Guide to Micro-DAX® Options

Fine-Tuning German Stock Index Strategies, by Tariq Dennison

For Educational Purposes Only – Not Investment Advice

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Germany is the largest economy in Europe and 4th largest in the world, with a GDP slightly lower than Japan's and still ahead of India's as of 2022. Its flagship stock market benchmark, the Deutscher Aktienindex[1] or DAX®, which literally means "German Stock Index", was expanded from 30 to 40 members in September 2021[2], adding names like Airbus, Porsche, HelloFresh, and Siemens's Healthineers spinoff, making the already-liquid benchmark even more diversified and representative of many of Europe's best-known companies. On 19 December 2022, Eurex launched the micro-sized options contracts on the DAX®, with current notional sizes around €14,000, which is significantly finer than the size of Europe's most liquid index options contract, the EURO STOXX 50®, with a current notional size around €40,000.

This article explains:

1. What the DAX® is and what drives its movements
2. Basics of index options and why to use them
3. Examples of option strategies for capturing profits and managing risk

What is the DAX®, and what makes it move?

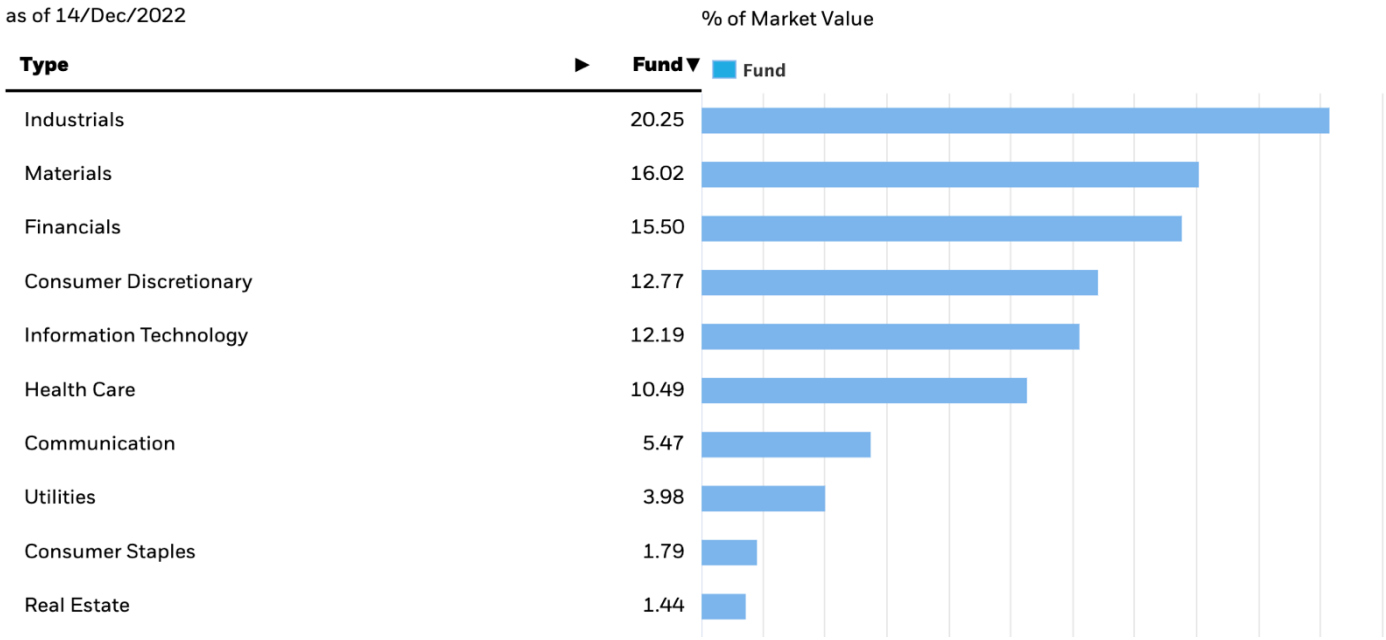
As mentioned above, the DAX® tracks 40 of the largest and most liquid German stocks, including many brands well-known around the world. The below table lists just the 18 largest DAX® components, together making up about 80% of the index weight, where many readers will recognize names like Siemens (the parent company), Bayer, and carmakers Mercedes-Benz, Volkswagen, and BMW. Siemens's heath care and energy spin-offs are also in the index, currently ranking as the 23rd and 38th DAX® components by weight. What should also stand out here is that two of the top five DAX® components actually have their primary listings included in another major index: Linde in the US S&P 500 index and Airbus in France's CAC 40. This can be read as just another sign of how this index is really a world-class portfolio of multi-national companies, rather than just a benchmark on Germany alone.

