



Full Assumptions and Calculations Explained

Why do investment charges and costs matter?

The power of compounding fees means that what might appear to be a small sum or percentage today, can compound over time to a larger number that substantially reduces the returns investors get back in their pockets. If a fund manager is going to produce high performance the difference in cost between one investment and another may be relatively immaterial. HOWEVER, if the overall returns are likely to be low in the future, then total costs should be a key determinant in an investor's decision-making process.

There has been extensive research proving an inverse relationship between fund charges and performance, i.e. the less you pay, the more your investment tends to grow. So the higher the costs incurred the lower the statistical probability that an investor will receive healthy returns. This does not stop an exceptionally talented or lucky fund manager beating the market but the level of total costs incurred in any investment essentially represents the headwind facing that particular manager which they may or may not overcome.

There will of course be fund managers producing excellent returns that charge high fees, just as there will be funds charging very low fees that produce disappointing returns but evidence shows there is a very strong relationship between the overall costs and charges and the actual performance received. It is also important to remember that in any investment decision process it is important to consider not just costs, as risk and performance are just as important.

The table below shows the effect of costs on investing £10,000 with an underlying return of 5% pa.

End Value from an initial investment of £10,000 assuming underlying returns of 5% pa				
Effect of Different % Annual Charges on End Value Assuming Constant Underlying Returns				
Years Held	0	1%	2%	3%
5	£12,763	£12,137	£11,537	£10,960
10	£16,289	£14,731	£13,309	£12,012
20	£26,533	£21,702	£17,714	£14,428

Source: SCM Private - Basis of calculations above: as an example if you were to invest £10,000 for 5 years and receive 5% pa before costs and pay 3% pa charges, your investment would be worth $£10,000 \times (1.05 \times 0.97)^5$

This example illustrates that by paying 3% per annum in costs rather than 1% has reduced the end value of £10,000 invested over 20 years from £21,702 to £14,428; i.e. your savings would have been worth 50% more by simply reducing the overall charges from 3% to 1% per annum.

True and Fair Calculator defaults

The True and Fair Calculator defaults to an underlying investment return (before costs) of 5% pa which is the central rate recommended by the Financial Conduct Authority (FCA) to be used by advisers when estimating the future value of pension pots¹. The impact of costs becomes much more material in a low return environment.

How does the True and Fair Calculator work?

The calculator allows users to enter the following:

- how much will be invested
- how long the invest will be held
- how much (before costs) the investment is likely to return / make per annum.

The system then calculates all the various fees disclosed and those normally 'hidden' into one **Total Estimated Cost of Investing**, in one £ number and the % per annum that the various costs are likely to reduce the investment by.

All these default numbers can be changed by the user, and if the numbers are not known, an investor can simply download and send the **True and Fair Cost Template** to their adviser or fund manager to complete. PLEASE NOTE - All the costs and charges are normally available so we would advise all investors to insist they are provided to them as they should be entitled to know BEFORE as well as AFTER, how much an investment is really costing.

Dealing costs and Portfolio Turnover Rates (PTRs) - Why are they important?

The impact of dealing costs on reducing overall investment returns can be substantial, even within bond funds. Christopher Traulsen, director of fund research Europe and Asia at Morningstar, reviewed various Morningstar GBP Bond categories and found clear results that lower fees resulted in better performance in every category of bond funds analysed². His conclusion was that it would be **'extremely remiss not to focus on costs as a key criterion when selecting a fixed-interest fund. It should by no means be the sole criterion, but investors must keep in mind that the higher the fees, the harder it will be for a manager to outperform.'**

The impact of the dealing costs amplifies as the number of years an investment is held increases. This is due to effect of compounding. As the investment grows in value overtime, so does the compounding effect of the fees. Therefore, the higher the fee and the longer the investment is held, the bigger the bite from charges.

An Economist article³ in April 2013 entitled "Don't just do something, sit there" - drawing on a recent paper⁴ in the Financial Analysts Journal (FAJ) found hidden costs were, on average, higher than the funds' declared expenses and had a significant negative impact on returns.

The study looked at 1,758 American equity mutual funds between 1995 and 2006, taking into account how often the fund manager traded, the type of stock and the trade size to analyse the full cost. The findings showed that the funds with the highest trading costs produced the lowest return; with those in the lowest 20% ranked by trading costs beating the 20% of funds with the highest trading costs by 1.8% per annum.

