EUREX Architects of trusted markets

Research paper

EURO STOXX 50® Index options box spreads

Part 2: Common use cases

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Introduction

The first paper in this series established the mechanics of EURO STOXX 50® index options (OESX) box spreads: how four European-style option legs can be combined to create a fixed terminal payoff, how that payoff translates into an implied financing rate, and how liquidity in these structures is distributed across execution channels and maturities. The data presented in this paper showed a market of meaningful and growing scale, with implied three-month rates averaging 13 basis points above ESTR. Most trading was concentrated in standardized 5,000-point strike packages and executed through a combination of visible order book trading and large electronic block trades.

This second paper moves from what box spreads are to who uses them and their common use cases. Box spreads occupy an unusual position in the funding landscape. They are traded in the options market but, when properly constructed and held to expiry, carry no equity or volatility exposure. They behave like zero-coupon instruments and, when traded in a listed format, counterparties face a central clearing house instead of a bilateral borrower. They are accessible to any participant with access to Eurex' options markets, yet the economics they offer (term financing at rates competitive with wholesale money markets) have historically been the preserve of institutions with repo desks and prime brokerage relationships.

In this paper, we examine five use cases for box spreads in detail: synthetic cash deployment, synthetic borrowing, clearing house cash and collateral management, and cross-currency funding and relative value. For each, we describe the participant profile, the economic rationale, and the specific features of the OESX contract and Eurex market structure that make the use case executable in practice.

We close with a section that steps back from individual use cases to consider what OESX box rates, in aggregate, can tell us about the euro area financial system. Some in the financial community regard box rates as the cleanest measure of the risk-free cost of capital, free of the convenience yield embedded in government bonds. The emergence of a liquid OESX box market extends that measurement capability to the euro area, with implications for how investors, researchers, and policymakers interpret euro funding conditions.

"IMC is seeing buy-side firms with equity-derivatives mandates increasingly trading OESX boxes. A long box puts excess cash to work; a short one raises funding to meet margin calls. For volatility traders in particular, the appeal is a money-market alternative that sits within the same trading ecosystem as their day-to-day operations. IMC is set up to meet that growing demand. Quoting boxes sits naturally alongside the options business we already do with these counterparties, so for most of them, it is another line in the same conversation.



Sergio Tam
Derivatives Sales Trader, IMC

Use Case 1:

Synthetic Cash Deployment – A Long Box as a Money Market Alternative

Participant Profile

Asset managers, insurance companies, pension funds, and corporate treasuries routinely carry structural cash balances. These cash balances come from a number of sources: liquidity buffers, uninvested subscriptions, collateral awaiting deployment, or proceeds from portfolio turnover. The conventional uses of this cash, including bank deposits, money market funds, short-dated government bills, and reverse repo, each involve trade-offs between yield, credit exposure, and operational complexity.

The Economics

A long OESX box spreads offers an box spread offers an alternative way to deploy cash balances while achieving the same economic objective. The buyer (the cash lender) pays a discounted premium upon execution of the trade and receives a fixed, known cash settlement at expiry. Held to maturity, the position is equivalent to a euro-denominated zero-coupon instrument with three distinguishing characteristics.

First, the yield. As documented in the first iteration of this paper, implied OESX box yields have averaged 12–20 basis points above ESTR over the sample period. For a cash investor, this represents a pickup over unsecured overnight benchmarks and frequently, over short-dated sovereign bills, which trade below comparable box rates because government paper is generally viewed as risk-free (or nearly risk-free). Therefore, an investor who is simply looking to deploy cash for a defined period of time and does not need to hold government securities could look to box spreads to deploy cash and generate added yield.

Second, the credit profile. A traditional deposit or commercial paper investment exposes the lender to a bank or corporate obligor. A long box faces Eurex Clearing, which carries an AA rating from major agencies, with the position further supported by the margin and default management frameworks of the clearing house. The lender's counterparty exposure is therefore comparable to a centrally cleared repo, but without requiring repo market access, Global Master Repurchase Agreement (GMRA) documentation, or complex collateral management infrastructure.

Third, term certainty. Unlike overnight instruments that must be rolled daily, a box locks in a rate to a chosen expiry. The OESX listing cycle offers expiries from the front weeks out to several years, allowing cash investors to match investment horizons or build maturity ladders (which function much like a bill ladder).