Trading Symbol	Instrument	ISIN	Sector	Market Cap. (in Mio.)	Weight	Performance 15.12.2021 - 15.12.2022
LIN	LINDE PLC	IE00BZ12WP82	Materials	€ 113,754	10.6%	5.6%
SAP	SAP SE O.N.	DE0007164600	Information Technology	€ 86,291	8.0%	-18.0%
SIE	SIEMENS AG NA O.N.	DE0007236101	Industrials	€ 75,135	7.0%	-11.7%
ALV	ALLIANZ SE NA O.N.	DE0008404005	Financials	€ 70,902	6.6%	3.6%
DTE	DT.TELEKOM AG NA	DE0005557508	Communications	€ 65,160	6.1%	22.2%
AIR	AIRBUS SE	NL0000235190	Industrials	€ 53,517	5.0%	12.2%
BAYN	BAYER AG NA O.N.	DE000BAY0017	Health Care	€ 51,371	4.8%	13.5%
MBG	MERCEDES-BENZ GRP NA O.N.	DE0007100000	Consumer Discretionary	€ 44,837	4.2%	-5.7%
BAS	BASF SE NA O.N.	DE000BASF111	Materials	€ 37,338	3.5%	-17.1%
MUV2	MUENCH.RUECKVERS.VNA O.N.	DE0008430026	Financials	€ 36,370	3.4%	25.3%
DPW	DEUTSCHE POST AG NA O.N.	DE0005552004	Industrials	€ 32,348	3.0%	-29.3%
IFX	INFINEON TECH.AG NA O.N.	DE0006231004	Information Technology	€ 31,408	2.9%	-22.2%
DB1	DEUTSCHE BOERSE NA O.N.	DE0005810055	Financials	€ 31,270	2.9%	22.6%
VOW3	VOLKSWAGEN AG VZO O.N.	DE0007664039	Consumer Discretionary	€ 29,995	2.8%	-21.5%
RWE	RWE AG INH O.N.	DE0007037129	Utilities	€ 27,542	2.6%	23.9%
BMW	BAY.MOTOREN WERKE AG ST	DE0005190003	Consumer Discretionary	€ 23,838	2.2%	0.9%
ADS	ADIDAS AG NA O.N.	DE000A1EWWW0	Consumer Discretionary	€ 22,946	2.1%	-51.9%
MRK	MERCK KGAA O.N.	DE0006599905	Health Care	€ 21,499	2.0%	-18.3%

DAX® constituents updated as of 15 December 2022[3],

[1] https://qontigo.com/index/de0008469008/
[2] https://deutsche-boerse.com/dbg-en/media/press-releases/DAX-welcomes-ten-new-members--2766886
[3] https://www.stoxx.com/data-index-details?isin=DE0008469008

As this next bar chart[4] shows, the DAX® is also relatively well balanced as far as sector weights go, with industrials, materials, and financials respectively covering half the index almost evenly, with technology, healthcare, and consumer staples each also weighing in with double-digit percentages. In other words, the DAX® can be seen as a diversified barometer of international companies that happen to be based in or are connected to Germany, and so can be seen by traders as a major index to be included on a trading dashboard.



