

StructurerAPI

0.1

OAS

[/openapi.json](#)

API for structured products and derivatives pricing.

This app is a structurer aimed app. The goal is to provide an programming interface (API) flexible that could be used to price different type of products quickly.

You will be able to:

- Price Bonds
- Price Options
- Price Options strategies
- Price Structured products

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Apache 4.0

default



POST	/api/v1/price/structured-product/{product_kind}	Structured Product Pricing	
This API HTTP POST method can be used to price structured products. The 2 structured products that could be priced are outperformer certificate and reverse convertible. The parameters that has to be in the JSON body are specified in the example section below. The structured product to price needs to be specified in the URL.			
Args:			
<code>product_kind (ProductKindType): The type of structured product to price among 'reverse-convertible', 'outperformer-certificate'.</code>			
<code>product (Union[OutperformerCertificateBaseModel, ReverseConvertibleBaseModel]): The schema corresponding to the JSON body sent by the user. The details are available in the section below (example).</code>			
<code>pricing_service (PricingService, optional): PricingService is a static class providing services to converge JSON schema to actual class while processing the input and returning the price and the associated greek. Defaults to Depends(PricingService).</code>			
Raises:			
<code>ValueError: Whether the user provides wrong arguments to the function.</code>			
<code>HTTPException: The details of any other error occurring during the pricing.</code>			
Returns:			
<code>Dict[str, float]: A dict representing with keys as price and greek names and values as computed values.</code>			

Parameters**Try it out**

Name	Description
product_kind * required string (path)	<i>Available values : reverse-convertible, outperformer-certificate</i> reverse-convertible

Request body required**application/json****Examples:****Reverse convertible****Example Value** Schema

```
{
  "spot_price": 100,
  "maturity": 1,
  "rate": 0.03,
  "coupon": 0.05,
  "dividend": 0,
  "volatility": 0.2
}
```

Example Description

Reverse convertible example without neither vol surface nor rate curve

Responses

Code	Description	Links
200	Successful Response	No links
	<p>Media type</p> <div style="border: 2px solid green; padding: 2px; display: inline-block;">application/json</div> <p>Controls Accept header.</p> <p>Example Value Schema</p> <pre>{ "price": 0, "delta": 0, "gamma": 0, "theta": 0, "rho": 0, "vega": 0 }</pre>	

422 Validation Error No links

Code	Description	Links				
	<p>Media type</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">application/json</div>					
	<p>Example Value</p> <pre>{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string" }] }</pre>					
POST	/api/v1/price/option/{option_kind} Option Pricing	^				
	<p>This API HTTP POST method can be used to price options. The 3 options that could be priced are vanilla, barrier and binary options. The parameters that has to be in the JSON body are specified in the example section below. The options to price needs to be specified in the URL.</p>					
	Args:					
	<p><code>option_kind (OptionKindType):</code> The type of option to price among 'vanilla', 'binary', 'barrier'.</p> <p><code>product (Union[BinaryOptionBaseModel, OptionBaseModel, BarrierOptionBaseModel]):</code> The schema corresponding to the JSON body sent by the user. The details are available in the section below (example)</p> <p><code>pricing_service (PricingService, optional):</code> PricingService is a static class providing services to converge JSON schema to actual class while processing the input and returning the price and the associated greek. Defaults to Depends(PricingService).</p>					
	Raises:					
	<p><code>ValueError:</code> Whether the user provides wrong arguments to the function.</p> <p><code>HTTPException:</code> The details of any other error occurring during the pricing.</p>					
	Returns:					
	<p><code>Dict[str, float]:</code> A dict representing with keys as price and greek names and values as computed values.</p>					
	Parameters	Try it out				
	<table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><code>option_kind * required</code></td> <td><i>Available values : vanilla, binary, barrier</i></td> </tr> </tbody> </table>	Name	Description	<code>option_kind * required</code>	<i>Available values : vanilla, binary, barrier</i>	
Name	Description					
<code>option_kind * required</code>	<i>Available values : vanilla, binary, barrier</i>					

Name	Description	
string (path)	vanilla	
Request body <small>required</small>	application/json	
Examples:		
Vanilla or Binary option		
Example Value	Schema	
<pre>{ "spot_price": 100, "strike_price": 100, "maturity": 1, "rate": 0.05, "dividend": 0, "volatility": 0.2, "option_type": "call" }</pre>		
Example Description		
Normal example without neither vol surface nor rate curve		
Responses		
Code	Description	Links
200	Successful Response	No links
Media type <div style="border: 1px solid green; padding: 2px; display: inline-block;">application/json</div>		
Controls Accept header.		
Example Value	Schema	
<pre>{ "price": 0, "delta": 0, "gamma": 0, "theta": 0, "rho": 0, "vega": 0 }</pre>		
422	Validation Error	No links
Media type <div style="border: 1px solid green; padding: 2px; display: inline-block;">application/json</div>		
Example Value	Schema	

