

## HOW TO READ THE CDV & CDUDTV panel ?

### INTRODUCTION :

As you have already noticed in the previous documents, papers, and videos that I have done lately; the notion and data of CDV (or DV) and CDUDTV (or DUDTV) is extremely important to understand how the market maker reacts, in relation to a market order flow that he is facing.

Because volume (bid volume, and ask volume) is only going to represent one dimension of trade execution. I would say half.

Indeed, the volume will represent the "TAKER" part; while the liquidity will represent the "PROVIDER" part.

So, in the execution process, you have to understand that it is not :

Buy market order, which will meet a sell market order directly to be served.

nor :

Sell-side market order, which will meet a buy-side market order directly to be served.

First of all, it is important to make the difference between volume and liquidity. Indeed, the real battle that will define the price action is not really at the level of volumes, and is not really :

Buy volume versus Sell volume

One could however think so, and it makes sense to think so! Only, it is incomplete as a vision.

Why is that?

But it is really :

---> bid market order, which will find counterpart with a sell limit order arranged at the offer of the order book.

and/or :

---> short market order, which will find a counterpart with a bid limit order placed at the bid of the order book.

The real fight is therefore at this level:

---> MARKET ORDER (buyer & sellers); COUNTER; LIMIT ORDER (buyer & sellers)

---> TAKER vs PROVIDER

**EXPLANATION :**

Once this theory is integrated, we understand and admit a simple thing:

The DV being the delta between : Buy volume - Sell volume; it will allow us to measure (or qualify) the NATURE of this incoming/outgoing volume.

By nature I mean: the type of market order that arrives: is it a buy market order, or is it a sell market order? These are two different market orders, by nature. One is buy volume; the other is sell volume.

If the DV is positive; then it means that the nature of the volume is mostly BUY (more buy market orders than sell market orders)

If the DV is negative, then it means that the nature of the volume is predominantly SELLING (more market orders selling than market orders buying)

the DV allows us to SPECIFY the NATURE of the volume, bar by bar; while the CDV allows us to SPECIFY the NATURE of the volume, and this since the opening of the market.

So much for the VOLUME part; the DV part.

If we now look at the DUDTV part, we will understand that we are studying something else than the volume!

We study here the impact!

The impact of what?

---> The impact of the volume on the price!

### **THEORIES :**

3 possibilities here are possible in terms of impact:

1) bullish impact: uptick volume; this means that the market order (whether it is a bid or a ask) increases the price of a tick.

2) bearish impact: downtick volume; this means that the market order (whether it's long or short) lowers the price of a tick.

3) neutral impact: there is neither uptick nor downtick volume at execution; that is to say that the market order is executed on the last traded price (at the same price as the last traded price); in this case, the market order will be classified in the last trade group.

Thus, the DUDTV measurement will allow us to know what was the majority impact of all the orders executed in the price bar!

If the DUDTV is positive, then it means that there was more volume (market orders) that caused the price to go up, than volume (market orders) that caused the price to go down! So here we are on an execution that seems bullish.

If the DUDTV is negative; then it means that there was more volume (market orders) that downticked the price, than volume (market orders) that upticked the price! We are therefore here on an execution that seems bearish.

Now the interest will be what?

The interest is to see if the NATURE of the measured volume corresponds or not, to the measured EXECUTION for the same price bar!

Indeed, in a simple and coherent way ;

we expect that :

---> a bid market order will raise prices; so we expect a bid market order to be most often a volume uptick.

just like :

---> a short market order lowers the price; therefore we expect that a short market order, is most often a downtick volume.

Which is the most stupid and nasty logic of auction market theory!

---> prices go up to motivate sellers

---> prices go down to motivate buyers

---> buying volumes, when they are in the majority, are supposed to make prices go up; to reveal the sellers' intentions.

on the other hand :

---> selling volumes, when they are in the majority, are supposed to lower prices; to reveal the intentions of buyers.

But here is the thing; in the reality of the micro structure of the prices; we realize a simple thing, but rather chaotic which is the following:

---> a buy market order can raise the price (upticker the price); but it can also lower it (downticker the price).

just like :

---> a short market order can lower the price (downticker the price); but it can also raise it (upticker the price).

So we can ask the question:

---> is there a logic in this?

---> if yes, what is it?

From there, what will be interesting is simply to compare the DV, with the DUDTV ! Why ?

because it will simply allow us to compare the NATURE of the volume, with the EXECUTION (with the way this volume is executed compared to the price).

By comparing the nature of the volume with the execution, we will be able to detect and measure market making behavior.

And in studying market making behavior, what will interest us the most is everything related to market abuse, market manipulation, contempt and market distortions, which are generated most of the time by market makers.

**REAL EXAMPLES :**

We will now look at a concrete example through the prism of the CDV&CDUDTV panel in region 3 of the [QUANT] volatility tool!

