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Order Flow Trading

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RISK DISCLAIMER

Transactions in forex, securities futures, commodity and index futures and options on futures carry a high degree of risk. The amount of initial margin is small relative to the value of the futures contract or forex lot, meaning that transactions are heavily "leveraged". A relatively small market movement will have a proportionately larger impact on the funds you have deposited or will have to deposit: this may work against you as well as for you. You may sustain a total loss of initial margin funds and any additional funds deposited with the clearing firm or forex counterparty to maintain your position. For futures trading, if the market moves against your position or margin levels are increased, you may be called upon to pay substantial additional funds on short notice to maintain your position. If you fail to comply with a request for additional funds within the time prescribed, your position may be liquidated at a loss and you will be liable for any resulting deficit. With forex trading, if the market moves against your position to the extent that you are under the required margins levels, most forex software will automatically liquidate your positions.

That “Mysterious” Edge

You’ve likely heard of “order flow.” Traders who use it will often tell you how advantageous it might be, if only because so few retail market participants know about it or know how to use it. The strange thing is that order flow means many different things to many different traders. Why? It’s all about platforms--or rather, the tools one uses to see, decipher, and exploit order flow imbalances (more on that later).

The goal of this ebook is to lay the concept out bare. Order flow is a simple concept; it’s all about supply and demand. What makes it tricky is that it’s about the micro-levels of supply and demand occurring at a rapid and real-time pace. Once you gain a basic understanding of how order flow works, it may or may not be something you’d want to use as part of your trading approach. It all depends on your overall trading approach and your trading platform’s capabilities. But, order flow is something you should be aware of, for it’s the mechanics driving the short-term trading process--in short, *the process that contextualizes your trading*, whether you pay attention to order flow or not.

Understanding Order Flow & How It Might Indicate Market Movement

Over the last few years or so, “order flow” has become something of a new buzzword in retail trading circles. It’s almost as if there’s an air of mystery surrounding the idea, a code that (once deciphered) might give one trader a significant “edge” over another.

The irony in all this is that order flow is one of the oldest, most basic, and almost *primal* functions of the market. There are traders who are willing to buy or sell at a given price *limit*, as in “I want to buy or sell at this price *or better*,” and then, there are traders who are willing to cross that limit, buying or selling at the best *available* price. That’s order flow in a nutshell.

If order flow is mysterious, it’s because its nuances are not easily understood, or for those who do understand it, the data is not always accessible, save for special software and data feed. But regardless of whatever tools you may have to decipher and interpret order flow, you can never anticipate the

buyers and sellers who jump in “out of nowhere” at a given moment, making the market environment more dynamic.

We’ll start by covering the basics of order flow and its practical use as a possible market movement indicator.

What is Order Flow?

Order flow is essentially the interplay between two types of orders: 1) **limit orders**, most of which are visible in the order book, a.k.a. Depth of Market, DOM, price ladders, etc.; and, 2) **market orders**, which aim to buy or sell at the “best ask” or “best bid” respectively. These you can’t see beforehand.

This interplay between limit and market orders is one of the main forces that drives price movement. To get a better understanding of this process, lets explore how the order book works.

The Order Book aka DOM (Depth of Market)

Depth of Market data is also known as the order book, since it shows the pending orders for a particular market.

Below is a hypothetical rendering of the **DOM** for the E-Mini S&P 500 futures.

Here's what you need to know:

- The middle column shows prices.
- There are 10 bid levels and 10 sell levels shown in this example.
- The "best bid" and "best ask" are those nearest one another.
- All of these orders are **limit orders**, meaning that traders on the bid side want to buy at the price corresponding to their price ladder or better (lower); the reverse is true for sellers.
- IMPORTANT: these orders *will likely not get filled unless* a buyer is willing to buy at the ask or a seller is willing to sell at the bid.