The Economist concluded that a possible explanation for this expensive hyper-activity by some fund managers was that **"professional managers have little reason to care, because the full cost of their trading activities is not revealed. Clients will discover that hyperactivity leads to underperformance only after they have invested, and that is too late."**

¹http://www.fsa.gov.uk/consumerinformation/product_news/pensions/growth_rates.shtml

²<http://www.morningstar.co.uk/uk/news/95449/high-fees-destroy-bond-fund-performance.aspx>

³<http://www.economist.com/news/finance-and-economics/21576683-fund-managers-trade-too-much-retail-investors-can-learn-not-dont-just-do>

⁴"Shedding Light on 'Invisible' Costs: Trading Costs and Mutual Fund Performance", by Roger Edelen, Richard Evans and Gregory Kadlec, Financial Analysts Journal, Volume 69, Number 1

Interestingly this independent academic research backs up earlier academic research⁵ that found that trading costs average 0.78% of fund assets per year and that these trading costs are “negatively related to fund returns and we find no evidence that on average trading costs are recovered in higher gross fund returns”.

In early 2013 SCM Private analysed 230 IMA UK All Companies funds with £105 Billion of combined assets under management, all investing in the largest IMA sector, the IMA UK All Companies sector. Their analysis then compared the average reported fund turnover rate over the last five calendar years with the actual performance for the five years to end April 2013. They found that the 20% of funds with the lowest average fund turnover beat the 20% of funds with the highest turnover by 0.71% per annum.

Calculating dealing costs

Unfortunately, only a minority of funds in the UK publish their dealing costs and not in ONE number combining:

- a) the difference between their buying and selling prices (the ‘spread’) in the various securities
- b) the associated taxes (e.g. the 0.5% Stamp Duty on share purchases in the UK) and
- c) the associated commissions paid to buy and sell the securities.

Despite public support from some of the largest UK platforms for improved dealing cost disclosures by fund managers, we are not aware of any platform which publishes this data within their consumer portals.

The True and Fair Calculator therefore estimates these costs for any fund that has supplied data on its underlying assets (known as ‘asset allocation’) and the rate at which it turns over its investments (known as ‘Portfolio Turnover Rate’ or PTR). The Calculator then multiplies the overall average recent fund turnover (PTR) by the percentage in each broad asset category (e.g. UK equities or bonds or property etc) by our own estimate of the typical cost of buying and selling that particular asset.

**True and Fair Calculator Estimated Dealing Costs =
Average Portfolio Turnover Rate (PTR) * Asset Breakdown * Estimated Cost of Buying & Selling Each Asset**

Portfolio Turnover Rate (PTR)

The Portfolio Turnover Rate (PTR) used in The Calculator is the average of the last three available PTRs as supplied by Morningstar, divided by two (since the UCITS definition of turnover effectively double counts turnover by adding purchases to sales). We have then used data for the calendar years 2010, 2011 and 2012 and have changed any numbers reported as negative as zero - since it is impossible in practise to record a negative dealing cost. The Calculator then calculates the average portfolio turnover rate for these three years.

Calculating different types of funds, dealing at different rates

We have applied the same commission, taxes and spreads to all funds, irrespective of whether the fund manager is an index or active fund. It may well be that a large number of index funds deal at lower costs than have been assumed, as many index funds deal at a commission rate of 0.05% or less rather than the 0.1% to 0.15% rate which is more common within active funds. This is because these active funds are often effectively dealing at a higher rate in exchange for ‘bundled’ research services received from brokers. The Financial Times, in early 2013, calculated this excess cost, in terms of the extra ‘hidden’ research costs being bundled into commissions, within UK funds at over £1 Billion per annum⁶.

⁵Transaction-cost Expenditures and the Relative Performance of Mutual Funds; John Chambers, Roger Edelen and Gregory Kadlec November 23rd 1999

⁶Financial Times, March 10, 2013 ‘UK funds dumping up to £1bn of costs’ by Steve Johnson <http://www.ft.com/cms/s/2/8a27bce8-8738-11e2-9dd7-00144feabdc0.html#axzz2TAhiu1Z5>

Cash – dealing costs

The calculator uses the weighted average of the estimated dealing costs for the various assets above according to its breakdown. Since cash assets are assumed to have a dealing cost of zero, the system may underestimate the cost for any fund with a material amount held in cash.

How closely are the True and Fair Calculator estimates likely to match actual future costs?

The Total Estimated Cost of Investing produced by the True and Fair Calculator is a reasoned estimate based on reasoned assumptions which can be changed by users. The assumptions enable a reasoned estimate to be produced for a large number of funds and investments but there will always be specific examples where such common assumptions may require adjustment.

Reduction in Yield (RIY)

The mathematical formulas used by the True and Fair Calculator are tried and tested and are based around an investment term called the Reduction in Yield (RIY) which calculates the difference between the return an investor would have received with and without charges, over the investment term.

