

# PromiseLand



## PromiseLand's Market Commentaries

Caleb Ong Jun Yi

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## 1 Introduction

Option positions in the options markets on indices and equities can be used to infer market movements and sentiments. The counterparties of an options trade are the investor, and the dealer. Investors who establish positions in options are generally likely to have a view on the underlying investment. In contrast, dealers generally do not adopt a view on the underlying investment. Dealers must therefore protect, or employ hedges against their options positions, and this entails buying and selling of the underlying investment. Such large hedging activity by dealers is able to influence the prices and volatility of the underlying. By knowing the expected activity taken by the dealers, we are able to infer price movement direction, to gather volatility expectations, and to assess market sentiment.

Notes and commentaries will be periodically provided.

The appendix contain explanatory notes on how to utilize price levels.



## 2 Concise Summary

### 2.1 S&P500

The S&P500 generally remained flat, registering a return of 0.094%. The effect on the market of positive US economic data, in the form of US Jun JOLTS job openings rising by 590,000 to a record number of 10.073 million, which beats expectations of 9.270 million, were overshadowed by fresh concerns about the COVID-19 Delta (and Lambda) variant.

The Key Gamma Strike of 4400 will continue to be significant level, whereby there is significant long gamma exposure, which should provide some support for the S&P500 to remain buoyant. The level whereby investors are targeting a top upside potential remains at 4450.

**Expected trading range: 4400 - 4450.**

### 2.2 NASDAQ

Strength in Technology stocks allowed the NASDAQ to register a positive return of 0.16%. The 15100 level, which was tested multiple times, continues to remain as a reliable support area as predicted by the models. The level whereby investors are targeting a top upside potential remains at 15200.

**Expected trading range: 15100 - 15200.**

### 2.3 STOXX50

The STOXX50 generally remained flat, registering a return of 0.063%, amidst a backdrop of rising COVID-19 cases and heightened volatility in the energy markets. Such performances can be considered to quite commendable, given fresh concerns over commodity prices. The level whereby investors are targeting a top upside potential remains at 4200.

**Expected trading range: 4100 - 4200.**

### 2.4 DAX

The DAX concluded the Thursday trading day with a return of -0.1%. Gains in the Utilities, Technology and Pharmaceuticals & Healthcare sectors led shares higher while losses in the Retail, Industrials and Media sectors led shares lower.

The DAX is extremely close to the Zero Gamma Level. If the price level approaches this level, we expect that prices should rebound, given that the Zero Gamma Level has always been a reliable support level.

**Expected trading range: 15730 - 15800.**

### 2.5 Gold

Gold took a tumble, in light of Hawkish Fed comments, which provided support for the USD. Atlanta Fed President Bostic said he is “in favor of going relatively fast” on tapering of QE, and he could back a tapering decision in September if job growth remains explosive. Also, Richmond Fed President Barkin said it is “fair to say” that the US economy has made progress toward the Fed’s goals. Such rallies in the USD, coupled with rising 10-year yields, depressed the prices of metals. Nevertheless, Gold will continue to remain as a safe-haven support.



The previously-predicted key levels of Lower Hedge Wall (1800) and Zero Delta Levels (1755) were insufficient to combat the decline in Gold prices, as prices eventually tumbled from those levels after hovering around them for extended periods of time. The negative gamma ‘ramp’ accentuated the selling of Gold to levels until it rebounded from 1700, the next lowest level with significant gamma build-up. The option gamma map indicates a significant increase in the number of put buying from investors for strikes in the 1700-1800 range, which signals short-term bearishness.

**Expected trading range: 1700 - 1740.**

## 2.6 Silver

Silver experienced a similar fate to Gold. Silver prices were also undercut Monday on weaker-than-expected Chinese July trade data, a sign of weakness in industrial metals demand. The option gamma map indicates a significant increase in the number of put buying from investors for strikes in the 22-25 range, which signals short-term bearishness.

**Expected trading range: 22.6 - 24.**

## 2.7 Crude Oil

Both WTI and Brent closed moderately lower, amid worldwide spread of the Delta COVID-19 variant, which will force more countries to impose pandemic restrictions that reduce economic growth and energy demand. Furthermore, as mentioned earlier, a rally in the USD to a 2-week high was another bearish factor for energy prices.

The coming week does not look good at all, with more negative news than positive news; there is weak fuel demand in India, which is the world’s third-largest crude consumer, increased OPEC production, and an increase in global crude oil stored on oil tankers throughout the world.

**Expected trading range: 65 - 75.**



### 3 Market Price Levels

Table 1: Key Price Levels for Market Indices

|                  | S&P500    | NASDAQ   | STOXX50  | DAX       |
|------------------|-----------|----------|----------|-----------|
| Current Price    | 4432.35   | 15133.11 | 4177.15  | 15745.41  |
| Previous Price   | 4436.52   | 15109.36 | 4174.54  | 15761.45  |
| Return           | -0.000940 | 0.001570 | 0.000625 | -0.001020 |
| Call Wall        | 4450      | 15200    | 4200     | 16100     |
| Key Delta Strike | 4000      | 14500    | 4100     | 15600     |
| Key Gamma Strike | 4400      | 15200    | 4100     | 15600     |
| Max Gamma Vanna  | 4400      | 15040    | 4150     | 15800     |
| Max Gamma        | 4485      | 15410    | 4275     | 16350     |
| Max Vanna        | 4385      | 15030    | 4125     | 15800     |
| Put Wall         | 4100      | 14000    | 3900     | 15000     |
| Zero Gamma Vanna | 3615.00   | 13232.17 | 3301.93  | 13855.27  |
| Zero Gamma       | 4380.31   | 14993.71 | 4101.81  | 15733.50  |

Table 2: Key Dates for Market Indices

|                           | S&P500     | NASDAQ     | STOXX50    | DAX        |
|---------------------------|------------|------------|------------|------------|
| Largest Gamma Strike Date | 2021-09-17 | 2021-08-20 | 2021-12-17 | 2021-08-20 |
| Largest Gamma Strike      | 0.246      | 0.259      | 0.266      | 0.375      |
| Largest Delta Strike Date | 2021-09-17 | 2021-09-17 | 2021-12-17 | 2021-12-17 |
| Largest Delta Strike      | 0.271      | 0.297      | 0.425      | 0.536      |
| Next Expiration Date      | 2021-08-11 | 2021-08-11 | 2021-08-20 | 2021-08-20 |
| Next Expiration Gamma     | 0.0542     | 0.0560     | 0.2460     | 0.3750     |
| Next Expiration Delta     | 0.00541    | 0.01110    | 0.04660    | 0.12800    |



Table 3: Key Price Levels for Single-name Indices

|                         | Gold Futures | Silver Futures | ICE Crude Oil Brent | Crude Oil WTI |
|-------------------------|--------------|----------------|---------------------|---------------|
| Current Price           | 1732.0000    | 23.4593        | 69.0400             | 66.4800       |
| Previous Price          | 1729.30      | 23.42          | 70.70               | 68.28         |
| Return                  | 0.00156      | 0.00146        | -0.02380            | -0.02670      |
| Hedge Wall (Lower)      | 1670.00      | 22.55          | 63.75               | 61.75         |
| Hedge Wall (Upper)      | 1945.00      | 34.95          | 85.25               | 83.00         |
| Key Delta Strike (Call) | 1850.00      | 18.25          | 75.00               | 50.00         |
| Key Delta Strike (Put)  | 1700         | 24             | 59                  | 110           |
| Key Gamma Strike        | 1700         | 24             | 70                  | 65            |
| Min Gamma Vanna         | 1717.50      | 27.60          | 71.00               | 69.75         |
| Min Gamma               | 1832.5       | 28.0           | 74.0                | 70.5          |
| Min Vanna               | 1690.00      | 24.20          | 54.25               | 59.00         |
| Zero Delta              | 1739.62      | 24.25          | 61.22               | 59.80         |

Table 4: Key Dates for Single-name Indices

|                                  | Gold Futures | Silver Futures | ICE Crude Oil Brent | Crude Oil WTI |
|----------------------------------|--------------|----------------|---------------------|---------------|
| Largest Gamma Strike Date        | 2021-08-26   | 2021-08-26     | 2021-10-26          | 2021-08-17    |
| Largest Gamma Strike             | 0.320        | 0.448          | 0.377               | 0.407         |
| Largest Delta Strike Date (Put)  | 2021-08-26   | 2021-08-26     | 2021-08-25          | 2021-09-16    |
| Largest Delta Strike (Put)       | 2.0800       | 1.1200         | -0.0362             | -0.0179       |
| Largest Delta Strike Date (Call) | 2022-05-26   | 2022-06-27     | 2021-10-26          | 2021-11-16    |
| Largest Delta Strike (Call)      | -1.810       | -0.314         | 0.701               | 0.690         |
| Next Expiration Date             | 2021-08-13   | 2021-08-13     | 2021-08-25          | 2021-08-13    |
| Next Expiration Gamma            | 0.04210      | 0.05610        | 0.28000             | 0.00709       |
| Next Expiration Delta            | 0.39900      | 0.14400        | -0.03620            | -0.00385      |