Code	Description	Links				
<pre>{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string" }] }</pre>						
POST /api/v1/price/option-strategy/{option_strategy}	Option Strategy Pricing	^				
<p>Function that prices the options strategies : straddle, strangle, butterfly, call-spread, put-spread, strip, strap.</p>						
Parameters		Try it out				
<table border="1"> <thead> <tr> <th>Name</th><th>Description</th></tr> </thead> <tbody> <tr> <td>option_strategy * required string (path)</td><td>Available values : straddle, strangle, butterfly, call-spread, put-spread, strip, strap straddle</td></tr> </tbody> </table>			Name	Description	option_strategy * required string (path)	Available values : straddle, strangle, butterfly, call-spread, put-spread, strip, strap straddle
Name	Description					
option_strategy * required string (path)	Available values : straddle, strangle, butterfly, call-spread, put-spread, strip, strap straddle					
Request body required		application/json				
Examples: <div style="border: 1px solid black; padding: 5px;"> Straddle </div>						
Example Value Schema						
<pre>{ "spot_price": 100, "strike_price": 100, "maturity": 1, "rate": 0.05, "dividend": 0, "volatility": 0.2 }</pre>						
Example Description						
Straddle example without neither vol surface nor rate curve						
Responses						

Code	Description	Links
200	<p>Successful Response</p> <p>Media type</p> <div style="border: 2px solid green; padding: 2px; display: inline-block;">application/json</div> <p>Controls Accept header.</p> <p>Example Value Schema</p> <pre>{ "price": 0, "delta": 0, "gamma": 0, "theta": 0, "rho": 0, "vega": 0 }</pre>	No links
422	<p>Validation Error</p> <p>Media type</p> <div style="border: 2px solid green; padding: 2px; display: inline-block;">application/json</div> <p>Example Value Schema</p> <pre>{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string" }] }</pre>	No links

POST /api/v1/price/bond/{bond_type} Bond Pricing



This API **HTTP POST** method can be used to price bonds. The 2 bonds that could be priced are: **vanilla**, **zero-coupon**. The parameters that has to be in the JSON body are specified in the example section below. The options strategies to price needs to be specified in the URL.

Args:

product (BondBaseModel): The schema corresponding to the JSON body sent by the user. The details are available in the section below (example)

pricing_service (PricingService, optional): PricingService is a static class providing services to converge JSON schema to actual class while processing the input and returning the price and the associated greek. Defaults to Depends(PricingService).

Raises:

ValueError: Whether the user provides wrong arguments to the function.
HTTPException: The details of any other error occurring during the pricing.

Returns:

`Dict[str, float]`: A dict representing with keys as price and greek names and values as computed values.

Parameters

[Try it out](#)

Name	Description
bond_type * required string (path)	<i>Available values : vanilla, zero-coupon</i> <code>vanilla</code>

Request body required

`application/json`

Examples:

`Zero coupon`

Example Value Schema

```
{
  "rate": 0.05,
  "maturity": 1,
  "nominal": 1000
}
```

Example Description

Zero coupon example

Responses

Code	Description	Links
200	Successful Response	No links

Media type
[application/json](#)

Controls Accept header.

Example Value Schema

`"string"`

Code	Description	Links
422	<p>Validation Error</p> <p>Media type</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">application/json</div> <p>Example Value Schema</p> <pre>{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string" }] }</pre>	No links

GET / Base Url ^

Base URL that redirect to [/docs](#).

Raises:

HTTPException: The details of any other error occurring during the pricing.

Parameters

Try it out

No parameters

Responses

Code	Description	Links
200	<p>Successful Response</p> <p>Media type</p> <div style="border: 1px solid green; padding: 2px; display: inline-block;">application/json</div> <p>Controls Accept header.</p> <p>Example Value Schema</p> <pre>"string"</pre>	No links

Code	Description	Links
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Schemas



BarrierOptionBaseModel ^ Collapse all `object`

`spot_price` ^ Collapse all `number > 0`

Spot price of the underlying

Default `100`

`strike_price` ^ Collapse all `number ≥ 0`

Strike price of the option

Default `110`

`maturity` ^ Collapse all `number > 0`

Maturity in years

Default `1`

`dividend` ^ Collapse all `(number | null)`

Dividend yield

Any of ^ Collapse all `(number | null)`

 #0 `number ≥ 0`

 #1 `null`

Default `0`

`rate` ^ Collapse all `(number | null)`

Interest rates to calculate the price (discount).

