In the world of stock market indexes, traders often compare America to Europe. Within Europe, one main comparison often made is that between Germany and the rest of Europe. Over many periods, Germany's DAX® tends to move up and down in very close relationship to Europe's broader EURO STOXX 50®, with several naturally expected periods where one leads or lags the other. This article starts by introducing the DAX® to readers who may be relatively new to this index. Then, it goes a bit deeper into the index for those wishing to understand it better, and then, most importantly, provides explanations and examples of the micro-sized futures and options traders can use to profit from moves in the stock benchmark of Europe's largest economy. This article will also explain the advantages of trading these strategies using micro-sized futures and options as the purest and simplest way to capture the ups and downs of this German benchmark. While a EURO STOXX 50® index option has a notional size of €10 per point, or over €42,000 per contract at current values of the EURO STOXX 50® index, the DAX® also has micro-sized index options contracts with a notional value of only €1 per point, or around €16,000 at current index values.

What is the DAX®, and how has it performed?

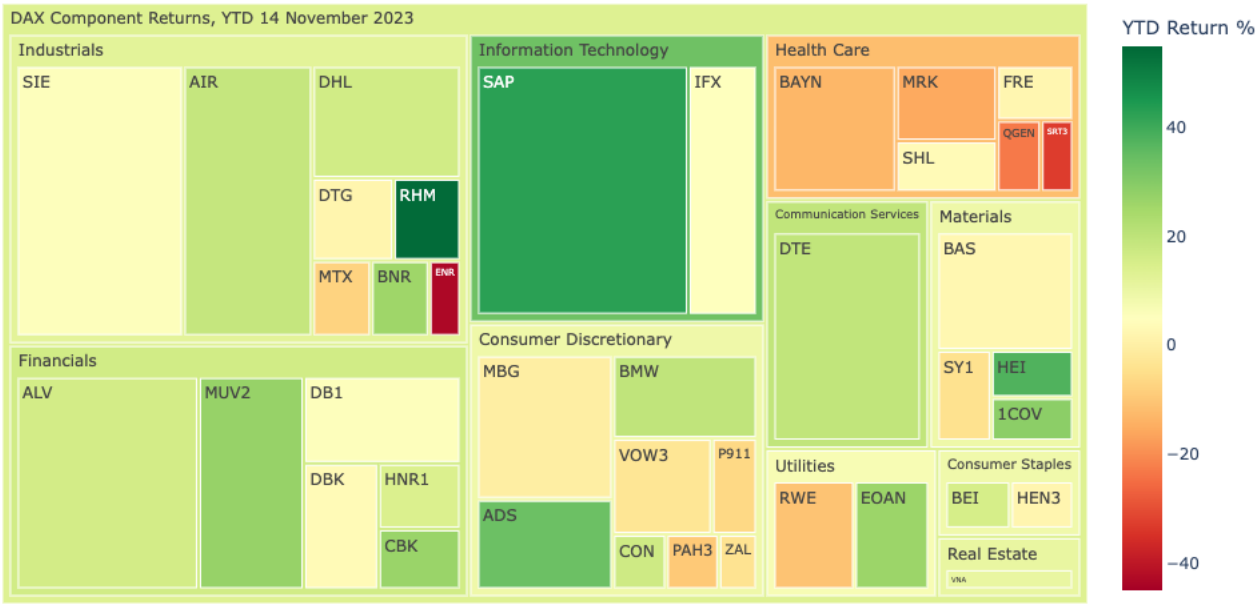
DAX® is an acronym for Deutscher Aktienindex[1], which literally means "German Stock Index". This index was formerly the DAX 30 but expanded from 30 to 40 members in September 2021[2]. These 40 stocks in the DAX® are among Germany's largest and most liquid, including many globally well-known brands including Siemens, Mercedes-Benz and Bayer. The table below provides a snapshot of the top 10 components of the DAX® as of 14 November 2023, which comprise about 60% of the index's weight. Some quick calculations based on this table also show that these top 10 components are responsible for over 60% of the DAX®'s roughly 10% rise in the first 11½ months of 2023, with over one-third of the benchmark's rise being attributable solely to software company SAP.

