

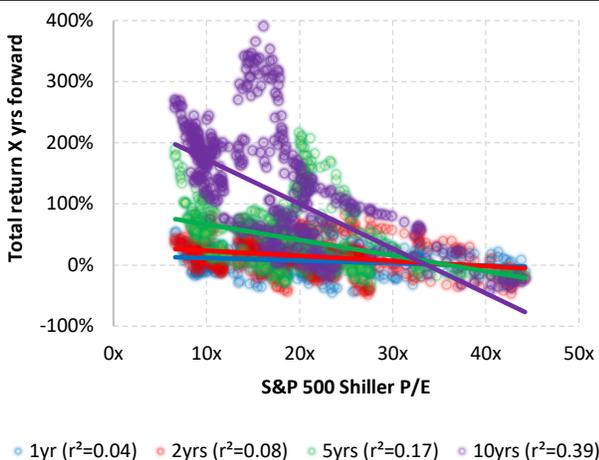
# Introduction to Vanda

Vanda is a leading tactical market data and insight specialist focused on 0-3 month investment horizons. The firm's clients include 11 of the 12 largest investment banks and 8 of the 20 largest hedge funds in the world, as well as central banks, sovereign wealth funds and other leading global asset managers.

Vanda's is the market leader in aggregating and structuring positioning and flow data from multiple sources globally. Its unique research framework relies on proprietary modelling and analysis of this dataset. The philosophy behind this approach is simple: the prices paid for financial assets, like all goods and services, are determined by the duelling forces of supply and demand. Vanda is used by market participants to identify trading opportunities and risks, as well as potential timing of market moves.

Identifying market moves through positioning and flow data is even more effective over shorter time horizons. For example, traditional metrics used to value equity securities like price-to-earnings multiples have exhibited little to no relationship with future returns over a one-to-two-year investment horizon:

Chart 1: Valuations are predictive of future returns... if you've got a 10-year investment horizon

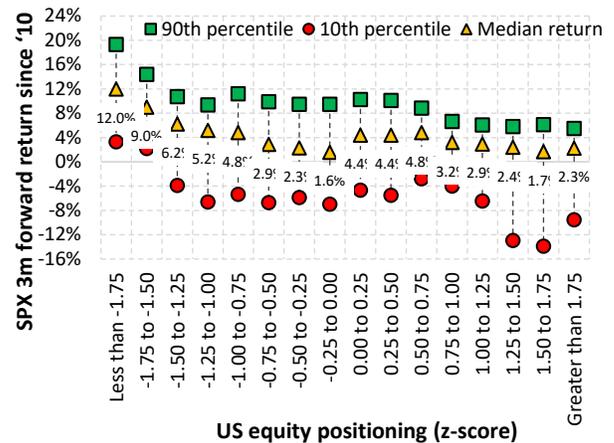


Source: Bloomberg, Vanda

Now consider the same analysis, this time using investor positioning as the independent variable. This nontraditional metric offers a much stronger

predictive signal for forward stock market returns – and within a much more practical three-month time horizon to boot!

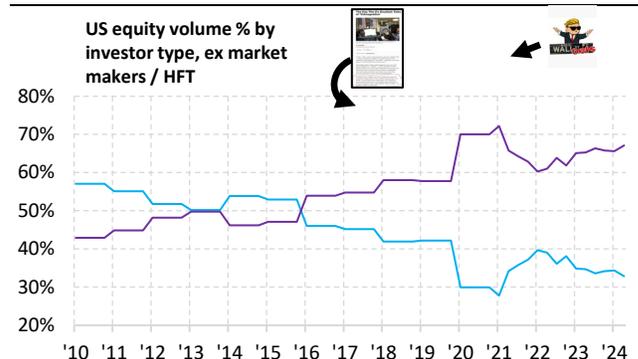
Chart 2: Positioning offers a predictive signal over a much shorter three-month time horizon



Source: Bloomberg, VandaXasset

Of course, not all data on investor positioning and flows are created equal. One of the defining developments within US equity markets over the past decade and a half has been the rising influence of nontraditional investor types. Namely, retail investors and quantitative / model-driven traders.

Chart 3: Nontraditional investors account for an increasing share of equity activity

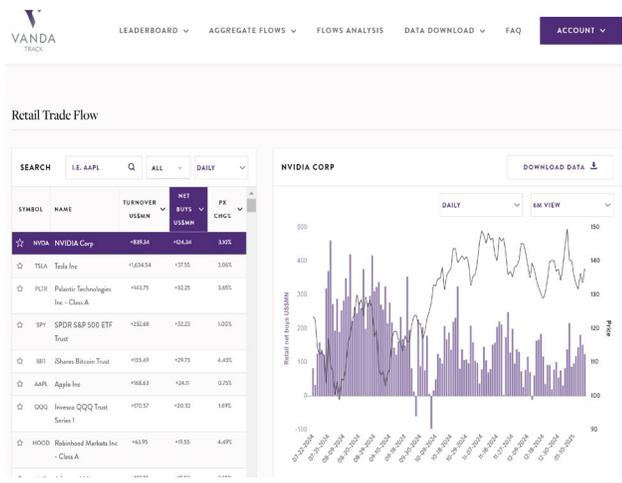


Source: SEC Filings, Bloomberg, Vanda Research

Vanda offers market-leading solutions for institutional investors to track and analyze both of these emerging cohorts. Its VandaTrack platform captures daily retail activity in over 10,000 US-listed

equity securities, allowing clients to analyze historical retail data to make forward predictions of individual investors' behavior:

Chart 4: VandaTrack retail flows



Source: VandaTrack

In addition, the firm's VandaXasset platform tracks and analyzes investor positioning and flows in a broader range of over 1,200 data series across 200+ global assets in equities, bonds, FX and commodities. The platform's analytics capabilities include spot-level estimates of various buy and sell "triggers" for systematic investors like CTAs:

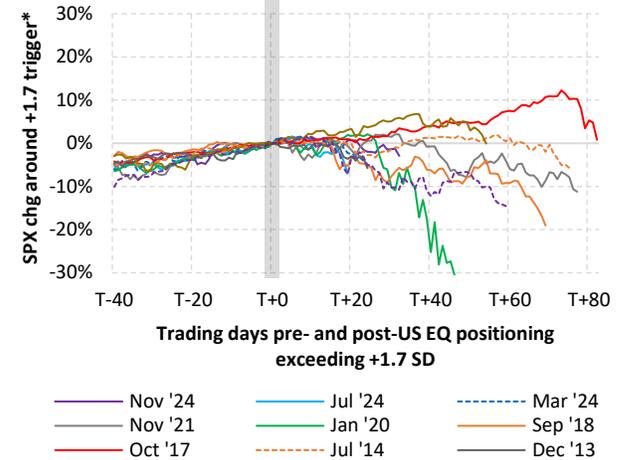
Chart 5: VandaXasset CTA trigger levels

Region ID	Ticker	Name	Exposure (SD relative to net)	Last pr. T	Level that would generate an SD (low from CTA's low net to day)	1SD Low (USDMM)	CTAs				
Oceania	sp index	ASX	0.80 SD	8232.00	7869.37	8066.04	8262.60	8262.60	8792.22	7391.02	<p><b>Momentum signals:</b> strength of trend in standard deviation terms relative to history. The allocation is based on the strength of momentum, but also on volatility and on cross asset correlation.</p> <p><b>Price thresholds:</b> the price at which CTAs will trigger a +1SD worth of asset relative to history - which can be considered as a buy/sell signal along the customer's "low net" (0.5 SD net).</p> <p><b>Asset price relative to 1SD:</b> the asset price relative to the threshold in SD terms. The CTA will trigger a 1SD worth of asset relative to history - which can be considered as a buy/sell signal along the customer's "low net" (0.5 SD net). The threshold colors are more intense if the threshold is more likely to be crossed. See the table for color to probability conversion.</p>
	div index	DJIA-Mem	0.86 SD	69201.00	67419.40	69391.86	69491.11	69692.37	69811.03	69811.03	
	air index	S&P500 E-mini	0.40 SD	6246175	594937	598198	6248149	6493146	6493146	6493146	
	fin index	S&P 500 E-mini	0.91 SD	3426149	3498176	3492148	3496193	3497176	3497176	3497176	
	enr index	MSCI EAFE	0.61 SD	2323180	2272142	232148	232185	232185	232185	232185	
	gpi index	S&P 500 E-mini	1.79 SD	1394170	1495193	1493148	150185	150185	150185	150185	
	ryi index	Russel 2000 E-mini	0.71 SD	220710	2176138	220514	2428148	2428148	2428148	2428148	
LATAM	lat index	S&P Europe	<0.64 SD	105891.00	1068936	10670516	10672142	10674019	10674019	10674019	
	in index	libor30	<0.81 SD	5701000	5701000	5701000	5701000	5701000	5701000	5701000	
Global	mer index	MSCI EM	0.34 SD	1078160	100511	100811	1062142	106811	107111	420108	
	11 index	CAC 40 index	1.01 SD	3989191	3469198	3701198	394711	4219198	431911	510175	

Source: VandaXasset

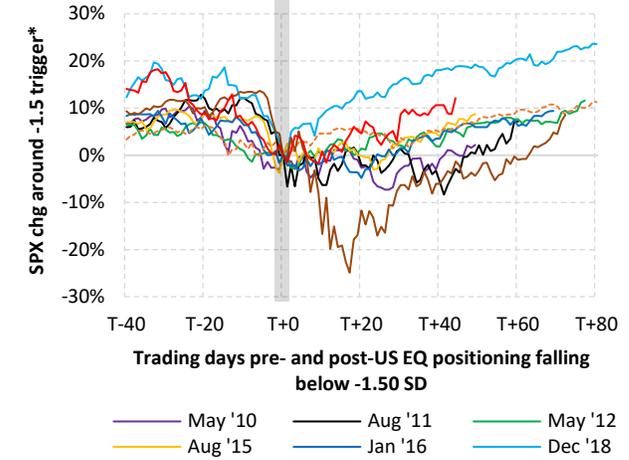
When utilized in concert, Vanda's positioning metrics allow investors to cut through the fog of greed and fear – making it possible to time the short-term tops and bottoms in assets like US equities:

Chart 6: Using positioning to call market tops...



\*Series cut-off at S&P 500 price bottom  
Source: Bloomberg, VandaXasset

Chart 7: ...as well as market bottoms



\*Series cut-off at S&P 500 price peaks  
Source: Bloomberg, VandaXasset

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