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ADX Explained: How to Measure and Trade Trend Strength

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Credit: NanoStockk / Getty Images

- The average directional index (ADX) measures trend strength and ranges from 0 to 100, with readings above 25 indicating a strong trend.

- ADX is non-directional, so it indicates trend strength without clarifying whether prices are moving up or down.

- Combining ADX with DI lines (+DI and -DI) can enhance trend direction analysis and help identify entry and exit points.

- ADX is less effective in range-bound markets and does not predict future price movements.
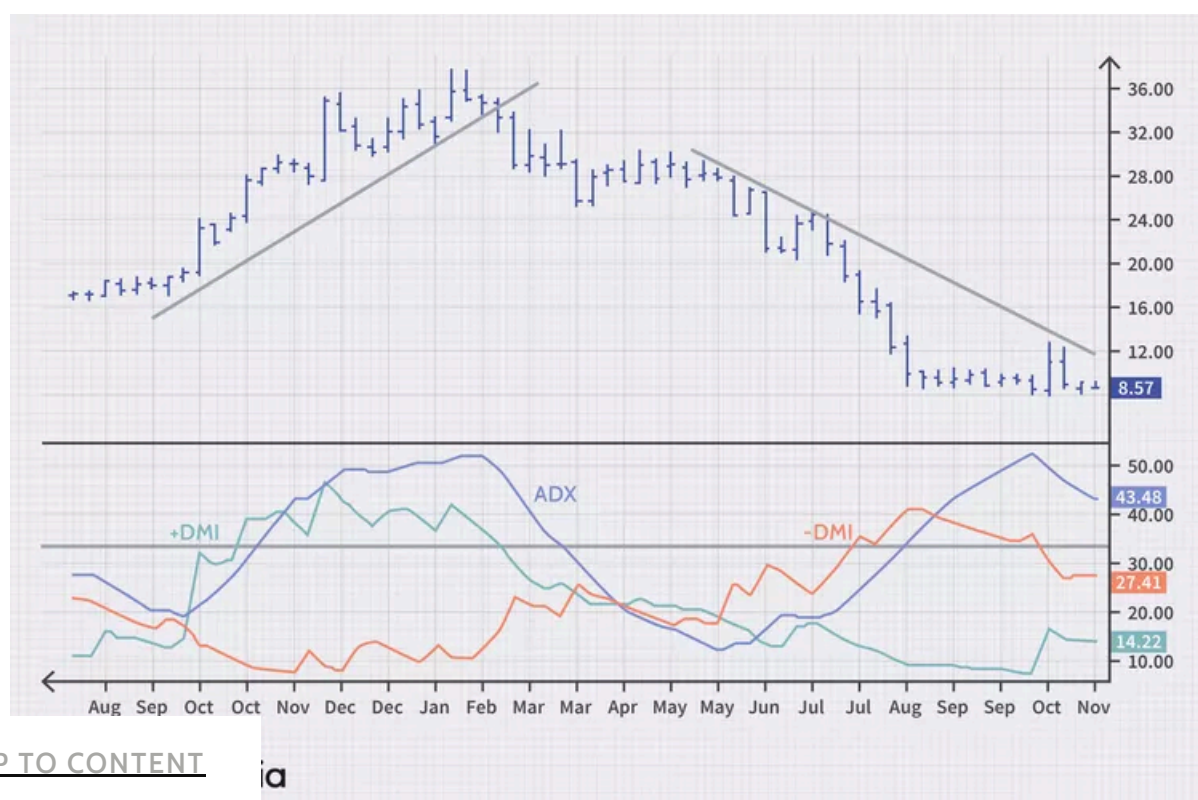
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The average directional index (ADX) is a vital tool for traders, used to measure the strength of a financial market trend, whether in stocks, exchange-traded funds (ETFs), or futures. The ADX helps traders reduce risk and maximize profit opportunities by aligning trades with the strongest trends.

In this article, we show you how to interpret ADX readings and how to use it alongside other indicators like the DMI. You'll also learn strategies to apply the index to enhance your trading performance and discover how an ADX reading above 25 signals a strong trend, making it a crucial metric for any trend-following strategy.

Understanding the ADX Trend Strength Indicator

ADX is plotted as a single line with values ranging from 0 to 100. [1] It is non-directional, meaning it registers trend strength, not whether price is trending up or down.

The indicator is usually plotted in the same window as the two directional movement indicator (DMI) lines from which ADX is derived (shown below). [2]

strength of the uptrend. When the -DMI is above the +DMI, prices are moving down, and ADX measures the strength of the downtrend.

