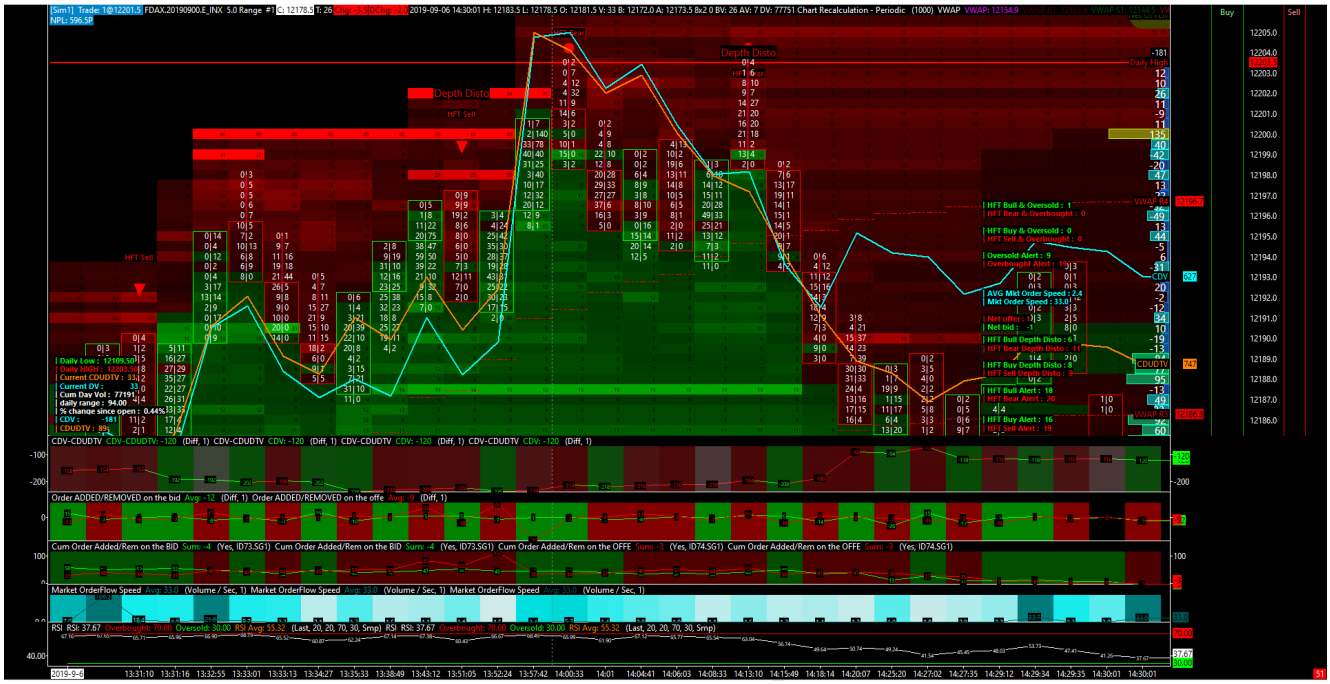
Microscopic examination of a daily high point on the DAX

Introduction: in this paper, I will try to explain different key concepts that I will link together, and detail the underlying logic, with a concrete example taken on the DAX during the day of Friday, September 6, 2019 at 2pm.

The aim here will not be to make a 10,000-word prose, but rather to show the sequence of two to three concrete steps that indicate a change in behaviour, especially at the level of the main market players: the market makers.

---

1) Getting to know each other: we will therefore first study what this high point on the DAX looks like, from a broader point of view:



On this graph, the first thing that is obvious is the three large limits on the notebook arranged on the offer, which are highlighted by the DOM heatmap, in a bright red color.

That's all very well, but what concretely tells us (at the moment when the price arrives to hit these big limit orders at the offer), that we will have a rejection that will then be implemented?

2) Mainly, three things will tell us:

A) Verification that there is indeed an absorption of volume in relation to the price. (i. e. check that we have an amat of volume that agglutinates in the same direction, and this in large quantities and a low price range)

B) The comparison between the claims displayed in the book, and the reality of the execution of market orders at the tape (basically it is possible: compare the limit orders upstream, with the volumes struck downstream, in order to be able to judge the truth of the false.)