DAX sector weights as of 14 December 2022[5]

One other important detail to note about the DAX® is that the DAX® is a "Total Return Index", meaning its value reflects the value of a portfolio with dividends reinvested, which is very different than many other major benchmarks like the Dow Jones Industrial Average, the S&P 500, the EURO STOXX 50®, the Hang Seng Index and the Nikkei, all of which measure price moves but not returns from dividends. That explains why over longer periods like the one charted below, the value of the DAX® has tended to rise more than other European benchmarks, largely reflecting these dividends.

DAX vs CAC and SX5E Index levels, 1 Jan 2000 to 15 Dec 2022

[4] https://etf.dws.com/en-ch/LU0274211480-dax-ucits-etf-1c/
[5] https://www.ishares.com/uk/professional/en/products/251464/ishares-dax-ucits-etf-de-fund

Basics of options, how and why to use them

For readers who are new to options, this page will provide a brief summary of what options are and why a trader might use options instead of ETFs or futures. Readers already familiar with options may skip through this section and move to the next page on specific Micro-DAX® options strategies.

An options contract is an instrument that enables a trader to capture a certain amount of upside and/or a certain amount of downside for a specific price. Two types of index options are call options, which trade the upside above a specific level for a specific price, and put options, which trade the downside below a specific level for a specific price. The price paid in exchange for this upside or downside is called the option "premium" and is sometimes compared to the premium an insurance company customer would pay to insure his car, as explained in a more detailed example below. That specific level written into the option contract is called the "strike price", sometimes also known as the "strike level" for index options, or more generally just "strike" for short. Options also have a pre-specified expiration date (sometimes called "expiry" for short), and index options are generally "European style", which means the upside or downside payoff is calculated on the expiration date only, and not before.

A trader buys an option by paying a specific amount of premium up-front, in exchange for receiving a variable payout at expiry depending on how high "above strike" the index is for a call option, or how far "below strike" the index is for a put option. If an index is below the strike price of a call option at expiry, then that option expires worthless, and similarly, if an index finishes above the strike price of a put option at expiry, then that option expires worthless. The generally high likelihood of a purchased option losing 100% of its value in a short period of time is a key reason why spending only a small percentage of one's portfolio on option premium is an important part of risk management for traders who buy options. The appeal of buying options, of course, is that although it is possible to lose 100% of the premium spent on an option very rapidly, it is also possible for an option double or triple or more in value just as quickly.

On the flip side, for every option contract bought by a trader, that option must be sold by another trader, and one advantage of using derivatives contracts like options is that they are just as easy to sell short (that is, to sell something you don't own) as they are to buy. A trader may sell an option for a variety of reasons, but usually option sellers expect the index is not likely to move as much as options prices indicate and expect to receive an up-front premium that will hopefully be less than the variable payout at expiry. The best-case scenario for an option seller is for the index to finish below the strike of a call or above the strike at the put, and so the seller keeps the up-front premium, and the option expires worthless, meaning the seller does not need to pay anything back.

Buying options, especially put options, is often compared to buying car insurance. For example, a driver with a car worth €15,000 car may pay €300 per month to insure against the car being damaged in an accident or through vandalism. If the car is damaged, then the driver can give the car to the insurance company (which would be worth less than €15,000) in exchange for a €15,000 payout to buy a new car. If the car is not damaged, then there is no payout. Either way, the insurance company receives and keeps the premium in exchange for taking the risk of having to pay out €15,000 in exchange for a car worth less than €15,000. Similarly, an investor may pay €300 for a one-month option to protect against a market index falling below 15,000. If the index does finish that one-month period below 15,000, then the investor receives a payout based on how far below 15,000 the index has fallen. The investor may choose to instead buy a cheaper option, say one costing only €150 that only protects against declines in the index below 14,500. This would be similar to the driver buying car insurance with a €500 deductible or excess, that is, in exchange for taking more of the initial risk, the premium is lower and vice versa.

Option Strategy #1: Buy puts for protection or to express a bearish view

Expanding on the insurance analogy, the first sample option strategy this article will be to simply buy a micro-sized put option on the DAX® index. There are several reasons you may want to do this:

1. You own a portfolio of German stocks, and want to buy protection against a broad-based decline in German stock prices over a specific period of time, or
2. You simply expect the DAX® index to decline in value over the next period of time and wish to profit from that decline while limiting your downside if you are wrong.