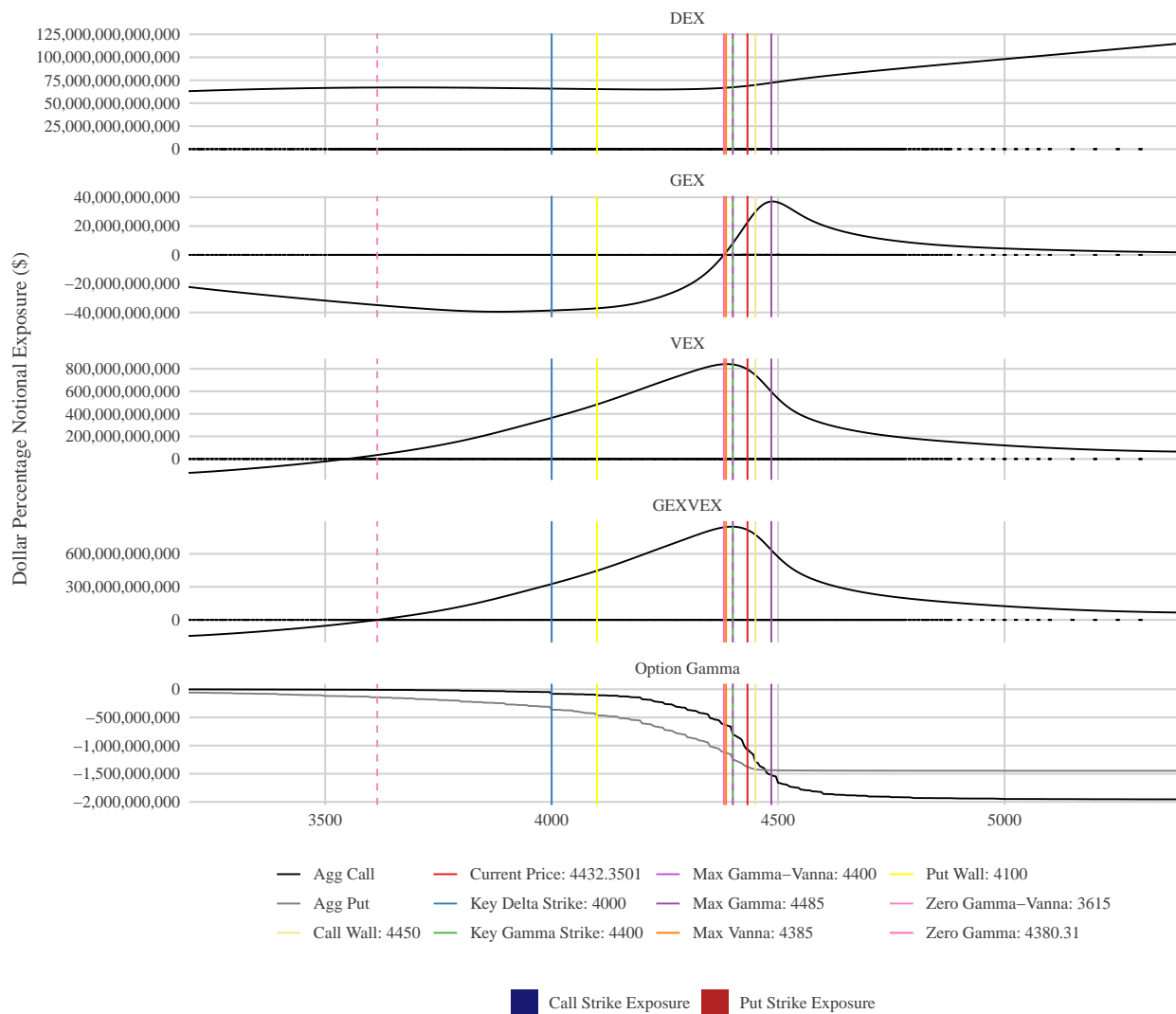


## 4 Market Indices

### 4.1 S&P500

#### Dollar Notional Exposure for SPX

Largest Gamma Strike: 2021-09-17 0.246  
 Largest Delta Strike: 2021-09-17 0.271  
 Next Expiration: 2021-08-11  
 Next Expiration Gamma: 0.0542  
 Next Expiration Delta: 0.00541  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10



The S&P500 generally remained flat, registering a return of 0.094%. The effect on the market of positive US economic data, in the form of US Jun JOLTS job openings rising by 590,000 to a record number of 10.073 million, which beats expectations of 9.270 million, were overshadowed by fresh concerns about the COVID-19 Delta (and Lambda) variant.

The Key Gamma Strike of 4400 will continue to be significant level, whereby there is significant long gamma exposure, which should provide some support for the S&P500 to remain buoyant. The level whereby investors are targeting a top upside potential remains at 4450.

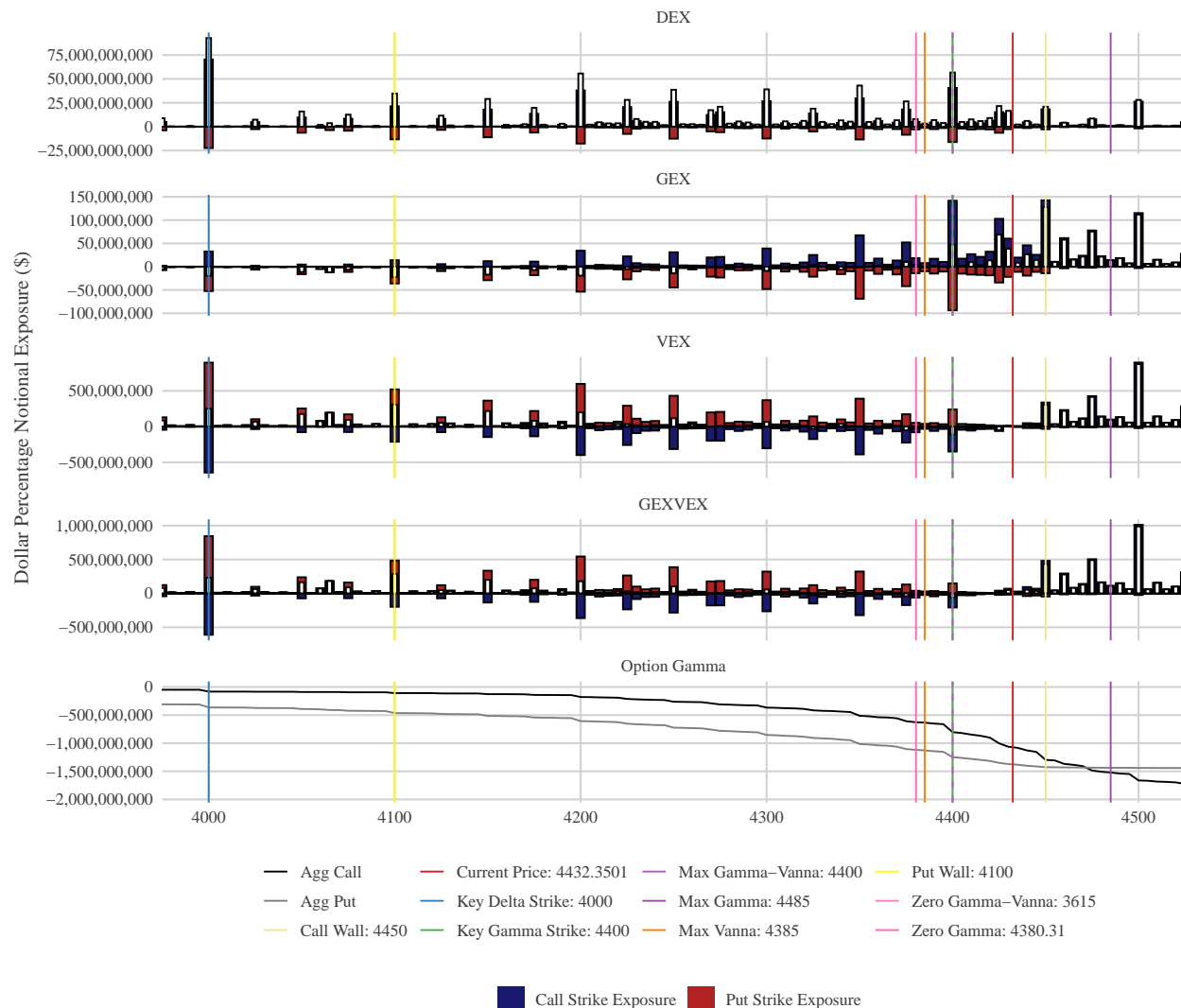
**Expected trading range: 4400 - 4450.**





## Strike Notional Exposure for SPX

Largest Gamma Strike: 2021-09-17 0.246  
Largest Delta Strike: 2021-09-17 0.271  
Next Expiration: 2021-08-11  
Next Expiration Gamma: 0.0542  
Next Expiration Delta: 0.00541  
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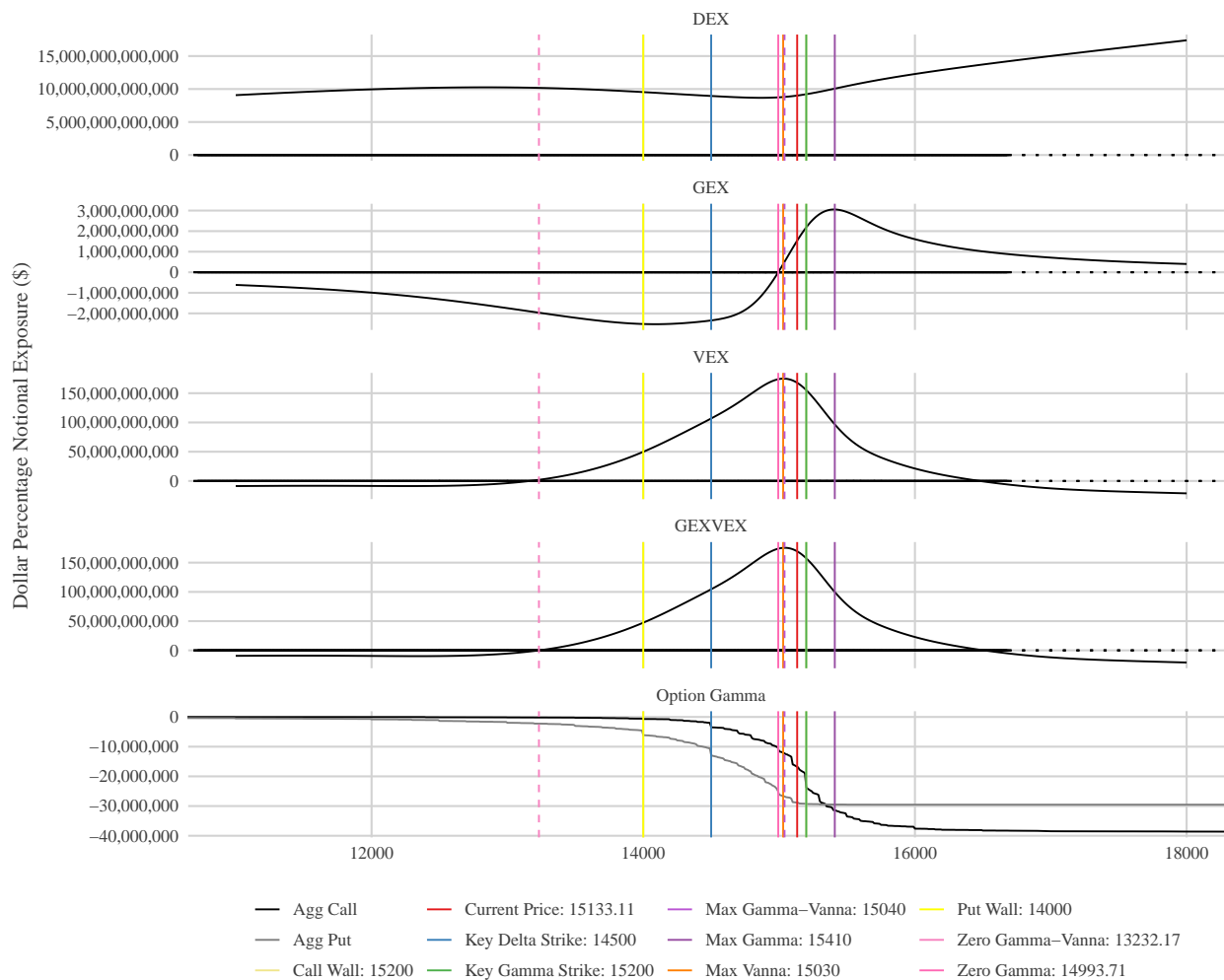




## 4.2 NASDAQ

### Dollar Notional Exposure for NASDAQ 100 E-Mini

Largest Gamma Strike: 2021-08-20 0.259  
 Largest Delta Strike: 2021-09-17 0.297  
 Next Expiration: 2021-08-11  
 Next Expiration Gamma: 0.056  
 Next Expiration Delta: 0.0111  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10



