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Market Research Tools

Systematic Flows:

How Mechanical Buying And Selling Drives Volatility And Trend In The Stock Market

Presented by Tier1 Alpha

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What Are "Flows"?

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In the stock market, Capital Flows, or simply "Flows", describe the journey of money as it is invested into, or pulled out of, different stocks or sectors.

Discretionary flows involve investment decisions that are based on the judgment and discretion of an individual or a portfolio manager. These flows are driven by qualitative factors, market analysis, and personal assessments of investment opportunities. Discretionary flows are human-driven, emotional and are generally unpredictable.

Systematic flows refer to investment decisions that are made based on a predefined strategy or a set of rules. At the institutional level, these strategies are almost exclusively executed through complex computer algorithms driven by quantitative factors meant to manage risk and generate alpha. Systematic flows are mechanical, unemotional, and predictable.

In 1996, IBM's supercomputer "Deep Blue" makes chess history by beating Garry Kasparov, the world's best chess player

Due to their inherent predictability, our research primarily focuses on Systematic Flows.

In An Inelastic Market, These Flows Matter!

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- The Inelastic Market Hypothesis explains that when supply and demand dynamics are constrained, flows become the primary driver of stock prices.
- Under these conditions, even minor capital flows in or out of the market can have a substantial effect on equity prices. Over 500x larger than prior estimates.
- As a consequence, the stock market does not necessarily reflect economic conditions or individual company performance. Instead, stock prices primarily reflect the influence of flow-driven demand in the market.

In fact, recent research quantifies that flows in and out of the stock market can have up to a 3-8x multiplier effect on aggregate price.

On average, this means for every $1 invested, market capitalization increases by $5!

Where Do Flows Come From?

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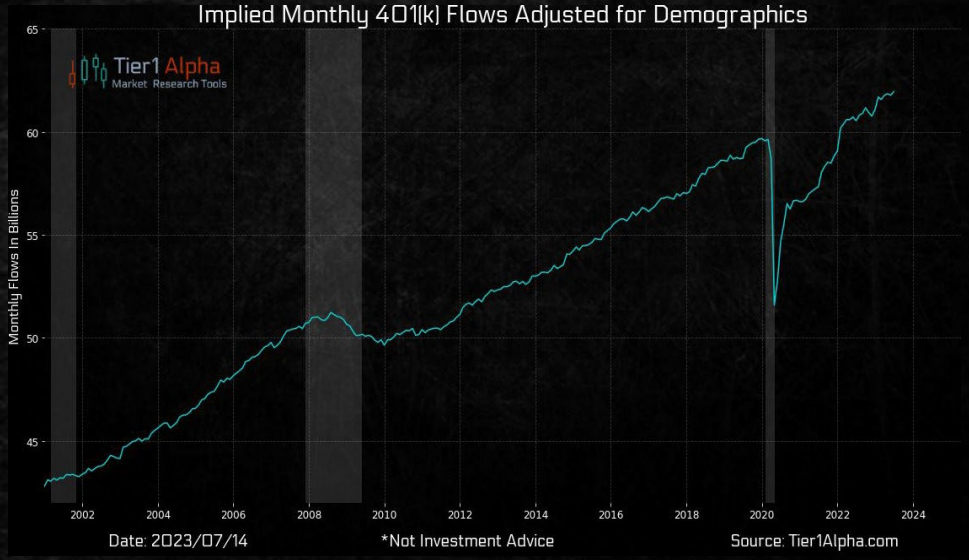
- The overwhelming majority of defined contribution plans (401Ks) are funneled into Target Date Funds (TDF) every month.
- A Target Date Fund is an investment vehicle that automatically adjusts its asset allocation based on a specific future date, such as retirement, aiming to become more conservative over time.
- Since TDFs use a "Glide Path" to decide asset allocation, we can estimate how much 401(k) flows are funneled towards equities every month.
- TDFs and 401(k) flows provide a direct link between ***Macroeconomics, Employment*** and the ***Stock Market.***

Have you ever wondered who's crazy enough to buy stocks while heading into a recession?



Well, if you're one of the 60 million Americans with a 401(k) plan, YOU ARE!

Where Do Flows Come From?

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While 401(k)'s flows often drive longer-term trends, *Institutional Positioning* can drive both *Volatility and Direction* *in the near term.*

The stock market is a large and complex system, so we have broken down institutional positioning into four main categories.