As with any option, you will need to choose both a strike level (the level below which your option will start paying off) and an expiration date. All else equal, a put with a higher strike price, and with a longer time to expiration, will be more expensive than one with a lower strike and/or nearer-term expiry date.

Suppose it is 29 November 2022, when the DAX® index is around 14,400, and we see the following prices for ***put*** options expiring in June 2023, based on strike price:

- 650 point premium for 14,000 strike, or
- 400 point premium for 13,000 strike

The below table shows the net P&L of buying one of these options versus the other depending on where the DAX® level is when the option expires in June. In both cases, 100% of the premium is lost if the index is flat or rises. Slightly would be lost in that case in the more expensive 14,000 strike option, but in exchange for that higher premium, this index does not need to decline as far for this option to pay off. If the index declines significantly, say to 12,000 or below, then both options can pay out more than 100% return on the premium, though of course this needs to be weighed against the likelihood of total premium loss if the index does not decline.

Final Index Level	Net P&L	
	14,000 Put	13,000 Put
17,000	€ (650)	€ (400)
16,500	€ (650)	€ (400)
16,000	€ (650)	€ (400)
15,500	€ (650)	€ (400)
15,000	€ (650)	€ (400)
14,500	€ (650)	€ (400)
14,000	€ (650)	€ (400)
13,500	€ (150)	€ (400)
13,000	€ 350	€ (400)
12,500	€ 850	€ 100
12,000	€ 1,350	€ 600
11,500	€ 1,850	€ 1,100
11,000	€ 2,350	€ 1,600
10,500	€ 2,850	€ 2,100
10,000	€ 3,350	€ 2,600

Source: Author's Calculation

One variant of the above strategy is to buy a "put spread", meaning rather than just buying one of these two options, a trader could, for example, buy the 14,000-strike put and sell the 13,000-strike put for a net premium of around €250. The put spread has the advantage of costing far less in premium, and so risking far less in the scenario when the index does not decline, but in exchange for that lower risk, the maximum gross payoff off this put spread is only €1,000 if the index finishes anywhere below 13,000, still a 4:1 payoff, but worth comparing against the "outright" payoff diagram above.

Option Strategy #2: Sell puts for yield

Options are a two-way market, so just like you can pay €400 to buy a 13,000-strike put option on the index, you can also choose to receive €400 to sell a 13,000-strike put option on the index. In exchange for receiving the €400 up-front premium, you are risking a loss of up to €13,000 if the DAX® index were to go to zero by next June, or perhaps more likely, the risk of the net loss of €2,600 if the index falls to around 10,000 by next June, exactly the opposite of the P&L shown on the table of example #1. In exchange for taking that risk, that €400 premium on €13,000 at risk can be seen as a 3% premium, or roughly 6% annualized, return simply for taking that risk, noting that this 6% annualized premium is over and above any interest you might earn on that €13,000 in the meantime. Many yield-oriented investors regularly sell options to earn yield in this way but given that losses can be many times the amount of premium received, position sizing and risk management is very important.

Option Strategy #3: Buy calls to capture upside with defined downside

As an example of an option strategy that profits from rising index levels, we will look at buying call options, which captures upside with a pre-determined downside risk. At the same time as the example #1 put option prices were taken on 29 November 2022, when the index was around 14,400, we could also see the following two sample prices for ***call*** options expiring in June 2023:

- 925 point premium for 14,500 strike
- 675 point premium for 15,000 strike
- 460 point premium for 15,500 strike

These three options would have the following net P&L levels based on the index level at expiry:

Final Index Level	Net P&L		
	14,500 call	15,000 call	15,500 call
18,000	€ 2,575	€ 2,325	€ 2,040
17,500	€ 2,075	€ 1,825	€ 1,540
17,000	€ 1,575	€ 1,325	€ 1,040
16,500	€ 1,075	€ 825	€ 540
16,000	€ 575	€ 325	€ 40
15,500	€ 75	€ (175)	€ (460)
15,000	€ (425)	€ (675)	€ (460)
14,500	€ (925)	€ (675)	€ (460)
14,000	€ (925)	€ (675)	€ (460)
13,500	€ (925)	€ (675)	€ (460)
13,000	€ (925)	€ (675)	€ (460)
12,500	€ (925)	€ (675)	€ (460)
12,000	€ (925)	€ (675)	€ (460)