Here is the screenshot in question and the situation:

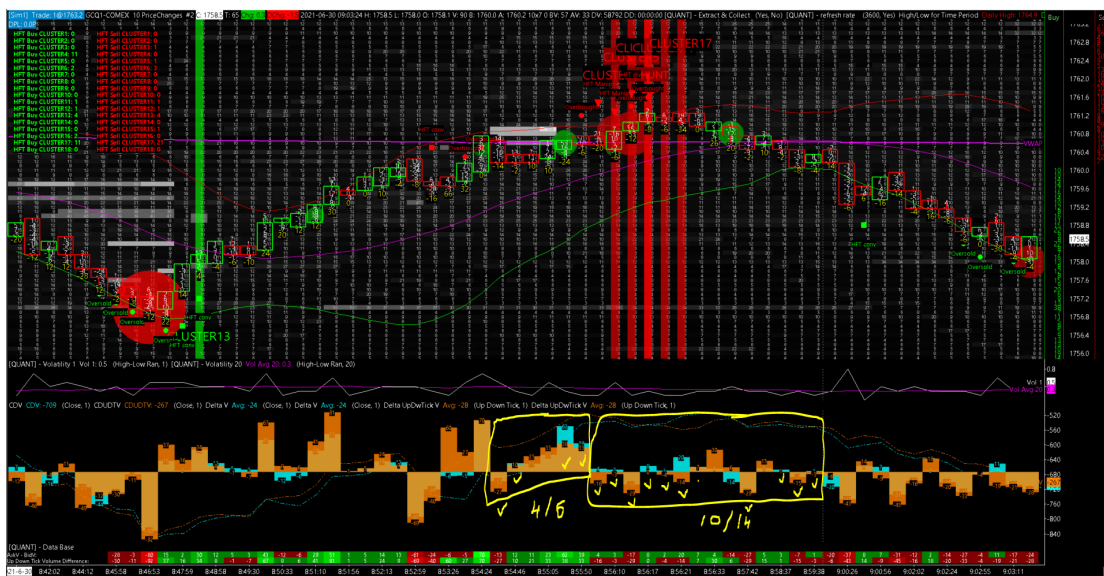
instrument : GC (gold futures 100 ounces from COMEX)

time unit : 10 price change per bar

tool : [QUANT] volatility V3.7

date : 30th june 2021

hour : 8.42 AM CET to 9.03 AM CET



I have attached the screenshot to the email, if you need to zoom in.

What do I notice important here:

- 1) a rise in price from \$1757 to \$1761; that's 40 ticks up
- 2) in a space/time of 5 to 10 minutes of rise.
- 3) we are approaching the VWAP (1760.6)
- 4) we are approaching a key half hour (9H)
- 5) we have 5 HFT sell clusters which are triggered in a row, and this, just after the VWAP crossing; as if the market making algo were programmed to work just above.
- 6) among these 5 HFT sell clusters, we have 3 different ones ! which are triggered one after the

other : the HFT sell cluster 12, the HFT sell cluster 5, and the HFT sell cluster 17 !

7) we finally have a conglomerate of HFT alerts that trigger all the sell alerts, in a rather concentrated way, because on a very short and tight space/time. we find here a combination/succession of : Overbought alert + HFT sell manip alert + HFT sell divergence alert + SL hunt alert ! All this triggered in a row.

### **DETAILS :**

When we look now in detail, especially at the level of the region 3 with its famous CDV&CDUDTV panel; we can see some things that must immediately jump to the eyes:

1) The first 6 bars from 8.54 to 8.55.50 AM CET; on these 6 price bars there; we can see that the market making is bearish in 4 cases on 6! while the price joins the VWAP. When I say that the market making of the bars is bearish 4 times out of 6 here, it means that the DUDTV, on 4 occasions here, was lower than the DV.

2) When we look at the 14 other price bars that follow these 6 bars, it becomes even more obvious!

Indeed, here, on 14 price bars that follow each other, we have a total of 10, whose market making is bearish !

The first 6 bars (on these 14) are particularly interesting ! Why are they so interesting?

Because we see that :

---> in spite of a volume in each time majority purchaser (with the DV all the time positive on these 6 first bars) ;

we have :

---> an execution which is each time mainly selling!

On these first 6 bars of this series of 14 consecutive bars; we can thus see that we have a real

attempt of manipulation of market making to the fall, which becomes here for the blow more and more clear! (8.56 à 8.56.21).

We are here just before the EU opening, on real and pure price manipulation at the execution!

As much after 9H, we notice that the majority of the volumes (seen with the DV) are sellers, and come to feed naturally the fall of the prices, which this time becomes "legitimate".

Legitimate in the sense that we lower the prices with volumes mostly sold.

What is interesting here is to see that :

---> the initiation of the downward price movement is done, and triggered by price manipulation by the market maker ;

while :

---> the continuation of the bearish price movement is done by a flow of market orders that is naturally short, and therefore naturally legitimate.

### **CONCLUSIONS :**

To conclude, and in short:

As soon as the volume (with DV) goes mostly in one direction; while the execution (DUDTV) is mostly in the other direction (with a DUDTV lower than DV); then we know that we have an attempt of manipulation of market making to the fall!

The judge of peace will then be the PRICE, to see if the market maker, in his manipulation process, is rather in a FIGHT phase, or rather in a CONTROL phase.



We are therefore here on a trio of data that are imperatively indistinguishable in the end!

Whether it is the volume (with DV); the execution (with DUDTV); and the price; these three datas, as different as they are; remain well and truly intrinsically intertwined! By nature.

Finally, let's keep in mind that the notion of "momentum" of market making manipulation is particularly interesting to study; because it denotes very often real algorithmic behaviors of liquidity providers. Their work very often leaves traces; especially when the manipulations are extreme. This notion of "market making momentum" can be studied very basically with the famous delta :  $(CDUDTV - CDV)$  !