The chart above shows an uptrend changing to a downtrend. Notice how ADX rose during the uptrend, when +DMI was above -DMI. When price reversed, the -DMI crossed above the +DMI, and ADX fell as the uptrend died, then eventually rose again as the downtrend gained momentum.

Steps to Calculate the ADX

The ADX is calculated as follows: [3]

Step 1: Calculate the Directional Movement (DM)

Directional movement is broken down into 2 directions: upward and downward.

Plus directional movement (+DM) = Current High - Previous High

Minus directional movement (-DM) = Previous Low - Current Low

If both +DM and -DM are positive for the same period, only the larger value is used, while the indicator with the smaller value is set to 0.

Step 2: Calculate the True Range (TR)

The True Range (TR) is used to normalize directional movements. It takes into account price gaps and daily volatility.

The True Range is the largest of the following values for a given period:

1. Current High - Current Low

2. Current High - Previous Close

   - Previous Close

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$$+DI_{14} = (\text{Smoothed} + DM_{14})/(ATR_{14}) * 100$$

$$-DI_{14} = (\text{Smoothed} - DM_{14})/(ATR_{14}) * 100$$

The default period is 14. In this case, the [Average True Range (ATR)](#) is the moving average of the True Range values over the same 14-period window.

Step 4: Calculate the Directional Movement Index (DX)

The Directional Movement Index (DX) quantifies the absolute difference between +DI and -DI, relative to their sum.

$$DX = (|+DI_{14} - -DI_{14}| / |+DI_{14} + -DI_{14}|) * 100$$

This value provides an understanding of how separated the two directional indicators are.

Step 5: Calculate the Average Directional Index (ADX)

Lastly, the Average Directional Index (ADX) is obtained by smoothing the DX values over a defined period. This is usually done using a Wilder Moving Average.

The first ADX value is the average of the first n DX values, where n is the number of periods.

Subsequent ADX Values: ADX = (Previous ADX * (n-1) + Current DX) / n

This smoothing makes the ADX line less volatile and more useful for gauging the trend.

Practical Applications of the ADX Indicator

SKIP TO CONTENT

Conversely, ADX values below 20 indicate a non-trending or sideways market, suggesting that range-bound strategies are more effective. However, as ADX moves between 20 and 25, it signals a possible trend formation, and traders should watch for further confirmation. [3]

When the ADX rises above 25, it confirms a strong trend, making trend-following strategies like moving average crossovers more viable. Once ADX climbs above 50, the trend is very strong. But at these levels traders should exercise caution as the market may be overheated, and corrections may be more likely. [3]

ADX Value	Trend Strength
0-20	Absent or Weak Trend
25-50	Strong Trend
50-75	Very Strong Trend
75-100	Extremely Strong Trend

The ADX is most useful when paired with the +DI and -DI lines, which indicate the direction of the trend. For example, if +DI crosses above -DI and ADX is above 20, it suggests an uptrend is forming and is an ideal time to consider a long position. Conversely, if -DI crosses above +DI with ADX rising above 25, a strong downtrend is forming. [4] [3]

