

# MACD Evolution

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In the early 1970s, Gerald Appel created the MACD (Moving Average Convergence-Divergence) Indicator. The MACD was an offshoot of research done by Peter N. Hauran. Pete Hauran was an actual rocket scientist employed by JPL (Jet Propulsion Labs) who figured out how to use rocket course-correction techniques for tracking stock market price movements. The MACD uses two EMAs (exponential moving averages). It subtracts a longer EMA from a shorter EMA in order to reduce signal lag. For an in-depth description of the MACD, see the [StockCharts.COM](http://StockCharts.COM) article.

The MACD was very useful because it combined trend-following information with momentum information in a single indicator. Through the 1970s and 1980s, it became more and more popular. Unfortunately, it ultimately became so popular that it didn't work any longer. Knowing that lots of people were trading with the MACD, smarter traders began front-running MACD signals, which eventually caused it to stop working.

As Jim Sloman observed, "A freely traded market is in the business of digesting information and rendering it useless. That is, the market is an organism for metabolizing information, and as with any organism, once food is metabolized it is no longer useful." Any indicator which becomes too popular becomes a market force, and the market always adapts to discount market forces.

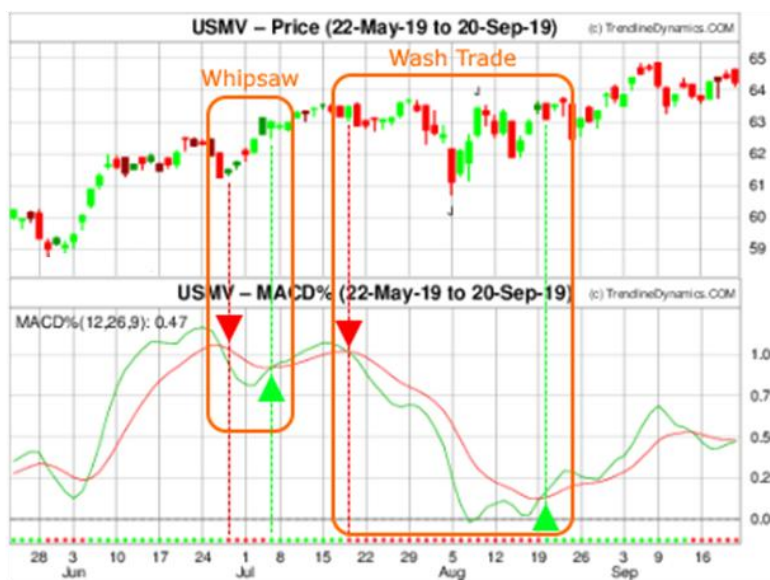
The original MACD was built from the 12-day EMA of price minus the 26-day EMA of price. In other words,  $EMA(12, \text{Close}) - EMA(26, \text{Close})$  was the formula for the MACD\_Oscillator. The *trailer* or "Signal Line" was added soon after. The Signal Line was an 9-day EMA of the oscillator, so  $\text{Signal} = EMA(9, \text{MACD\_Oscillator})$ .

The conventional MACD chart displays 3 things: the MACD oscillator itself, the signal line, and the center (zero) line. Other than the zero, the numbers on the side of the MACD chart do not convey much information because the MACD scaling varies with price.



For EEM, the original MACD gave a long signal on May 31, a short signal on July 10, and another long signal on August 21. All three signals were timely and profitable.

Unfortunately, no indicator is perfect, and the MACD is no exception.



Between June 5 and June 27, the MACD gave us a profitable long trade in USMV. Then from June 27 to July 5 it signaled a short trade, which got us in at \$61.30 and out at \$62.90 for a net loss of \$1.60. Because of the lag in the indicator and the rapid turn in price, we got a short entry signal at exactly the wrong time. This is called a *whipsaw*.

Then on July 27, we got another short signal. During the next 20 days, the MACD made a dramatic decline, but price itself was flat. (Lots of activity but no progress.) By the time we got an exit signal on August 20, we had a *wash trade*, meaning we got out at the same price we got in.

When interpreting the USMV charts, there was an additional piece of information we did not discuss yet. That piece of information is the relationship between the MACD and zero line. If the MACD is consistently above the zero line it indicates an upward trend in price. Notice that the MACD is above zero about 99% of the time in this chart.



That's signaling that price is in a rising trend. Now let's analyze the MACD signals again.



There's not enough context on this chart to tell much about the first crossover on May 29. The next signal is on Jun 5. MACD is above zero, implying a rising trend. A clean, rising crossover above zero says there is a high probability of a profitable advance, so it's a credible buy signal. On June 27, MACD crosses below the signal line, marking an exit.

