When to Migrate Away From an Expensive ETF to a Cheaper, Equivalent One?

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1 Introduction

Exchange traded funds (ETFs) track the price of a set of underlying assets such as stocks or commodities. Some underlyings – like the S&P 500 or the MSCI World indexes – are covered by several different ETFs. In this case, while the underlying is virtually identical from one ETF to the other, the total expense ratios (TERs) of the ETFs vary: some ETFs collect less yearly fees than others – they are "cheaper" – effectively provding more returns after accounting for the TER.

If an investor happens to own shares in an ETF while a cheaper ETF exists for the same underlying, it may make sense to sell the former and buy the latter with the resulting cash. Each order (buy or sell) is subjected to a fee by the broker – the order fee. This fee is a key parameter to determine if one should migrate to the cheap ETF or stay invested in the more expensive one: the saved fund expenses must offset the fees incurred when selling and buying for the migration to make sense. Using the ETFs TER, the order fee, and the expected yearly return of the underlying asset (before fund fees), we can compute the amount of time necessary to make a migration scenario breakeven with a scenario where no migration is carried out.

Herein, we will focus on the ETFs presented in Table 1. Both track the MSCI Daily Net TR World Euro index. CW8 is an historical, more expensive ETF while DCAM was introduced more recently and has a lower TER. We will consider an order fee of 0.35%.

Table 1: Focal ETFs of this paper

ETF Ticker	ETF Name	TER
CW8	Amundi MSCI World Swap UCITS ETF EUR Acc	0.38%
DCAM	Amundi PEA Monde (MSCI World) UCITS ETF	0.20%

2 A formula for each scenario

We will make formulas to compute the resulting capital in each of the two scenario using the following variables:

- $years$ = investment horizon
- $\text{TER}_{\text{expensive ETF}}$ = TER of the more expensive ETF
- $\text{TER}_{\text{cheap ETF}}$ = TER of the cheaper ETF
- yearly return = expected yearly return of the underlying asset (before fund fees)
- order fee = order fee applied to buy and sell orders by the broker
- value_0 = initial market value of the shares of the more expensive ETF owned by the investor
- $\text{value}_{\text{years}}$ = market value of the investment after $years$ years

2.1 Staying invested in the more expensive ETF

Equation 1 computes the outcome in the scenario where one stays invested in the more expensive ETF.

$$\text{value}_{\text{years}} = \text{value}_0 \times (1 + \text{yearly return} - \text{TER}_{\text{expensive ETF}})^{\text{years}} \tag{1}$$

With an initial value ($value_0$) of 20 k€ and a yearly return arbitrarily set at 7%, staying invested in CW8 (TER = 0.38%) leads to a capital of €259 762.9 after 40 years.

2.2 Migrating to the cheaper ETF

Equation 2 computes the outcome in the scenario where one migrates from a more expensive to a cheaper ETF.

$$\text{value}_{\text{years}} = \text{value}_0 \times (1 - \text{order fee})^2 \times (1 + \text{yearly return} - \text{TER}_{\text{cheap ETF}})^{\text{years}} \tag{2}$$

With the same parameters, migrating from CW8 (TER = 0.38%) to DCAM (TER = 0.20%) leads to a capital of €275 952.7.

3 Breaking even

3.1 Graphical resolution

In practice, what we want is to know what minimal investment horizon is needed for the migration to be financially advantageous. We need to compute the outcome of each scenario for varying *years* values (all other things being equal) and observe the sign of the difference.

Still with an initial value of 20 k€ and a yearly return arbitrarily set at 7%, Figure 1 shows that migrating becomes financially advantageous after a little more than 4 years.

