%	8.9%	14.1%	(1.2%)	151.7%	323.7%
	Ibovespa	7.4%	3.1%	(2.5%)	0.7%	(4.1%)	0.3%	4.8%	7.5%	4.9%	0.0%	(3.2%)	6.2%	26.9%	60.5%
2018	Ártica LT	22.1%	23.9%	0.8%	2.4%	29.7%	(8.4%)	7.9%	5.1%	(7.8%)	6.5%	(4.7%)	0.9%	98.8%	742.3%
	Ibovespa	11.1%	0.5%	0.0%	0.9%	(10.9%)	(5.2%)	8.9%	(3.2%)	3.5%	10.2%	2.4%	(1.8%)	15.0%	84.6%
2019	Ártica LT	10.7%	(1.7%)	(3.4%)	(1.2%)	(5.7%)	(1.5%)	3.6%	1.0%	(7.8%)	14.0%	0.5%	25.0%	33.1%	1021.5%
	Ibovespa	10.8%	(1.9%)	(0.2%)	1.0%	0.7%	4.1%	0.8%	(0.7%)	3.6%	2.4%	1.0%	6.9%	31.6%	142.9%
2020	Ártica LT	2.7%	(4.2%)	(24.8%)	8.0%	0.2%	6.7%	9.9%	(2.9%)	(0.2%)	0.1%	12.2%	4.6%	7.1%	1,101.6%
	Ibovespa	(1.6%)	(8.4%)	(29.9%)	10.3%	8.6%	8.8%	8.3%	(3.4%)	(4.8%)	(0.7%)	15.9%	9.3%	2.9%	150.0%
2021	Ártica LT	(1.1%)	(1.5%)	8.1%	6.3%	7.8%	4.8%	(2.1%)	(1.3%)	(2.2%)	(1.6%)	-	-	17.9%	1,316.8%
	Ibovespa	(3.3%)	(4.4%)	6.0%	1.9%	6.2%	0.5%	(3.9%)	(2.5%)	(6.6%)	(6.7%)	-	-	-13.0%	117.4%

* Ártica LT began on June 27, 2013 as an "investment club" and, on September 27, 2019, it was converted into an "equity investment fund." Returns shown from inception on June 27, 2013 through October 31, 2021

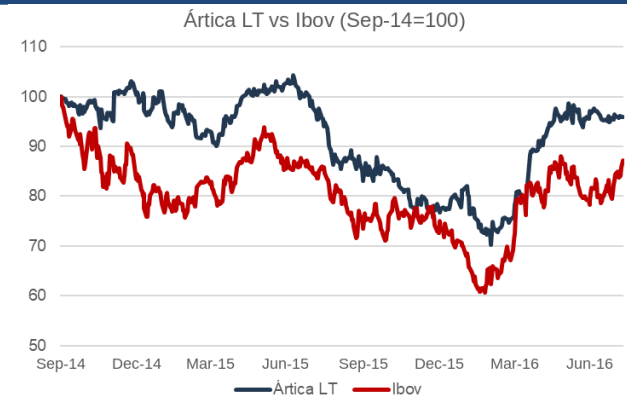
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Performance in crisis scenarios



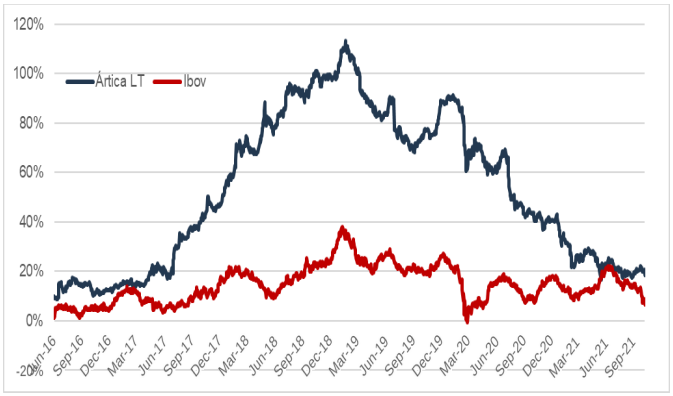
Max drawdown Ártica LT: 34%
Max drawdown Ibovespa: 47%



Max drawdown Ártica LT: 30%
Max drawdown Ibovespa: 39%

	Ártica LT	Ibovespa
Volatility – since inception	23.7%	25.8%
Sharpe – since inception	1.28	0.18
Correlation (Ártica LT vs Ibov) – since inception	0.37	-
Volatility – 12 months	13.1%	20.8%
Sharpe – 12 months	2.72	0.44
Correlation (Ártica LT vs Ibov) – 12 months	0.68	-

Rolling 3-year returns



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