Is June 27 also marking a short entry? Not really. Notice that the zero line is clear at the bottom of the chart and MACD is near the top. That says there is a strong upward trend in USMV and a poor probability for a profitable short.

The Long signal on July 5 is credible, but the Short on July 18 is not. Again, MACD is far above the zero line so shorting USMV is not a wise move.

Between July 18 and August 20, MACD drops a lot. Along the way it does something interesting. It goes just below zero for one day. Then it drops almost to zero and turns back up. When MACD has been above zero for some time, then it declines and bounces up off zero, it implies there is likely to be a continued advance in price. This means the Long signal on August 20 is a high probability entry.

#### Important Information in the Original MACD

1. Short-term trend – Indicator: MACD above/below signal line

Many people trade the crossover. between the oscillator and the signal line. When doing this it is wise to avoid taking positions that go against the intermediate-term trend. In other words, if the intermediate trend is up, only trade long positions. When the intermediate trend is down, only trade short positions.

2. Intermediate-term Trend – Indicator: MACD above/below zero line

The distance and duration (amount of time) that MACD is above/below zero line reveals the intermediate-term trend. Veteran traders know it doesn't pay to fight the current trend.

However, there are times when the intermediate trend is essentially horizontal. If the MACD is

swinging up and down fairly evenly on either side of the zero line, then the intermediate trend is flat. When the intermediate trend is flat, then it's usually safe to trade MACD signals in both directions.

Note: Some people who prefer longer positions only buy or sell when the MACD crosses the zero line. If you want to do this, it would be a good idea to use a second indicator to gauge the long-term trend.

## MACD 2

Traders are always looking for ways to get better returns, and they always search for improvements. One of those improvements was to normalize the MACD so readings from one security could be compared with another.

[Moving Average Convergence Divergence](#) (MACD):  $(12\text{-day EMA} - 26\text{-day EMA})$

[Percentage Price Oscillator](#) (PPO):  $\{(12\text{-day EMA} - 26\text{-day EMA}) / 26\text{-day EMA}\} \times 100$

The heart of the MACD formula (in red) is the same in both indicators. The PPO just adds some scaling. By comparing the formulas, you can see that the PPO is just our old friend, MACD, wearing a new suit.

Since the numbers on the right side of the original MACD have no fixed scale, and the PPO is just a rescaled MACD, I don't see any compelling reason to attach a new name to what is — for all intents and purposes — the second generation of the original MACD. Just be aware that when you look at MACD charts on the TLD website, the PPO rescaling has already been applied.

## MACD 3

Other traders began looking at the distance between the oscillator and the signal line as a way to see a more detailed picture of what price was doing. The distance between the oscillator and the signal line is called the MACD Histogram. Green bars show that the oscillator is above the signal line. Red bars show that the oscillator is below the signal line. The length of the bars are proportionate to the distance between the oscillator and the signal line.





Notice that in the period between August 30 and Sep 24, the MACD entry signal on August 30<sup>th</sup> is timely, but the MACD exit signal on September 24<sup>th</sup> is rather late. However, the high in the histogram on September 13 coincides almost perfectly with the high in price. Unfortunately, as you can see during the first 3 months on the chart, the histogram isn't always so clear and accurate.



One of the basic rules in technical analysis is that you should never try to make decisions based on one indicator alone (even if it's the MACD enhanced with a histogram).

## MACD 4

Adding 2 more colors to the histogram in order to distinguish between longer histogram bars and shorter histogram bars isn't entirely necessary, but it makes it easier to tell the difference between a widening gap and a narrowing gap separating the Oscillator line and the Signal line. In the first chart the entry and exit points are marked on the Osc/Sig crossovers.



In Chart 1 it is clear that the Osc/Sig crossovers are often somewhat late. In Chart 2 the entry and exit points are marked using the rule: "Move on an Osc/Sig crossover OR a 2-bar decrease in the Osc-Sig gap." This works much better except where a waver in the MACD gives an early entry signal on September 6. The entry signal on September 18 is much better.



Adding color to the MACD Histogram tells us that the distance between the Oscillator Line and the Trailer line is decreasing. This decrease may be telling us that a turn is coming, but it may only be telling us that the rate of change in price is decreasing. Testing has shown that changing position when the first dark histogram bar appears (either dark red or dark green) is often premature. Changing a position when a given number of dark histogram bars appears (e.g., acting when 2 or even 3 dark bars have appeared) is better, but there's no free lunch there, either.