Any of ^ Collapse all `(number | null)`

 #0 `number`

 #1 `null`

`foreign_rate` ^ Collapse all `(number | null)`

Foreign interest rate for FX options

Any of ^ Collapse all `(number | null)`

 #0 `number`

 #1 `null`

`rate_curve` ^ Collapse all `(object | null)`

Interest rates curve dictionary maturity as keys and rates as values

Any of ^ Collapse all `(object | null)`

 #0 > Expand all `object`

 #1 `null`

`volatility` ^ Collapse all `(number | null)`

The implied volatility

Any of ^ Collapse all `(number | null)`

```

#0  number
#1  null

volatility_surface ^ Collapse all (object | null)
The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^ Collapse all (object | null)

#0 > Expand all object
#1  null

option_type* ^ Collapse all string
Allowed values ["call"] ["put"]

barrier_level* ^ Collapse all number
Barrier level for the option

barrier_type* ^ Collapse all string
Barrier type: ko/ki
Allowed values ["ko"] ["ki"]

barrier_direction* ^ Collapse all string
Barrier type up/down
Allowed values ["up"] ["down"]

```

BinaryOptionBaseModel ^ Collapse all **object**

```

spot_price ^ Collapse all number > 0
Spot price of the underlying
Default [100]

strike_price ^ Collapse all number ≥ 0
Strike price of the option
Default [110]

maturity ^ Collapse all number > 0
Maturity in years
Default [1]

dividend ^ Collapse all (number | null)
Dividend yield
Any of ^ Collapse all (number | null)

#0  number  ≥ 0
#1  null

Default [0]

rate ^ Collapse all (number | null)
Interest rates to calculate the price (discount).
Any of ^ Collapse all (number | null)

#0  number
#1  null

foreign_rate ^ Collapse all (number | null)
Foreign interest rate for FX options
Any of ^ Collapse all (number | null)

```

```

#0 number
#1 null

rate_curve ^ Collapse all (object | null)
Interest rates curve dictionary maturity as keys and rates as values

Any of ^
Collapse all (object | null)

#0 > Expand all object
#1 null

volatility ^ Collapse all (number | null)
The implied volatility

Any of ^
Collapse all (number | null)

#0 number
#1 null

volatility_surface ^ Collapse all (object | null)
The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^
Collapse all (object | null)

#0 > Expand all object
#1 null

option_type* ^ Collapse all string
Allowed values ["call"] ["put"]

```

BondBaseModel ^ Collapse all object

```

rate ^ Collapse all (number | null)
Interest rates to calculate the price (discount).

Any of ^
Collapse all (number | null)

#0 number
#1 null

rate_curve ^ Collapse all (object | null)
Interest rates curve dictionary maturity as keys and rates as values

Any of ^
Collapse all (object | null)

#0 > Expand all object
#1 null

maturity ^ Collapse all number > 0
Maturity of the bond in years
Default [1]

nominal ^ Collapse all integer > 0
Nominal value of the bond in currency
Default [1000]

coupon_rate ^ Collapse all number > 0
Coupon rate of the bond
Default [0.05]

nb_coupon ^ Collapse all integer > 0
Number of coupons in the bond

```

Default [1]

ButterflyStrategyBaseModel ^ Collapse all `object`

`spot_price` ^ Collapse all `number > 0`

Spot price of the underlying

Default [100]

`maturity` ^ Collapse all `number > 0`

Maturity in years

Default [1]

`dividend` ^ Collapse all `number ≥ 0`

Dividend yield

Default [0]

`rate` ^ Collapse all `(number | null)`

Interest rates to calculate the price (discount).

`Any of` ^ Collapse all `(number | null)`

#0 `number`

#1 `null`

`rate_curve` ^ Collapse all `(object | null)`

Interest rates curve dictionary maturity as keys and rates as values

`Any of` ^ Collapse all `(object | null)`

#0 > Expand all `object`

#1 `null`

`volatility` ^ Collapse all `(number | null)`

The implied volatility

`Any of` ^ Collapse all `(number | null)`

#0 `number`

#1 `null`

`volatility_surface` ^ Collapse all `(object | null)`

The implied volatility surface with first keys as maturity and second keys as moneyness.

