SyntheticFi
Deep-dive

What is a **Box Spread Synthetic Loan?**

SyntheticFi Securities-Backed Lending Program is constructed with box spreads on S&P 500 index options. This brochure explains how it works.

> "Market participants have **used options box spreads as a financing tool for decades**.
> Indeed, on any given day ...[box spreads] worth upwards of hundreds of million dollars, are consummated."
>
> **CME Group**,
>
> *Index Options Box Spreads as Financing Tool*

What is a box spread?

A box spread is a **basket of four option contracts.** With a put and a call in each direction, the structure **hedges out risk from underlying securities**.

These option contracts are designed to have a **fixed payoff at a fixed future date**.

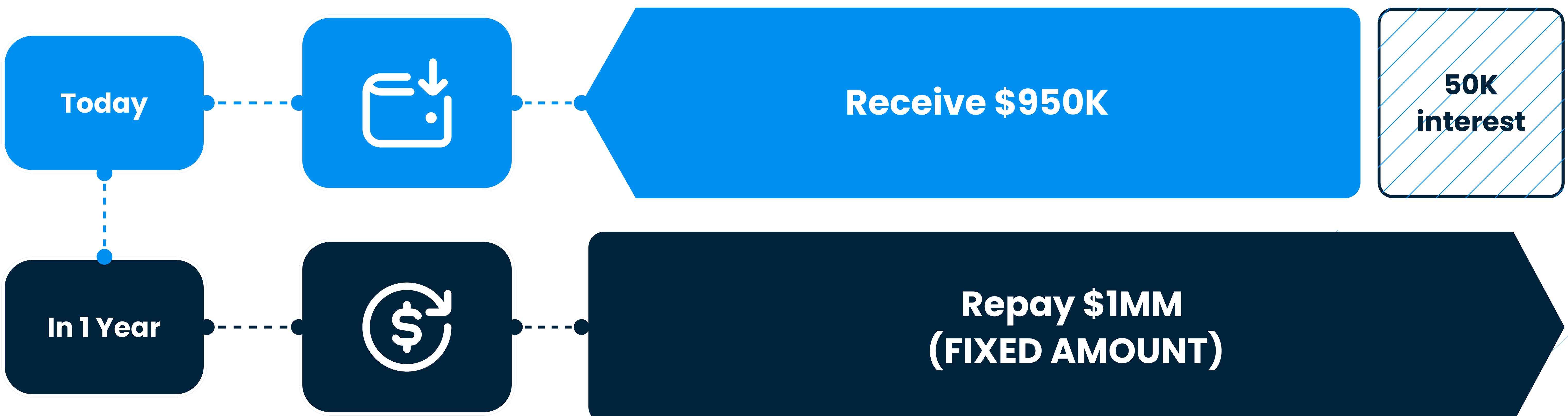
Sample Box Spread, on SPX Index Option

- Short (sell) call option, strike price 5000
- Long (buy) put option, strike price 5000
- Long (buy) call option, strike price 6000
- Short (sell) put option, strike price 6000

Trade a box spread: **borrow money from the options market.**

Because it has a **fixed payoff in the future, you can use box spreads to borrow and lend money, directly from the options market.** To borrow money, you can sell (short) a box spread, and receive a payment in the form of options premium. To lend money, you can buy (long) a box spread and pay the options premium.

Example: **borrow money** with a box spread, repay in 1 year.



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Receive Money Today ($95K)

Where does **the money come from?**

- Options Market Makers
- Hedge Funds
- BOXX ETF
- Other Market Participants

Market participants lend money via box spreads because they can get a guaranteed higher return from the options market, and it has **favorable tax characteristics**. The return tend to be higher than money market funds.

Lender cashflow:	invest (lend) $95K today, receive $100K at expiration.
Lender incentive:	gain $5K in interest income

Interest Set by Market ($5K)

Why is it **so cheap?**

Market participants compete for your loan on the options exchange, driving the price lower.

At SyntheticFi, we translate your borrowing needs to box spreads, constructed with European Style S&P 500 Index Options (SPX). SPX index options listed on the options exchange, and they are the most liquid options in the world.

Every day, hundreds of millions are on this market competing to lend you money through the box spreads we constructed. Therefore, you receive a competitive interest rate to borrow.