Another way of deciding if the histogram may be turning is the Histogram Trailer Line. The Histogram Trailer Line (the blue line) is basically an advisory. It tells us when the histogram has contracted enough to seem to be reversing. It's a little more conservative than counting 3 dark bars, so you may want to count bars, check the Histogram Trailer Line, and then make a judgment call. (Sorry, there is still no way to get around that pesky "you can't predict the future" rule.)



The first entry is the same as the previous chart because the Osc Line crossed above the Sig Line. The rest of the entries and exits are about a day later because the histogram crossing the blue line is a little more conservative than counting 2 dark bars. The good news is that using the blue line avoided the false entry on Sep 6<sup>th</sup> (the orange circle on the chart).

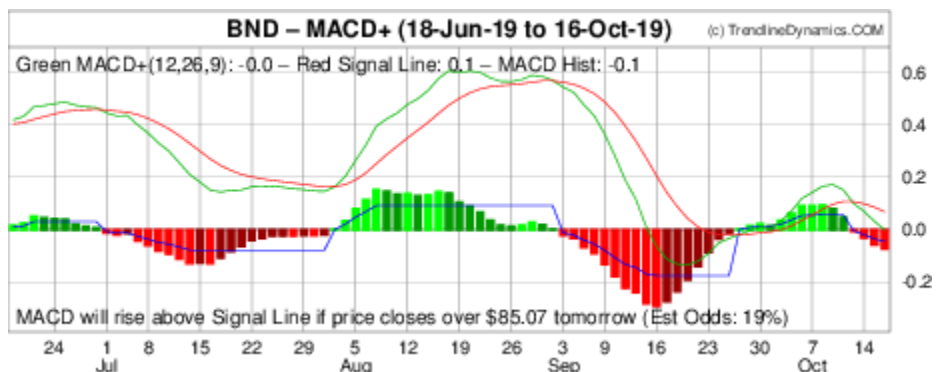
The Histogram Trailer follows the MACD Histogram at a fixed percentage of the histogram's largest (or smallest) value. It changes sign and resets itself when the histogram changes sign.

So should you count dark bars (2 bars, 3 bars, 3 out of the last 5 bars), use the Histogram Trailer, or ignore the histogram and wait for the actual crossover of the Osc Line and the Sig Line? Use the method you are most comfortable with. It all boils down to probabilities and what works best for you.

## MACD 5

This year I developed an algorithm that could calculate how much change in price it would take to cause an Osc Line/Sig Line crossover in the MACD. Knowing how much of a price move is needed to cause an MACD crossover is valuable for people who prefer to trade late in the day. Now they can look at price near the end of the day and have a strong sense of whether price will be in "crossover territory" by the time the market closes. This means that if they're waiting for a crossover to take a

position, they can place their trade before the closing bell instead of waiting until the opening of the market the next day.

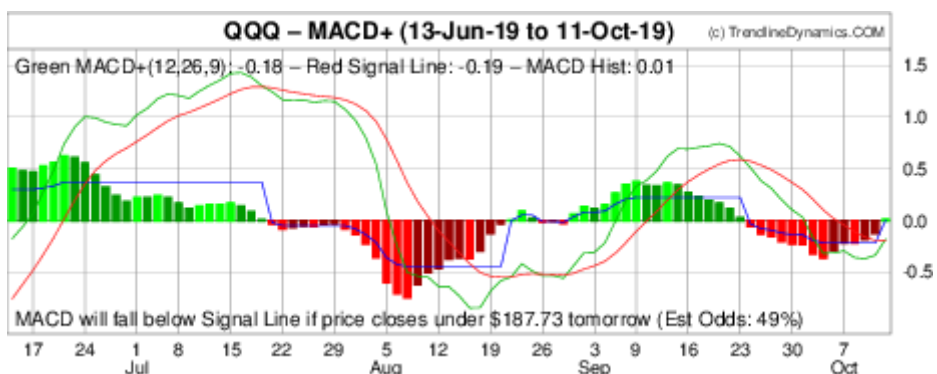


The text at the bottom of the MACD window provides two useful pieces of information. The first piece is the level price will have to reach in order to cause a crossover between the oscillator line and the signal line. In this case that price is \$85.07. The other piece of information is the estimated odds of that happening. The odds are calculated using the average amount price has been moving each day. On this particular day, the chance of price moving far enough to cause a crossover is only 19%.

### Swing Trading With the MACD+

Now that we have wrung almost every available bit of information out of Gerald Appel's MACD, can we trade using the MACD+ all by itself? I suppose it's possible, but I wouldn't do it. I believe that relying on any one indicator by itself is a sucker bet. Carefully choosing a few good indicators that work in different ways or different time scales provides a broader perspective of what's going on.