Call Strike Exposure Put Strike Exposure

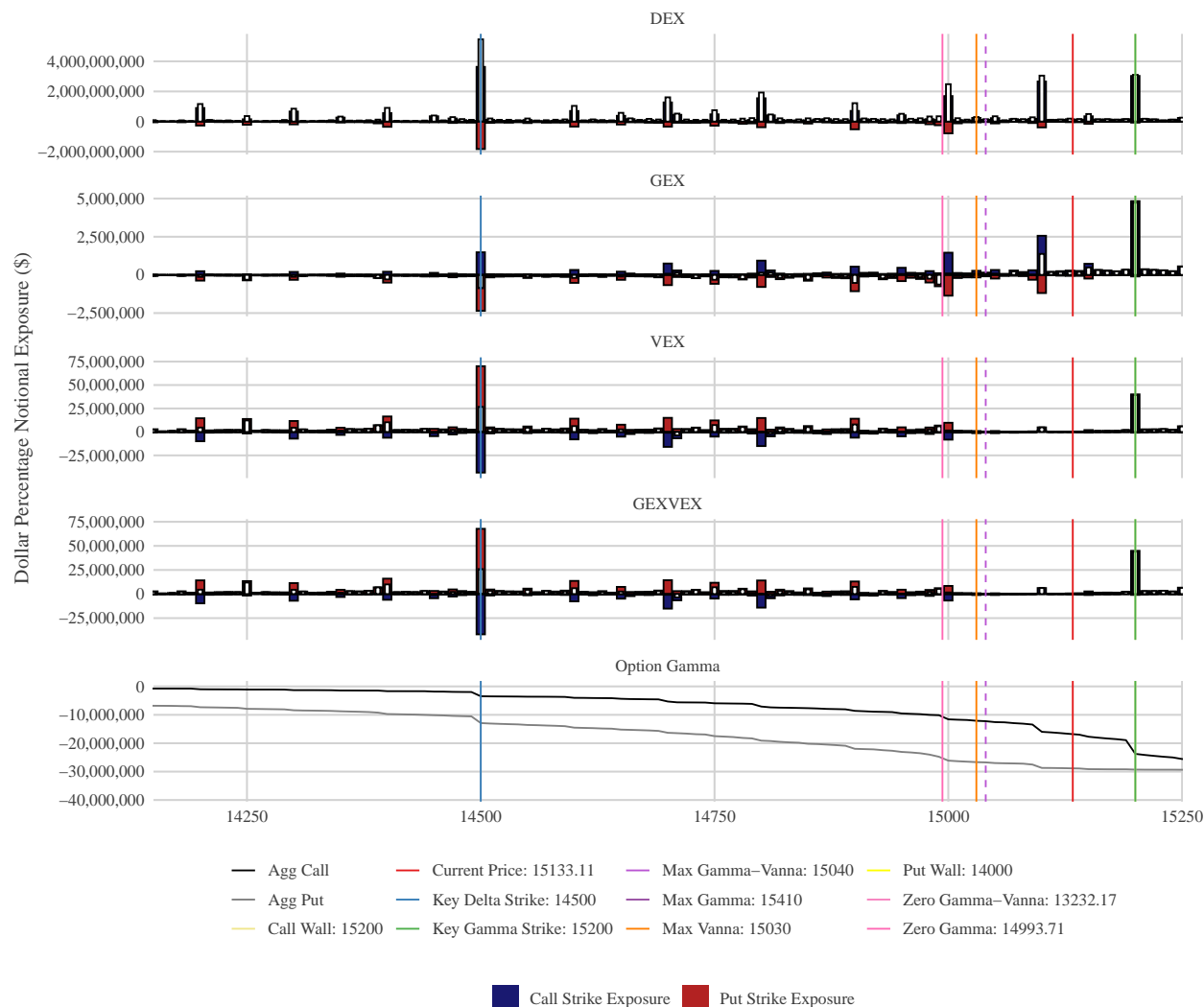
Strength in Technology stocks allowed the NASDAQ to register a positive return of 0.16%. The 15100 level, which was tested multiple times, continues to remain as a reliable support area as predicted by the models. The level whereby investors are targeting a top upside potential remains at 15200.

**Expected trading range: 15100 - 15200.**



## Strike Notional Exposure for NASDAQ 100 E-Mini

Largest Gamma Strike: 2021-08-20 0.259  
Largest Delta Strike: 2021-09-17 0.297  
Next Expiration: 2021-08-11  
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Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10

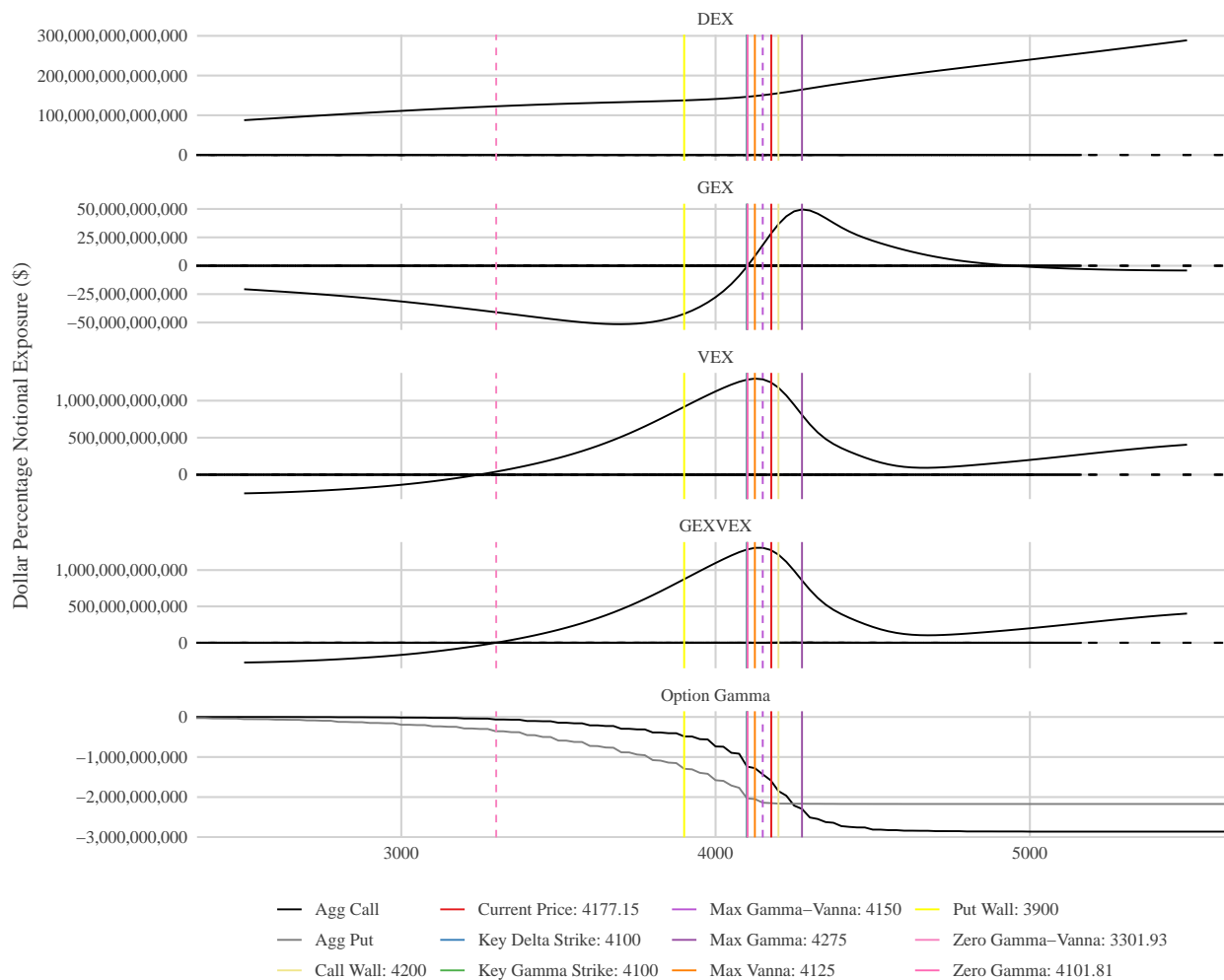




### 4.3 STOXX50

#### Dollar Notional Exposure for Euro Stoxx 50 Futures

Largest Gamma Strike: 2021-12-17 0.266  
 Largest Delta Strike: 2021-12-17 0.425  
 Next Expiration: 2021-08-20  
 Next Expiration Gamma: 0.246  
 Next Expiration Delta: 0.0466  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10



Call Strike Exposure Put Strike Exposure

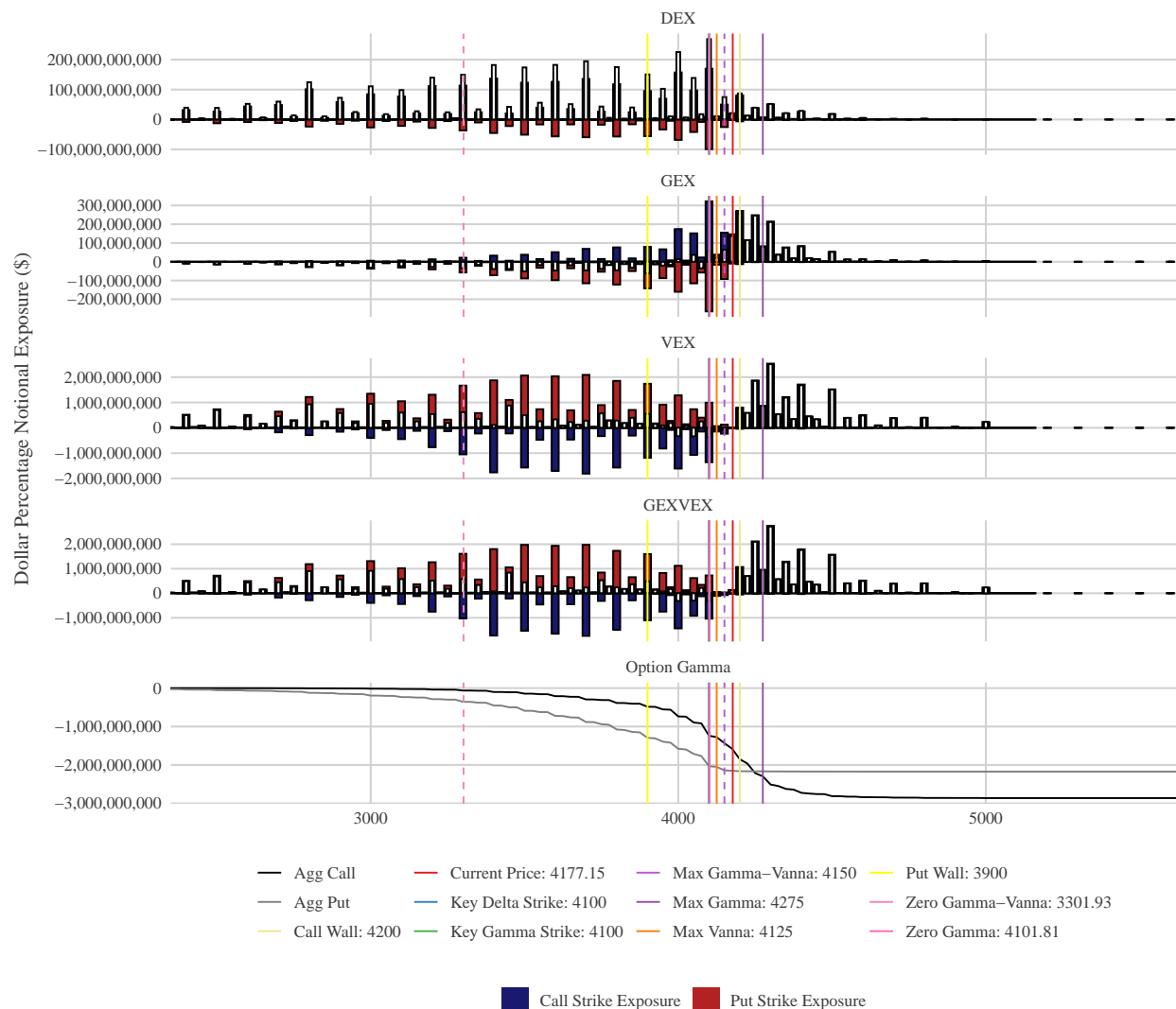
The STOXX50 generally remained flat, registering a return of 0.063%, amidst a backdrop of rising COVID-19 cases and heightened volatility in the energy markets. Such performances can be considered to quite commendable, given fresh concerns over commodity prices. The level whereby investors are targeting a top upside potential remains at 4200.