	Bid	Price	Ask	
		2800.00	1103	
		2799.75	1687	
		2799.50	1498	
		2799.25	1257	
		2799.00	1211	
		2798.75	1002	
		2798.50	815	
		2798.25	941	
		2798.00	524	
		2797.75	103	Best Ask
Best Bid	375	2797.50		
	971	2797.25		
	1037	2797.00		
	1355	2796.75		
	1008	2796.50		
	1642	2796.25		
	1119	2796.00		
	1212	2795.75		
	1657	2795.50		
	1350	2795.25		

Enter the market order.

		2797.75	103	Best Ask
Best Bid	375	2797.50		

A market order means "fill at the best *bid* (if you're selling) or *ask* (if you're buying)." It's another way of saying "get me in or out of the market NOW."

Notice the price highlighted in blue. That's the last trade and current price. Note that the last trade took place on the "best ask" side, meaning **a buyer stepped in with a market order**, and that order was matched to the best ask (or best sell limit order).

This interplay between a limit order and market order forms the basis of order flow.

But, how does order flow move prices?

How Order Flow Moves Prices

Imagine working as a trader for a large institution, like a major alternative investments fund. To satisfy your fund's allocation requirements, you need to purchase a whopping 10,000 ES contracts *at the market*.

Given that you need to fulfill your fund's allocation ASAP, you decide to buy it all at once, knowing that your actions are likely to move price as soon as you hit all of those asks.

So you place a large market order of 10,000 ES contracts–all of which will get matched to the asks on the screen. In slow motion, here's what may happen.

Bid	Price	Ask	
	2800.00	**141**	order filled
	2799.75	**0**	order filled
	2799.50	**0**	order filled
	2799.25	**0**	order filled
	2799.00	**0**	order filled
	2798.75	**0**	order filled
	2798.50	**0**	order filled
	2798.25	**0**	order filled
	2798.00	**0**	order filled
	2797.75	**0**	order filled

Bid	Price	Ask	
	2800.00	**1103**	
	2799.75	**1687**	
	2799.50	**1498**	
	2799.25	**1257**	
	2799.00	**1211**	
	2798.75	**1002**	
	2798.50	**815**	
	2798.25	**941**	
	2798.00	**524**	
	2797.75	**103**	**Best Ask**
375	2797.50		
971	2797.25		
1037	2797.00		
1355	2796.75		
1008	2796.50		
1642	2796.25		
1119	2796.00		
1212	2795.75		
1657	2795.50		
1350	2795.25		

Best Bid

You bought every ask, moving the last trade and current price to 2800.00 from its original 2792.75 position. You were basically the market's "whale" at the moment.

What are Trade Imbalances?

Another important takeaway from this is that you caused massive trade imbalances in the process. How so?

If a seller places an ask of 100 contracts and a buyer fills it with a market buy order of 100 contracts, then that's a balanced trade–you want 100 contracts, and I (as seller) have 100 for you.

But the hypothetical trade we just placed was highly unbalanced. Let's take a look at it again (at right).

Ask	Market Buy	Remainder	Buying Pressure
1103	962	-141	87.22%
1687	2649	962	157.02%
1498	4147	2649	276.84%
1257	5404	4147	429.91%
1211	6615	5404	546.24%
1002	7617	6615	760.18%
815	8432	7617	1034.60%
941	9373	8432	996.07%
524	9897	9373	1888.74%
103	10000	9897	9708.74%

Your order of 10,000 contracts was 9,708.74% greater than the available number of contracts at the best ask. Once filled, you still had 9,897 left to be filled, but only 524 contracts available at the ask, your market order exceeding available contracts by 1,888.74%.

Let's suppose that we consider any market order exceeding 300% to be an imbalance – there is no standard for this figure and it varies according to the trader. In this case, all of the highlighted percentages in green indicate an imbalance.

And how might knowing this help you as a trader?

If you can identify the trade imbalances, you might – that is "might" – be able to get a clearer indication of the bullish or bearish bias of a given instrument.