For example, here's the MACD+ for QQQ on October 11<sup>th</sup>.



The MACD Osc Line has just crossed above the Sig Line. A crossover by a whole 0.01 doesn't seem much like a very high-probability entry, but let's look further. The MACD+ bias is neutral because the Osc Line and the Sig Line are swinging above and below zero. The current down swing didn't go very far below zero, so this could be a sign of a bullish strength. Then again, it could be a sign of QQQ going flat.



## Step 1 — Analyze the dominant trend

The first thing we need to do is figure out the direction of the dominant trend. The MTA provides a quick analysis of the longer-term trend. If the MTA is solid green, avoid short swing trades. If the MTA is solid red, avoid long swing trades. When price is moving above and below the MTA and the trend is close to horizontal, then you can take both long and short swing trades on a case-by-case basis. If the MTA is unclear, look at the trendline charts for guidance.



Here, the MTA is up. Even though QQQ has been in a 3-month consolidation, all three averages are still sloping upward.

## Step 2 — Compare the MACD+ with the Price chart



1. The MACD and price agree that there is a medium-term rise under way. We know this because B is higher than A on the price chart and on the MACD+ chart point D is higher than point C.
2. There is a short-term rise in price because the low swing stop is on and price has broken above the high swing stop.
3. Price has broken above the blue line (the MTA Fast Average). However, when price gaps up across the average (as it did on this chart), it could be a warning sign. Gaps can fall closed as easily as they pop open. Price gapped up across the blue line on Aug 19 and fell back below it

just a few days later. Maybe we should wait one more day before buying, or maybe we should check the volume chart to get a clearer picture of what's going on.

Step 3 — See what message volume is sending



In this case, the volume chart is showing 3 green bars, each bigger than the one before. This is a very bullish sign. It shows that the jump in price is supported by volume and not just statistical noise.

Since all four charts are in agreement, they are telling us this is a high probability long entry point for QQQ. Now we have an entry point and a security which, ironically, are the two least important pieces of a trade plan. A complete plan for a trade has:

1. What to buy
2. When to buy it
3. How much to buy
4. What's our good exit (also known as our profit-taking exit).
5. What's our bad exit (also known as our "emergency exit").

A lot of people believe the movie version of trading and wander into the markets thinking that trading is easy. They don't know that opening a position is easy and closing a position is an art. When you are looking for a position, you are an analyst, but once you're in a trade, you're a risk manager. If you can't make the transition, you will not make money in trading.

Potential comes from the purchase but profit comes from the sale. It takes both a buy AND a sell to put money in your pocket. You are involved in an activity where you have no control over the market and no real idea of where it will go next. Since you can't be certain of what the market is going to do, you must be certain of what YOU are going to do.

Item 3 determines how much of your capital you are will to risk. Professionals risk 2% or less on any one position. If you're new and just learning how to trade, then 1% risk is a good starting point.

Item 4 says when or under what conditions you will take profits. In other words, if price moves in your favor, how will you know when the party is over and it's time to get out. Failure to decide this before

you take a position often leads to riding a profitable trade up to its peak and then back down to below your entry price.

Item 5 says when or under what conditions you are going to cut your losses and dump a position that is not working as you expected. When a position doesn't work as you expected, don't blame your indicators, don't blame your analysis, and don't blame the market. Maybe you were right but you were early. Maybe you were just wrong. Take your lumps and move on.

What would you have done if you had bought Enron at \$90? Would you have ridden it all the way down to \$1 or would you have sold it at \$84 or \$79 like you should have? Things like Enron happen. (If you don't think so, have a look at a 3-year chart of Pacific Gas and Electric. They went from \$70 in September 2017 to \$7 in November 2019.)

You must have a plan for both a good exit and a bad exit before you enter a trade because once you're in it, you will be biased by your emotions and you won't be able to make the right choices. Fortunately, the MACD+ provides pretty reliable entry and exit signals for many securities, so we can create a rule-based system for trading.