**Expected trading range: 4100 - 4200.**



## Strike Notional Exposure for Euro Stoxx 50 Futures

Largest Gamma Strike: 2021-12-17 0.266  
Largest Delta Strike: 2021-12-17 0.425  
Next Expiration: 2021-08-20  
Next Expiration Gamma: 0.246  
Next Expiration Delta: 0.0466  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10

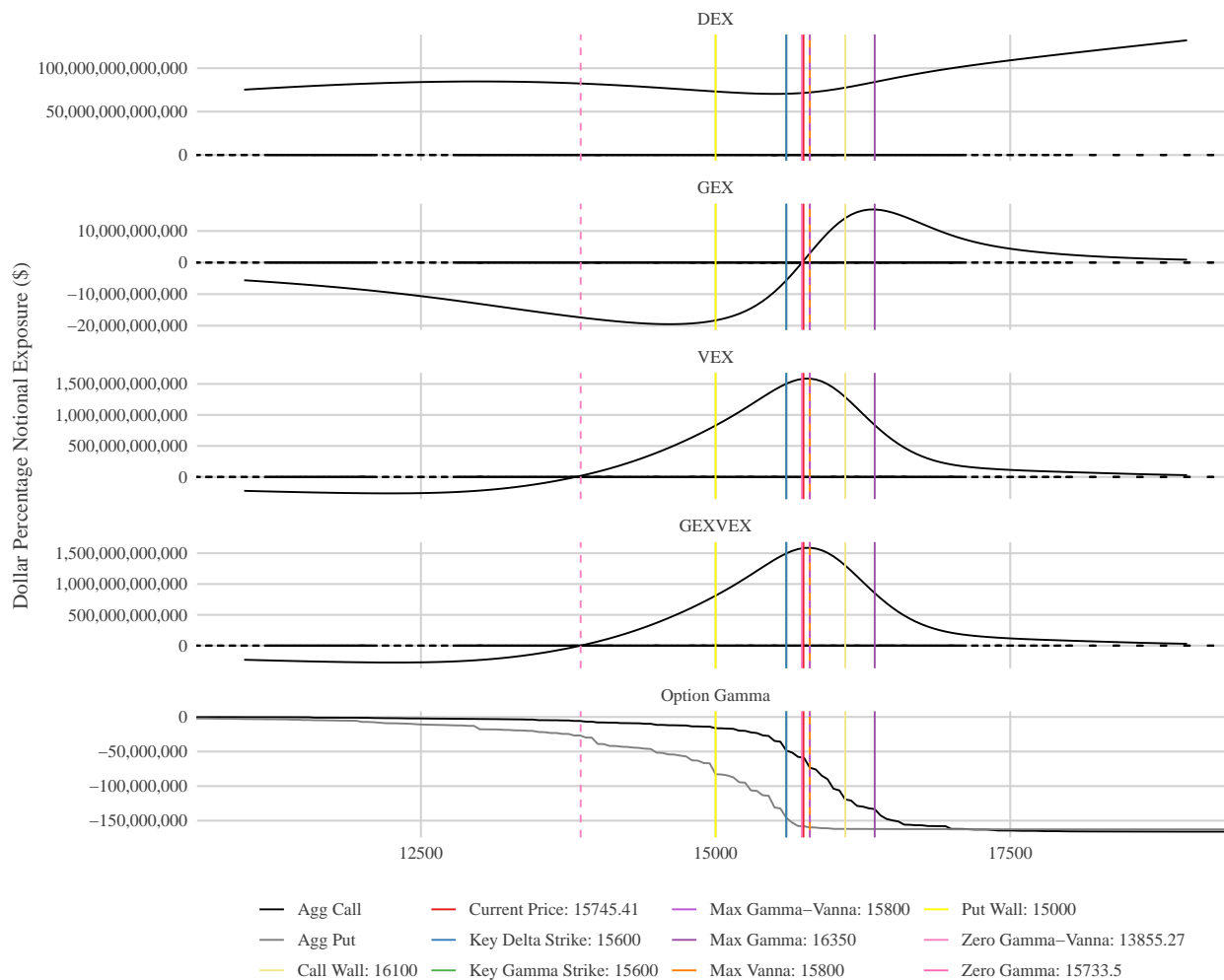




## 4.4 DAX

### Dollar Notional Exposure for DAX Futures

Largest Gamma Strike: 2021-08-20 0.375  
 Largest Delta Strike: 2021-12-17 0.536  
 Next Expiration: 2021-08-20  
 Next Expiration Gamma: 0.375  
 Next Expiration Delta: 0.128  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10



Call Strike Exposure Put Strike Exposure

The DAX concluded the Thursday trading day with a return of -0.1%. Gains in the Utilities, Technology and Pharmaceuticals & Healthcare sectors led shares higher while losses in the Retail, Industrials and Media sectors led shares lower.

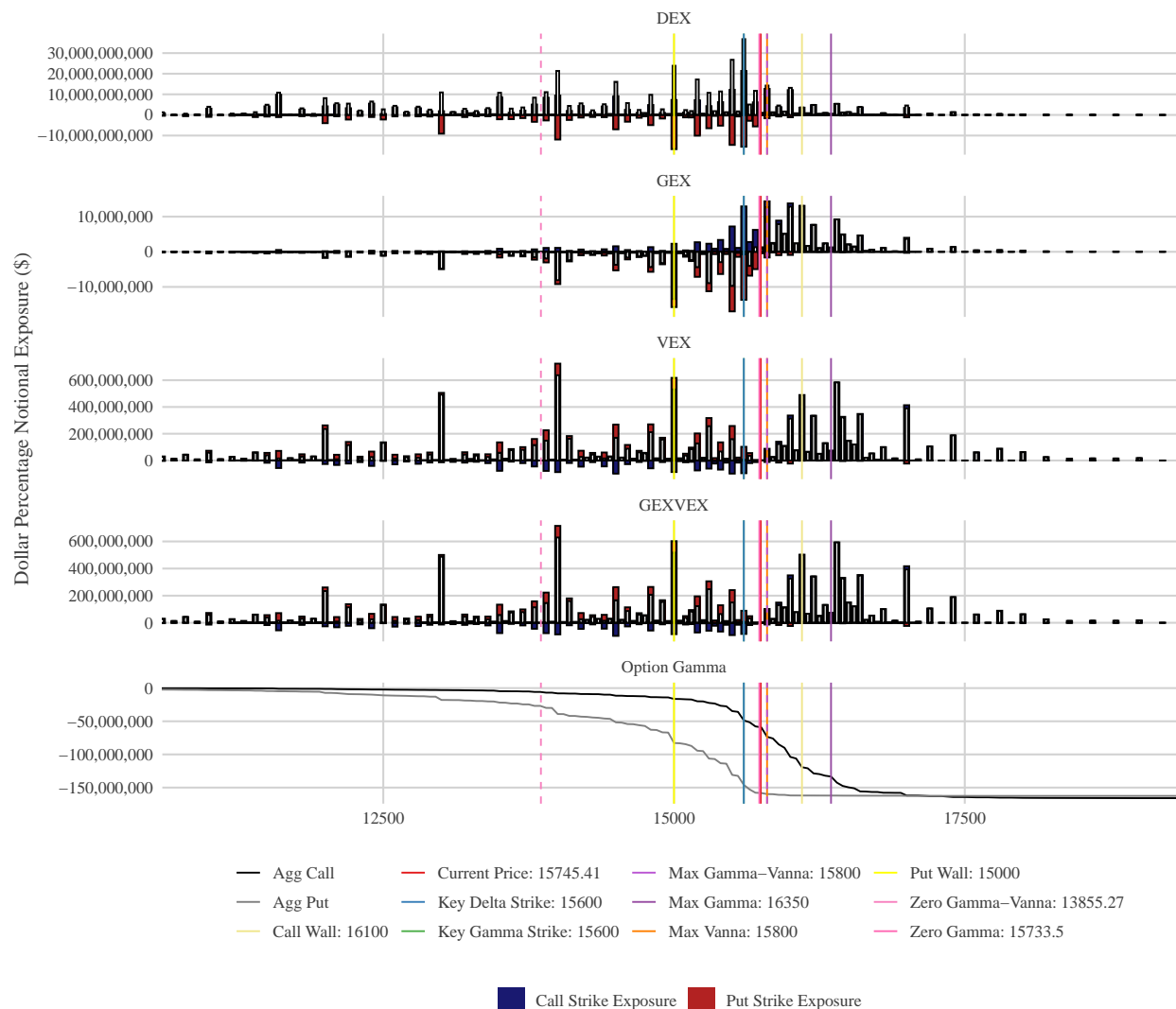
The DAX is extremely close to the Zero Gamma Level. If the price level approaches this level, we expect that prices should rebound, given that the Zero Gamma Level has always been a reliable support level.