As the table shows, the biggest risk in the strategy of buying call options is that much or all of the premium may be lost even if the index does go up, but does not go up enough. On the flip side, this comes with the advantage that the premium is all the investor in this strategy can lose over this period of time. For example, a buyer of the 15,000-strike call in the above example would lose all of the €675 premium whether the index were to rise to exactly 15,000, decline to 14,000, or even decline to 10,000 or below. In this way, budgeting a limited amount of money to regularly buy call options is often seen as a less risky way to maintain upside exposure to the index with a fixed limited downside. When interest rates are high enough, some investors implement this strategy by buying bonds and spending some or all of the interest on call options, together providing the investor with the upside of stocks but the downside of bonds. This downside protection comes at a cost of course – a premium of €675 is about 4.5% of the notional value of DAX exposure purchased over a roughly 6-month period, and the index must rise 8.5% or more over that 6-month period for the option buyer to simply break even in this case.

As with example #1, a trader can buy a limited amount of upside exposure to the index at a reduced premium cost by buying a "call spread" instead of simply buying a call with unlimited upside. In this case, we can consider an example where an investor buys the 14,500-strike call for €925 and sells the 15,500 strike call for €460, for a net premium cost of €465, in exchange for a maximum gross payout of €1,000 in the event that the index finishes at or above 15,500 at expiry.

Option Strategy #4: Sell calls to earn premium

As a final sample option strategy, we consider the opposite of strategy #3 where a trader sells call options to receive the premium in exchange for having to pay out if the index goes up. This strategy is saved for last because it can be by far the most risky, with the potential of unlimited losses given there is no theoretical limit to how high the DAX® index can rise. A "covered call" strategy is one where this upside risk is fully offset by an investor owning that underlying asset or index, which in this case could be an investor who holds a long position in DAX® futures or even a DAX® tracking ETF. Just as likely, this strategy may be employed by an investor with a portfolio of German stocks that may not exactly replicate the DAX®, but against which selling these call options on the DAX® index can provide some premium income and an offset for periods when German stocks don't go up. For the sake of this example, let's assume the investor owns a portfolio of German stocks worth €14,400 that happens to track the DAX® exactly, and then sells a 15,500 strike call for a premium of €460. The net P&L from current levels over this period is compared in the table below between the scenario where the investor does not sell this call versus the scenario where the investor does sell this call option:

Final Index Level	Net P&L	
	No Call	Sold Call
16,900	€ 2,500	€ 1,560
16,400	€ 2,000	€ 1,560
15,900	€ 1,500	€ 1,560
15,400	€ 1,000	€ 1,460
14,900	€ 500	€ 960
14,400	€ -	€ 460
13,900	€ (500)	€ (40)
13,400	€ (1,000)	€ (540)
12,900	€ (1,500)	€ (1,040)

As the table shows, the premium received provides a €460 boost or buffer in scenarios where the index declines or does not rise that much. In fact, even when the index rises to 15,900, the caller still comes out €60 ahead of not selling the call. Only in a scenario where the index rises much more significantly do we see that the call seller's upside is capped at €1,560 while the non-seller would have seen upside of €2,000 or more.

Conclusion

The introduction of the Micro-DAX® options contract provides traders and investors with additional choice and finer controls over upside and downside exposure, in even smaller size than far available so far with EURO STOXX 50® options. This paired with the expansion of the DAX® index from 30 to 40 components last year, which made this index more diversified and more relevant for global traders and investors, makes these options a key instrument for those seeking opportunities in what is still Europe's largest and the world's 4th largest economy. Hopefully the above four sample strategies make it very clear how to better incorporate these instruments into your overall strategy.

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