Lending via OESX

The practical viability of this use case depends on execution quality. The market structure findings from Part 1 of this series are directly relevant. Liquidity concentration in 5,000-point strike packages, particularly the 1,000/6,000 combination, which accounted for 94 percent of notional, means that a cash investor deploying size can transact in the most standardized and most quoted structure in the market. For institutional-scale tickets, the TES block facility supports nearly unlimited execution size, with an average block size of 2,200 contracts observed in the data (equivalent to over US$100 million in terminal value per trade at the standard strike widths). T+1 settlement keeps the cash cycle extremely tight and efficient.

Use Case 2:

Synthetic Borrowing – A Short Box as Term Leverage Financing

Participant Profile

Hedge funds, proprietary trading firms, and levered relative-value strategies finance their positions predominantly through prime brokerage debit balances, securities lending, and repo. Each channel carries a cost of intermediation: the prime broker's spread over its own funding rate, balance sheet charges that can widen, and credit terms that can be repriced or withdrawn.

The Economics

A short OESX box is the opposite of the lending trade in Use Case 1. The box seller receives the net option premium upfront and repays a fixed settlement value at expiry; the difference is the implied borrowing cost. For a levered investor, this creates a listed, transparent financing channel with several attractive properties.

The headline attraction is the financing rate. Because the box market clears at a spread modestly above ESTR, short-box financing frequently prices cheaper than typical prime brokerage debit rates, which, for smaller funds, may sit meaningfully above overnight benchmarks.

Equally important is the margin treatment. A box spread is a risk-locked, delta-neutral package whose maximum loss is capped by construction. Eurex' Prisma margining methodology recognizes this: initial margin on the box itself is quite small (commonly in the range of 30 basis points of the trade notional). The borrower is not required to over-collateralize the loan in the way that a repo haircut would demand, and the financing raised generally does not consume prime brokerage credit lines. In effect, the short box converts unencumbered clearing capacity into cash balances.

There is also the strategic dimension of funding diversification. Past market stress events have made funds attentive to concentration with a single financing counterparty. A listed box market provides a standing alternative channel that is anonymous, centrally cleared, executable in size, and does not depend on the bilateral goodwill of a credit provider. Borrowing can be termed out across the expiry curve, fixing financing costs for months or years.

Borrowing via OESX

For euro-denominated portfolios, OESX boxes are a natural financing venue: the borrowing is raised in the currency of the assets being financed and with the exchange/clearing house where many of the participants already clear their derivatives. The depth of block liquidity documented in Part 1 of this paper matters most for this use case. Since financing trades are typically large and price-sensitive, a few basis points of execution slippage on the package can materially change the realized borrowing rate. The concentration of activity in standard strike widths gives borrowers a reliable reference for where executable rates are likely to sit before committing to a trade.

Use Case 3:

CCP Cash and Collateral Management for Options Traders

Participant Profile

Designated market makers and large options liquidity providers carry substantial and variable margin balances at clearing houses as a structural component of their business. Managing the cash side of those balances (funding margin calls, deploying excess collateral, smoothing the daily variation margin cycle, etc.) is a core operational discipline where inefficiency translates directly into lost basis points on large balances.

The Economics

Box spreads for cash management at clearing houses are the most natural application of the trade. The distinguishing feature of this use case is that the financing instrument operates inside the same clearing ecosystem as the exposures it is managing.

A market maker with excess cash at the clearing house can redeploy that cash via long boxes without the cash ever leaving the clearing environment. Without custodian transfers, managing cut-off times or settlement chains across institutions, long cash balances can be efficiently deployed. Conversely, a firm facing a margin requirement can raise cash through short boxes within the same account structure, with near-zero initial margin on the box package. This near-zero initial margin (IM) means the financing itself consumes almost none of the capacity it is designed to support.

This internalization has second-order benefits. Positions net within the clearing member's account. The operational risk of moving large cash sums across institutions on tight deadlines is eliminated. And because boxes trade across the expiry curve, a liquidity provider can shape the maturity profile of its financing to match the expected evolution of its margin needs (for example, short-dated boxes around known volatility events or longer tenors for structural balances).

