LINCOLN INTERNATIONAL

Q4 2021

LSDI

LINCOLN SENIOR DEBT INDEX

INTRODUCING:

The Lincoln Senior Debt Index

Lincoln International LLC (“Lincoln”) is pleased to release the quarterly Lincoln Senior Debt Index (LSDI). The LSDI represents years of research and analysis of data and was developed by professionals from Lincoln’s Valuations & Opinions Group (VOG) in collaboration with Professor Pietro Veronesi of The University of Chicago Booth School of Business. “Continuing strong competition, strong earnings performance and record low defaults resulted in the spread of second lien loans declining to levels experienced pre-COVID-19 as investors continue to seek yield.”, said Professor Veronesi.

The LSDI provides insight into the direct lending market as it is a fair value index consisting of four components:

- Total return (income return plus capital gain return);
- Price (i.e., fair value);
- Spread; and,
- Yield to maturity.

Each of the four components are then categorized into three types of senior loans:

- All senior loans – consisting of first lien, unitranche, and second lien loans;
- Senior loans consisting of first lien and unitranche loans; and,
- Second lien loans.

Lincoln additionally provides additional descriptive statistics including: (a) loan-to-value; (b) the impact of interest rate and credit changes on total return; (c) the results of stress testing spread changes in the current and subsequent quarters; and (d) default rates.

The U.S. non-investment grade corporate loan market has two segments: the broadly syndicated loan (BSL) market, which attracts larger companies (i.e., as an approximation companies with EBITDA greater than $100 million) and direct lending market (i.e., companies with EBITDA less than $100 million). While correlated, there are subtle but significant differences between the two markets. Both markets primarily provide floating rate loans; however, divergences exist in terms of market liquidity, company size and credit facility size. Given the greater liquidity in the BSL market, pricing and terms are a function of technical market and competitive factors, whereas the more illiquid direct lending market has a stronger orientation to assessing company fundamentals.

In contrast to the S&P/LSTA U.S. Leveraged Loan 100 Index which is comprised of companies borrowing in the BSL market, the constituents in the LSDI are virtually all companies borrowing in the direct lending market.

The direct lending market is a significant source of capital to private equity-backed mid-market companies. The LSDI benefits market participants by providing information to facilitate a greater understanding of the attributes of this important source of capital to the private sector.

How We Obtain the Information

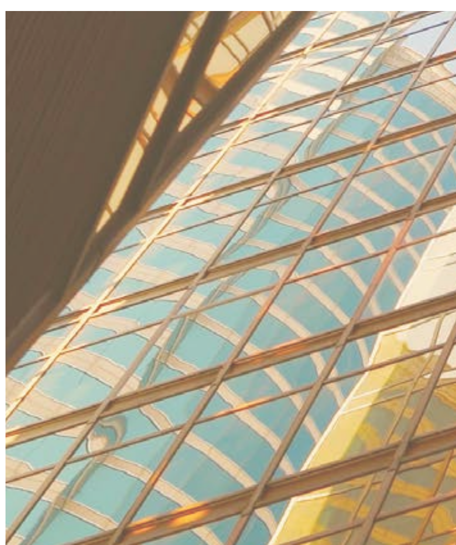
On a quarterly basis, Lincoln values over 3,000 private companies primarily owned by over 100 alternative investment funds and lenders to funds. Most of these companies are levered via borrowings from the direct lending market. A significant percentage of the LSDI constituents are based upon valuations of loans provided for non-public business development companies (BDCs) and other private investment vehicles and, therefore, not disclosed in public filings.

For many of the private companies valued quarterly, Lincoln advises on the fair value of at least one senior debt security in the capital structure. All valuations conform with GAAP and fair value principles and have been reviewed by fund management, fund boards, limited partners and auditors.

Additional information can be found in our Methodology discussion (below) and on our website.

98.7

Average Fair Value of Loans in the Index as of Q4 2021



Returns from interest rates have increased relative to credit risk as the LIBOR curve steepens

The two primary risks in this asset class are interest rate risk and credit risk. For the quarter ending December 31, 2021, the LSDI return was 1.4%, of which credit risk accounted for 1.1%. While still accounting for the minority of the return LIBOR accounted for 0.3% of the index's return, increased from 0.1% in the prior period driven by the increase in LIBOR from 0.9% to 1.3% as the LIBOR curve steepened.

- The change in quarterly return due to credit improvements of 1.1% is lower than its historical average of 1.3% and decreased from the prior year of record setting levels in the 3.0% range, as companies in the fourth quarter of 2021 have successfully managed through the economic challenges created by COVID-19 and have stabilized after the recovery seen over the past year, while spreads widened out slightly.
- While still composing a minority of the index's return, the interest rate contribution increased to 0.3% the highest level since Q2 2020, driven by the steepening LIBOR curve. The overall contribution is still lower than the historical average of 0.5% and the high of 3.1% in Q1 2020.
- The strong corporate earnings performance was consistent with our findings from our Lincoln Private Market Index (LPMI), our enterprise value fair value index; for more information on the LPMI visit **An Overview of the Lincoln Private Market Index** on the Lincoln web site.