**Expected trading range: 15730 - 15800.**



## Strike Notional Exposure for DAX Futures

Largest Gamma Strike: 2021-08-20 0.375  
Largest Delta Strike: 2021-12-17 0.536  
Next Expiration: 2021-08-20  
Next Expiration Gamma: 0.375  
Next Expiration Delta: 0.128  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10



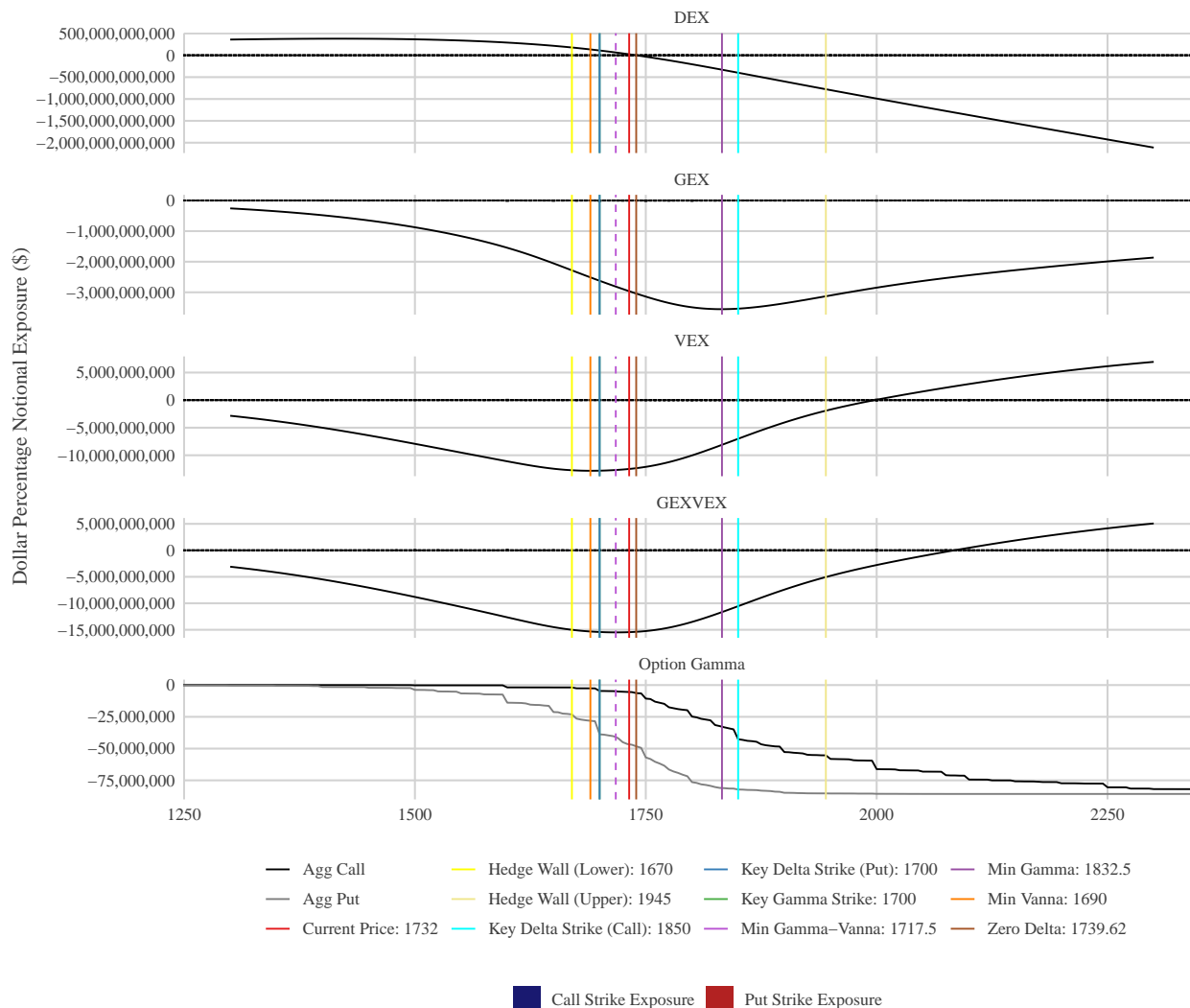


## 5 Commodities

### 5.1 Gold

#### Dollar Notional Exposure for Gold Futures

Largest Gamma Strike: 2021-08-26 0.32  
Largest Delta Strike (Put): 2021-08-26 2.08  
Largest Delta Strike (Call): 2022-05-26 -1.81  
Next Expiration: 2021-08-13  
Next Expiration Gamma: 0.0421  
Next Expiration Delta: 0.399  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10



Gold took a tumble, in light of Hawkish Fed comments, which provided support for the USD. Atlanta Fed President Bostic said he is “in favor of going relatively fast” on tapering of QE, and he could back a tapering decision in September if job growth remains explosive. Also, Richmond Fed President Barkin said it is “fair to say” that the US economy has made progress toward the Fed’s goals. Such rallies in the USD, coupled with rising 10-year yields, depressed the prices of metals. Nevertheless, Gold will continue to remain as a safe-haven support.

The previously-predicted key levels of Lower Hedge Wall (1800) and Zero Delta Levels (1755) were insufficient to combat the decline in Gold prices, as prices eventually tumbled from those levels after hovering



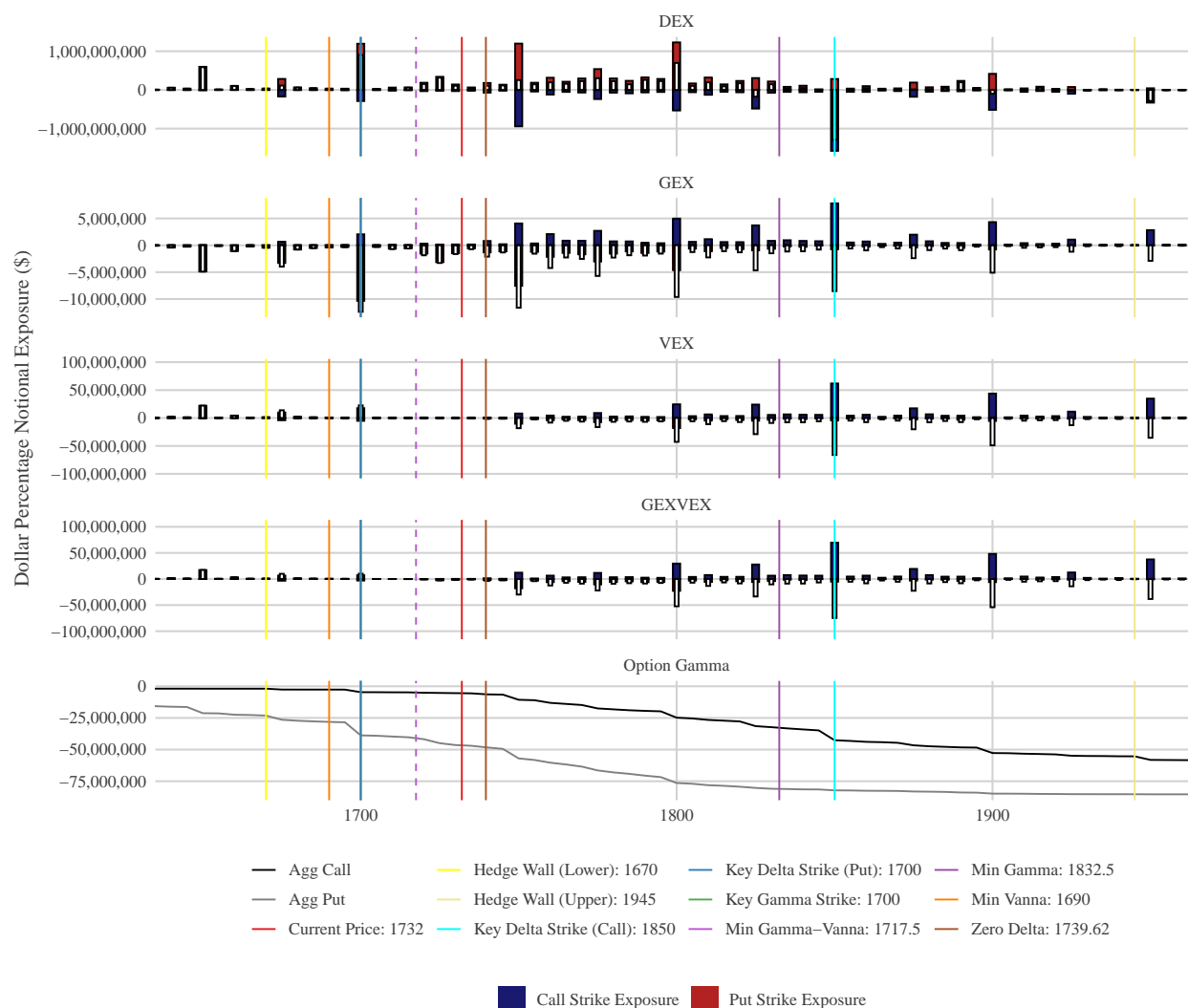


around them for extended periods of time. The negative gamma 'ramp' accentuated the selling of Gold to levels until it rebounded from 1700, the next lowest level with significant gamma build-up. The option gamma map indicates a significant increase in the number of put buying from investors for strikes in the 1700-1800 range, which signals short-term bearishness.

**Expected trading range: 1700 - 1740.**

### Strike Notional Exposure for Gold Futures

Largest Gamma Strike: 2021-08-26 0.32  
 Largest Delta Strike (Put): 2021-08-26 2.08  
 Largest Delta Strike (Call): 2022-05-26 -1.81  
 Next Expiration: 2021-08-13  
 Next Expiration Gamma: 0.0421  
 Next Expiration Delta: 0.399  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10

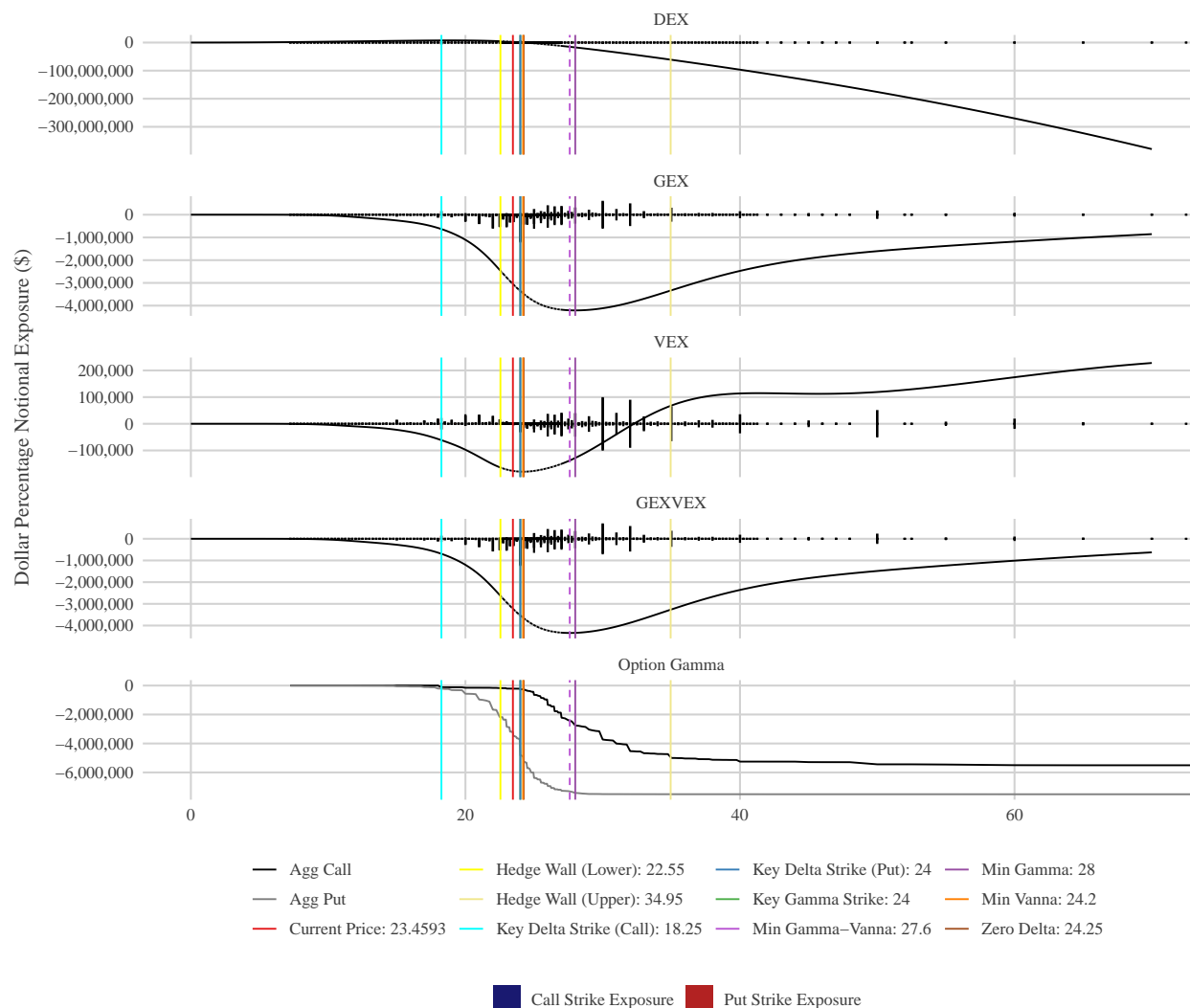




## 5.2 Silver

### Dollar Notional Exposure for Silver Futures

Largest Gamma Strike: 2021-08-26 0.448  
 Largest Delta Strike (Put): 2021-08-26 1.12  
 Largest Delta Strike (Call): 2022-06-27 -0.314  
 Next Expiration: 2021-08-13  
 Next Expiration Gamma: 0.0561  
 Next Expiration Delta: 0.144  
 Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
 Data as of 2021-08-10