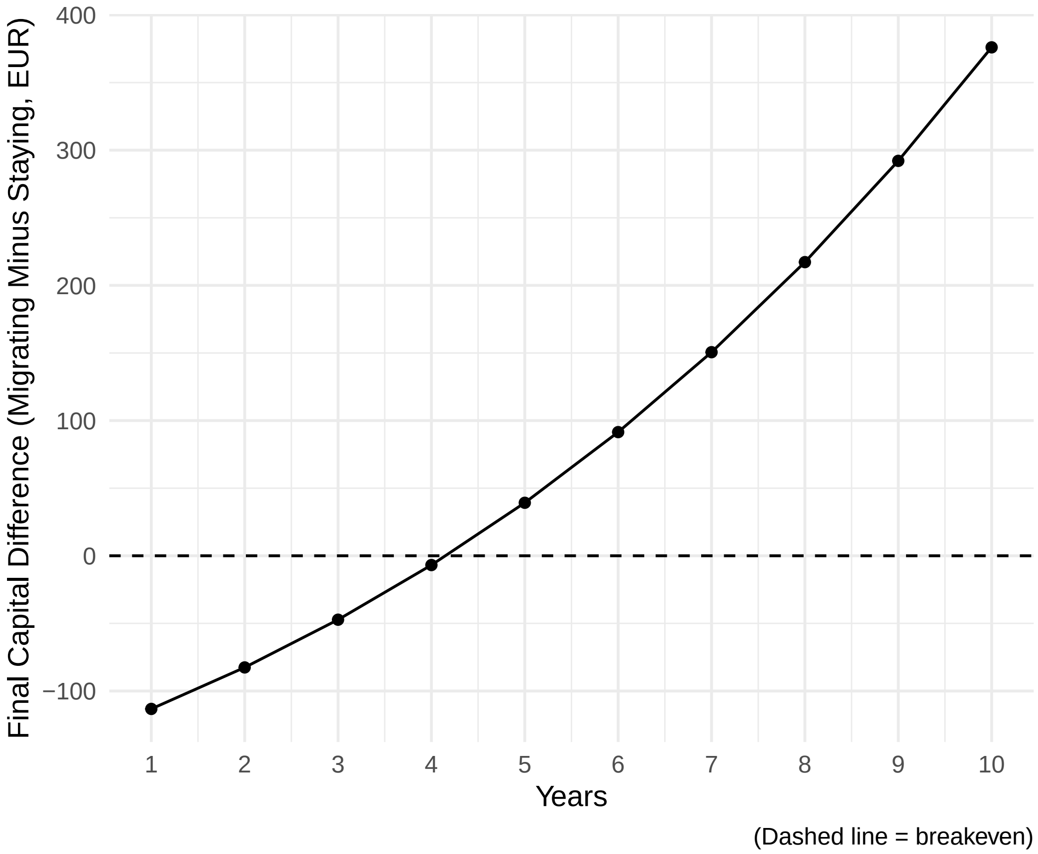

Figure 1: Graphical resolution

Table 2 shows the added capital gain caused by the migration relative to the scenario where the investor stays invested in the more expensive ETF. Further down, Equation 3 will demonstrate that the initial value has no impact on the added final capital gain (in %) – which why this metric is only computed once for both initial values in Table 2 & Table 3.

Table 2: Gain from migrating to the cheaper ETF depending on the investment horizon (yearly return = 7%)

Investment Horizon (years)	Final Capital Difference (Initial Value = 5 000, EUR)	Final Capital Difference (Initial Value = 20 000, EUR)	Added Final Capital Gain If One Migrates (%)
4	-1.71	-6.85	-0.03
10	94.01	376.06	0.99
20	488.05	1952.19	2.71
30	1524.19	6096.76	4.46
40	4047.46	16189.84	6.23

Table 3 presents the same information but using a yearly return of 5% instead of 7%. When the yearly return is lowered, the number of years to breakeven decreases as well and the added capital gain caused by the migration (in %) increases. The order of magnitude remains the same, though.