Performance

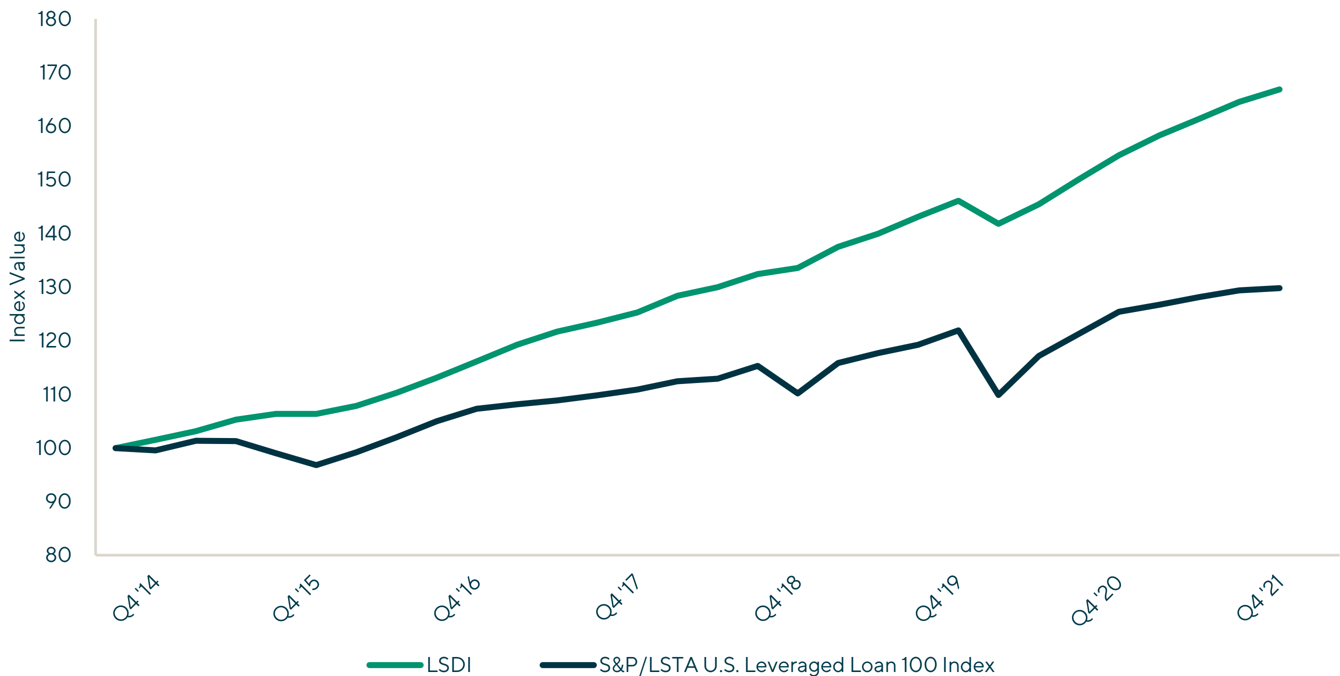
The LSDI increased from 164.5 as of September 30, 2021 to 166.8 as of December 31, 2021. The U.S. leveraged finance market performed positively in the fourth quarter of 2021, continuing the trend from the first half of 2021 and consistent with most other debt and equity asset classes.

Fair value price range

The LSDI closed out the quarter at a fair value of 98.7, decreased from 99.0 as of September 30, 2021 as spreads widened marginally.

Total Returns

Comparison of Total Return – LSDI (All Loans) to S&P/LSTA U.S. Leveraged Loan 100 Index



Observations:

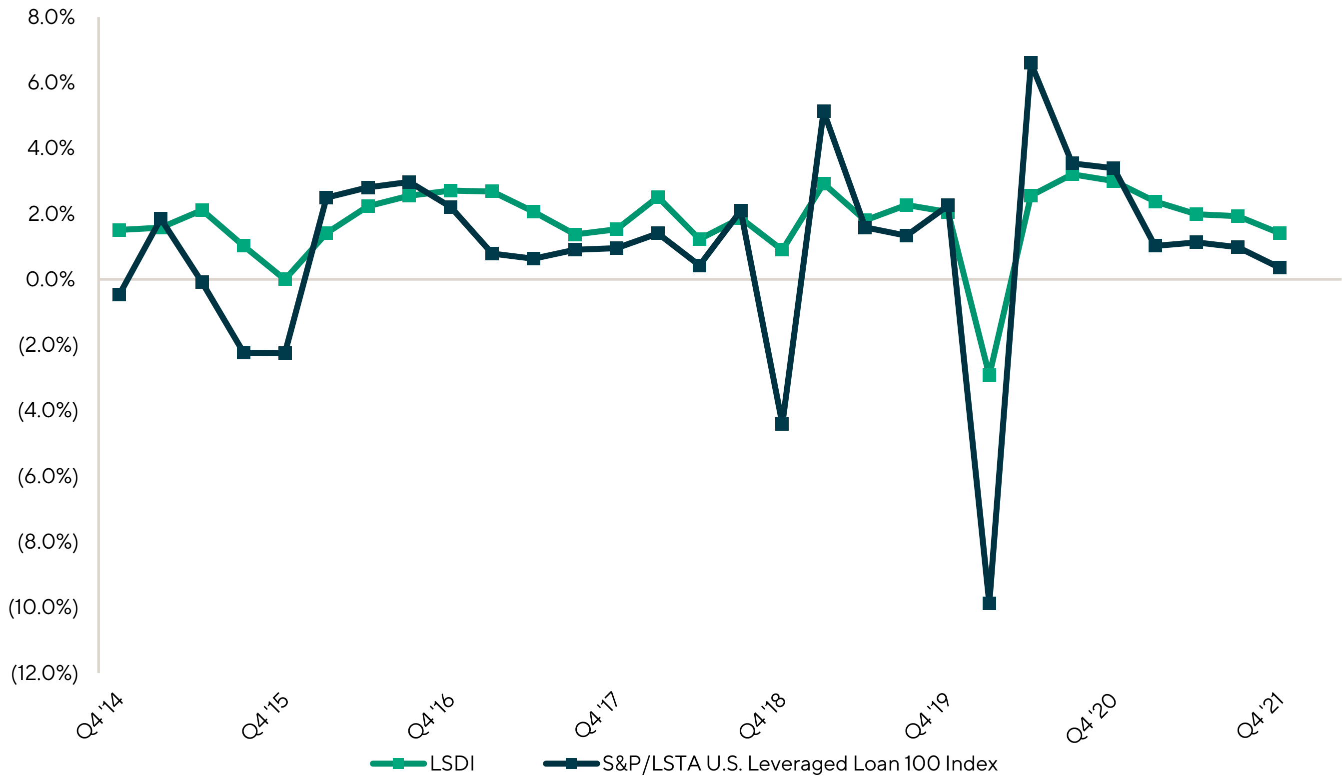
Investment return is generated from two sources: (1) capital gains and losses; and (2) income return. In the leverage lending asset class, income return dominates capital gains or losses, resulting in a positive quarterly total return.