- What to buy — Any ETF which has shown a good history of performing well with the MACD+. (It's pretty easy to choose a primary indicator you like and then find some ETFs it works with. It's much harder to find an indicator that works well with some ETF you like.)
- When to buy it — Wait until all 3 are true before buying.
  - The dominant (longer-term) trend is rising. Never try to fight the dominant trend. The dominant trend can be measured by either the MTA or the OBV.
  - The MACD+ histogram moves above the blue line OR it moves above zero line.
  - Price moves above the 21-day average. This confirms the MACD+ entry signal.
    - Price does not have to confirm the MACD+ signal right away. It may take several days.
    - If price does not confirm the MACD+, then something is wrong, so it's better to pass on the trade.
- How much to buy — Do not risk more than 1%-2% of your trading capital on any one trade.
- Profit-Taking Exit
  - MACD+ histogram moves below the blue line
- Emergency Exit
  - MACD+ histogram moves below the zero line

A set of rules and criteria for trading is like a recipe for baking a cake. It tells you what to pay attention to and what to do at each step along the way. The purpose of these rules is to give you a workable system, a starting point that will help you learn the process, have a reasonably good chance of making some money, and keep you from losing your shirt when the market moves against you from time to time.

Over time, your own version of the system will evolve. Once you become comfortable with the process, you will also gain an understanding of how it can be adjusted to fit your personal trading style. For example, when you are more experienced, you will know when it's all right to expand the first entry rule ("dominant trend is rising") to the broader ("dominant trend is either rising or horizontal").

Now, let's look at applying the exit rules to the QQQ position we opened on Oct 11<sup>th</sup>.



On Nov 13<sup>th</sup>, the MACD Histogram dropped below the blue Histogram Trailer line, triggering the profit-taking exit rule.

Some of you may be wondering if there is a cost to taking the early exit (when the Histogram drops below the Histogram Trailer line) as opposed to taking the regular MACD exit (when the Osc line drops below the Sig Line). Here is a chart illustrating the two exits for the QQQ trade.



In this case the MACD exit (B) would have gotten you a dollar or so more than the "early" exit (A); however, that is not generally the case. Most of the time price falls off rapidly after it peaks, and the lag inherent in the MACD exit signal gets you a lower price than the early exit. Also, the early exit often gets you out in time to be selling into a rising market. That gives you a little more leeway to work the trade than the MACD exit, which usually has you selling into a falling market.

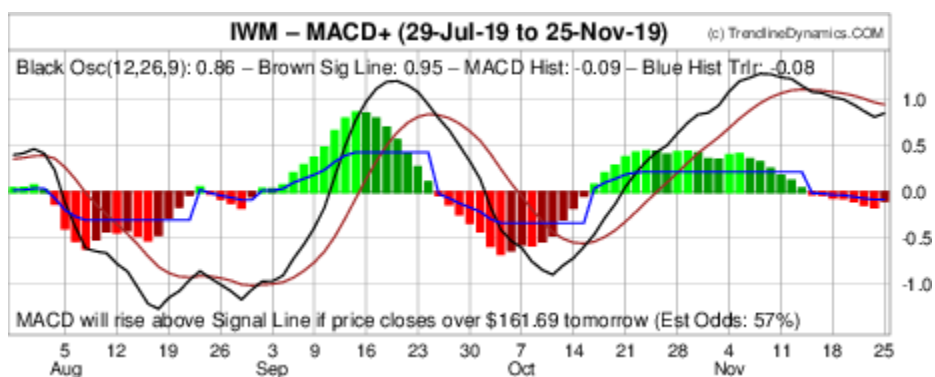
## Longer-Term Trading With the MACD+

The MACD+ can also be of value for longer-term trading. The MACD+ bias provided a useful intermediate-term trend indicator. It's a little more sensitive than the MTA and gives us perspective on what the MTA is saying.

Swings in the MACD+ can be used to identify secondary entry points in long-term advances. These can be used for adding more money to long-term positions.

### Chart Changes

During the many weeks it took to write this paper, there have been several changes to the MACD+ chart. The most recent changes occurred because I didn't like the fact that the Osc Line and the Sig line tended to disappear when they crossed the MACD Histogram bars. To fix that problem, I changed the Osc Line to black, the Sig Line to brown, and then made the lines a little thicker. That makes the MACD+ lines easier to see.



The Sig Line is still a little hard to track when it crosses the dark red bars of the histogram, but none of the colors I've tried show up clearly when the dark red bars are behind them.

### Swing Trading Case Study

I have been working on this paper (and polishing the new MACD+) since early spring in 2019. During the summer I decided it would be good to include a case study showing the entry, management, and exit of a real trade relying almost exclusively on the MACD+ indicator.

While doing this case study, I followed the market day by day and made all my decisions based on what was on the "hard right-edge of the chart" each day. In other words, there was no peeking into the future and then backing up to make "improved" (fudged) decisions. As the days went by, I had no idea what was coming next and I only used the charts shown here to decide what to do each day.