The True and Fair Calculator has taken the RIY principle but allowed users to enter their own numbers at all levels. In addition, users can enter their own estimate of extra costs including the previously hidden dealing costs or use the True and Fair estimate (where available). As of May 2013, only a minority of fund managers follow the Investment Management Association (IMA) recommended practice of Enhanced disclosure of fund charges and costs, so all the data is not easily available to investors. If this code were to be made mandatory and all fund managers were required to disclose their costs in one number, the True and Fair Calculator would be able to produce more accurate estimates for investors of their likely future costs and returns.

There will always be individual funds that fall outside the assumptions and skew the calculations. If a fund is showing an artificially or alarmingly high or low number, it is always recommended that an investor contact the fund manager or provider to ascertain why the anomaly has occurred.

Reduction in Growth or Effective Charges

The Calculator works out the effective impact of charges or reduction in growth on an investment. For example, if you invested £1,000 at a rate of 10% per annum, and you pay £100 as an up-front charge, you would have £900 growing at 10% at the end of year 1 which would give you £990. Had there been no charges, that £1,000 would have grown to £1,100. So the effective charge or reduction in growth is really £1,100 - £990 which is £110 NOT £100.

Funds of Funds

The True and Fair Calculator assumes that in any Fund of Fund structure, the assets within the underlying funds are all turned over at the same common rate - 61% per annum. In our view it would be misleading to simply record the Portfolio Turnover Rate (PTR) at the top level within a Fund of Funds when the underlying funds could themselves be trading at a completely different rate. As it is common within such Fund of Funds for the mix of funds not to change much, the PTR recorded for the overall Fund of Funds can be significantly less than the PTR recorded by the average of the funds within it.

Following an analysis by SCM Private in May 2013, of 1,753 IMA index and active funds, with assets totalling £859 Billion, the average PTR of this group over the last three calendar years was found to be 61% per annum. In view of this finding, The Calculator uses this PTR percentage for any Fund, recorded by Morningstar as being a 'Fund of Fund'. If the Fund of Funds is made up predominantly of just index funds, where the PTR is frequently 15% or less per annum, it is recommended that users adjust this assumption within the advanced calculator.

Asset Breakdown

For every fund with available data from Morningstar, the investments or holdings within each fund have been broken down into the broad classifications below, ensuring that the sum of these categories adds up to 100%. Where a fund has a number of investments, some long and some short, the combination of the two breakdowns have been added together and then the percentages adjusted to add up to 100%.

Broad Asset Category	Morningstar Classifications used
Asia Pacific Equities	Asia ex-Japan Stock
Emerging Markets	Emerging Market Stock
Europe	European Stock Large Cap, European Stock Mid Cap, European Stock Small Cap
Japan	Japan Stock
North America	North America Stock
UK	U.K. Stock Large Value, U.K. Stock Large Value/Core, U.K. Stock Large Core/Growth, U.K. Stock Large Growth, U.K. Stock Mid Value, U.K. Stock Mid Value/Core, U.K. Stock Mid Core/Growth, U.K. Stock Mid Growth, U.K. Stock Small Value, U.K. Stock Small Value/Core, U.K. Stock Small Core/Growth, U.K. Stock Small Growth
Commodities	Commodity
Other Equities	Other Stock
Bonds (Principally corporate bonds)	U.K. Corporate Bond Short Term, U.K. Corporate Bond Interm/Long Term, European Bond, North American Bond, Japan Bond, Asia ex-Japan Bond, Emerging Markets Bond
Convertibles	Convertible
Government Bond (Based on UK Gilts)	U.K. Gilt Bond Short Term, U.K. Gilt Bond Interm/Long Term
Index Linked (Based on Index Linked Gilts)	U.K. Index Linked Bond
Money Market	Cash
Other Bonds	Other Bond
Property (Physical Property)	Property

Exchange Traded Funds

Within Exchange Traded Funds (ETFs) it is common for many funds to follow a 'synthetic replication' method whereby the ETF manager enters a swap contract with an investment bank that agrees to pay the index return and is required to deposit collateral against such a guarantee within the ETF. Changes in this collateral are recorded as portfolio turnover but there are normally no associated purchase or sale costs to the fund. The calculator therefore assumes any ETF which is recorded by Morningstar as following a 'synthetic replication' method to have no dealing costs since these are borne outside the fund and therefore do not impact on fund returns.

There are instances where a fund may move from a 'synthetic' replication method to a 'physical' replication method - this can result in a fund being recorded as being 'physical' whilst its PTR data may in some instances derive from a time at which it was 'synthetic' thereby producing anomalous data.