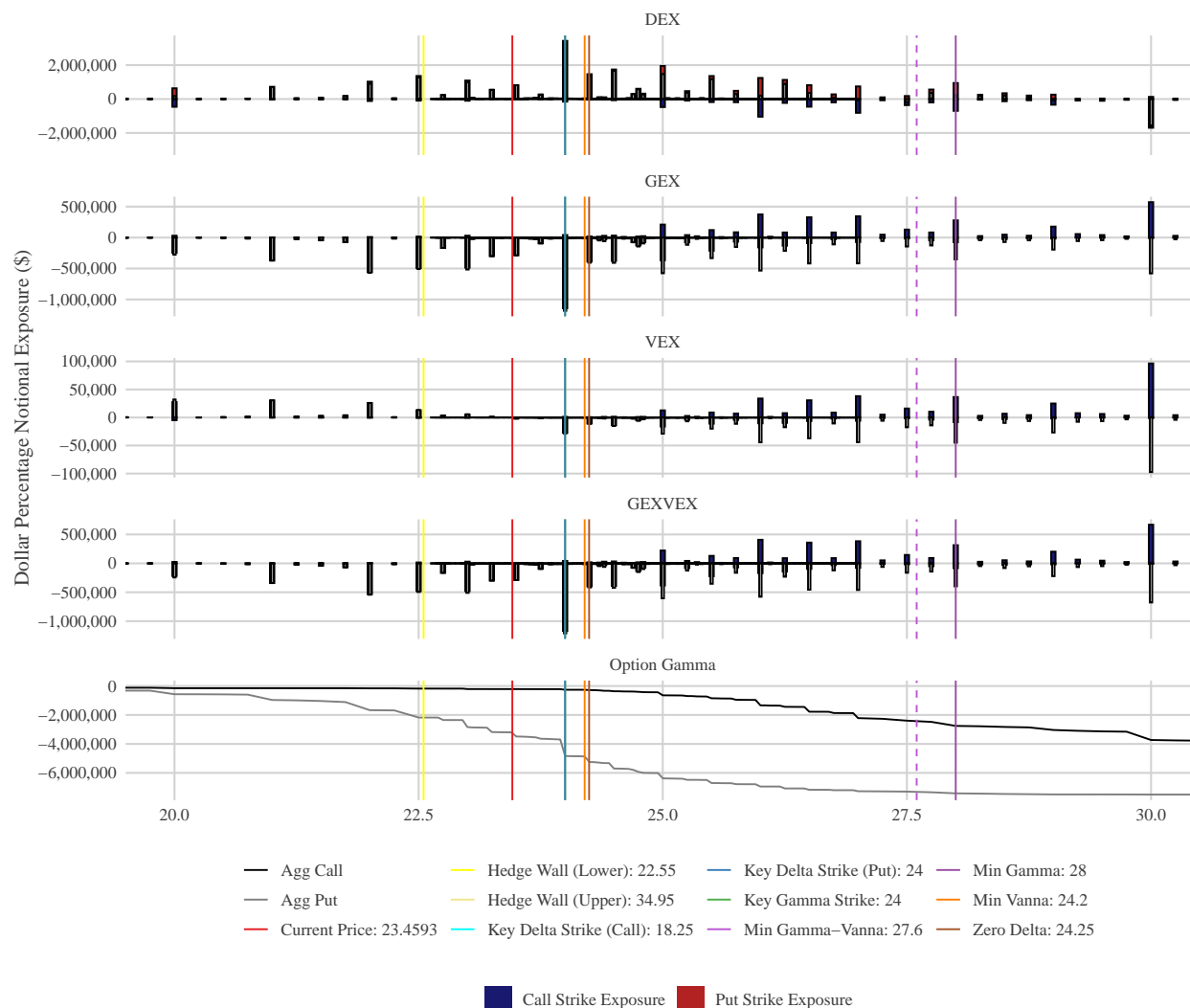
Silver experienced a similar fate to Gold. Silver prices were also undercut Monday on weaker-than-expected Chinese July trade data, a sign of weakness in industrial metals demand. The option gamma map indicates a significant increase in the number of put buying from investors for strikes in the 22-25 range, which signals short-term bearishness.

**Expected trading range: 22.6 - 24.**



## Strike Notional Exposure for Silver Futures

Largest Gamma Strike: 2021-08-26 0.448  
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Largest Delta Strike (Call): 2022-06-27 -0.314  
Next Expiration: 2021-08-13  
Next Expiration Gamma: 0.0561  
Next Expiration Delta: 0.144  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10





### 5.3 Crude Oil

Both WTI and Brent closed moderately lower, amid worldwide spread of the Delta COVID-19 variant, which will force more countries to impose pandemic restrictions that reduce economic growth and energy demand. Furthermore, as mentioned earlier, a rally in the USD to a 2-week high was another bearish factor for energy prices.

The coming week does not look good at all, with more negative news than positive news; there is weak fuel demand in India, which is the world's third-largest crude consumer, increased OPEC production, and an increase in global crude oil stored on oil tankers throughout the world.