Here are four charts for QQQ on 12-Aug-2019. Five important facts that establish the market context have been marked on the charts.

1. The three MTA averages are all rising, so the MTA 3-Slope Test says the dominant trend is up.
2. Price came down through all three MTA averages on August 5<sup>th</sup> and then started to bounce back up.
3. On August 5<sup>th</sup> the RSI chart signaled that QQQ was oversold.
4. On August 5<sup>th</sup> price completed a 6-day decline and then showed signs of turning back up.
5. On August 7<sup>th</sup> the MACD Histogram hit a low point.



Two more items worth noting are marked on these two charts from the next day, 13 August:

- A. The odd little symbol (a black square with a red line through the middle of it) in the upper right corner of the price chart shows the level of the price described at the bottom of the MACD+ chart. That level tells where price would have to move in order to cause the MACD Osc to cross the MACD Sig.
- B. The Histogram Trailer and the MACD Histogram are currently at exactly the same level today.



The rest of the charts in the case study will allow you to see how the MACD and the MACD histogram react to changes in price, how to navigate price consolidations, and a special pattern called the ABC Setup which can provide several types of valuable information.

On the 14<sup>th</sup> the MACD Hist is slightly above the Hist Trlr, but not quite enough to be interesting. We want to have at least a little visible space between the MACD Hist bars and the blue "Hist Trlr" line. (A difference of less than 0.05 seems too niggling to take seriously.)

The orange arrows are pointing at the small "J"s beneath the price bars on May 13<sup>th</sup> and Aug 5<sup>th</sup>. Those "J"s indicate that those days saw unusually large "jumps" in price. The interesting thing about big price jumps is that downward jumps often exhaust selling pressure, causing a decline to pause or reverse for a few days. Upward price jumps also often exhaust buying pressure, causing an advance to pause or even reverse for a few days. In other words, it's often unproductive to buy the day after a *jump up day* or to sell the day after a *jump down day*.



A day later, August 15<sup>th</sup>, the MACD Hist Bar is slightly closer to the Hist Trlr line, just 0.01 away.



Aug 16<sup>th</sup>: A small space appears between the MACD Hist bar and the Hist Trlr. The MACD Histogram is saying "Go long" but the high trailing stop in the upper chart is still in force. The high stop started on the 13<sup>th</sup> and the newest low stop started on the 15<sup>th</sup>. The high stop is longer and is still active, so we should not buy just yet. The trailing stops on price are sanity checks for what the MACD+ chart is telling us.



August 19: Two things happen at once: the high trailing price stop is broken and an ABC Setup appears. We know the high stop is broken because its value (in the orange circle) changes to "Off".

In an ABC Setup, "a" is the lowest point, "b" is a local high after "a", and "c" is a higher low than "a". The last piece of the ABC Setup is a trendline through the "B" point and the highest local high before "a". Price must close above that trendline to complete the setup and generate a buy signal, and it did.

The ABC Setup is one of the easiest setup patterns to remember and use. This particular example is very small, but it has all the elements. Today we got a second MACD Histogram buy signal, a price trailing stop signal, and an ABC setup signal on the same day, so this is a strong buy signal.





Aug 20: We buy QQQ at the open for \$188...and by the end of the day we're down \$1.03. Get used to it. It happens all the time.



Aug 21: The day opens another \$2.86 lower and we think somebody is out to get us. But by the end of the day it's back above the low trailing stop and we've actually made a little money. Meanwhile, the MACD Osc line has caught up with and crossed above the MACD Sig line.

We've been in this position 2 days and we've already experienced a losing day and a winning day. It's important to remember that day-to-day price movements are full of noise and are highly erratic. If we celebrate every uptick and worry about every downtick we will make ourselves crazy.

Short-term market gyrations are just that, gyrations. You have to pay attention to your rules and give the up-swing time to develop.



Aug 22: The market opens higher, then closes lower than the previous close. However, the MACD Histogram got further above zero today and made another, slightly larger, little green bar.