Taking Advantage of Order Flow Trade Imbalances

We have covered the basic mechanics of an order book as viewed in a DOM in the previous section. The only setback in following order flow from a DOM is that once the order has been filled, the numbers change and you have *no record of how many contracts were bought and sold*.

If you are looking to use order flow to inform your trading, then you need a record showing how many contracts were bought and sold at a given price. Otherwise, you'd have no way of keeping track of order flow and, more importantly, identifying where trade imbalances took place.

For instance, let's imagine a hypothetical scenario where a trader is willing to sell 200 ES contracts at the ask (a sell limit order) at the price of 2170.00. Another trader is willing to buy 125 contracts at the bid at 2169.75.

It would look like this:

Bid	Price	Ask
	2170.00	200
125	2169.75	

Then suddenly, a buyer comes in and snatches up those 200 contracts at the ask.

Bid	Price	Ask
	2170.00	0
125	2169.75	

The ask is now at zero (someone purchased all of it) and the "last trade" is now at 2170.00.

Buying and selling happens quite frequently, but were there more contracts bought or sold over a given time frame? If there were more bought than sold, then that might indicate a bullish bias. If more contracts were sold rather than bought, then that might indicate a bearish bias.

What were the bigger purchases that took place? With a DOM, there is no memory or record. But you need that data if you plan on using order flow to inform your decisions. Enter order flow software, popularly referred to as "footprints."

Using Footprint Charts & Other Charting Studies to Interpret Order Flow

A Footprint chart is a volume chart that records how many bids and asks were filled at each price level for the charts timeframe With a footprint chart, you read numbers diagonally.

Bids (filled)		Asks (filled)
0	x	10
10	x	26

The above footprint shows that 10 bids were filled and (diagonally) 10 asks were filled. This is a balanced trade, a 100% match – a buyer wanted 10 contracts, and a seller sold 10 contracts.

Now let's look at a different footprint.

Bids (filled)		Asks (filled)
0	x	200
10	x	26

The above footprint shows that there were 200 contracts bought (highlighted green) at the asking price while only 10 contracts were sold at the bidding price, during a specified time period (depending on a trader's set chart timeframe).

200 contracts bought versus 10 sold. That's 2,000% more contracts bought than sold. Let's suppose that we consider any market order exceeding 300% to be an imbalance – there is no standard for this figure and it varies according to the trader. 2,000% is well above the 300%, huge by most any standard. From an order flow perspective, this may indicate bullishness, whether the price went up or down as a result. It may mean that many buyers jumped in. If price went down, and trade imbalances still indicate stronger "buying pressure," then the order flow may present an opportune moment to go long.

Now, we have demonstrated the importance of footprints related to order flow strategy. It's an effective way to get a big picture view of trade imbalances.

Let's take this a step further.

Let's review the footprint (at right) starting with from the top. 352 contracts were purchased while only 26 were sold. That's a 1353.85% difference, again well above the 300% standard we decided on. More buys than sells. All of the imbalances (over 300%) are highlighted green, indicating that buying pressure > selling pressure.