Ticker	Security Name	Sector	Industry	Price	Weight	Return	Contribution
SAP	SAP SE	Information Technology	Software	135.42	10.6%	42.9%	356
SIE	Siemens Aktiengesellschaft	Industrials	Industrial Conglomerates	132.90	8.8%	5.5%	51
ALV	Allianz SE	Financials	Insurance	221.40	7.8%	16.2%	122
AIR	Airbus SE	Industrials	Aerospace and Defense	130.24	6.8%	19.0%	122
DTE	Deutsche Telekom AG	Communication Services	Diversified Telecommunication Serv	21.64	6.7%	19.8%	123
MUV2	Münchener Rückversicherungs	Financials	Insurance	374.00	4.5%	27.4%	109
MBG	Mercedes-Benz Group AG	Consumer Discretionary	Automobiles	56.60	4.0%	-0.5%	-2
BAYN	Bayer Aktiengesellschaft	Health Care	Pharmaceuticals	40.25	3.5%	-13.2%	-60
BAS	BASF SE	Materials	Chemicals	44.09	3.5%	2.3%	9
IFX	Infineon Technologies AG	Information Technology	Semiconductors and Semiconductor	29.63	3.5%	5.1%	19

DAX® constituents and data updated as of 14 November 2023, source: Koyfin

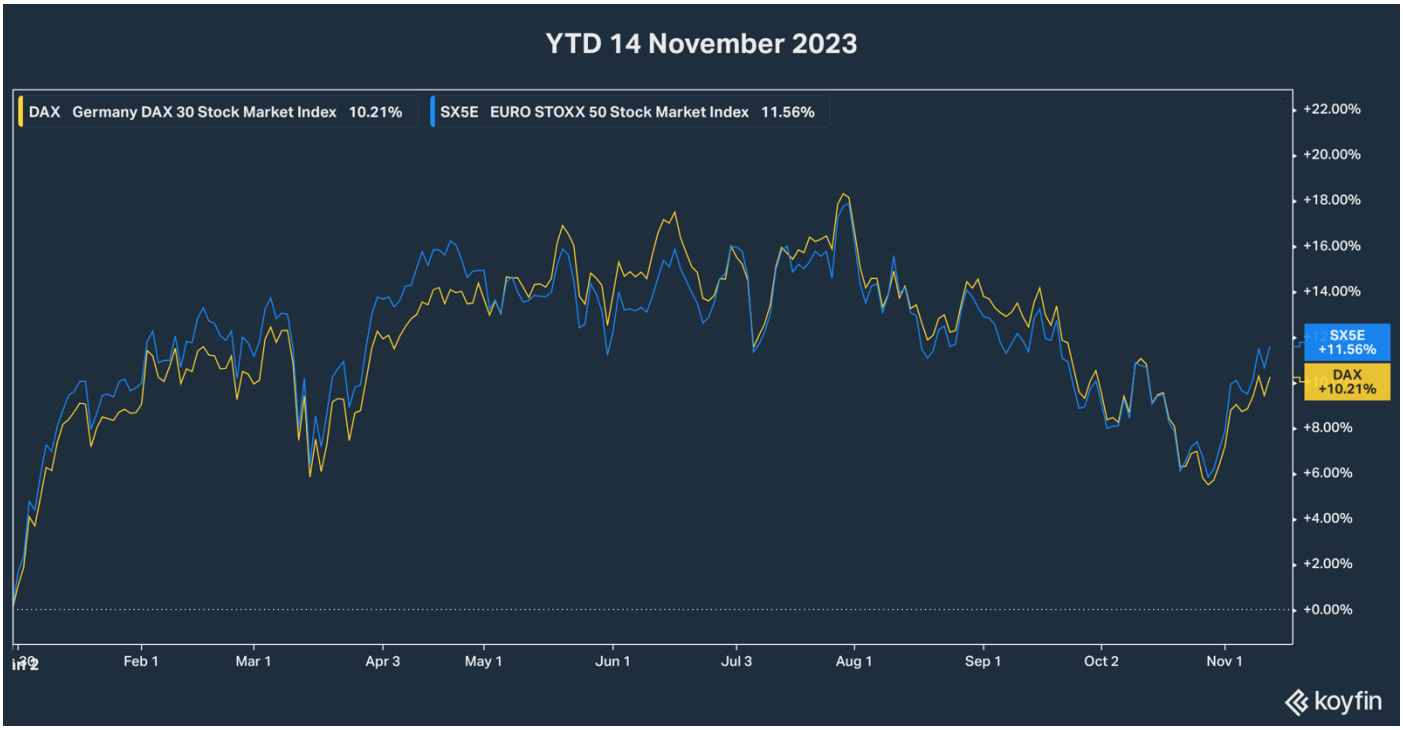
This next chart is a heatmap providing an even higher-level view of DAX® breakdown by sector and individual names, colored by each stock's year-to. On the upside, this heatmap shows how the price rise in SAP has made Information Technology the best performing DAX® sector so far in 2023, while on the downside, the index has been weighted down this same year by the Health Care sector, with names like Bayer (BAYN), Merck KGaA (MRK) and Qiagen (QGEN) all ranking among this year's greatest decliners. While this is just one sample year, this heatmap should hopefully make clear how well balanced the DAX® benchmark is among sectors, and how this is important for one sector's good year offsetting another sector's bad year.