Analyzing Trend Momentum with ADX

Momentum is the velocity of price changes. ADX clearly indicates when the trend is gaining or losing momentum. A series of ADX peaks is a visual representation of overall trend momentum.
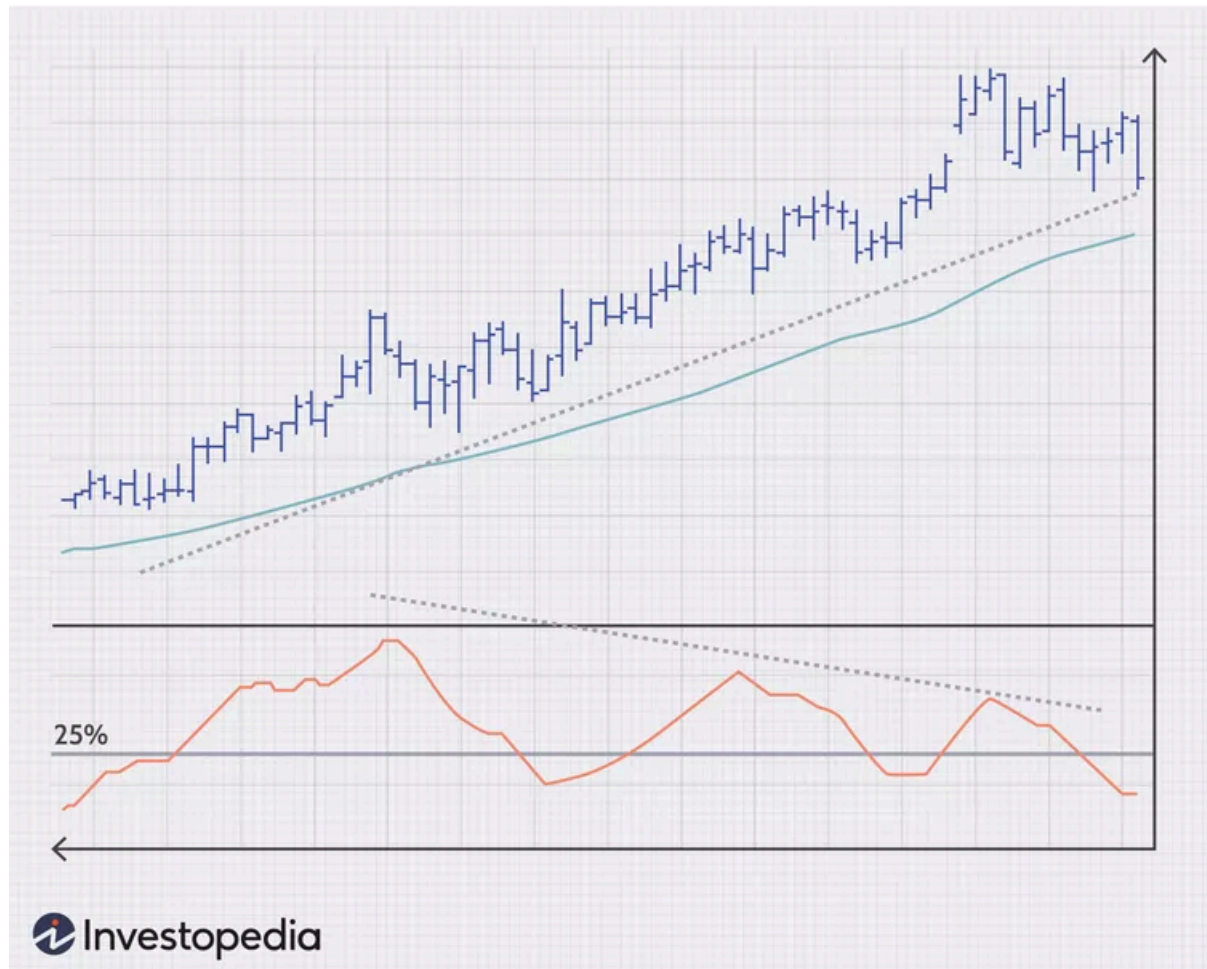
Increasingly higher ADX peaks mean trend momentum is increasing.
 er ADX peaks mean trend momentum is decreasing. Any ADX

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In an uptrend, price can still rise on decreasing ADX momentum because overhead supply is eaten up as the trend progresses (shown below).