Table 3: Gain from migrating to the cheaper ETF depending on the investment horizon (yearly return = 5%)

Investment Horizon (years)	Final Capital Difference (Initial Value = 5 000, EUR)	Final Capital Difference (Initial Value = 20 000, EUR)	Added Final Capital Gain If One Migrates (%)
4	-0.82	-3.26	-0.01
10	80.35	321.41	1.02
20	342.35	1369.40	2.77
30	883.19	3532.78	4.56
40	1939.40	7757.59	6.37

Figure 1, Table 2, and Table 3 show that the added capital gain caused by the migration (in %) increases with the investment horizon. This is due to compounding. Migrating makes sense whenever the investment horizon surpasses a certain threshold, but it also continues making more and more sense when the horizon is increased while already over the threshold. The more investment time horizon, the more migrating is important.

3.2 Equational resolution

Graphical resolution works but it is inaccurate and requires more computation than necessary. Equational resolution will provide us with a precise solution. Equation 3 is the resolution without numerical substitution. Note that $value_0$ has no play in the final formula.

$$\begin{gathered}
\text{value}_0 \times (1 + \text{yearly return} - \text{TER}_{\text{expensive ETF}})^{\text{years}} = \\
\text{value}_0 \times (1 - \text{order fee})^2 \times (1 + \text{yearly return} - \text{TER}_{\text{cheap ETF}})^{\text{years}} \\[1em]
(1 + \text{yearly return} - \text{TER}_{\text{expensive ETF}})^{\text{years}} = \\
(1 - \text{order fee})^2 \times (1 + \text{yearly return} - \text{TER}_{\text{cheap ETF}})^{\text{years}} \\[1em]
\frac{(1 + \text{yearly return} - \text{TER}_{\text{expensive ETF}})^{\text{years}}}{(1 + \text{yearly return} - \text{TER}_{\text{cheap ETF}})^{\text{years}}} = (1 - \text{order fee})^2 \\[1em]
\left(\frac{1 + \text{yearly return} - \text{TER}_{\text{expensive ETF}}}{1 + \text{yearly return} - \text{TER}_{\text{cheap ETF}}}\right)^{\text{years}} = (1 - \text{order fee})^2 \\[1em]
\text{years} = \log_{\frac{1+\text{yearly return}-\text{TER}_{\text{expensive ETF}}}{1+\text{yearly return}-\text{TER}_{\text{cheap ETF}}}} (1 - \text{order fee})^2
\end{gathered} \tag{3}$$

After numerical substitution with the same parameters presented in Section 2, we measure that the number of years to breakeven is 4.16.

4 Appendix

This qmd took 0 minutes to render. It was rendered in the following environment:

```
R version 4.5.1 (2025-06-13)
Platform: x86_64-pc-linux-gnu
Running under: Ubuntu 24.04.2 LTS

Matrix products: default
BLAS: /usr/lib/x86_64-linux-gnu/openblas-pthread/libblas.so.3
LAPACK:
/usr/lib/x86_64-linux-gnu/openblas-pthread/libopenblasp-r0.3.26.so;
LAPACK version 3.12.0

attached base packages:
[1] stats graphics grDevices datasets utils methods base

other attached packages:
[1] knitr_1.50 ggplot2_3.5.2 data.table_1.17.6

loaded via a namespace (and not attached):
[1] vctrs_0.6.5 cli_3.6.5 rlang_1.1.6 xfun_0.52
[5] renv_1.1.4 generics_0.1.4 jsonlite_2.0.0 labeling_0.4.3
[9] glue_1.8.0 htmltools_0.5.8.1 scales_1.4.0 rmarkdown_2.29
[13] grid_4.5.1 evaluate_1.0.4 tibble_3.3.0 fastmap_1.2.0
[17] yaml_2.3.10 lifecycle_1.0.4 compiler_4.5.1 dplyr_1.1.4
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[25] R6_2.6.1 tidyselect_1.2.1 pillar_1.10.2 magrittr_2.0.3
[29] withr_3.0.2 tools_4.5.1 gtable_0.3.6
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