Reporting-date dynamics add a further dimension. Quarter-end and year-end balance sheet pressure on bank intermediaries is a well-documented occurrence within money markets, often manifesting in repo rate dislocations. Participants who finance through listed boxes are partially insulated from that cycle, a cycle that we discuss later.

Cash Management via OESX

For firms making markets in European index options, OESX boxes offer the tightest possible alignment between the financing mechanism and the business itself: the same underlying ecosystem, the same exchange, the same clearing house, the same margin methodology. The 85%/15% split between screen and block trade counts documented in Part 1 of this paper, alongside the inverse split in notional, reflects this community's footprint: frequent smaller screen trades for fine-tuning balances alongside large blocks for structural financing.

Use Case 4:

Cross-Currency Funding and Relative Value

Participant Profile

Global macro funds, bank treasuries, and internationally invested asset managers all need to compare the true cost of capital across currencies. What is the genuine interest differential between the euro and the dollar, stripped of the distortions that blur conventional reference rates?

The Economics

A clean comparison requires rates that are comparable in kind. Conventional reference rates generally are not perfectly comparable. Government bill yields embed liquidity and risk components that differ across sovereigns; some rates carry bank credit risk, and repo rates reflect collateral-specific dynamics. Comparing a German bill to a U.S. Treasury bill confounds the true interest differential, given the difference in how each market values various sources of risk.

Box rates largely solve these challenges. Because they are inferred from the prices of options on risk assets but command no risk-related yield, box-implied rates in different currencies measure the same economic object: the pure, convenience-free cost of capital. The academic evidence is direct. Van Binsbergen, Diamond, and Grotteria (2022) construct boxes from both the S&P 500 and Nikkei 225 options and find that previously documented violations of covered interest parity shrink substantially when box rates replace government bonds or LIBOR rates on both legs. Much of what had been measured as a "dollar basis" was, in fact, the greater convenience premium on dollar safe assets rather than a true difference in the cost of capital.

With a liquid OESX box market alongside the established SPX box market, this comparison can now be made for the euro-dollar pair using listed instruments on both legs. The box-implied cross-currency basis becomes directly observable, providing a better reading of the euro-dollar funding differential and a way to see when conventional covered interest parity measures are being driven by safe asset scarcity rather than genuine funding conditions.

The term dimension adds further scope to this comparison. Both OESX and SPX box curves extend years out, so the comparison is not confined to a single tenor: the entire term structure of the euro-dollar funding differential becomes observable, which is something no pair of money-market benchmarks offers in a listed form.

Cross Currency Funding via OESX

This use case simply could not exist without a liquid euro leg. The OESX box market provides it on the eurozone's premier equity benchmark through European-style options (for which put-call parity holds) and a centrally cleared mechanism. The two-year implied yield curve presented in Part 1 of this paper demonstrates that the term structure is directly observable in the data.

Use Case 5:

Box Rates as an Economic Signal

Beyond their transactional applications, box rates carry valuable information. This is where OESX markets may prove most consequential over time.

Convenience and Risk Premium Lens

The academic foundation is worth stating carefully. Any sufficiently safe asset embeds a convenience yield: a discount in its required return that reflects its usefulness as collateral, its acceptability for regulatory liquidity requirements, and its money-like tradability. This means that government bond yields are not pure measures of the time value of money; rather, they represent the time value of money minus a scarcity premium on safety itself. The difficulty has always been observing these two components separately, because nearly every candidate "risk-free rate" drawn from fixed-income markets carries some convenience premium of its own.

Box rates cut this knot. Because they are constructed entirely from option prices, instruments that are not held for their moneyness, they measure the risk-free cost of capital without a convenience component and do so without relying on any particular model of risk. The spread between a box rate and the matching government yield therefore isolates the convenience yield on sovereign debt. Applying this framework to U.S. data, van Binsbergen, Diamond and Grotteria (2022) estimate the convenience yield on Treasuries at roughly 40 basis points on average over 2004-2018. The convenience yield was larger at shorter maturities and roughly quadrupled during the 2008 financial crisis. Their box rates responded to news as quickly as, or more quickly than, Treasury yields, a property that is required for the measure to be useful in real time.