ADX peaks are above 25 but getting smaller. The trend is losing momentum but the uptrend remains intact.
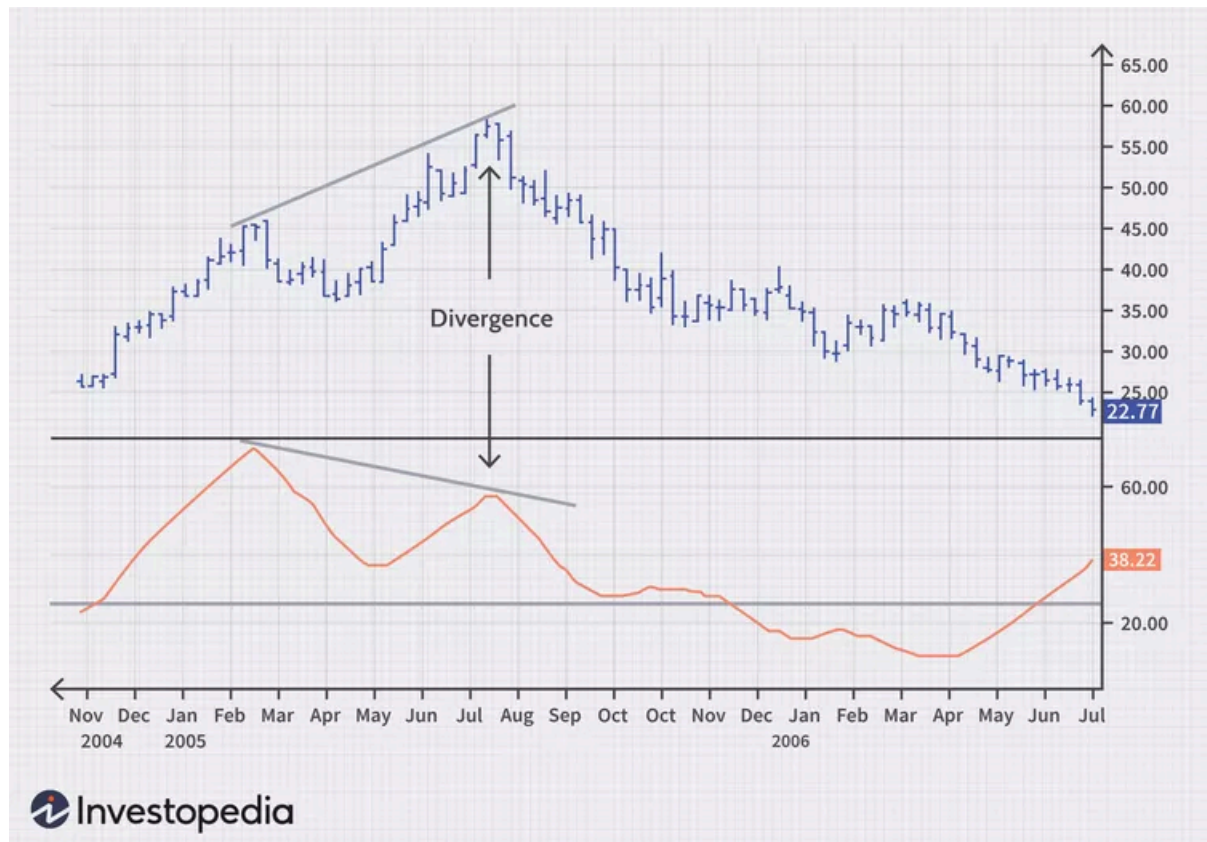Credit: Image by Sabrina Jiang Â© Investopedia 2020

Knowing when trend momentum is increasing gives a trader the confidence to let profits run instead of exiting before the trend has ended. However, a series of lower ADX peaks is a warning to watch prices and manage risk.

The ADX can also show momentum divergence. When price makes a higher high and ADX makes a lower high, there is negative divergence, or non-confirmation. In general, divergence is not a signal of a reversal, but rather a warning that trend momentum is changing. It may be appropriate to tighten the stop-loss or take partial profits.

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Price makes a higher high while ADX makes a lower high. In this case, the negative divergence led to a trend reversal.
Credit: Image by Sabrina Jiang Â© Investopedia 2020

Strategic Insights for Using ADX in Trading

Price is the single most important signal on a chart. Read price first, and then read the ADX in the context of what price is doing. When any indicator is used, it should add something that price alone cannot easily tell us. ADX tells traders about the strength of the trend, whether to help them avoid false breakouts or enter strong ones.

> ⭐ **TIP**
>
> The best trading decisions are based on objective signals, not emotion.

Leveraging ADX and Crossover Signals

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25 can confirm a short entry. [3] [4]

Note that some traders use an ADX reading of 20 to confirm a trade entry on a crossover of the +DI and -DI lines. This can mean entering trades earlier, but can also result in more false signals. It's up to each individual trader to determine what best suits them. [4] [3]

Utilizing ADX for Confirming Breakouts

The best trends rise out of periods of price consolidation. Breakouts are not hard to spot, but they often fail and end up being a trap. But the ADX can help confirm a breakout. When it rises from below 20 to above 25, for example, a strong trend has been established and is likely to be sustained. On the other hand, if the ADX remains below 25, it likely indicates a false breakout, and if it remains below 20, it's even more likely to be a false breakout. [4] [3]

Traders can also use the ADX to monitor the continuation of trends, with a rising ADX possibly signaling that it's time to add to a position or adjust stops higher. [4] [3]

During periods of consolidation, a low ADX shows that the market is resting, but as the ADX begins to rise, it can signal an impending breakout. [4] [3] But it's important to beware a rising ADX below 20—while it indicates that price movement is gathering strength, it hasn't confirmed a trend. Moreover, for added reliability, a rising ADX with increased volume provides strong evidence of a proper breakout with momentum.

By strategically using ADX during breakouts, traders can boost confidence in their setups, manage risks effectively, and focus on high-probability trades. [5] [4]

Identifying Rangebound Markets with ADX

It is often hard to pinpoint when price moves from trending to rangebound. The ADX shows when the trend has weakened so much that, at the very least, the price is likely entering a period of consolidation. Range

After using the ADX to identify a consolidation period, choose the appropriate trading strategy. In trending conditions, entries are made on pullbacks and taken in the direction of the trend. In range conditions, trend-trading strategies are not appropriate. However, trades can be made on reversals at levels of support (go long) and resistance (short).