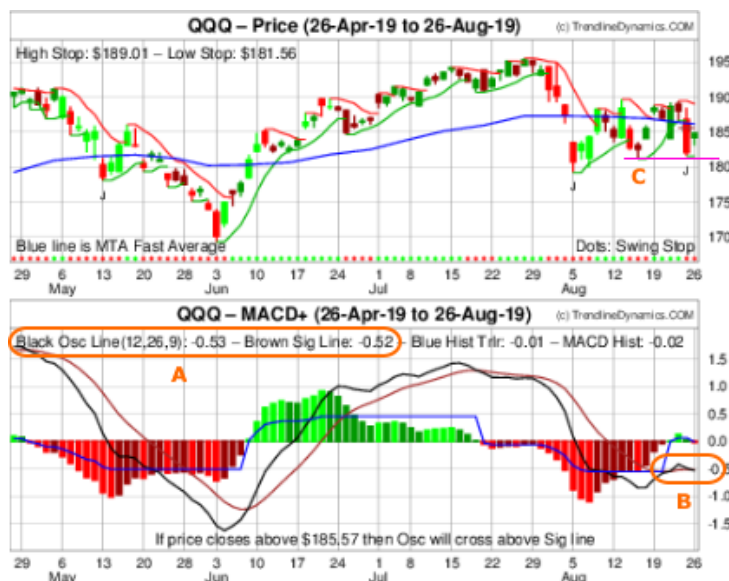
Aug 23: QQQ got thumped today, taking us clear down to \$182. The MACD Hist fell below the Hist Trailer, but there is no visible white space between the MACD Hist Bar and the blue Hist Trlr line. So this is not a clear MACD exit signal. (Notice that this is a "jump down day" so there is probably not going to be any follow through.)

But if price can drop this far without causing a MACD exit signal, it seems like we should come up with an alternate exit signal to protect our capital. One of the nice things about the ABC Setup is that the low point on the "C" low gives us just such an exit. In this case that exit level is \$181.16. If price goes below that level it's a clear sign that something has gone wrong with our position and we should close it right away.



Aug 26: Price moved back up. But even as it moved back up, the MACD Osc below the MACD Sig line and gave us a red MACD Hist bar and an apparent MACD exit signal. However, the difference between the Osc Line and the Sig line is only 0.01 ("A" on lower chart). Even if you expand the chart enough to fill your screen, the chart shows the black Osc line lying right on top of the brown Sig line.

For the MACD Hist bars and the blue Hist Trlr line, I said that it didn't count as a crossover unless you could see some space between them. It looks like we need a similar rule for the Osc/Sig crossovers, like, "a crossover isn't complete until you can see at least a little bit of white between the two lines" (see "B"). There is a tiny red MACD Histogram bar showing on the 26<sup>th</sup>, but it is only -0.02, so this doesn't really qualify as a fully-fledged crossover, either. So we don't have a clear-cut MACD Histogram exit signal yet. And there isn't a price exit yet because price is still above the "C" low.



Aug 27: The MACD Hist bar is only 0.01 away from zero. I had no idea readings like this might occur when I started this case study, but they are proving useful to make our evaluation rules more robust.



Aug 28: Here the Blue History Trailer line is at -0.02 and the MACD Hist Bar is at -0.04. That's a difference of only 0.02 and there's still no visible space between the lines. Also, the Osc Line and the Sig line are only .03 apart. All in all, this chart isn't telling us anything definitive.



Aug 29: Price moves up. Now the Osc is 0.08 above the Sig line and the MACD Hist is 0.05 above the Blue Trlr line. There's no visible separation between either pair but the change is positive.



Aug 30: Price opens higher and closes slightly lower than yesterday's close. A little space becomes visible between the MACD Osc and the MACD Sig line, as well as between the MACD Hist bars and the MACD Hist Trlr line.



Sep 3: Price declines a little. The distance between the MACD Osc and the MACD Sig shortens a little. Overall, nothing really important happened today. Despite the promising entry signal on the 19<sup>th</sup>, price has been stuck in a horizontal range between \$182 and \$190.

If you're looking for excitement, real trading isn't the place to find it.



Sep 4: Price rises, MACD OSC and Sig both rise.



Sep 5: Price breaks out of its almost 4-week range. MACD Osc is now moving up faster than the MACD Sig so we're getting bright green MACD Hist bars.



Sep 6: Price holds at the previous close. MACD Osc continues to move ahead of the MACD Sig.



Sep 9: Price yields a little but MACD Osc still outdistances the MACD Sig, so Histogram bars keep growing.



Sep 10: Price declines a little more. MACD Osc slows, allowing MACD Sig to catch up. This causes a shorter, dark green Histogram bar to form.



Sep 11: Price moves ahead. MACD Sig is still climbing faster than MACD Osc, generating another dark green histogram bar.





Sep 12: Price gaps up then falls back a little at the close. But the close is high enough to let the MACD Osc advance away from the MACD Sig and generate a new bright green histogram bar.



Sep 13: Price declines a bit. MACD Osc slows while MACD Sig keeps climbing and another dark green bar appears on the histogram.



Sep 16: A third day of decline generates another dark green histogram bar.