C) The market maker's behaviour (from the open and in the short term) as well as the detection of HFT events. (it goes together globally since market making today is no longer done humanely)

If all this fits together, goes in the same direction, and fits into the same coherent logic; then yes, we can expect a price rejection later on.

Let us now go into the details of each of these three points A, B and C:

A) Verification of the absorption phenomena :

What does that mean?

This means that when the price is breaking a resistance, either an old daily high, or a key area; then I have to look at whether :

---> I have more volume market buyer than seller

---> this buyer-market volume is being absorbed.

By absorption, I mean that I have to check if:

---> Indeed, it is necessary, more and more buyer-market contracts, to raise the price of the same unit.

---> and if the quantities of buying market orders are larger and larger, price tick, after price tick.

This absorption phenomenon will be a first important element to be noted; because it will translate and illustrate a fairly simple market reality which is as follows:

---> It's getting more and more expensive to raise prices

which means that:

---> The market maker seems OK to welcome and serve market buyers at the price levels in question, in the desired quantities. (i.e. "without slippage" at the execution level, and "fully" at the requested size)

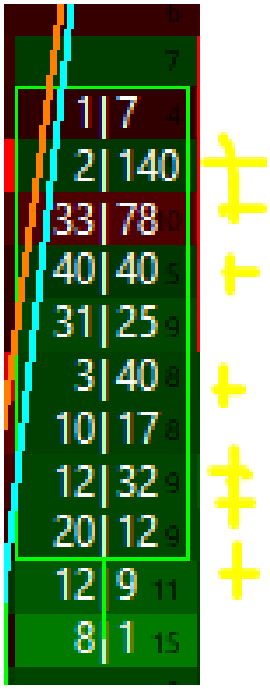
To conclude on this point, it should be noted that:

---> The fact that there is an absorption of buyer-market contracts above a key resistance, or a key price level, tells us that: "it is getting harder and harder to raise prices, because it is getting more and more expensive! "

It is therefore a first element that will invite to the FADE, and to think that the prices will make a rejection.

Let's illustrate this first concept with the same example taken above:

Here is the price bar that precedes the daily high point:



On this price bar which precedes the daily high point, we can see that :

---> Almost every time the price rises by a tick, it took more buyer-market contracts to get the price up to the next tick.

---> On a 10 tick up bar, we have here 7 price levels that have been printed, and each time with more buyer-market contracts, than it took to print the previous tick.

This is a perfect illustration of the fact that:

---> In this price range, it costs more and more to raise the price upwards.

This "pressure" buyer at the market, therefore, actually reveals the strength and reveals the absorption capacity, implemented at the level of the offer, at the sale by the book!

Indeed, we start with 1 buyer contract at the very bottom to go to the top tick, then we need 9, then 12, then 32!

Then we go back to 17 buyer contracts, then it takes 40 to go up to the next price level; we start again with 25, then it takes 40 again to go up to the next price level; and finally, cherry on the cake, we go from 40 buyer contracts on a price level to 78, then 140 buyer contracts to go up to the next price level...

It's just crazy! We are really in a very significant absorption here, and which, when we know the average liquidity on the DAX, must be obvious directly!

There are not 50 thousand questions to ask here, but just to see that it costs more and more to raise the price, and that in "absolute quantities" larger and larger, and on "relative proportions" more and more delirious (compared to the average proportions on the DAX).

In short, this kind of absorption must really be obvious. This is a possible starting point, when the trap is set up for market buyers, who will probably find themselves locked at the very top when buying.

B) The comparison between:

the claims displayed in the orderbook,

and

the reality of the execution of market orders at the tape.

(Basically it is to be able to: compare the limit orders upstream, with the volumes struck downstream, in order to be able to judge the truth of the false.)

The measurement to be made here, or even more simply, the reading to be made here is quite easy, and will also have to "jump out at you" when there is something obvious.

Here we will try to preach the truth from the false, having two points of view to take into consideration:

---> First we will look at what I call the "claims" in the notebook; and in particular those that are the most notable! For example, a BIG limit order added to the BID or OFFER.

---> and in a second time we will look at HOW it took a real market contract to finally move to the next price level.

