Capra's Key Takeaways from the National Bureau of Economic Research's

Working Paper on "CLO Performance"

(https://www.nber.org/papers/w29410)

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The first large-scale academic study of CLO equity performance was recently published by the National Bureau of Economic Research. Written by finance professors at The Wharton School of the University of Pennsylvania and the Director of Risk Assessment, Data Analysis and Research at the Philadelphia Federal Reserve Bank, this study rigorously examined the performance of 2,131 CLO 1.0 and CLO 2.0 deals done from 1997 through March of 2021, a data set that notably included 98% of all deals done since 2010. This paper sheds light on the risks and rewards of investing in CLO debt and equity tranches, identifies the sources of this performance, and compares an investment in CLO equity on a risk-adjusted basis to alternative public market investments.

We believe this study is noteworthy in two key respects. First, it is the most comprehensive study ever undertaken on CLO performance. A great deal of care was taken to develop a consistent and accurate data set to ensure the analysis was unbiased. Second, the three authors are highly respected academic finance professionals who are unaffiliated with CLO managers, underwriters, or investors. Given the expertise of the authors and their disinterested objectivity, the conclusions of this paper warrant serious consideration.

Below are some of our major takeaways:

1. **CLO equity provides significant alpha:** "Our central finding is that CLO equity tranches provide statistically and economically significant abnormal returns, or alpha, against a wide variety of public benchmarks" (pg. 1).

2. **The alpha in CLO equities is probably generated by regulatory capital treatment:** In their analysis, the authors suggest that the price of CLO equity is systemically inexpensive on a risk-adjusted basis because the CLO's senior debt tranche is systemically expensive. One reason the highly-rated CLO debt tranches may be relatively expensive is because they offer favorable regulatory capital treatment to banks and insurers AND a relatively higher yield compared to other assets that also offer such favorable regulatory treatment. The ensuing heavy demand by banks and insurers for the CLO's highly-rated debt tranches create the opportunity to provide alpha to the CLO equity investor.

"Because equity investors receive the residual cash flow from the collateral pool after debt tranches are paid, this abnormal return comes from the difference between the risk-adjusted pricing of leveraged loans and CLO debt tranches" (pg. 23).

"One plausible explanation for our findings is that these investors (primarily commercial banks and some insurance companies) pay a premium for highly-rated CLO debt relative to leveraged loans because the former mitigate regulatory costs" (pg. 28).

3. **CLO equities have been structurally resilient to severe credit stresses:** CLO equities issued prior to the Great Financial Crisis "locked in low-cost financing prior to the crisis and reinvested in high-yielding loans during and after the crisis. The result was a windfall of excess interest and principal for CLO equity investors as the economy recovered" (pg. 2).

   As to more recent credit volatility, the authors state "CLO equites have also proven resilient to the Covid-19 crisis, which thus far has had a negligible effect on equity distributions" (pg. 2).

4. **CLO equity's resilience to market shocks is due to several unique structural features**: (pg. 25-26)
   a. CLOs are closed-end vehicles in which capital inflows and outflows are limited;
   b. Collateral coverage tests for the distribution waterfalls are based on par values and credit ratings so that market price volatility alone does not trigger the diversion of cash flows away from CLO equity tranches;
   c. CLO equities carry embedded options to reinvest the collateral and re-issue debt, enabling opportunistic trading and refinancing by CLO managers;
   d. CLOs employ a long-term debt funding structure ("term leverage") that insulates the CLO from rollover risk. "This feature became particularly valuable during the financial crisis, when many institutional investors taking levered positions were forced to reduce leverage or liquidate their positions. In contrast, CLO managers were able to maintain highly levered positions through the crisis without any increase in their debt servicing costs due to the long maturity of CLO securities. When markets recovered, this levered position paid off handsomely" (pg. 26).

5. **The report shows that, on a risk-adjusted basis, CLO equity outperformed the S&P 500. Additionally, CLO equity performance was compared to the performance of the S&P 500 plus another relevant index introduced to capture risks unique to CLO equity** (pg. 55).

   Comparison indices used as factors in the analysis:
   - S&P 500
   - S&P 500 plus LSTA US Leveraged Loan 100
   - S&P 500 plus The Bloomberg-Barclays U.S. Corporate High Yield Bond Index
   - S&P 500 plus CBOE S&P Put Write Index

"The estimates imply that, in present value terms, CLO equity investors earn between 37 cents and 67 cents per dollar invested **above** what they could earn by investing in (these) public market factors" (pg. 55).

6. **Some CLO managers are much better than others:** "We find significant cross-sectional heterogeneity in manager style and performance" (pg. 6).

   "Some managers do produce persistent outperformance relative to their peers" (pg. 3).

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