Since the inception of the LSDI, both the S&P/LSTA U.S. Leverage Loan 100 Index, which measures the performance of the BSL market, and the direct lending market have experienced an increase in total return. While income return was offset by capital losses due to COVID-19 in the first quarter of 2020, total return began to recover by the second quarter of 2020 and has continued to trend upward thereafter.

Capital gains have provided upside opportunity over the past year as the index's constituents recovered from COVID-19, contributing to the index's increase through capital appreciation. As many companies have now recovered, the index's return from capital appreciation has approached a limit and is expected to be driven largely by income return in the near-term.

Given the higher cost of debt for mid-market direct lending loans versus loans in the BSL market, yields are significantly greater in the direct lending market, accounting for the LSDI generating a total return higher than the BSL market.

Correlation and Comparison of Quarterly Returns – LSDI (All Loans) to Broadly Syndicated Loan Market



Observations:

- While the correlation between the LSDI and S&P LSTA 100 Investment is high at 86%:
  - the LSDI is significantly less volatile; while,
  - generating higher returns.
- Investments in the direct lending market experience higher returns and lower volatility than the BSL market.
- The direct lending market experiences negative returns much less frequently than the BSL market, given its higher yields.
  - Since the inception of the LSDI in Q3 2014 to Q4 2021, only Q1 2020 reported a negative quarterly return.

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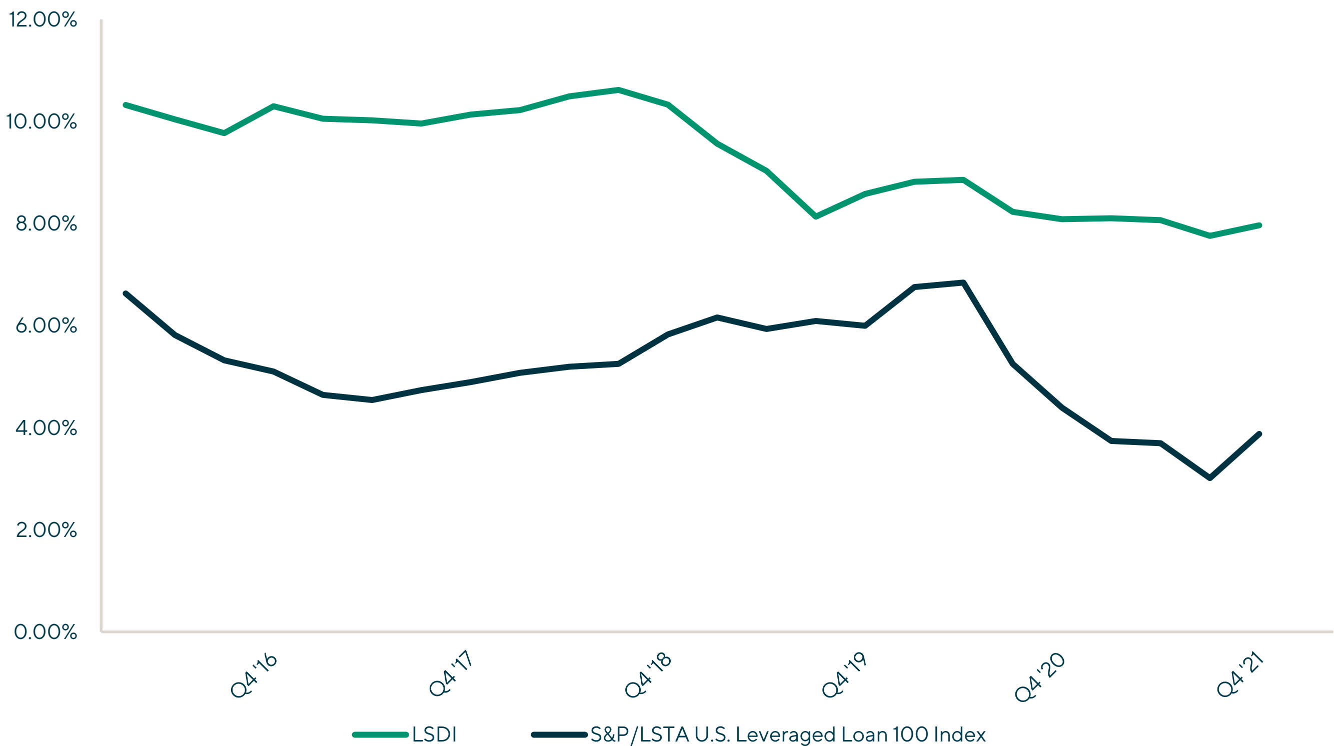
RESULTS:

Yields

Comparison of Yields – LSDI (All Loans) to Broadly Syndicated Loan Market



Observations:

The average yield of the LSDI has been approximately 9.4%.

The yield of the LSDI was 8.0% in the fourth quarter of 2021.

Loans in the direct lending market yielded approximately 4.1% more than broadly syndicated loans, a decrease compared to 4.8% in the third quarter of 2021.

- The tightest difference was 2.0% in the second quarter of 2020 and the widest being 5.5% in the second quarter of 2017.

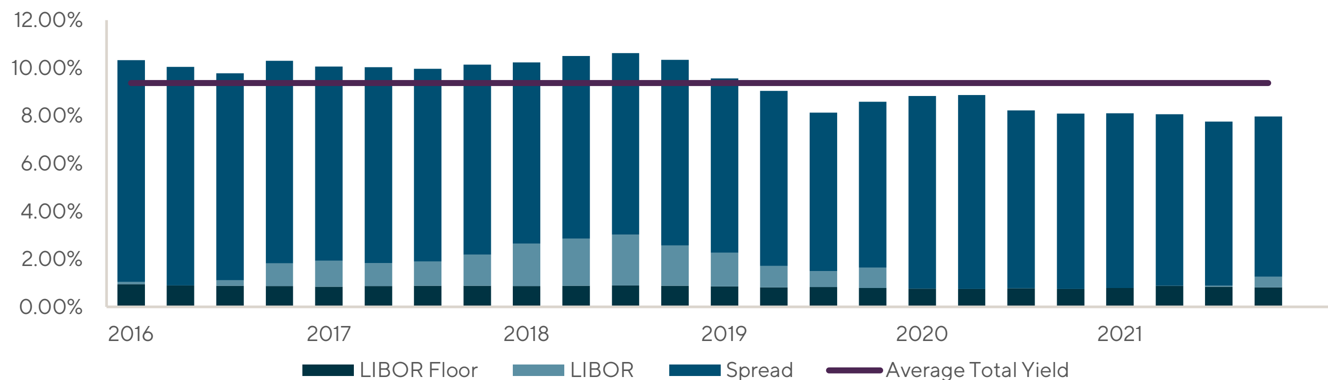
Interestingly, as of December 31, 2019, direct lending yields were 8.6% versus BSL yields of 6.0%. As of December 31, 2021, direct lending yields declined only 60 bps to 8.0%, whereas BSL yields declined 212 bps to 3.9%. We attribute the significant decline in BSL yields to high capital inflows being experienced in the BSL market combined with purchases by CLOs, which are the largest buyers of broadly syndicated loans. In contrast, while there is a lot of dry powder in the direct lending middle market, it is less liquid, and therefore less accessible, than the BSL market, reducing the impact of these market forces.

RESULTS:

Decomposing Yields in the Direct Lending Market – LIBOR Floors and Spreads

Q4 2021

Decomposing Yield - LIBOR, LIBOR Floors and Spreads - All Loans



Note: LIBOR Floor reflects weighted average for each period while LIBOR reflects the extent to which LIBOR was above the floor

Observations:

The average yield of the LSDI has been approximately 9.4%.

It is common that direct lending loans contain LIBOR floors of 1.0%. In contrast, LIBOR floors in the BSL market are not as prevalent. Consequently, as LIBOR declines below 1.0%, the benefit to yield resulting from the LIBOR floor will partially mitigate a decline in LIBOR.

- While the average yield in the direct lending market has remained in a band between 8.0% and 10.0%, the components of the yield vary as LIBOR and spreads change.
- As the LIBOR curve continued to steepen in the fourth quarter of 2021, the yield of the index did not receive benefit from the implied LIBOR floor which previously provided benefit since the fourth quarter of 2019.