Technically, we will therefore compare here:

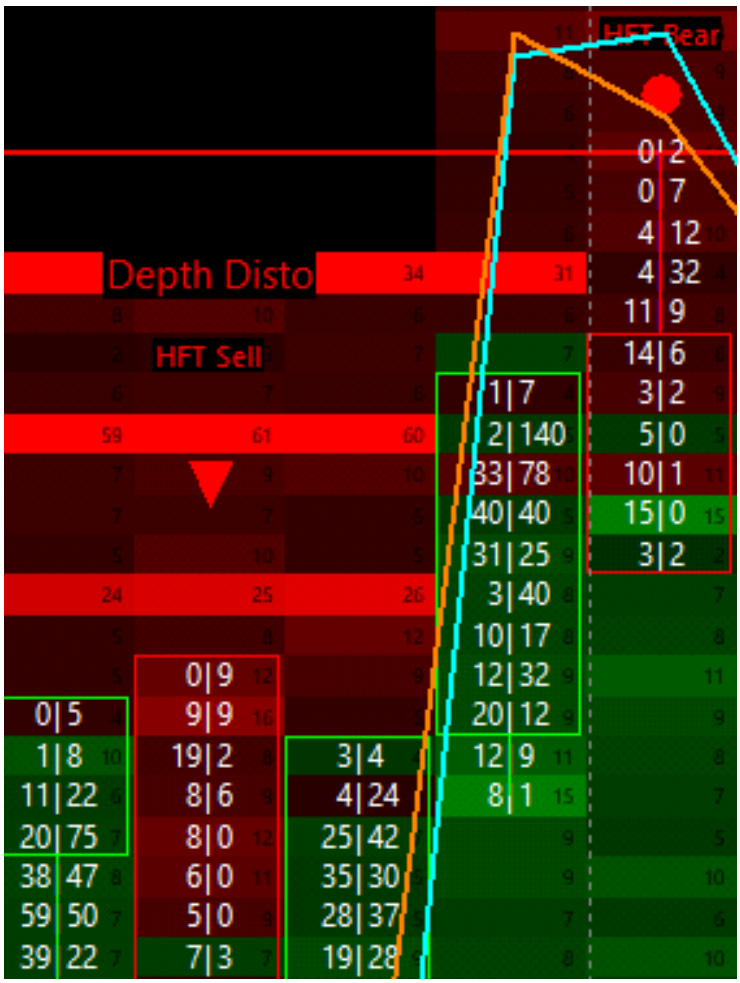
---> the size of the best BID at t-1 with the size of the market sale at t0, and this at the same price level.

or:

---> the size of the best OFFER at t-1 with the size of the market purchase at t0, and this logically, on the same price level.

The aim here is to make a combined reading of the available liquidity with the volume traded, and this price level by price level.

Don't worry, we won't do this for all price levels, and for all executed market contracts. We are not machines, we will only do so when a large and significant limit order has appeared in the book. As in our example that we will resume right away:



Here we can see:

---> our famous three big limit orders to OFFER, which challenge us, and which we wonder if the quantities displayed here in appearance, are really true!

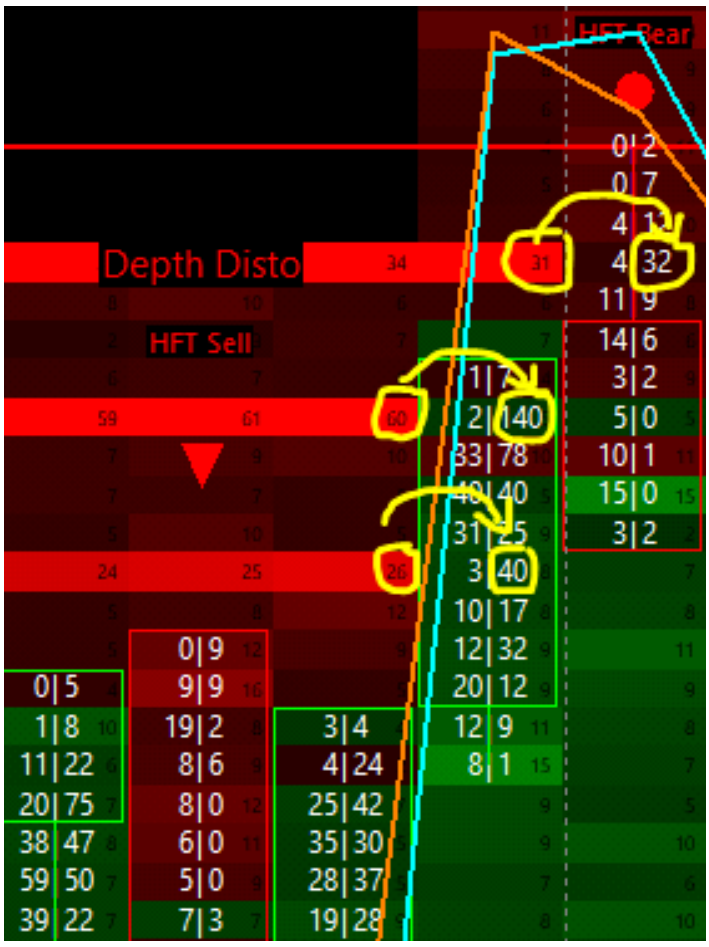
We can therefore see at first that there are on these three lines the OFFER:

- 26 limit orders shown in the offer, then 4 price tick above

- 60 limit orders shown in the offer, then 4 price tick above

- 31 limit orders shown in the offer.

The purpose here will therefore be to compare these quantities issued by limit orders on these different prices to the OFFER (in black), with the quantities actually executed, the next moment, at the level of the right side of the price bar (the white buyer market orders that hit the offer)



We have here:

26 limit orders available to the offer on price X in the first instance.

For 40 buyer market orders actually executed in a second phase.

Then we have:

60 limit orders available to the offer on the price X+4 initially.

For 140 buyer market orders that were actually executed in a second phase.

Finally we have:

31 limit orders available to the offer on the price X+8 initially.

For 32 buyer market orders that were actually executed in a second phase.

---> What can we notice here very simply?

- It should be noted that each time more buyer-market contracts were needed to rise to the higher price level than was supposed to be necessary, according to the information given by the order book to the OFFER.

- It can therefore be said that: some of these buyer market orders were served by iceberg limit orders to the OFFER, and this in a discreet way.

- We can also note that, these quantities displayed on the OFFER were already seen as being large in size upstream! And we now realize through the reality of market order execution that, in reality, the order book was actually even STRONGER at the offer than it already was on the surface.

It's like this:

---> we take you out with our big arms to OFFER it in the order book

and when you get there to hit it:

---> you realize that the arms in question are even bigger and stronger than what was presented at the base in the notebook (apparently).

So here we have here, through this process, succeeded in judging and gauging the truth of the false; and this by a very simple method:

---> compare the claims of the order book with the reality of the execution of the tape. And this at concrete price levels.

To conclude on this point, if we therefore have, as here, quantities of buying market orders, which are ultimately larger in size than the quantities of selling limit orders initially placed in the offer of the booklet; THEN we can consider that :

The "reality" is even stronger than appearances. And this even though the "appearances" were already being swept away....

Here, we no longer read the data vertically as in point A, but horizontally.

When you have this kind of situation, you are invited to fader, and wait for a price rejection.

Because it means:

---> on the one hand: that the market maker (or someone else) dares to make heavy and serious claims to the book