`Any of` ^ Collapse all `(object | null)`

#0 > Expand all `object`

#1 `null`

`strike_price1*` ^ Collapse all `number > 0`

First strike price of the strangle

`strike_price2*` ^ Collapse all `number > 0`

Second strike price of the strangle

`strike_price3*` ^ Collapse all `number > 0`

Third strike price of the strangle

CallSpreadStrategyBaseModel ^ Collapse all `object`

`spot_price` ^ Collapse all `number > 0`

```

Spot price of the underlying
Default  [100]

maturity ^ Collapse all number > 0
Maturity in years
Default  [1]

dividend ^ Collapse all number ≥ 0
Dividend yield
Default  [0]

rate ^ Collapse all (number | null)
Interest rates to calculate the price (discount).

Any of ^ Collapse all (number | null)

  #0 number
  #1 null

rate_curve ^ Collapse all (object | null)
Interest rates curve dictionary maturity as keys and rates as values

Any of ^ Collapse all (object | null)

  #0 > Expand all object
  #1 null

volatility ^ Collapse all (number | null)
The implied volatility

Any of ^ Collapse all (number | null)

  #0 number
  #1 null

volatility_surface ^ Collapse all (object | null)
The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^ Collapse all (object | null)

  #0 > Expand all object
  #1 null

lower_strike* ^ Collapse all number > 0
lower price of the call spread

upper_strike* ^ Collapse all number > 0
upper price of the call spread

```

HTTPValidationError ^ Collapse all `object`

```

detail > Expand all array<object>

```

OptionBaseModel > Expand all `object`

OutperformerCertificateBaseModel ^ Collapse all `object`

```

spot_price ^ Collapse all number > 0
Spot price of the underlying

```

```

Default [100]



```

Default [1]

PricingResultBaseModel ^ Collapse all object

```
price* number
delta* number
gamma* number
theta* number
rho* number
vega* number
```

PutSpreadStrategyBaseModel ^ Collapse all object

```
spot_price ^ Collapse all number > 0
Spot price of the underlying
Default [100]

maturity ^ Collapse all number > 0
Maturity in years
Default [1]

dividend ^ Collapse all number ≥ 0
Dividend yield
Default [0]

rate ^ Collapse all (number | null)
Interest rates to calculate the price (discount).
Any of ^ Collapse all (number | null)
#0 number
#1 null

rate_curve ^ Collapse all (object | null)
Interest rates curve dictionary maturity as keys and rates as values
Any of ^ Collapse all (object | null)
#0 > Expand all object
#1 null

volatility ^ Collapse all (number | null)
The implied volatility
Any of ^ Collapse all (number | null)
#0 number
#1 null

volatility_surface ^ Collapse all (object | null)
The implied volatility surface with first keys as maturity and second keys as moneyness.
Any of ^ Collapse all (object | null)
#0 > Expand all object
#1 null

lower_strike* ^ Collapse all number > 0
```

```

    lower price of the put spread
upper_strike* ^ Collapse all number > 0
    upper price of the put spread

```

ReverseConvertibleBaseModel ^ Collapse all **object**

```

spot_price ^ Collapse all number > 0
    Spot price of the underlying
    Default [100]

dividend ^ Collapse all (number | null)
    Dividend yield
    Any of ^ Collapse all (number | null)
        #0 number ≥ 0
        #1 null
    Default [0]

rate ^ Collapse all (number | null)
    Interest rates
    Any of ^ Collapse all (number | null)
        #0 number
        #1 null
rate_curve ^ Collapse all (object | null)
    Interest rates curve dictionary maturity as keys and rates as values
    Any of ^ Collapse all (object | null)
        #0 > Expand all object
        #1 null

volatility ^ Collapse all (number | null)
    The implied volatility
    Any of ^ Collapse all (number | null)
        #0 number
        #1 null
volatility_surface ^ Collapse all (object | null)
    The implied volatility surface with first keys as maturity and second keys as moneyness.
    Any of ^ Collapse all (object | null)
        #0 > Expand all object
        #1 null

maturity ^ Collapse all number > 0
    Maturity in years
    Default [1]

coupon* ^ Collapse all number ≥ 0
    Coupon rate

```

StraddleStrategyBaseModel ^ Collapse all **object**

```

spot_price ^ Collapse all number > 0
  Spot price of the underlying
  Default [100]

maturity ^ Collapse all number > 0
  Maturity in years
  Default [1]

dividend ^ Collapse all number ≥ 0
  Dividend yield
  Default [0]

rate ^ Collapse all (number | null)
  Interest rates to calculate the price (discount).
  Any of ^ Collapse all (number | null)
    #0 number
    #1 null

rate_curve ^ Collapse all (object | null)
  Interest rates curve dictionary maturity as keys and rates as values
  Any of ^ Collapse all (object | null)
    #0 > Expand all object
    #1 null

volatility ^ Collapse all (number | null)
  The implied volatility
  Any of ^ Collapse all (number | null)
    #0 number
    #1 null

volatility_surface ^ Collapse all (object | null)
  The implied volatility surface with first keys as maturity and second keys as moneyness.
  Any of ^ Collapse all (object | null)
    #0 > Expand all object
    #1 null

strike_price* ^ Collapse all number > 0
  Strike price of the straddle