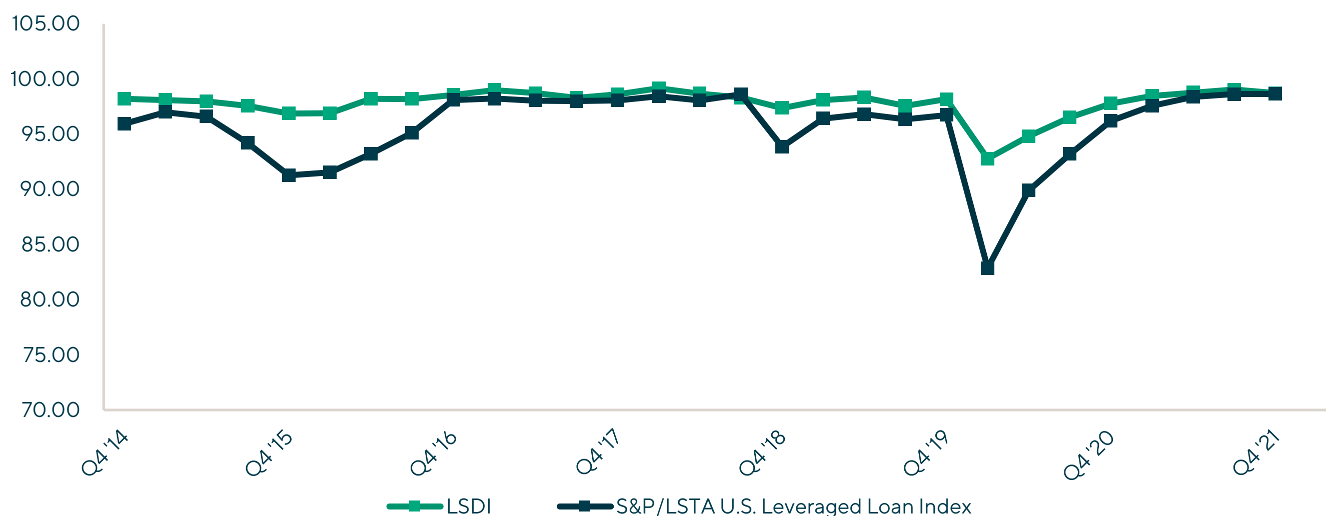
Over time, the direct lending market has become increasingly competitive as the supply of capital has increased along with the number of market participants. The index's yield increased to 8.0% in the fourth quarter of 2021 from 7.8% in the prior quarter, driven largely by the increase in LIBOR. While the yield increased, spreads continued to tighten in the fourth quarter of 2021, evidencing the continued competition in the market. A higher volume of second lien loan origination in the direct lending market helped to mitigate the decline in spread from Q3 2021 to Q4 2021. The average spread in the fourth quarter of 2021 was 6.7% decreased from 6.9% as of September 30, 2021, its second lowest point since the inception of the index, and lowest since the third quarter of 2019 (just prior to the onset of COVID-19, when it was 6.6%).

Ignoring the impact of LIBOR floors, the change in spreads has a greater impact on the fair value of a loan versus changes in LIBOR. As direct lending loans are based on a floating rate, LIBOR, from a valuation point of view, the loan's discounted cash flow model contains LIBOR in the numerator and denominator, thus canceling each other out. However, the numerator is LIBOR plus the contractual spread, whereas the denominator is LIBOR plus the market required spread - the fair value spread. Therefore, it is the change in the denominator or credit spread that positively or negatively impacts fair value.

RESULTS:
Fair Value – Price – Trends

Q4
2021

Fair Value - LSDI (All Loans) Compared to the S&P/LSTA U.S. Leveraged Loan Index



Note: Price based on fair value of the Lincoln Senior Debt Index and average bid of the S&P/LSTA U.S. Leveraged Loan Index

Observations:

The LSDI closed out the 2021 at 98.7%, decreased from the near record level of 99.0% in the third quarter.

Over time, prices, on a fair value basis, have ranged between 97.0 to 99.2 (excluding the first two quarters of 2020).

There are several reasons for this phenomenon whereby loans in the direct lending market do not experience the same price volatility as observed in the BSL market:

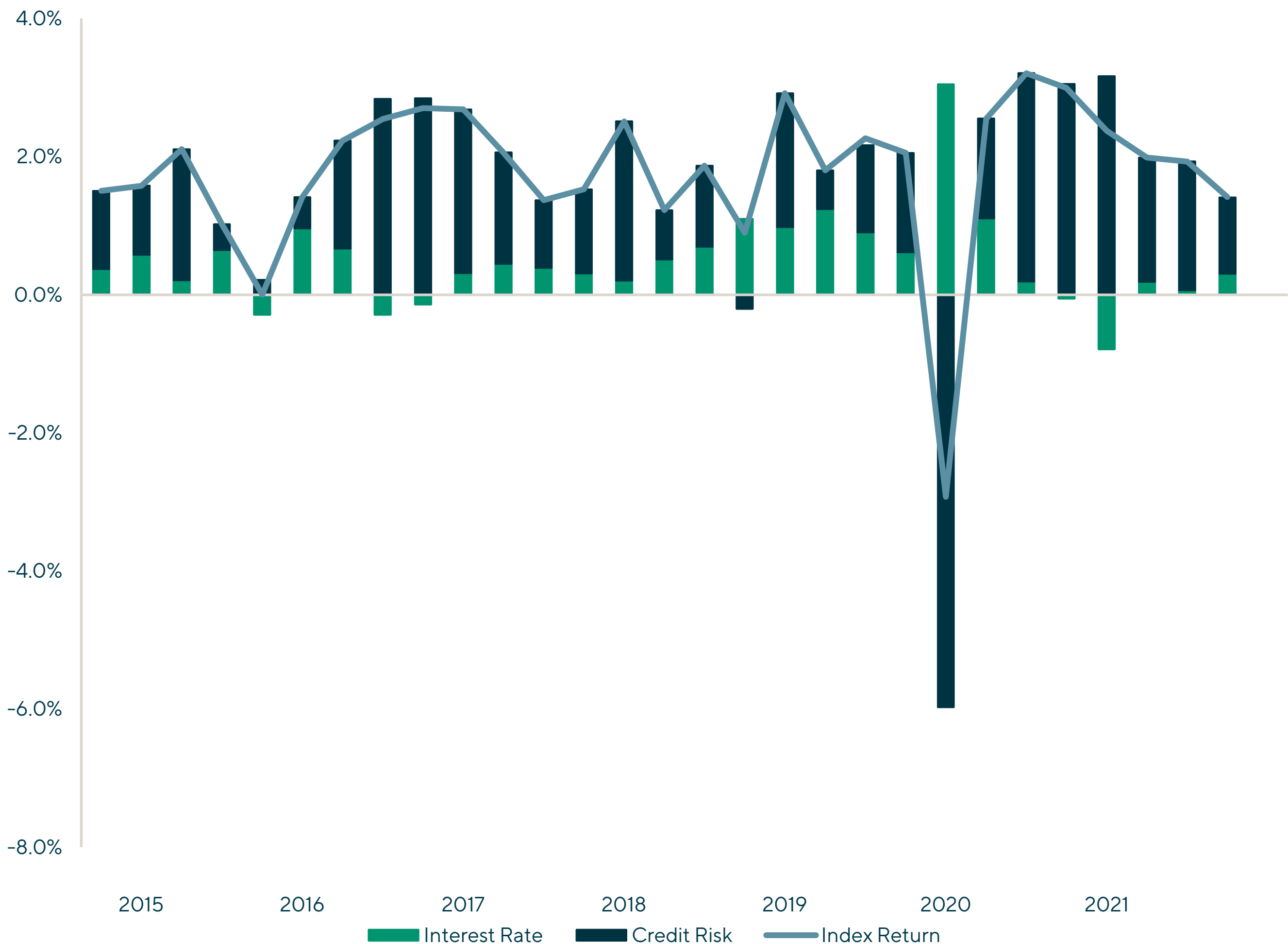
- It is common for loans in the direct lending market to contain LIBOR floors as compared to loans in the BSL market. Therefore, in low interest rate environments, the impact of LIBOR floors becomes a significant component of total return. In effect, whenever LIBOR is below 1.0% (the typical floor for a loan in the direct lending market), the loan becomes a fixed rate investment. In contrast, the prevalence of this subsidy in low interest rate environments is much lower in the BSL market.
- Loans in the direct lending market trade much less frequently than loans in the BSL market.
- Investors in the BSL market have a greater ability to liquidate their investment should they decide to exit, as trading is a viable option. In contrast, investments in direct lending funds are structured whereby investor redemptions are limited. Therefore, capital flows are not as volatile as the BSL market.

RESULTS:

Bifurcation of the Impact on Total Return Due to Credit Risk and Interest Rate Risk

Q4

2021



Observations:

The LSDI quarterly return was 1.4%, of which credit risk accounted for 1.1% while the return due to changes in LIBOR was 0.3%. The change in quarterly return due to credit risk of 1.1% decreased from the prior period of 1.9% and fell below historical levels as companies' increase in performance slowed given stabilization after recovery from the impacts of COVID-19.

The increase in the LSDI due to improvements in credit is consistent with the LPMI, which captures enterprise fair value performance.