---> that on the other hand these claims are true

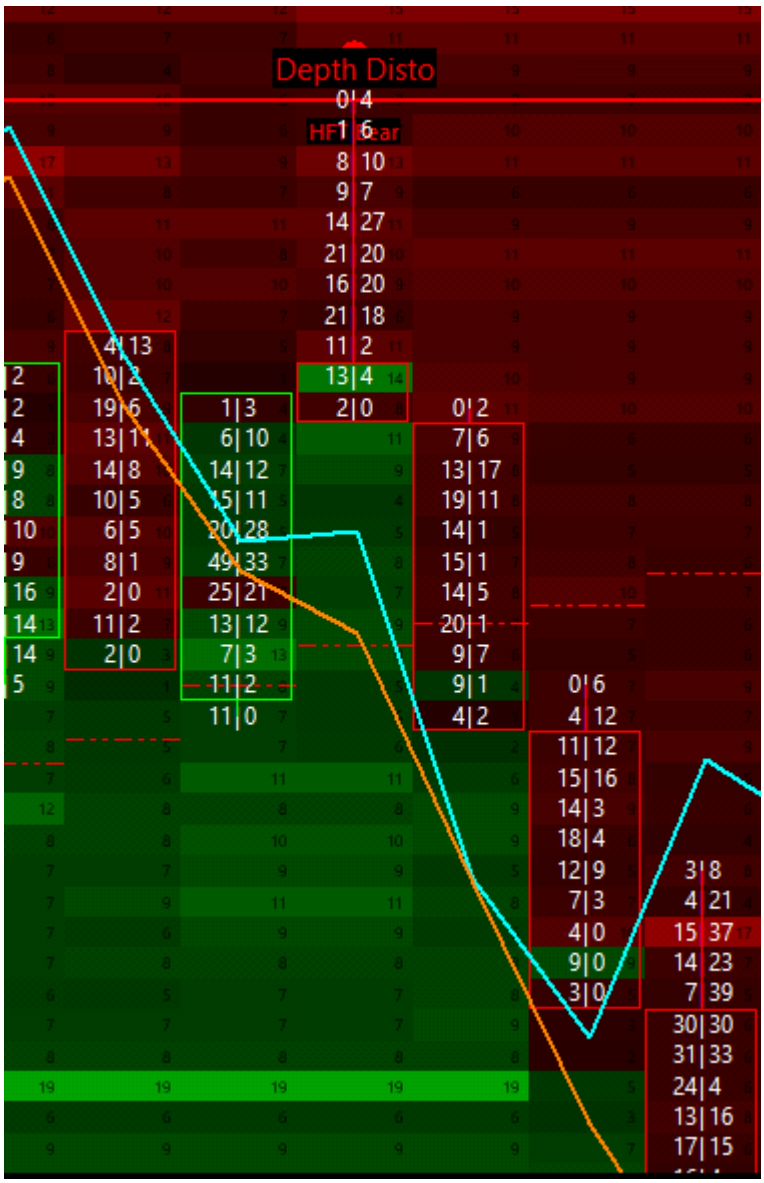
---> and that finally, we're actually on to something even bigger. And this despite the fact that these claims were already important.

It's pretty clear; someone shows that he has big arms, and when the market comes to dare to hit him, and dare to test if the arms are really big; well the market realizes that the arms are even bigger than expected!

C) The market maker's behavior (from the open and in the shorter term) as well as the detection of HFT events. (it goes together globally since market making today is no longer done humanely)

First of all, as I explained in the title, the behaviour of the market maker, whether studied "from the open" or in the "shorter term", will be directly related and correlated with the HFT events that take place in the market. Why? Why? For the simple reason that today, and since 2006, 90% of market makers (official or unofficial) carry out their transactions via market making bot.

So, for example, when we have a "HFT bear" signal that is triggered, accompanied for example by a "depth distortion"; this will tell us several things about the HFT events that occurred in the price bar!



The HFT bear will tell us three things:

---> the price has just gone up on the current price bar, compared to the previous price bar.

---> The market volume indicates a positive delta volume, showing that there are more buyer-market contracts than seller-market contracts.

---> The execution shows us that some buyer-market contracts were executed below the best price at the initial offer.

The "Depth distortion", if it is triggered on the same price bar as the "HFT bear" will tell us that we have in addition:

---> an addition of limit orders made to the OFFER

and

---> a withdrawal of limit orders made at the BID

this de facto creating a kind of "reversal" at the level of the order book which weakens on one side, and at the same time strengthens on the other side.

If we look at the type of market making at that time we have:

---> a market making since the open which is still slightly bullish (indeed, the price has risen all morning) with a CDUDTV that remains higher than the CDV.

But if a slightly shorter termist reading has been made; we will see that the orange line (CDUDTV) starts to cross below the blue line (CDV); thus indicating that, in the short term, the market maker's behaviour becomes more aggressive when selling.

Indeed, if the orange line crosses the blue line downwards, it indicates that some buyer-market contracts have been executed with a downtick! That is to say, below the best selling price initially available to the OFFER of the order book.

So we finally have here a (logical) combination of several things:

---> HFT signals for sale (a HFT sell and depth distortion, and a HFT bear alone, then a HFT bear with depth distortion) exclusively !

---> a market making that becomes aggressive in the very short term on this price action with an orange line that crosses the blue line downward!

Note: the signal would have been perfect if the CDUDTV (in value) was lower than the CDUDTV (in value); this would have indicated that market making had also become a seller since the open (and not only in the very short term).

Therefore, it may not have been easy to anticipate that it was "the high point" of the day; however, it was quite easy and visible to realize that there was a very good sales opportunity to play on this potential price rejection.