What OESX Boxes Can Signal for the Euro Area

The OESX box market extends this measurement framework to the euro area, where the underlying questions are arguably even richer. The euro area has multiple sovereign issuers, a structural scarcity of top-tier collateral, and a central bank whose balance sheet policy has been a dominant force in fixed-income markets. Four signals stand out.

Safe-asset scarcity in real time.
The spread between OESX box rates and Bund yields (or €STR-based swap rates) provides a continuous, market-implied gauge of how strongly investors value German and other core sovereign collateral. A widening spread indicates growing scarcity of safe euro-denominated assets, while a narrowing spread indicates normalization. Unlike survey-based measures or repo specialness indicators, the box-based gauge is observable throughout the trading day in a centrally cleared market.

Monetary policy transmission.
The high-frequency event-study methodology applied in the academic literature to Federal Reserve announcements can also be applied to ECB policy decisions using OESX box rates. The question it answers is one that policymakers care about directly: do policy rate decisions and balance-sheet operations pass through to the private-sector cost of capital, or only to sovereign yields? U.S. evidence suggests that the first round of quantitative easing reduced box rates by more than Treasury yields, while later rounds had more muted effects. Whether the ECB's asset purchases, TLTROs and their unwind exhibit the same pattern remains an open empirical question that the OESX box market now makes possible to answer.

Intermediary Balance-Sheet Pressure
Quarter-end and year-end dislocations in euro money markets are well documented. The behavior of box rates around these dates, and of the box-€STR spread in particular, offers a window into dealer balance-sheet costs and the demand for synthetic financing that does not consume bank intermediation capacity. Persistent reporting-date patterns in box rates can also help quantify the value of regulation-driven balance-sheet scarcity in basis-point terms.

A listed term structure of euro funding expectations.
The two-year implied yield curve shown in Part 1 of this paper demonstrates that OESX boxes already trace an observable term structure. As liquidity deepens at longer tenors, this curve becomes a complement to €STR swaps: an executable, cleared, market-implied path of euro funding rates, derived from an entirely different market segment and therefore useful as a cross-check.

Caveats
A balanced interpretation requires acknowledging the factors that can also influence box rates. The spread over €STR is not a pure measure of convenience yield at every point in time. It also reflects execution costs, supply and demand imbalances in synthetic financing, the margin and balance-sheet treatment of market participants that clear the market, and liquidity concentration in particular strikes and maturities.

The U.S. literature reached a reassuring conclusion on this point. Observable option-market frictions, such as bid-ask spreads, had limited explanatory power for box-rate movements. At the same time, box-based spreads captured the common variation across other convenience-yield proxies more effectively than those proxies captured one another. Establishing the same degree of robustness for OESX box rates as the market matures is a natural objective for subsequent papers in this series.

Until then, movements in the OESX box spread are best interpreted alongside repo, bill, and swap-spread indicators rather than in isolation.

Conclusion

Box spreads on EURO STOXX 50® index options serve a range of institutional needs that extends well beyond their origins in options market making. As a lending instrument, the long box offers cash investors a centrally cleared, term-certain euro-denominated payoff at yields above conventional safe-asset benchmarks. As a borrowing instrument, the short box provides leveraged investors with financing that is competitively priced, margin-efficient under PRISMA, and independent of bilateral credit relationships. Within the clearing ecosystem, boxes remain one of the most operationally efficient tools for managing cash balances at the CCP. Across currencies, the combination of OESX and SPX box markets gives participants, for the first time in a listed format, directly comparable convenience-free rates on both sides of the euro-dollar pair.

The final section of this paper argued that the significance of the OESX box market extends beyond any individual participant's use of it. Box rates are among the cleanest available measures of the risk-free cost of capital, and the spread they trace over sovereign yields and €STR is an economically meaningful metric: the market price of safety in the euro area. As liquidity in OESX boxes continues to develop, that signal will sharpen, and the product may evolve from a financing tool into a benchmark in its own right.

Subsequent papers in this series will build on this foundation through deeper quantitative analysis, including transaction-cost analysis and executable-rate estimation, the economics of rolling box positions, term-structure behavior across policy cycles, and a formal comparison of OESX box rates with the full range of euro funding benchmarks.

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© Eurex, September 2026

Published by
Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany
www.eurex.com

ARBN Number
Eurex Frankfurt AG ARBN 100 999 764

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