[1] https://qontigo.com/index/de0008469008/
[2] https://deutsche-boerse.com/dbg-en/media/press-releases/DAX-welcomes-ten-new-members--2766886



DAX sector weights and year-to-date returns as of 14 November 2023, source: Koyfin

This next chart shows how this year serves as a sample of the observation made earlier in this article, that the German DAX® and broader European EURO STOXX 50® tend to be highly correlated, largely moving up and down together on most days, with one moving ahead of the other at times. Over this sample period, much of the minor difference in the year-to-date returns between these two indices can be roughly explained by both benchmarks having roughly exposure to the Information Technology sector, while the DAX® may have been dragged by its slightly heavier exposure to the Health Care sector in 2023.



Source: Koyfin

Basics of micro-sized futures and options

In simple terms, futures and options on a stock market index provide pure contractual exposure to the value of that index on a given future date. Futures are often one of the most liquid ways to trade "linear" exposure to an index, while options provide traders a way to more specifically target exposure to the index above or below specific levels. Futures on both DAX® and EURO STOXX 50® benchmarks are available in micro-sized contracts worth €1 per index point, but for now, only the former also has index options contracts available in this same micro size. As mentioned at the beginning of this article, this makes DAX® options exposure tradable in less than half the size, or more than twice the level of granularity, as EURO STOXX 50® options at current index levels.

A micro-sized DAX® futures contract, quite simply, provides €1 for €1 exposure to every point the index moves up or down versus the price at which the trader enters the contract. If a trader buys one of these contracts at 16,000, the net gain would be €100 if the index finishes at 16,100, while the net loss would be €100 if the index finishes at 15,900. Conversely, if a trader with no other position sells one of these contracts at 16,000, the net gain would be €100 if the index finishes at 15,900 and a net loss of €100 if the index finishes at 16,100. The futures contract is only guaranteed to settle to the value of the index at expiry, but the price of the futures contract will differ from the current level of the index based on a number of factors ranging from interest rates and stock loan rates. In short, these futures contracts provide many traders with a very simple and liquid way to get quick exposure to the German stock index's next up or down move. As a snapshot of this liquidity, the below screenshot shows "depth of book" market prices for the June 2023 DAX® futures three days before expiration, showing €2 difference between the buy or sell price for 3 contracts, and still only about €10 difference between the average price of buying or selling over 100 contracts, representing €1.6 million exposure. As of this writing in November 2023, there is also some liquidity in the March 15th 2024 futures contract currently trading at a 160 point premium to the December contract, reflecting an almost 4% implied annual interest rate between December and March.