Estimated Costs of Buying and Selling Each Asset

Having built up extensive and up to date data from third party sources on the levels of broking commissions paid by fund managers worldwide, together with the taxes and buy/sell spreads (including impact costs associated with dealing in the larger sizes traded by most fund managers) of various indexes that closely represent the main asset categories we have been able to calculate the associated costs of buying and selling these broad asset categories shown below:

Broad Asset Category	Index or Funds Analysed	Dealing Costs of Buying and Selling Combined includes taxes, commissions and buy/sell spreads
Asia Pacific Equities	MSCI Pacific ex Japan	0.697%
Emerging Markets	MSCI Emerging Markets	0.914%
Europe	MSCI Europe ex UK	0.437%
Japan	MSCI Japan	0.623%
North America	MSCI USA	0.284%
UK	85% FTSE 100 & 15% FTSE 250 Composite	0.977%
Commodities	Various S&P Commodity Indexes	0.553%
Other Equities	Weighted Average of equity indexes above based on average equity asset mix from IMA 2011/12 Yearbook	0.674%
Bonds (Principally corporate bonds)	From various enhanced fund disclosure documents	0.890%
Convertibles	Based on Estimate for Other Equities	0.674%
Government Bond (Based on UK Gilts)	From various enhanced fund disclosures	0.065%
Index Linked (Based on Index Linked Gilts)	From various enhanced fund disclosures	0.183%
Money Market	No costs assumed	0.000%
Other Bonds	Weighted Average of bond indexes above based on average fixed income asset mix from IMA 2011/12 Yearbook	0.686%
Property (Physical Properties not Shares)	From various enhanced fund disclosure documents	4.565%

Estimated Costs of Buying and Selling Bonds and (physical) Properties

The analysis of bond and physical property costs have been derived from Enhanced Fund Disclosure documents published by some fund management groups in March 2013. We have applied extremely conservative estimates - for example most of the funds within the 'Bond' category are investing in UK corporate bonds where we have applied an overall estimate of 0.89%; despite finding that the average bid/offer spread from an extensive list of IMA corporate bond funds was 1.11%; with one fund alone disclosing its spread as being 1.74%.

It should be stressed that for many funds the actual spreads may be significantly higher than the spreads assumed in this analysis as many funds invest in less liquid companies or bonds in which the spreads and therefore overall dealing costs may be significantly higher than the levels assumed in this analysis. Spreads in smaller company shares in particular may be a multiple of the normal spread associated with larger blue chip shares.

Disclaimer - Important Notices

The information in this document represents the opinion of True and Fair Calculator Limited and is for information purposes only. It does not represent statements of fact, recommendations or financial promotions to purchase, hold, or sell any financial instruments or to make any investment decisions. In particular, nothing in this document should be construed as being financial advice.

The information comes from sources that we believe to be reliable but we have not independently verified this information. No representation or warranty (express or otherwise) is given as to the accuracy or completeness of the information contained in this document and neither True And Fair Calculator Limited, nor any of our employees accept any liability for the consequences of acting or not acting upon the information contained within this document. The views reflected herein are subject to change without notice. We have no obligation to update, modify or amend the information within this document or to otherwise notify you in the event that any matter stated herein changes or subsequently becomes inaccurate.

The 'ESTIMATED DEALING COSTS' referred to within the document are calculated using our own assumptions, as outlined within this document, and have not been supplied by either Morningstar or any of the fund management companies. The Calculator has developed a method of calculating dealing costs taking data on the activity of a fund (known as the portfolio turnover rate), how the fund is invested within broad asset categories (known as asset allocation) and our own ESTIMATES of how much it would REASONABLY COST to buy and sell such assets. Whilst we believe these calculations result in a fair, consistent and objective number, there may be individual funds for which the estimate may be incorrect. The assumptions and basis are all explained in detail within this document. Until such time as individual funds supply the full dealing cost in one number (including the underlying bid/offer spreads) and supply this data to the industry's third party data suppliers, the True and Fair Calculator will continue to apply their strategy to calculate such 'hidden' costs fairly, consistently and objectively.

In no event shall we, or any of our affiliates, officers or employees be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of this document and its content even if advised of the possibility of such damages.

Accuracy of Information: Any opinions expressed herein are given in good faith. True And Fair Calculator Limited uses all reasonable skill and care in compiling the information. However, errors or omissions in the information may occur because of a number of factors which are inherent in any calculator system and are not within our reasonable control. This service is accurate only on the date that such information is supplied by Morningstar via its data services. In view of the above, the team at True And Fair Calculator Limited advises you to confirm the accuracy of any information with the appropriate fund manager before seeking to rely on such information within this document or the website.