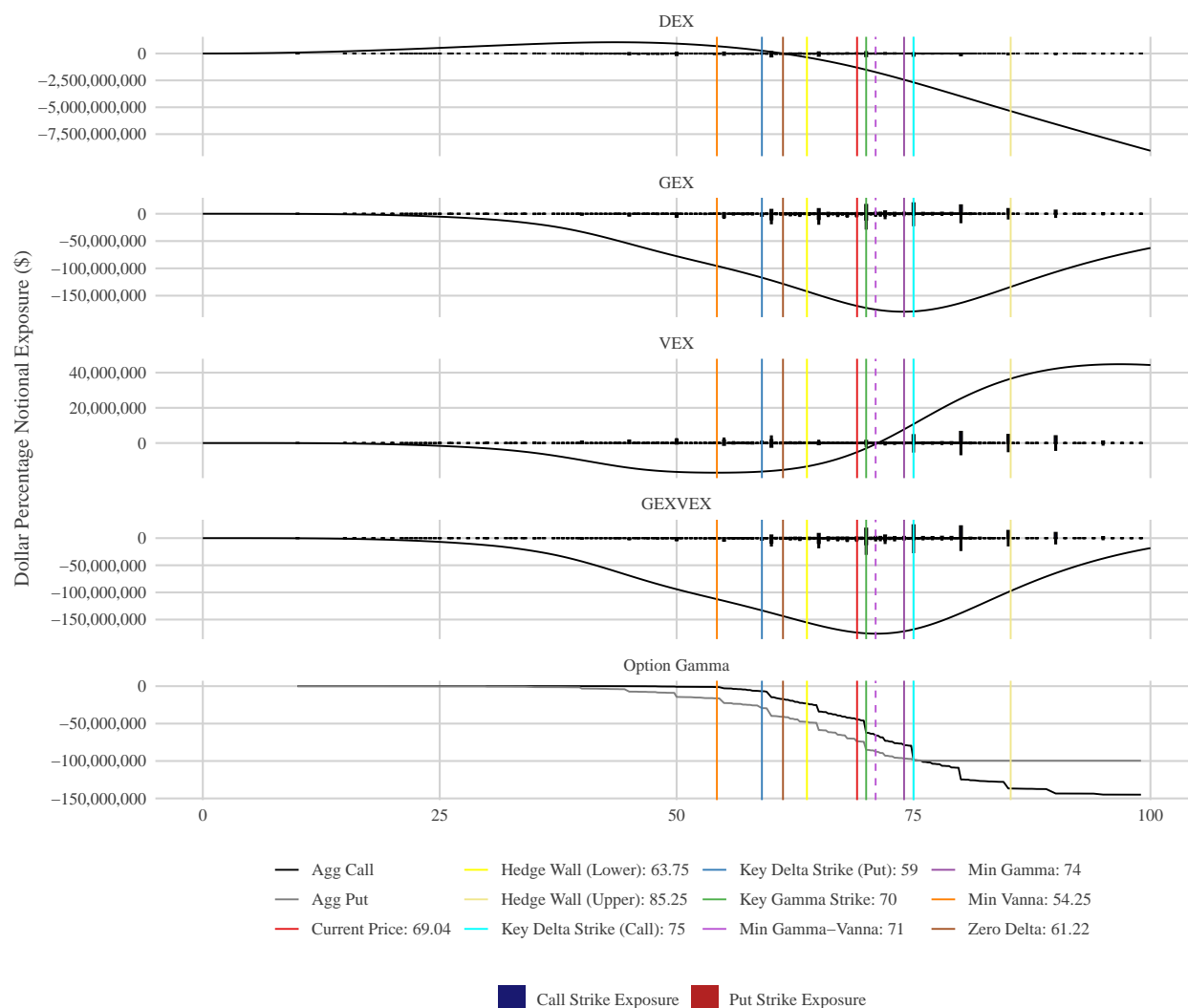
**Expected trading range: 65 - 75.**



### 5.3.1 Brent

#### Dollar Notional Exposure for ICE Crude Oil Brent

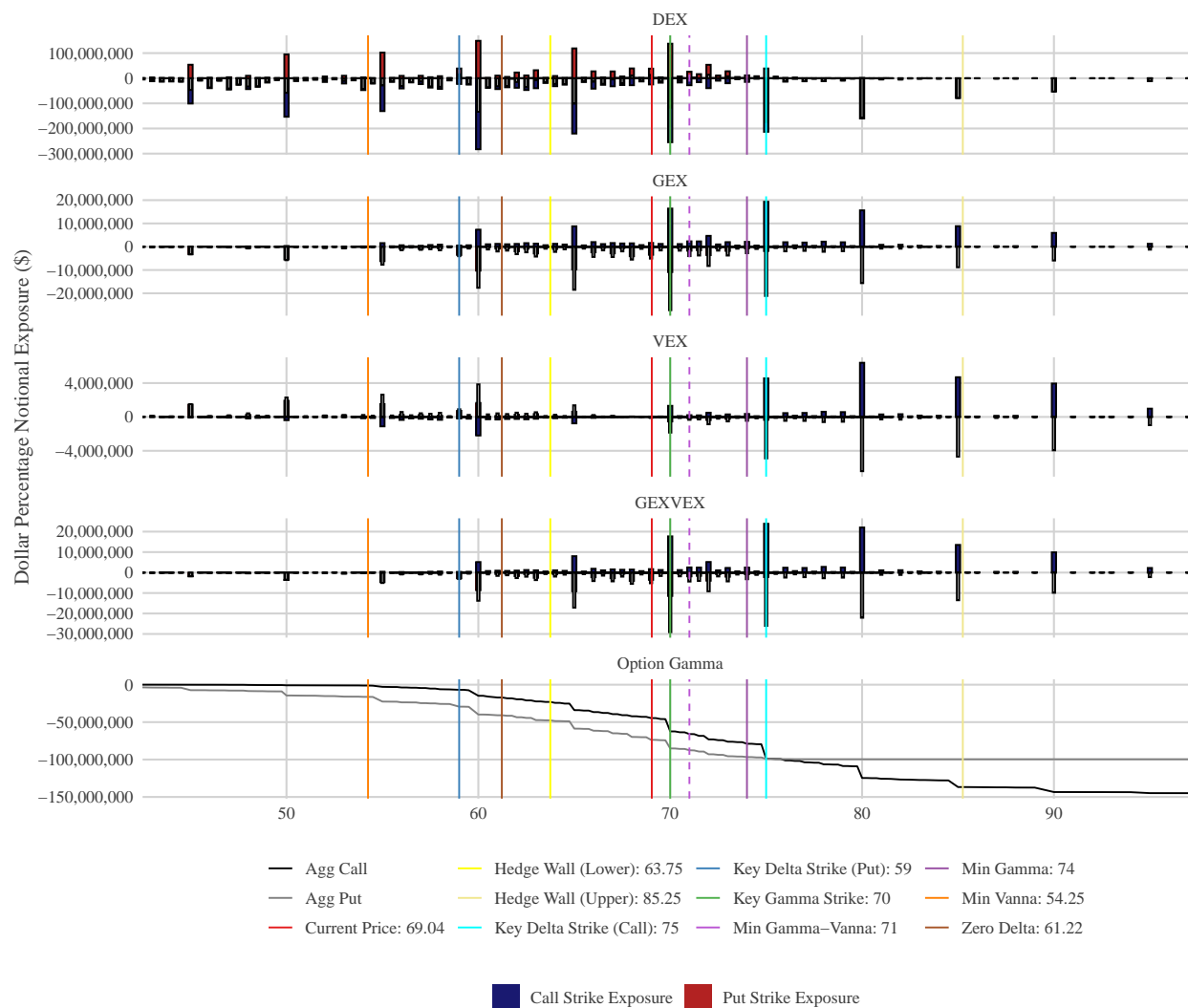
Largest Gamma Strike: 2021-10-26 0.377  
Largest Delta Strike (Put): 2021-08-25 -0.0362  
Largest Delta Strike (Call): 2021-10-26 0.701  
Next Expiration: 2021-08-25  
Next Expiration Gamma: 0.28  
Next Expiration Delta: -0.0362  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10





## Strike Notional Exposure for ICE Crude Oil Brent

Largest Gamma Strike: 2021-10-26 0.377  
Largest Delta Strike (Put): 2021-08-25 -0.0362  
Largest Delta Strike (Call): 2021-10-26 0.701  
Next Expiration: 2021-08-25  
Next Expiration Gamma: 0.28  
Next Expiration Delta: -0.0362  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10

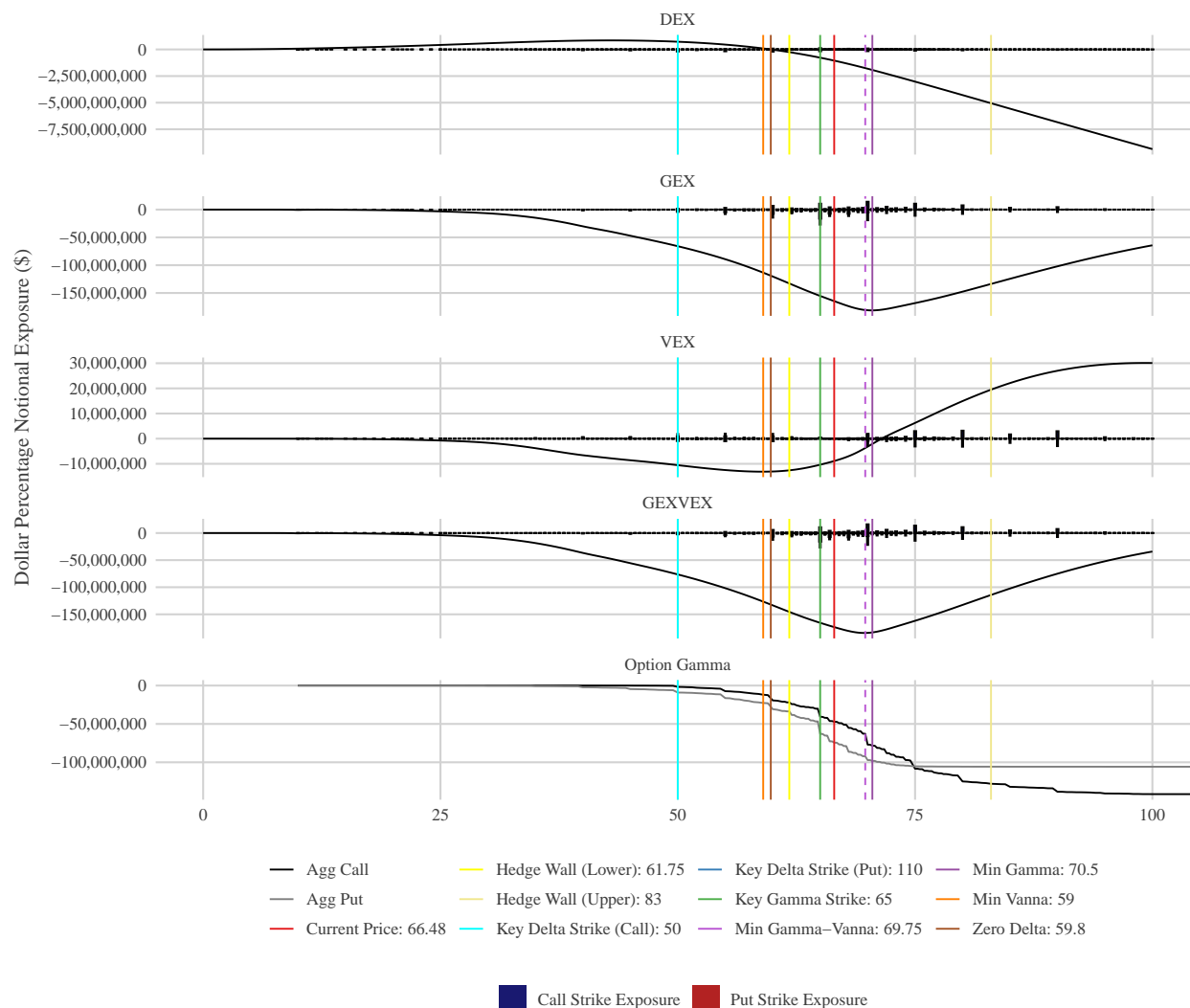




### 5.3.2 West Texas Intermediate (WTI)

#### Dollar Notional Exposure for Crude Oil WTI

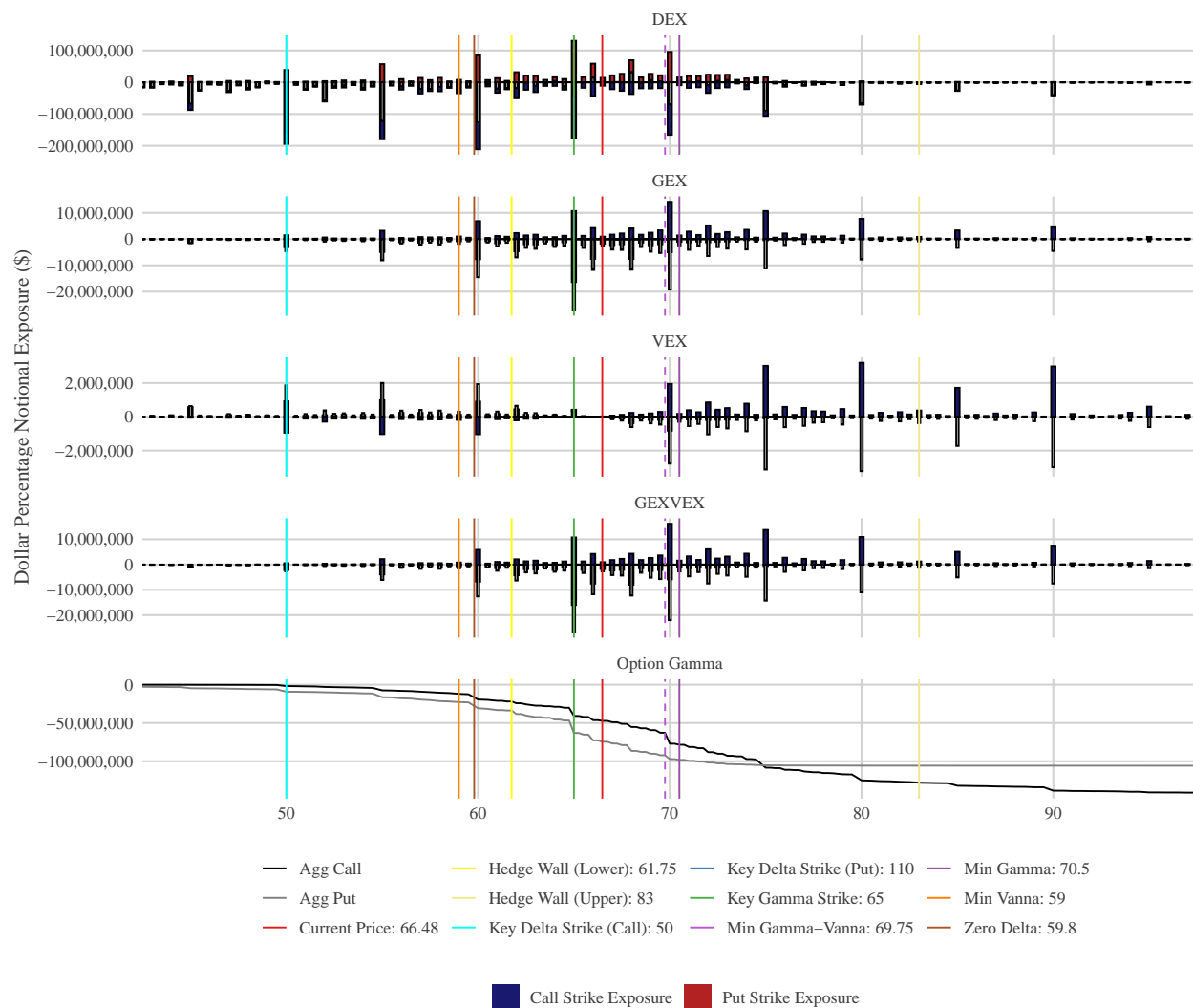
Largest Gamma Strike: 2021-08-17 0.407  
Largest Delta Strike (Put): 2021-09-16 -0.0179  
Largest Delta Strike (Call): 2021-11-16 0.69  
Next Expiration: 2021-08-13  
Next Expiration Gamma: 0.00709  
Next Expiration Delta: -0.00385  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
Data as of 2021-08-10





## Strike Notional Exposure for Crude Oil WTI

Largest Gamma Strike: 2021-08-17 0.407  
Largest Delta Strike (Put): 2021-09-16 -0.0179  
Largest Delta Strike (Call): 2021-11-16 0.69  
Next Expiration: 2021-08-13  
Next Expiration Gamma: 0.00709  
Next Expiration Delta: -0.00385  
Source: CBOE, COMEX, EUREX, NYMEX, ICE/EU, author's compilation  
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## 6 Appendix

### 6.1 Introduction to Options

A derivative is an investment instrument whose investment value is dependent on an underlying investment. Options are a form of derivative instrument that allows investors to engage in investing, speculating, and risk management activities. Options give market participants the right to purchase and sell the underlying security, or to deliver and receive the underlying security, at a predetermined price, which is also known as the Strike price. Each option has an expiration date, by which the holder of the option must decide whether to exercise the option.