```

StrangleStrategyBaseModel ^ Collapse all **object**

```

spot_price ^ Collapse all number > 0
  Spot price of the underlying
  Default [100]

maturity ^ Collapse all number > 0
  Maturity in years
  Default [1]

dividend ^ Collapse all number ≥ 0
  Dividend yield
  Default [0]

```

```

rate ^ Collapse all (number | null)
  Interest rates to calculate the price (discount).

Any of ^ Collapse all (number | null)
  #0 number
  #1 null

rate_curve ^ Collapse all (object | null)
  Interest rates curve dictionary maturity as keys and rates as values

Any of ^ Collapse all (object | null)
  #0 > Expand all object
  #1 null

volatility ^ Collapse all (number | null)
  The implied volatility

Any of ^ Collapse all (number | null)
  #0 number
  #1 null

volatility_surface ^ Collapse all (object | null)
  The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^ Collapse all (object | null)
  #0 > Expand all object
  #1 null

strike_price1* ^ Collapse all number > 0
  First strike price of the strangle

strike_price2* ^ Collapse all number > 0
  Second strike price of the strangle

```

StrapStrategyBaseModel ^ Collapse all **object**

```

spot_price ^ Collapse all number > 0
  Spot price of the underlying
  Default [100]

maturity ^ Collapse all number > 0
  Maturity in years
  Default [1]

dividend ^ Collapse all number ≥ 0
  Dividend yield
  Default [0]

rate ^ Collapse all (number | null)
  Interest rates to calculate the price (discount).

Any of ^ Collapse all (number | null)
  #0 number
  #1 null

rate_curve ^ Collapse all (object | null)
  Interest rates curve dictionary maturity as keys and rates as values

```

```

Any of ^ Collapse all (object | null)
  #0 > Expand all object
  #1 null

volatility ^ Collapse all (number | null)
  The implied volatility

Any of ^ Collapse all (number | null)
  #0 number
  #1 null

volatility_surface ^ Collapse all (object | null)
  The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^ Collapse all (object | null)
  #0 > Expand all object
  #1 null

strike_price1* ^ Collapse all number > 0
  First strike price of the Strap

strike_price2* ^ Collapse all number > 0
  Second strike price of the Strap

```

StripStrategyBaseModel ^ Collapse all `object`

```

spot_price ^ Collapse all number > 0
  Spot price of the underlying
  Default [100]

maturity ^ Collapse all number > 0
  Maturity in years
  Default [1]

dividend ^ Collapse all number ≥ 0
  Dividend yield
  Default [0]

rate ^ Collapse all (number | null)
  Interest rates to calculate the price (discount).

Any of ^ Collapse all (number | null)
  #0 number
  #1 null

rate_curve ^ Collapse all (object | null)
  Interest rates curve dictionary maturity as keys and rates as values

Any of ^ Collapse all (object | null)
  #0 > Expand all object
  #1 null

volatility ^ Collapse all (number | null)
  The implied volatility

Any of ^ Collapse all (number | null)
  #0 number

```

```
    #1 null

volatility_surface ^ Collapse all (object | null)
    The implied volatility surface with first keys as maturity and second keys as moneyness.

Any of ^ Collapse all (object | null)

    #0 > Expand all object

    #1 null

strike_price1* ^ Collapse all number > 0
    First strike price of the Strip

strike_price2* ^ Collapse all number > 0
    Second strike price of the Strip
```

ValidationError > Expand all **object**

ZeroCouponBondBaseModel ^ Collapse all **object**

```
    rate ^ Collapse all (number | null)
        Interest rates to calculate the price (discount).

    Any of ^ Collapse all (number | null)

        #0 number

        #1 null

    rate_curve ^ Collapse all (object | null)
        Interest rates curve dictionary maturity as keys and rates as values

    Any of ^ Collapse all (object | null)

        #0 > Expand all object

        #1 null

    maturity ^ Collapse all number > 0
        Maturity of the bond in years
        Default [1]

    nominal ^ Collapse all integer > 0
        Nominal value of the bond in currency
        Default [1000]
```