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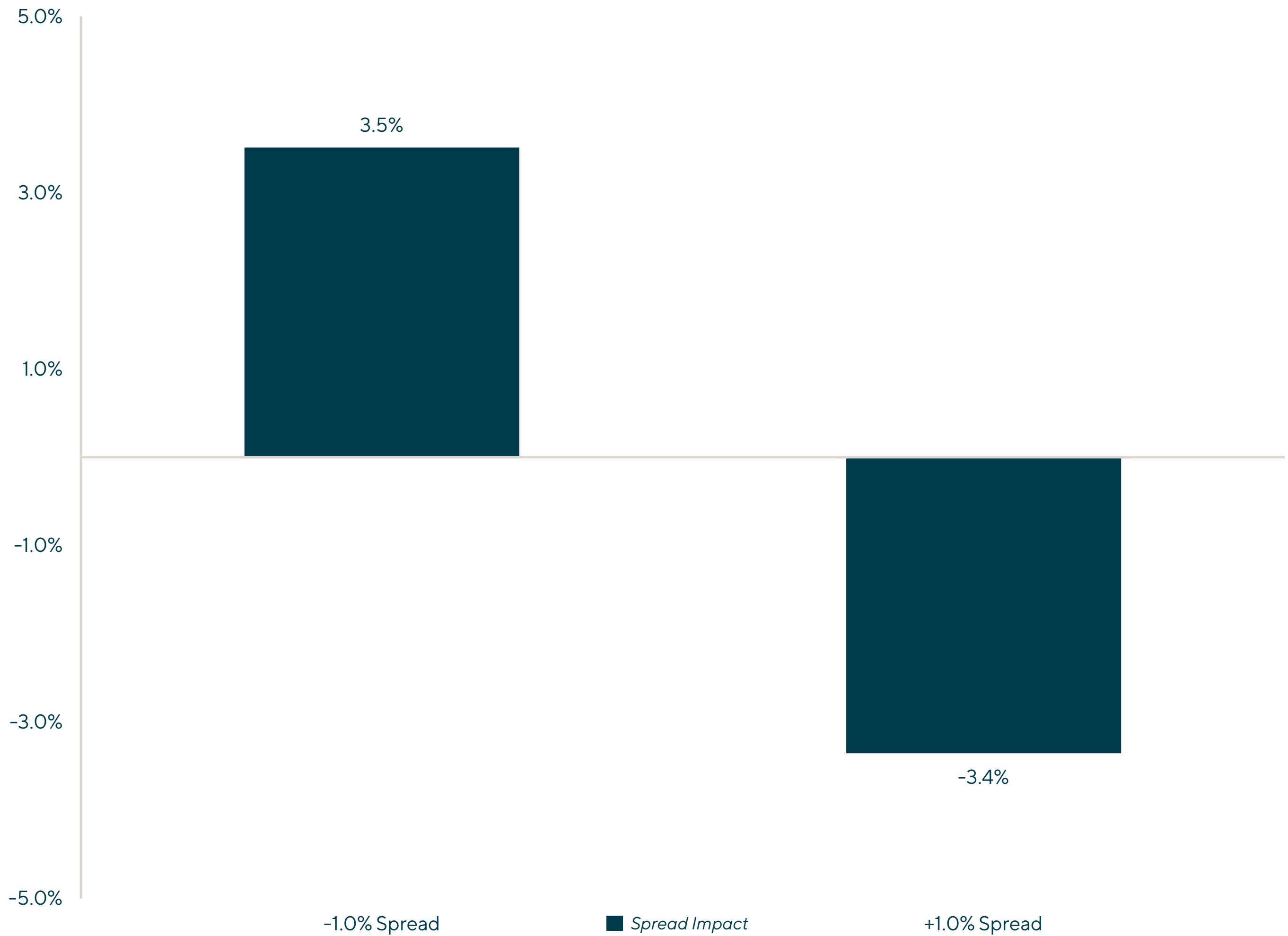
RESULTS:
Spread Sensitivity

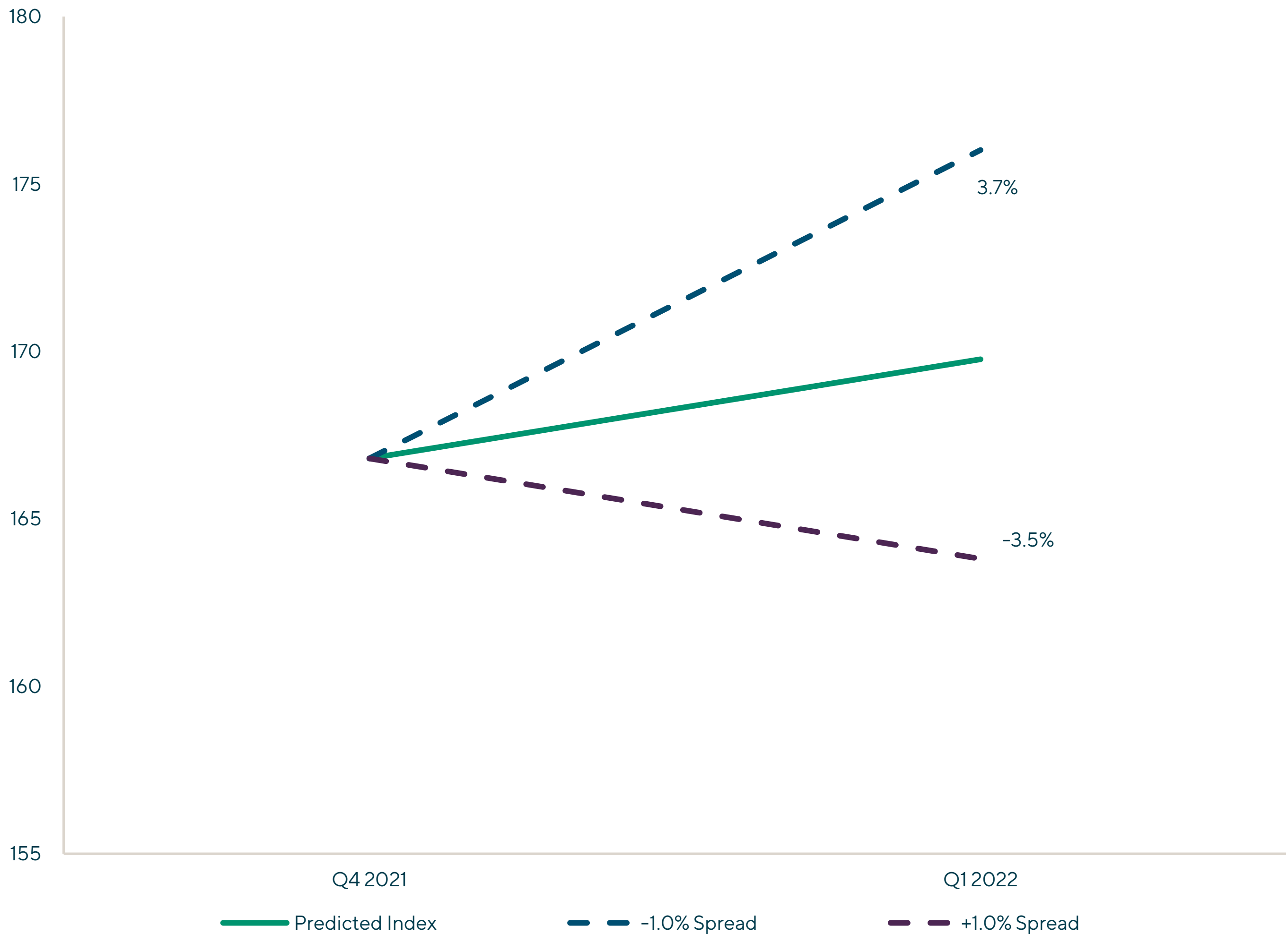
Q4 2021 Lincoln Senior Debt Index Spread Sensitivity