A Call Option gives the holder the right to buy the underlying at the strike price, while a Put Option gives the holder the right to sell the underlying at the strike price. Accordingly, the seller of a Call Option has the obligation to deliver the underlying at the strike price, while the seller of a Put option has the obligation to receive the underlying at the strike price. Whether the holders of the options would exercise their rights, and whether the sellers of the options would be obligated, depends on the moneyness of the option.

An Out-of-the-Money (OTM) option would not be exercised by options holders, as they would be better off by transacting in the underlying directly. For instance, if a Call Option has a Strike of 100, and the underlying is at 90, it would be better for the investor to directly purchase the underlying at 90, rather than to exercise the right to purchase the underlying at 100. If a Put Option has a Strike of 100, and the underlying is at 110, it would be better for the investor to directly sell the underlying at 110, rather than to exercise the right to sell the underlying at 100. Accordingly, such options would have little value.

An In-the-Money (ITM) option would generally be exercised by options holders, as they would not be better off by transacting in the underlying directly. For instance, if a Call Option has a Strike of 100, and the underlying is at 110, it would be better for the investor to exercise the right to purchase the underlying at 100, rather than to directly purchase the underlying at 11. If a Put Option has a Strike of 100, and the underlying is at 90, it would be better for the investor to exercise the right to sell the underlying at 100, rather than to directly sell the underlying at 90. Accordingly, ITM options would have greater value than an OTM option.

The value of an option is influenced by many factors. The more pertinent factors are the price of the underlying, the strike price, the volatility of the underlying, and the time to expiration.



## 6.2 Quantifying Dealer Market Exposure

For market indices, dealers are assumed to be long call options, and short put options. For single-name indices, dealers are assumed to be short call options, and short put options.

For single-name indices, call gamma strike exposure and vanna strike exposure are assigned positive numbers, and put gamma strike exposure and vanna strike exposure are assigned negative numbers.

Dealers are generally exposed to three kinds of exposures: Delta, Gamma, and Vanna. Delta exposure refers to the value of the hedge that dealers are notionally exposed to, at a particular strike price. It is the dollar notional amount that dealers are holding or selling in order to remain protected (against small price movements).

What is of greater interest are the gamma and vanna exposures. Gamma exposure refers to the rate of change of the value of the hedge that dealers are notionally exposed to, with respect to changes in the underlying price. It measures the sensitivity of the delta notional exposure to changes in the underlying price. The metric utilized to assess dealer gamma exposure is known as Total Gamma Exposure (GEX). The rate of change of GEX can be denominated in per unit points, or percentage points.

Vanna exposure refers to the rate of change of the value of the hedge that dealers are notionally exposed to, with respect to changes in the volatility of the underlying. It measures the sensitivity of the delta notional exposure to changes in the volatility of the underlying. The metric utilized to assess dealer gamma exposure is known as Total Vanna Exposure (VEX). The rate of change of VEX can be denominated in per unit points, or percentage points.



### 6.3 Making Inferences

A high GEX indicates heightened dealer hedging activity, whereas a low GEX indicates subdued dealer hedging activity. A high GEX implies that dealers must purchase or sell a greater amount of the underlying in order to be protected against small price movements, while a low GEX implies that dealers must purchase or sell a lesser amount of the underlying in order to be protected against small price movements.

A positive GEX indicates that dealers would have to sell the underlying as the underlying price increases, and to buy the underlying as the underlying price decreases. Accordingly, a positive GEX indicates relative market calmness and tempered volatility, as dealer selling activity would put downward pressure on market highs, and dealer buying activity would put upward pressure on market lows. Expected market trading ranges can then be inferred.

A negative GEX indicates that dealers would have to sell the underlying as the underlying price decreases, and to buy the underlying as the underlying price increases. Accordingly, a negative GEX indicates relative market aggressiveness and heightened volatility, as dealer selling activity would put further downward pressure on market lows, and dealer buying activity would put further upward pressure on market highs. Expected market momentum and volatility can then be inferred. A high VEX indicates a heightened additional adjustment to the delta notional exposure for a given change in volatility, while a low VEX indicates a subdued additional adjustment to the delta notional exposure for a given change in volatility.

A positive VEX indicates that dealers would have to sell the underlying as the volatility of the underlying price increases, and to buy the underlying as the volatility of the underlying price decreases.

A negative VEX indicates that dealers would have to buy the underlying as the volatility of the underlying price increases, and to sell the underlying as the volatility of the underlying price decreases.

If GEX is positive, and if markets are experiencing decreasing volatility, a positive VEX, which induces buying activity of the underlying, tempers and subdues the selling activity of a positive GEX. This is usually the case for a market uptrend. If markets are experiencing increasing volatility, a positive VEX, which induces selling activity of the underlying, tempers and subdues the buying activity of a positive GEX. This is usually the case for a market downtrend. Expected market trading ranges can then be inferred.

If GEX is negative, and if markets are experiencing decreasing volatility, a positive VEX, which induces buying activity of the underlying, amplifies the buying activity of a negative GEX. This is usually the case for a sharp upward rebound in the market. If markets are experiencing increasing volatility, a positive VEX, which induces selling activity of the underlying, amplifies the selling activity of a negative GEX. This is usually the case for large downward spirals in the market, until the volatility of the underlying can no longer increase further. Expected market momentum and volatility can then be inferred.

The charts show the calculated distributions of DEX, GEX, VEX, and GEXVEX across different underlying prices, and the distributions of call and put gamma at each strike level (for plotting purposes, calls are given positive gamma, puts are given negative gamma). The net effect is also shown. The aggregated option gamma exposure for calls and puts indicates the volatility profile, and market sentiment of the underlying. Key price levels are indicated, and those serve as important price levels to be wary of.

For market indices, call delta strike exposure are assigned positive numbers, put delta strike exposure are assigned negative numbers, and call option gamma are assigned negative numbers for plotting purposes.

For single-name indices, call gamma strike exposure and vanna strike exposure are assigned positive numbers, and put gamma strike exposure and vanna strike exposure are assigned negative numbers for plotting purposes.



## 6.4 Key Price Levels

### 6.4.1 Market Indices

**Zero Gamma:** The Zero Gamma level is the price whereby there is zero dealer gamma notional exposure. At this level, expected dealer hedging activity is zero. This is a crucial level whereby dealer hedging activity may swing from suppressing volatility to exacerbating volatility, and it therefore acts as a major pivot point; large underlying price drawdowns may be observed if the underlying price crosses below this level, and it acts as a support level if the underlying price approaches this level.

**Max Gamma:** The Max Gamma level is the price at which dealer hedging activity due to changes in the underlying price is at the maximum. It serves as a major pinning point if the underlying is trading near that level.

**Max Vanna:** The Max Vanna level is the price at which dealer hedging activity due to changes in the volatility of the underlying is at the maximum. It serves as a major pivot point for the underlying, whereby the price movement of the underlying is most affected, and contingent on the volatility trend of the underlying.

**Key Delta Strike:** The Key Delta Strike level is the strike price whereby there is the largest positive delta notional position. It is the level whereby there is the highest level of dealer call and put delta. Downward price trends may be reversed upon expiration of this delta notional position. It serves as a support or resistance level for the underlying.

**Key Gamma Strike:** The Key Gamma Strike level is the strike price whereby there is the largest total gamma notional position. It is the strike price whereby there is heightened dealer hedging activity, and hence there should be heightened dealer influence in the underlying. It serves as a support or resistance level for the underlying.

**Call Wall:** The Call Wall level is the strike price whereby there is the largest net positive gamma notional position. It indicates the market sentiment and expectation of the upper limit of the underlying, should the underlying trend upwards. It serves as a major resistance point. If this level moves higher, it indicates a bullish sentiment whereby the upward run is not overextended. If this level moves lower, it indicates a bearish sentiment whereby the upward run is overextended.

**Put Wall:** The Call Wall level is the strike price whereby there is the largest net negative gamma notional position. It indicates the market sentiment and expectation of the lower limit of the underlying, should the underlying trend downwards. It serves as a major pivot point. If this level moves higher, it indicates a bearish sentiment whereby more market participants are seeking greater downside protection. If this level moves lower, it indicates a bullish sentiment whereby more market participants are seeking lower downside protection.

### 6.4.2 Single-name Indices

**Key Delta Strike (Put):** The Key Delta Strike (Put) level is the strike price whereby there is the largest positive net delta notional position. If the strike is above the price of the underlying, downward price trends may be reversed upon expiration of this delta notional position. It serves as a support or resistance level for the underlying.

**Key Delta Strike (Call):** The Key Delta Strike (Call) level is the strike price whereby there is the largest negative net delta notional position. If the strike is below the price of the underlying, upward price trends may be reversed upon expiration of this delta notional position. It serves as a support or resistance level for the underlying.



**Key Gamma Strike:** The Key Gamma Strike level is the strike price whereby there is the largest total gamma notional position. It is the strike price whereby there is heightened dealer hedging activity, and hence there should be heightened dealer influence in the underlying. It serves as a support or resistance level for the underlying.

**Zero Delta:** The Zero Delta level is the price whereby there is zero dealer delta notional exposure. It serves as a pivot point for the underlying, whereby the impact of dealer hedging activity on the market is minimized.

**Lower Hedge Wall:** The Lower Hedge Wall level is the price whereby downside gamma exposure starts to decrease. It serves as a price level whereby downside market volatility may reduce.

**Upper Hedge Wall:** The Lower Hedge Wall level is the price whereby upside gamma exposure starts to decrease. It serves as a price level whereby upside market volatility may reduce.

**Min Vanna:** The Min Vanna level is the price at which dealer hedging activity due to changes in the volatility of the underlying is at the maximum. It serves as a major pivot point for the underlying, whereby the price movement of the underlying is most affected, and contingent on the volatility trend of the underlying.

GEXVEX aggregates the effects of Gamma and Vanna.