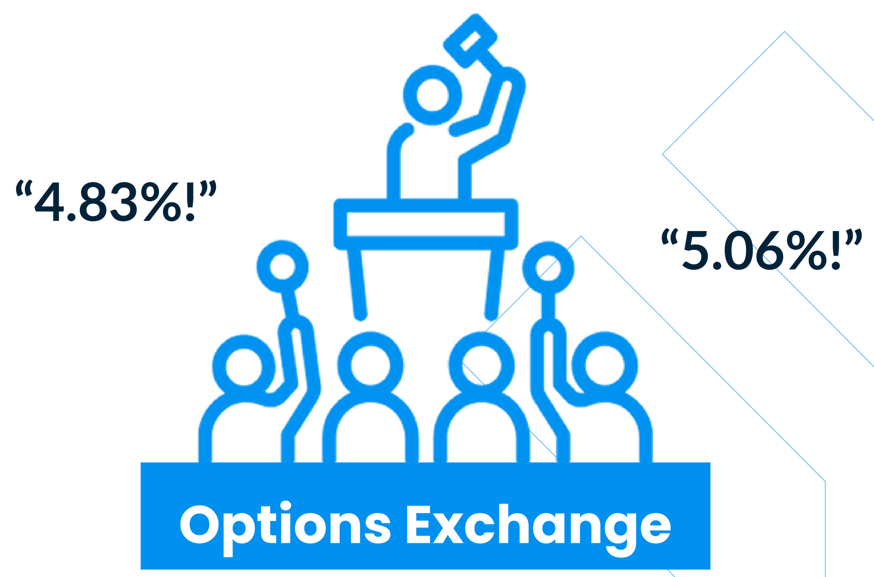
"SyntheticFi: I want $100K line of credit"

"Gotcha! Back in a sec."

SEND: BOX SPREAD ORDER

Sell to open 1 SPX M/DD/YYYY [AM] 5000 C at XXX.XX LMT
Buy to open 1 SPX M/DD/YYYY [AM] 5000 P at XXX.XX LMT
Buy to open 1 SPX M/DD/YYYY [AM] 6000 C at XXX.XX LMT
Sell to open 1 SPX M/DD/YYYY [AM] 6000 P at XXX.XX LMT

FILLED: AT LOWEST RATE
(Example below filled at 4.83%)



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Repay In the Future ($100K)

Borrowers repay a fixed amount when box spreads expire.

Regardless of how the market moves, you will **always pay a fixed amount (principal + interest) when the options expire**. That's because these options are hedging each other to remove any exposure to the underlying (S&P 500 Index).

SPX Index Prices	4500	5500	6500
Short Call at 5000	Expires	-$50,000	-$150,000
Long Put at 5000	$50,000	Expires	Expires
Long Call at 6000	Expires	Expires	$50,000
Short Put at 6000	-$150,000	-$50,000	Expires
Combined Outcome	**-$100,000**	**-$100,000**	**-$100,000**

Fixed outcome is **guaranteed by hedging.**

We can decompose a box spread into a **synthetic short and a synthetic long**. They hedge each other out and mathematically guarantees a fixed repayment outcome.

Short Put at 6000
Results in loss if index falls below 6000

Long Call at 6000
Results in gain if index rises above 6000

Synthetic Long at 6000
is equivalent to **longing / buying S&P 500 Index at 6000.**

Long Put at 5000
Results in gain if index falls below 5000

Short Call at 5000
Results in loss if index rises above 5000

Synthetic Short at 5000
is equivalent to **shorting / selling S&P 500 Index at 5000.**

FIXED OUTCOME: LOCK IN 1000 REPAYMENT

Buying + Selling the same Index, at different prices
=
No matter what happens with the Index, the result is fixed at the strike price difference.

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What does it **look like in my account?**

You **can withdraw the cash** from the box spread **if you have enough assets** in your brokerage account as collateral. Withdrawal will reduce your margin maintenance equity. However, you won't pay any margin interest as long as you maintain a positive cash balance.

Your account at the beginning

Holdings	
Cash	$10
SPY	$1,000,000
Box spread	N/A

Account balance:	$1,000,010
Cash balance:	$10
Available to withdraw using margin:	$500,010

Step 1: Trade a box spread:
Receive $95,000 cash for $100,000 future liability

Holdings	
Cash	$95,010
SPY	$1,000,000
Box spread	-$95,000

Account balance:	$1,000,010
Cash balance:	$95,010
Available to withdraw using margin:	$495,010

Explanation

Box spread reduces margin maintenance equity by $5K. That's because your custodian will hold $5K to prepare for future liabilities. This amount equals interest payment at expiration.

Step 2: Withdraw $95,000 in cash

Holdings	
Cash	$10
SPY	$1,000,000
Box spread	-$95,000

Account balance:	$905,010
Cash balance:	$10
Available to withdraw using margin:	$400,010

Explanation

Withdrawal reduces account balance, cash balance, and margin maintenance equity. However, you still have a positive cash balance, so you don't need to pay any margin interest.