Sep 17: Price closes higher but MACD Osc is flat and MACD Sig is still rising so we get a third dark histogram bar.



Sep 18: As price goes flat, histogram bars drop until they are within 0.01 of Hist Trlr at 0.25.



Sep 19: Today MACD Hist fell below the Hist Trlr by 0.02, but not quite far enough to create a visible opening between the two.



Sep 20: Price dropped to 190.80 and now we have an clearly visible white space between the MACD Hist bar and the Hist Trlr line so it's time to sell. Since the market is already closed, we put in an order to sell our shares of QQQ "at the market" tomorrow morning (or rather, on Monday morning since the 20<sup>th</sup> is a Friday).



Sep 23: The market opens on Monday morning and our sell order is filled at \$190.36.



On September 24<sup>th</sup>, the market opened at \$191.37 and closed at \$187.97. If we had not sold at the open on the 23<sup>rd</sup>, and waited until the evening of the 24<sup>th</sup> to put in a sell order (for the market open on the 25<sup>th</sup>), then price would have dropped to \$187.79, and we would have actually lost some money on the trade. This is why it's useful to sell early, when the MACD Hist drops below the blue line. On the 24th the MACD Osc would have crossed below the MACD Sig and the people who waited for the crossover would be exiting on the 25<sup>th</sup> with nothing to show for the trade.



## Final Analysis

You may have expected me to show you an example where we had a big, dramatic win. But I wanted to show you a real trade, so I picked an entry signal in real time and followed it to see where it would go. In real trading you're going to have a lot of trades that make a little or lose a little, and a few trades that win big. By carefully managing this trade, we bought at \$188.00 on Aug 20 and sold for \$190.36 on Sep 23. We made a big, fat \$2.36 in 34 calendar days, but 1.25% is still a win.

When you take a position, there are basically three things that can happen. A) You are wrong, the market moves against you, and you lose money. B) You are early, the market moves against you, and you lose money. C) You are right and you make money. Notice that the odds are somewhat against you from the outset.

I could have shown you a trade like the one that started on Oct 11, 2019 and ended on Nov 14 and made a bunch of money, but that would have given you the illusion that all you have to do is follow the MACD and everything is going to be one win after another. That trade was one of the fun exceptions.

Instead of showing you an ideal trade with a big return, I showed you several useful things:

1. How to switch roles from market analyst (before the trade) to risk manager (once you're in the trade).

Before you place a trade you are an analyst. Once you put your money on the table, you have

to become a risk manager. People who fail to make this transition end up losing money. They know how to get in but they don't know how to get out (which means they don't really have a trading plan, just a buying plan).

## 2. How to use several indicators together to make decisions

Look at the whole picture. People who try to trade using a single indicator end up losing money. Ironically, people who use too many indicators also lose money. Get a few good indicators — long, intermediate, and short — and stick with those.

## 3. The ABC Setup

This is an easy setup to spot and it has a fairly good record of spotting profitable entries. It also provides you with a reliable initial stop value — a price that tells you your trade isn't working and it's time to get out.

## 4. The importance of paying attention to trading rules

If you do not stick to clearly defined rules, then in the long term you will probably find yourself funding other traders' accounts (which is to say, losing money). Moreover, if you do not have clearly defined trading rules, then you will definitely find yourself funding other traders' accounts.

## 5. The value of being able to make your move one day before the other retail traders

Using the rule "don't move until you see some white space between the MACD Histogram bar and the Histogram Trailer" may only get you in or out 1 bar before the other retail trailers. But that one day can make the difference between breaking even on a trade and losing a little time after time.

If you lose a little time after time, your trading account will die the death of a thousand paper cuts. Real trading is depends on the principal that a few big wins pay for a lot of little losses. The only way this works is for you to keep your losses small and give your winners enough working room to let them become big winners.

## Conclusion

Trading is the hardest free money you will ever earn. Some people say it's hard because you are up against the best traders in the world. That implies you have to beat the best traders in the world, which is silly. You don't have to beat the best traders in the world, you only need to beat the average traders.

The real challenge is that the average person who aspires to be a trader doesn't really understand how their brain works and why it can be their biggest enemy. The instincts and beliefs that serve us well in other pursuits will not work in the markets. To succeed in investing or trading, it is necessary to learn and embrace a psychological transformation that most aspiring traders will never achieve.

Most would-be traders will burn through their trading capital and give up without ever knowing what went wrong. They will blame the markets, or the high-frequency traders, or bad luck. And they will never realize that it was their own mind that sabotaged their efforts.

But that's another story. I will start writing about that in 2020.