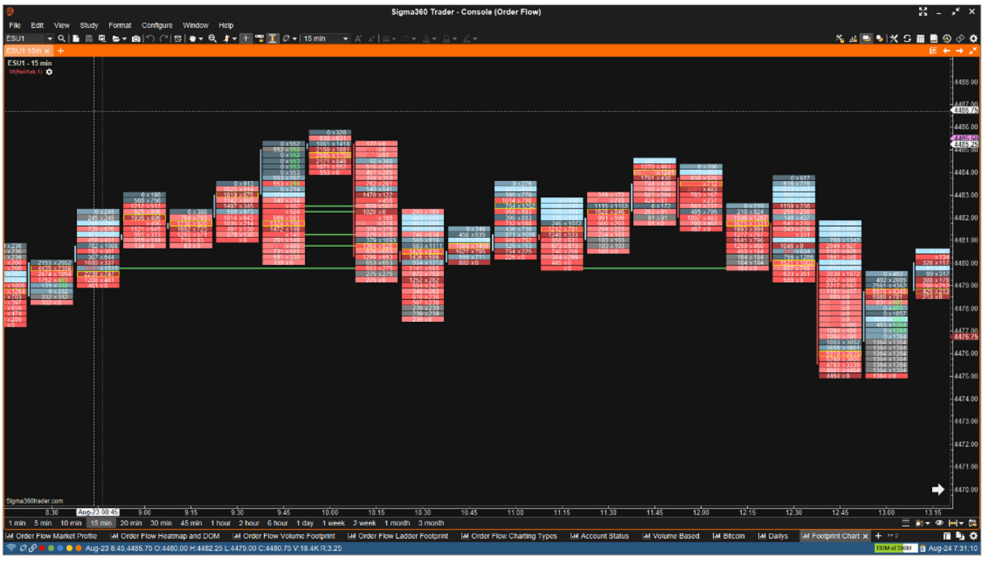
Bids (filled)		Asks (filled)	
0	x	352	1353.85%
26	x	14	116.67%
12	x	20	111.11%
18	x	267	1112.50%
24	x	254	498.04%
51	x	51	425.00%
12	x	67	136.73%
49	x	474	1481.25%
32	x	0	

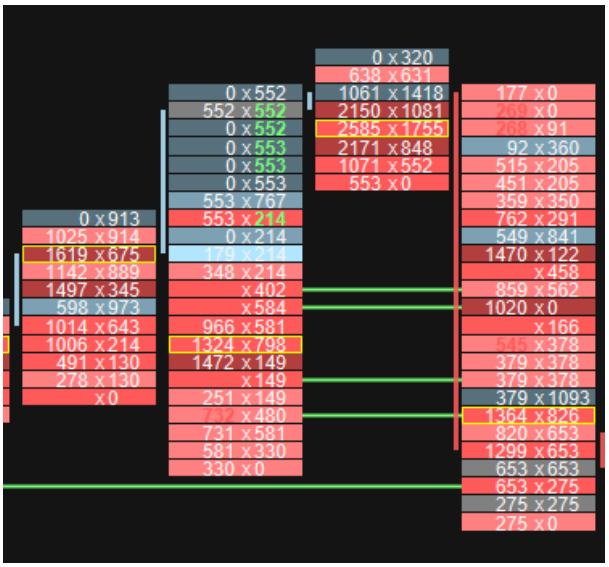
In a reverse (bearish) scenario, you may come across a chart similar to the following.

Bids (filled)		Asks (filled)	
0	x	27	
25	x	26	92.59%
373	x	12	1434.62%
96	x	18	800.00%
78	x	24	433.33%
78	x	51	325.00%
62	x	67	121.57%
267	x	49	398.51%
164	x	75	334.69%

Again, note the buy vs sell imbalances.

Below is an example of a Footprint Chart with the DOM ladder in the Sigma360 Trader platform:





Now if we zoom in on the same footprint chart on the left, you can see the actual numbers more clearly.

Another popular charting study for interpreting order flow is called Volume Profile (example shown below). This study displays the distribution of volume traded at each price (or price range) for a given period of time as a vertical histogram. This identifies how trading activity is distributed by volume (exchanged units) and shows key support and resistance levels by identifying areas of high volume.

Below is an example of a Volume Profile Study with the DOM ladder in the Sigma360 Trader platform:

The main takeaway is that in order to use order flow to inform your trades, you may need to identify and chart the imbalances between buys and sells. And one effective way to accomplish that is to have a histogram that charts the volume behind these purchases. Without an adequate record of trade order flow, you may not be able to take full advantage of order flow data.