- Delta Hedging / Gamma Exposure
- Volatility Controlled Funds
- Commodity Trading Advisors (CTA)
- Risk Parity Strategies

Delta Hedging -

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When an investor buys an Option Contract, there is almost always a Market Maker on the other side of the trade.

- The goal of an Options Dealer is to collect the premium from the sale while avoiding as much directional risk as possible.
- To avoid directional risk, Dealers employ a strategy called Delta Hedging, where they take an opposing position in the underlying asset to offset the risk associated with price movements in the option contracts they have sold.
- As the spot index moves around throughout the day, market makers must frequently adjust their hedges, by buying and selling the underlying asset in order to maintain their delta-neutral position.
- In addition to adhering to their internal risk management policies, Option Dealers are also subject to regulatory limits on risk-taking in the post-Dodd-Frank era. As a result, dealers are essentially forced into hedging in this way.

What is Delta?

- Delta measures the rate of change in an option's price given a one-unit change in the price of the underlying asset. In other words, it quantifies how much the value of an option is expected to change for every $1 change in the price of the underlying asset.
- Delta values range from 0 to 1 for call options, and -1 to 0 for put options. For example, if a call option has a delta of 0.5, the option's price will rise by $0.50 for every $1 increase in the underlying asset's price.

Gamma Exposure -

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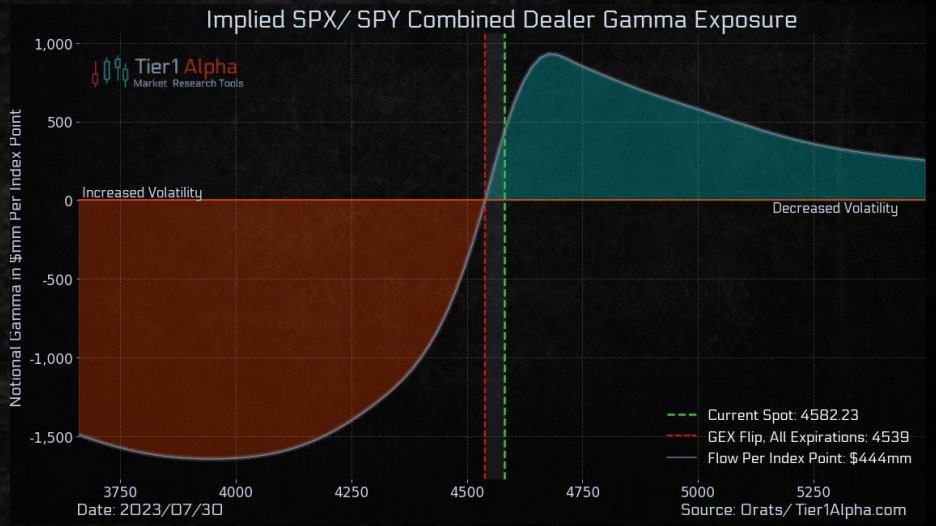
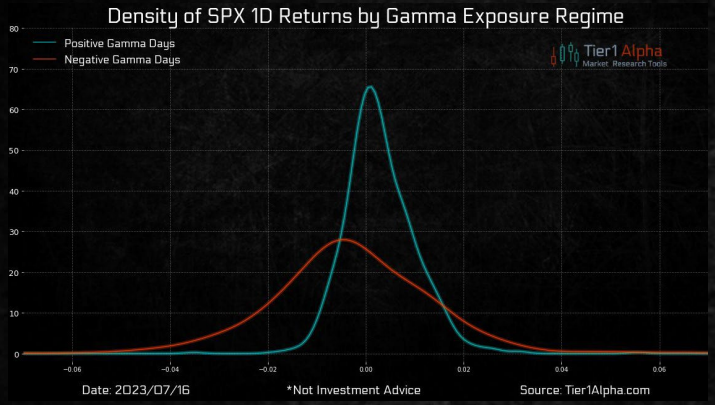
Our Gamma Exposure models aim to track the estimated amount of flows generated by Market Makers deploying a Delta-Neutral Hedging Strategy.