DAX ∞ Dec15'23 @EUREX

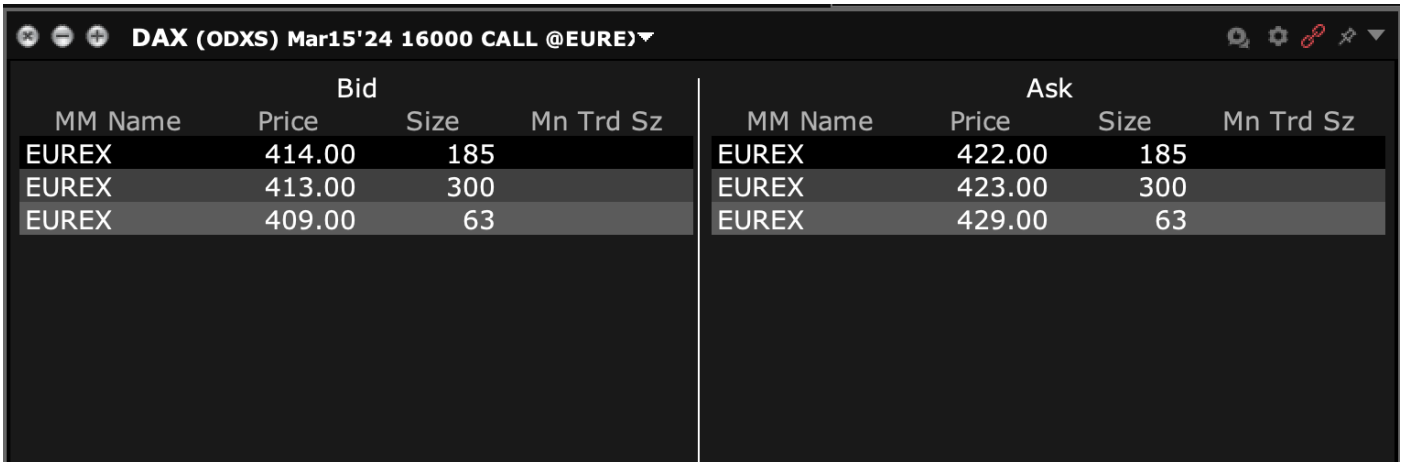
Bid				Ask			
MM Name	Price	Size	Mn Trd Sz	MM Name	Price	Size	Mn Trd Sz
EUREX	15737.00	8		EUREX	15739.00	3	
EUREX	15736.00	29		EUREX	15740.00	24	
EUREX	15735.00	14		EUREX	15741.00	17	
EUREX	15734.00	12		EUREX	15742.00	12	
EUREX	15733.00	42		EUREX	15743.00	13	
EUREX	15732.00	20		EUREX	15744.00	12	
EUREX	15731.00	9		EUREX	15745.00	11	
EUREX	15730.00	9		EUREX	15746.00	12	
EUREX	15729.00	12		EUREX	15747.00	10	
EUREX	15728.00	17		EUREX	15748.00	20	
EUREX	15727.00	10		EUREX	15749.00	9	
EUREX	15726.00	10		EUREX	15750.00	9	
EUREX	15725.00	8		EUREX	15751.00	8	
EUREX	15724.00	22		EUREX	15752.00	18	
EUREX	15723.00	11		EUREX	15753.00	33	

Source: Interactive Brokers, 15 November 2023, 10:19 CET

An options contract goes a step further than a futures contract, providing the trader with pre-defined exposure to only the upside OR the downside of the index from a pre-determined strike price. Because of that additional variable of the strike price, there are many different options contracts expiring on the same expiry date and many different expiry dates a trader might consider at a given time. For example, the screenshot below shows the "option chain" (quotes across multiple strike prices) for micro-sized DAX® options expiring on March 15th 2023 (with two earlier expiry date choices that were not selected). As a first example, we will look under the left "CALLS" side of this option chain at the bid and ask prices of the option on the row with strike "16000". This option will pay out €1 per point over 16,000 if the DAX® finishes above 16,000 on March 15th 2024, while expiring worthless if the index finishes below 16,000 on that date. In exchange for that exposure, this screen quotes that one of these contracts can be bought for €423 or sold for €414.

Source: Interactive Brokers, 15 November 2023, 10:21 CET

Although the difference between the buy price and sell price of this option seems to be significantly wider than with the futures contract, a look at the depth of market quote for this option shows that these options have an on-screen liquidity available in much larger size, in this case, 185 contracts with an €8 difference between the bid an offer, and a further 300 contracts per side with a bid-offer spread of only €10 per contract. These 485 contracts have a combined notional value of €7,760,000, a significant amount of liquidity for a single option contract in the "micro" series.



Source: Interactive Brokers, 15 November 2023, 10:22 CET

Next, we will consider specific examples of trading strategies using these futures and options, starting with the above quotes examples of the March 2024 futures contract and 16,000 call options expiring on the same date, based on the above option chain.