Observations:

Measuring the immediate impact on total returns, as of December 31, 2021, a 1.0% increase in spreads would decrease the value of the LSDI by 3.4% from 166.8 to 161.9. Conversely, the impact from a 1.0% increase in spreads would have increased the LSDI by 3.5% from 166.8 to 173.4 .

Spread Sensitivity (cont.)



Observations:

Measuring the impact on total returns as of the next quarter, if LIBOR remains unchanged between December 31, 2021 and March 31, 2022, a 1.0% increase in spreads would decrease the predicted value of the LSDI by 3.5% from a predicted 169.8 to 163.8. Conversely, the predicted impact from a 1.0% decrease in spreads would be an increase of 3.7% from 169.8 to 176.0.

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RESULTS:
Default Rates

Direct Lending Default Experience

Date	Size Weighted Defaults
2018	5.7%
Q2 18'	5.8%
Q3 18'	5.5%
Q4 18'	5.8%
2019	6.2%
Q1 19'	5.0%
Q2 19'	8.2%
Q3 19'	6.1%
Q4 19'	5.4%
2020	7.0%
Q1 20'	5.0%
Q2 20'	9.4%
Q3 20'	9.0%
Q4 20'	5.6%
2021	3.6%
Q1 21'	4.1%
Q2 21'	3.1%
Q3 21'	3.2%
Q4 21'	2.2%
Historical Average	**5.6%**

Note: Defaults defined as loan covenant defaults (not monetary defaults).

Observations:

As expected, the default rate increased dramatically in the second and third quarter of 2020 and has since declined to historically low levels, at 2.2% as of December 31, 2021.

SUMMARY:
Q4 2021 Lincoln Senior Debt Index

From 2014 through December 31, 2021, a portfolio of direct lending loans has yielded higher returns and lower volatility relative to broadly syndicated loans.

The LSDI provides market participants many unique valuation insights into the fair value of direct lending loans and represents a significant enhancement to the information available within an opaque market.

METHODOLOGY:
Source of Data and Sample Size

On a quarterly basis, Lincoln determines the enterprise fair value of over 3,000 portfolio companies for approximately 100 private equity sponsors and lenders. These portfolio companies report quarterly financial results to the sponsor (i.e., private equity group) or lender. Lincoln obtains company and loan level information to create the LSDI.

All information is prepared in accordance with the fair value measurement principles of generally accepted accounting principles. Finally, each valuation is then vetted by auditors, company management, boards of directors and regulators.

Additional information about the methodology of the LSDI can be found at: https://www.lincolninternational.com/perspectives/an-overview-of-the-lincoln-senior-debt-index/

Academic Advisor

Professor Pietro Veronesi is the Chicago Board of Trade Professor of Finance at the University of Chicago, Booth School of Business. He is also a research associate of the National Bureau of Economic Research and a research fellow of the Center for Economic and Policy Research.

Professor Veronesi's research has appeared in numerous publications, including the *Journal of Political Economy, American Economic Review, Quarterly Journal of Economics, Journal of Finance, Journal of Financial Economics* and *Review of Financial Studies*. He is the recipient of several awards, including the 2015 AQR Insight award, the 2012 and 2003 Smith Breeden prizes from the *Journal of Finance*; the 2008 WFA award; the 2006 Barclays Global Investors Prize from the EFA; the 2006 Fama/DFA prizes from the *Journal of Financial Economics*; and the 1999 Barclays Global Investors/Michael Brennan First Prize from the *Review of Financial Studies*. Professor Veronesi teaches both masters- and PhD-level courses. He is the recipient of the 2009 McKinsey Award for Excellence in Teaching.

His undergraduate work was in economics at Bocconi University where he received a laurea magna cum laude with honor in 1992. He earned a master's degree with distinction in 1993 from the London School of Economics. He joined the Chicago Booth faculty upon obtaining his PhD in economics from Harvard University in 1997.

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Lincoln's Valuations & Opinions Group is a leading independent valuation advisor to managers of illiquid assets and lenders to alternative assets funds. The group specializes in the valuation of illiquid debt, equity and derivative securities. Additionally, they provide independent fairness, solvency and other transaction opinions for a variety of corporate transactions for both public and private companies.

The firm's Valuations & Opinions Group is widely recognized for leveraging Lincoln's "real world" transaction experience from its mergers and acquisitions and debt advisory practices to assist its clients in the determination of fair value. Lincoln's highly skilled professionals have extensive experience in determining and supporting fair value measurements for traditional and complex securities.

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