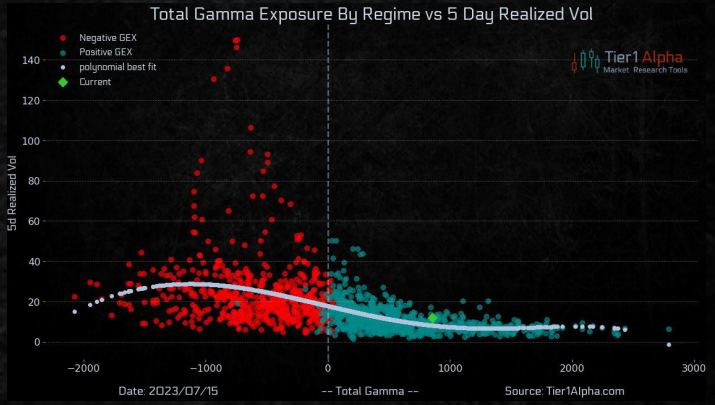
- Gamma measures how much the delta of an options position will change with each one-point move in the price of the underlying asset.
- As market dynamics shift throughout the day, a dealer's gamma exposure will cause their delta to change, which in turn will affect their hedging requirements, which demand continuous adjustments.
- Dealer gamma exposure and its associated hedging activities can significantly influence broader market dynamics.
- Large-scale adjustments to maintain delta neutrality, especially in illiquid or volatile markets, can drive substantial buying or selling pressure in the underlying asset, which in turn may influence the asset's price direction and overall market volatility.



Gamma Exposure -

Dealer Gamma Exposure can be broadly broken down into two regimes, Positive Gamma, and Negative Gamma.





- When Options Dealers are Positive Gamma, markets tend to be LESS volatile, as dealers are forced to Buy the underlying asset when the market goes down and Sell the underlying asset when the market rise. This buying and selling ensures they maintain a delta-neutral position.
- This ***SUPPRESSES volatility*** as the flows are driven in the OPPOSITE direction of the cash index.

- When Options Dealers are Negative Gamma, markets tend to be MORE volatile, as dealers are forced to Sell the underlying asset when the market goes down and Buy the underlying asset when the market rises. This buying and selling ensures they maintain a delta-neutral position.
- This ***INCREASES volatility*** as the flows are driven in the SAME direction of the cash index.

Gamma Exposure -

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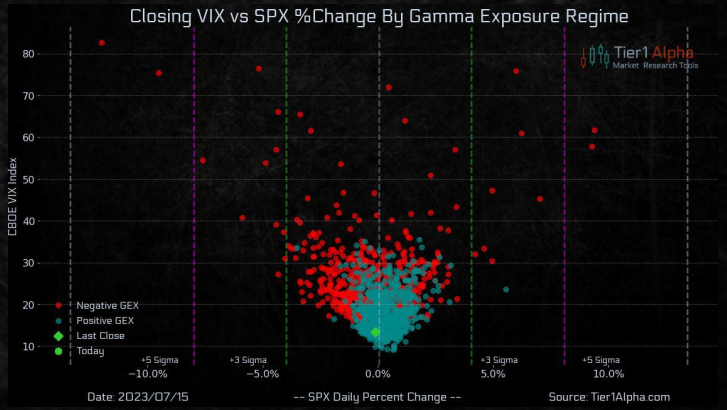
One of the most important concepts to grasp about Dealer Gamma Exposure is that it affects Volatility but not necessarily Direction

- Said another way, it's the magnitude of returns that change, but those returns can be either to the Upside or to the Downside, depending on how dealers are positioned.

- This is especially evident when dealers are in a Negative Gamma Regime, and why we often see *big down days*, immediately followed by *big up days*, as dealers are forced to chase the market in both directions.



In this sense, Dealer Gamma Exposure acts as a *Throttle for Volatility*

Quantitative Fund Flows-

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While *Gamma Exposure* acts as a *Throttle For Volatility*, *Volatility* acts as a *Toggle for Equity Exposure.*

- Quantitative funds, including Vol control funds, CTA funds, and Risk Parity strategies, leverage algorithms and advanced statistical techniques to manage portfolio risk, by systematically adjusting their asset allocation based on changes in volatility.
- In other words, these funds use volatility as a mechanism or "Toggle" to adjust their exposure to the equity market.
- As volatility increases, these funds mechanically reduce their equity holdings by selling stocks to maintain a stable level of risk. Conversely, when volatility falls, they mechanically increase equity exposure by purchasing stocks.