Sample Strategy #1: Bullish view, buying futures vs. buying a call option

As a first example, consider a trader who is bullish on the DAX® and expects it to rise over the next few months. Let us consider four different trades this trader could put on to express this view:

1. Buy a March DAX® futures contract at 15,900, or
2. Buy a March 15,000 strike DAX® call option contract for a premium of 1,116, or
3. Buy a March 16,000 strike DAX® call option contract for a premium of 423, or
4. Buy a March 17,000 strike DAX® call option contract for a premium of 80

Since these are micro-sized contracts, they all provide exposure to €1 per index point, whether via the futures contract or one of the options. The options contracts purchase their future possible payoffs in full in exchange for an up-front cash payment of €1,116, €423, or €80, respectively. The futures contract, on the other hand, does not involve payment of an up-front premium but rather requires the account to have an initial margin balance[3] of at least a few thousand euros, with conservative traders wanting to have much more margin in the account. Based on these starting numbers, the following table compares the relative levels of profit versus loss of these four trades if the index rises versus declines over this period:

	Future	15000 Call	16000 Call	17000 Call
17,650	€ 1,750	€ 1,534	€ 1,227	€ 570
17,400	€ 1,500	€ 1,284	€ 977	€ 320
17,150	€ 1,250	€ 1,034	€ 727	€ 70
16,900	€ 1,000	€ 784	€ 477	€ (80)
16,650	€ 750	€ 534	€ 227	€ (80)
16,400	€ 500	€ 284	€ (23)	€ (80)
16,150	€ 250	€ 34	€ (273)	€ (80)
15,900	€ -	€ (216)	€ (423)	€ (80)
15,650	€ (250)	€ (466)	€ (423)	€ (80)
15,400	€ (500)	€ (716)	€ (423)	€ (80)
15,150	€ (750)	€ (966)	€ (423)	€ (80)
14,900	€ (1,000)	€ (1,116)	€ (423)	€ (80)
14,650	€ (1,250)	€ (1,116)	€ (423)	€ (80)
14,400	€ (1,500)	€ (1,116)	€ (423)	€ (80)
14,150	€ (1,750)	€ (1,116)	€ (423)	€ (80)

Starting with the "Futures" column, it seems one advantage of expressing this view by buying the futures contract is that if the index does not move, and finishes at exactly 15,900, then the futures contract neither makes nor loses money, while each of the options contracts would lose some or all of the premium paid. The futures contract also nets the highest profit at every level the index rises above 16,330, but this comes at the expense of losing significantly more than any of the options contracts if the index falls much below 15,000. In other words, the futures contract provides the simplest euro-for-euro exposure to every point the DAX® index rises or falls. The options all involve paying an upfront premium in exchange for limiting the maximum loss to that amount of premium paid. Although the 17,000 strike call option makes the smallest profit if the index rises to 17,650, compared to any other option, in percentage terms, a €570 profit on €80

[3] https://www.eurex.com/ex-en/data/clearing-files/risk-parameters

risked is a significantly more leveraged return than any of the other options, but of course, the index has to rise well above 17,000 for this highest strike option just to break even. Traders getting started with futures and options may be well-served to create a table like this before every trade in order to best decide which of these instruments best reflects the expected moves and acceptable risks the trader wants to be exposed to.

Sample Strategy #2: Bullish view, buying futures vs. selling a put option

One disagreement many traders have with buying options is that if the index does not move, then the option's premium wastes away and may eventually be lost. Traders expecting an index move that is likely to be minor than major may instead prefer to sell options contracts rather than buying them. For this second example, let us again consider a trader who broadly expects the DAX® index to rise and wants to consider the following trades to express this view, starting with the same futures contract used in the first example:

1. Buy a March DAX® futures contract at 15,900, or
2. Sell a March 15,000 strike DAX® put option contract for a premium of 208, or
3. Sell a March 16,000 strike DAX® put option contract for a premium of 500, or
4. Sell a March 17,000 strike DAX® put option contract for a premium of 1,147

While buying call options in the previous example meant paying a premium in exchange for a payoff if the index rises, the three trades in this example sell put options, meaning the trader receives an up-front premium in exchange for the risk of having to pay out on the option if the index finishes below the strike price. Given that the risk of paying out on a put is higher when the strike price is higher, the trade receives a higher up-front premium for selling a higher strike price put option than for selling a lower strike price put. The table below compares the net profit and loss of these three put selling trades, compared with the same long futures position as in the previous example:

	Future	15000 Put	16000 Put	17000 Put
17,650	€ 1,750	€ 208	€ 500	€ 1,147
17,400	€ 1,500	€ 208	€ 500	€ 1,147
17,150	€ 1,250	€ 208	€ 500	€ 1,147
16,900	€ 1,000	€ 208	€ 500	€ 1,047
16,650	€ 750	€ 208	€ 500	€ 797
16,400	€ 500	€ 208	€ 500	€ 547
16,150	€ 250	€ 208	€ 500	€ 297
15,900	€ -	€ 208	€ 400	€ 47
15,650	€ (250)	€ 208	€ 150	€ (203)
15,400	€ (500)	€ 208	€ (100)	€ (453)
15,150	€ (750)	€ 208	€ (350)	€ (703)
14,900	€ (1,000)	€ 108	€ (600)	€ (953)
14,650	€ (1,250)	€ (142)	€ (850)	€ (1,203)
14,400	€ (1,500)	€ (392)	€ (1,100)	€ (1,453)
14,150	€ (2,180)	€ (642)	€ (1,350)	€ (1,703)

Opposite to what was seen in the previous example, with these put writes, all of them make a profit if the index remains at 16,330, which is the level at which the futures contract neither makes nor loses money in this example. If the index were to rise significantly, say above 17,000, the futures contract would profit

significantly more than any of the options trades, whose maximum profit is capped at the premium received with the hope of paying nothing out. On the downside, each option will lose less, or in some cases even profit slightly, if the index were to decline, as the premium received and choice of strike price provides some buffer against these declines. In other words, selling put options may be an attractive strategy for traders who feel the current index level may currently be a little high with upside relatively limited but also don't expect the index to decline significantly either. In many months, when the index stays flat or moves only slightly, the profit net of premium can be quite attractive, but if the index does crash, the loss can easily be many times more than the value of the premium received.

Sample Strategy #3: Bearish view, selling futures vs. buying a put option

Finally, consider a trader who expects the DAX® index to decline and may express this view through one of the following four trades:

1. ***Sell*** a March DAX® futures contract at 15,900, or
2. Buy a September 15,000 strike DAX® put option contract for a premium of 215, or
3. Buy a September 16,000 strike DAX® put option contract for a premium of 511, or
4. Buy a September 17,000 strike DAX® put option contract for a premium of 1,159

Note that all four of these trades are the exact opposite position of the same four contracts in example 2, where the trader either sells the futures contract or buys a put option contract. In the case of the futures contract, this provides the trader with simple euro-for-euro exposure to a ***decline*** in the DAX® index, meaning the trader profits €1 for every point the index declines and loses €1 for every point the index rises. One important asymmetry between selling and buying futures is that buying a futures contract at 15,900 can, in theory, lose at most €15,900 per contract if the index were to decline all the way to zero, but selling at 15,900 can lose a lot more than that if the index were to rise to 40,000 or higher, for example in a hyperinflationary scenario. For this reason, many traders seeking to buy downside protection may find paying the premium for put options worth the benefit of having losses limit in cases where the index rises significantly. Sample net profit and loss numbers of these four trades are expanded below:

	Future	15000 Put	16000 Put	17000 Put
17,650	€ (1,750)	€ (215)	€ (511)	€ (1,159)
17,400	€ (1,500)	€ (215)	€ (511)	€ (1,159)
17,150	€ (1,250)	€ (215)	€ (511)	€ (1,159)
16,900	€ (1,000)	€ (215)	€ (511)	€ (1,059)
16,650	€ (750)	€ (215)	€ (511)	€ (809)
16,400	€ (500)	€ (215)	€ (511)	€ (559)
16,150	€ (250)	€ (215)	€ (511)	€ (309)
15,900	€ -	€ (215)	€ (411)	€ (59)
15,650	€ 250	€ (215)	€ (161)	€ 191
15,400	€ 500	€ (215)	€ 89	€ 441
15,150	€ 750	€ (215)	€ 339	€ 691
14,900	€ 1,000	€ (115)	€ 589	€ 941
14,650	€ 1,250	€ 135	€ 839	€ 1,191
14,400	€ 1,500	€ 385	€ 1,089	€ 1,441
14,150	€ 1,750	€ 635	€ 1,339	€ 1,691

Buying lower strike put options is sometimes compared with buying an insurance policy with a higher "deductible." That is, in exchange for paying a lower premium, the option buyer forgoes getting paid on the first few points of index decline.

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 sizes than available in EURO STOXX 50® options. Whether you are considering trading these Micro-DAX® options because of this smaller contract size or because you are looking to trade a second European index alongside EURO STOXX 50® options, hopefully, the above three sample strategies make it very clear how to incorporate these instruments into your overall strategy better.

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