Advantages and Disadvantages of ADX

Advantages	Disadvantages
• Measures Trend Strength	• Lagging Indicator
• Helps Avoids False Signals	• Limited Predictive Capability
• Adaptable to Different Markets and Timeframes	• Not Effective in Choppy Markets
• Indicates Trend Continuation or Exhaustion	• Can Give False Signals in Rangebound Markets
• Pairs Well With Other Indicators	

Real-World Example of Trading with the ADX

A gold (XAUUSD) trader is trading on a one-hour candlestick chart and observed the metal consolidating, with the ADX declining and the gold prices oscillating between 2580 and 2530. The market shows no clear trend during this phase, indicating that momentum is weak.

The trader then receives a potential buy signal when a positive DMI crossover occurs, accompanied by a rising ADX, a clear indication that trend strength is starting to pick up. This signal is confirmed when gold closes above the 2577.45

SKIP TO CONTENT   prompting the trader to enter a long position.

Gold ADX Trade Part 1.
Credit: Tradingview

Following the breakout, gold's momentum builds sharply, as evidenced by the ADX rising from 29 to 65. The DMI continues to show a positive crossover, reinforcing the strength of the uptrend. Confident in the direction and strength of the trend, the trader chooses to hold the position.

Gold ADX Trade Part 2.
Credit: Tradingview

Thereafter, the metal begins to consolidate between 2620 and 2640, and the ADX starts declining from its highs, indicating weakening trend strength and even showing some negative divergence. Recognizing that momentum may be waning, the trader prudently decides to exit the trade at 2650, locking in gains before any pullback.

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Gold ADX Trade Part 3.
Credit: Tradingview

How Does the ADX Quantify Trend Strength?

The ADX quantifies trend strength by measuring directional movement over a given time frame. It provides traders with specific numbers (from 0 to 100) that represent strong or weak price trends. Traders can simply refer to the numbers to quickly assess the strength of a trend. When the ADX number rises, the trend is strengthening. When it declines, the trend is weakening. An ADX above 25 is considered to represent a strong trend.

Is the ADX Reliable?

The ADX is widely used and is considered by many traders to be very reliable as a gauge of trend strength. Traders can easily alter the time period to meet their needs.

What Are Limitations of the ADX?

The ADX doesn't offer much help in rangebound markets. Also, it is a lagging indicator and offers no predictive power. Finally, the ADX says nothing about the actual price of a security, just the strength of a trend. So it's wise to use the ADX along with other technical indicators to determine entry and exit points.

The Bottom Line

The biggest profits come from [the strongest trends](#). The ADX not only identifies trending conditions, it quantifies the strength of the trend, offering traders a major edge.

SKIP TO CONTENT   ADX identifies trading-range conditions, so a trader won't get
                   ade the trend when there isn't one. Moreover, the ADX shows

that a [risk management](#) plan is in place.

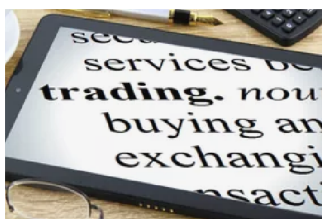READ MORE   (TRADING)   (TECHNICAL ANALYSIS)

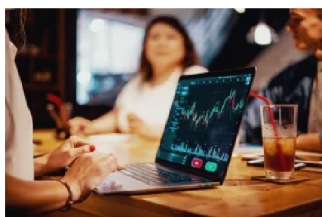(TECHNICAL ANALYSIS BASIC EDUCATION)

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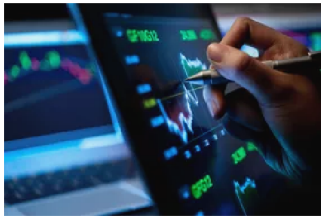
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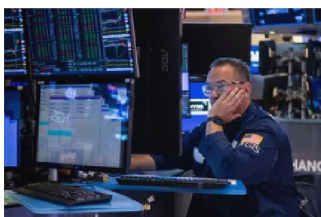
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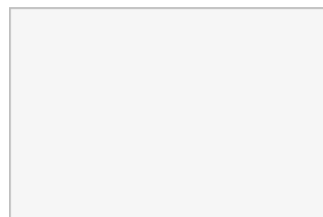
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