This Mechanical Rebalancing contributes to the *Directional Component of Volatility*

Volatility Controlled Funds-

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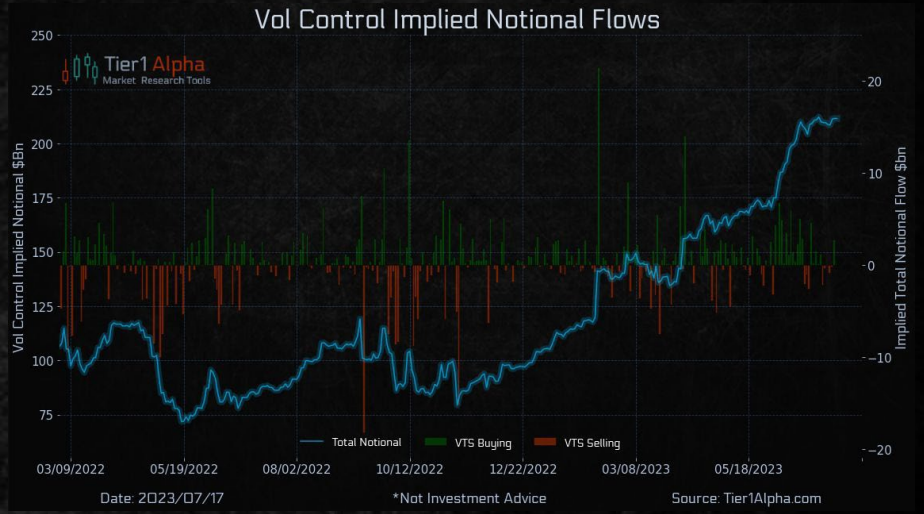
- Risk targeting, also known as Volatility Control, is a widely adopted technique among investment funds for managing risk, with a notable concentration in the insurance space.
- The approach involves setting a predetermined level of volatility in their portfolios, such as 5%, 10%, or 15%, and adapting asset allocation based on realized volatility levels to uphold that goal.
- Although this approach can offer more predictable returns and minimize drawdowns during volatility events, it requires frequent rebalancing and which creates flows that can impact the market.
- The most popular approach to risk targeting is volatility scaling, which uses the higher of either the 1-month or 3-month realized vol as the toggle for equity exposure.



When Realized Volatility Falls, Vol Control funds mechanically Buy Equities.
When Realized Vol Rises, these funds must Sell Equities.

Commodity Trading Advisors-

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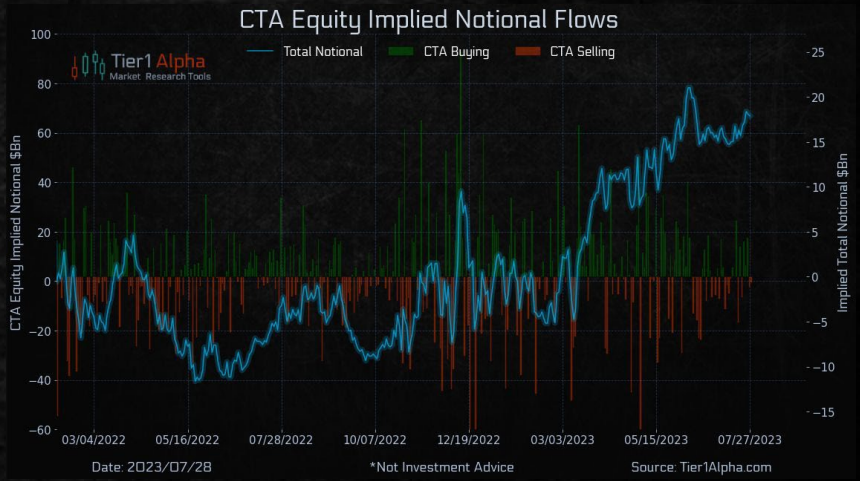
Realized volatility plays a pivotal role in these strategies, particularly around position sizing and risk management.

- Commodity Trading Advisors (CTAs) often use trend-following strategies in the futures market across various asset classes, employing normalized momentum to gauge market trends.
- Normalized momentum is a risk-adjusted measure of price momentum, calculated by dividing the average price change over a specific period by the standard deviation of those changes.
- This allows for more accurate comparisons between assets and better risk management in volatile market conditions.
- CTAs then dynamically modify their position sizes in response to changes in realized volatility, reducing exposure during periods of high volatility and increasing exposure during periods of lower volatility.



Higher equity volatility reduces exposure, triggering Selling Flows.
Lower equity volatility leads to increased exposure, generating Buying Flows.