Speed, Limit Orders, and the Other Side of Order Flow

We have now covered the way order flow works and how to take advantage of the imbalances within the order flow process. Now we'll dive into the other side of order flow–the more passive space of limit orders.

A limit order is simply an order to be filled at a specific price or better. If you aim to go long a position at say, 25.00, then a limit order at that price seeks to be filled at that specific price or any price below it (the lower the better). If you aim to sell or go short at 25.00, then your aim is to sell at that specific price or higher.

Simple enough, right? But anyone who has traded live knows that limit order don't always get filled. You place a buy limit order at 25.00 and see price move below your price perhaps as low as 24.50, yet price moves back up above 25.00 without giving you a fill. Why not? What happened? The likely answer is that traders with market orders started buying higher before your order got filled.

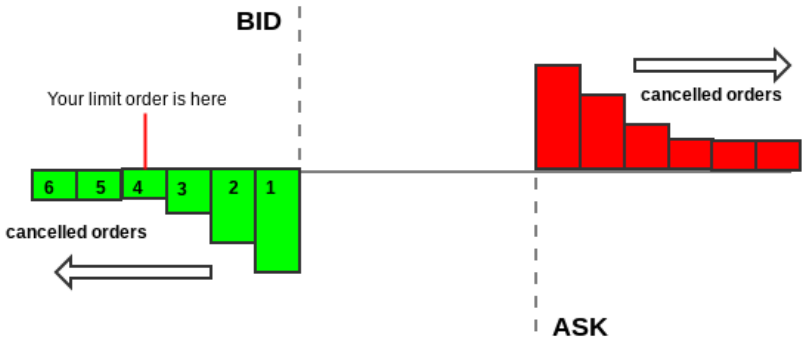
So who got filled between 24.50 and 25.00, and why didn't your order get filled? The likely answer is that you were not at the front end of the queue. In short, you were close to last in line to get filled. And what made the difference between you and the other trader who got filled? The answer is likely *speed*. Your order routing might have been slower than the other traders whose orders were earlier on in the queue.

The Order Queue and Why Execution Speed Makes a Difference

Take a look at the hypothetical price action below.

- You placed a buy limit order at 25.00
- The last traded price as at 25.50.
- Price trades all the way down to 24.50 and moves back up without giving you a fill.

What happened? The diagram below shows a likely scenario.



- The numbered blocks on both sides shows the order priority of the queue–in other words the order that are first to last in line.
- The order from first to last are designated by numbers 1 – 6. These are all hypotheticals, but the point here is to translate the "concept" behind the mechanics of limit order flow.
- Let's suppose that your limit order was in the segment of the queue designated #4. Your order wasn't last in line but it certainly was anywhere near the front of the queue.
- When you noticed that price moved below your order, it's possible that the 1st or 2nd row of order were filled, leaving orders 3 – 6 unfilled as price began trading above your limit order price of 25.00.

So why weren't you higher up in the queue? Maybe your order routing was too slow, or other traders' order routing was just much faster. Perhaps the other traders had a lower-latency platforms, faster internet speed, more powerful computers, or even utilized co-located servers.

Low-latency isn't a significant factor for every trading strategy. Swing traders and position traders can often get by without High Frequency Trading-like speed. But if your intention is to take advantage of order flow on a low-latency scale, then speed counts. Should you use a low-latency platform, upgrade your internet, or subscribe to co-location services? It really depends on whether your strategy depends on it. But if your trading approach does depend on speed, then not having a means to execute quickly might work against your performance.

The Bottom Line

Contrary to the hype you've probably heard from various proponents in the retail trading space, order flow isn't that secret panacea that will give you a permanent advantage when trading the markets. Whether this helps or does nothing is up to you--your trading personality and your trading approach. Don't abruptly change your trading approach based solely on order flow data; instead, try utilizing order flow tools in a simulated trading environment. Find a way to make order flow data enhance your current trading methodology. Good luck and trade wisely!