Risk Parity Funds-

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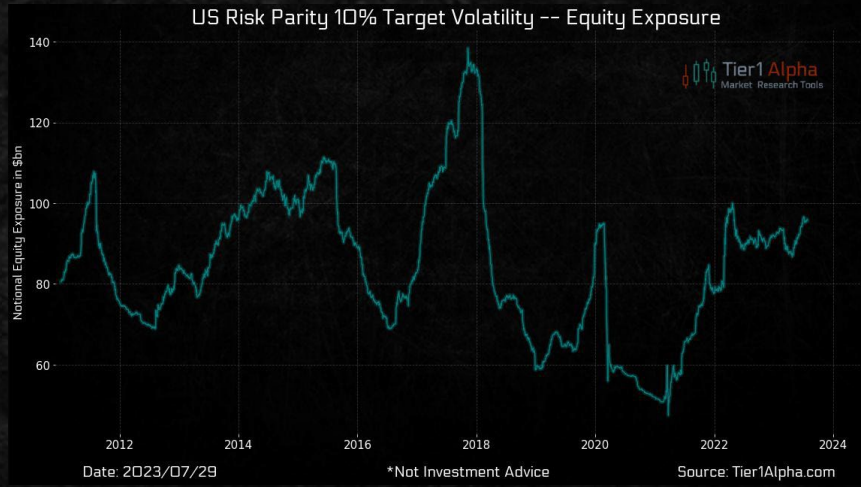
Risk Parity Funds seeks to ensure each asset contributes equally to the overall portfolio risk, assigning more weight to low-volatility assets and less weight to high-volatility ones.

- Risk parity is an investment approach prioritizing risk allocation over capital allocation. It aims to create a balanced portfolio where various assets like equities, commodities, and bonds are weighted based on their volatility.
- Realized volatility plays a crucial role in this strategy. Assets with higher volatility are given less weight, and those with lower volatility are given more weight, ensuring equal risk contribution across the portfolio.
- Risk parity strategies drive market flows by adjusting asset holdings based on volatility.



Increased asset volatility triggers Sellings Flows to reduce exposure, while a Decrease in Volatility prompts Buying Flows to increase exposure, ensuring balanced risk.

Systematic Positioning Index-

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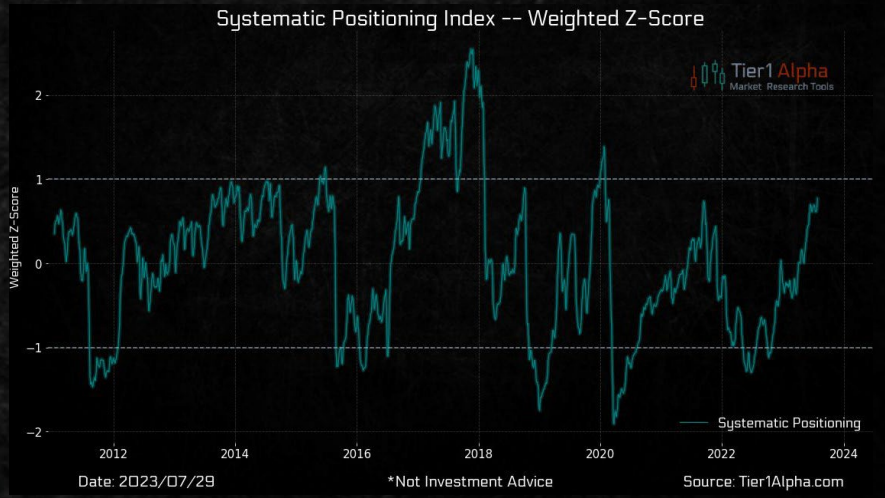
Systematic Flows play a crucial role, often leading to significant disparities between Asset Prices and Economic Conditions.

- Our Systematic Positioning Index gives us a broad view of equity exposure across several popular quantitative strategies.
- Combined, these strategies represent nearly $1 trillion in assets under management (AUM), which are all mechanically tied to volatility as a form of risk management.
- Within the context of an Inelastic Market, that $1 trillion in AUM, with just an average multiplier, has the potential to influence up to $5 trillion in market capitalization.
- Remember, flows remain indifferent to economic conditions, prices, valuations, earnings, or emotions. Broadly speaking, they react by buying stocks when realized volatility decreases and selling stocks when it rises.



Trade The Flows, But Don't Be Fooled By The Flows!

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Professional Insights For An Options Dominated World

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