Futures-friendly derivatives: a fix for the over-the-counter derivatives mess

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Abstract: This note presents an easily implemented, inexpensive, private sector innovation, a futures-friendly derivative (FFD) intended to compete with the unnecessarily credit-risky, dealer-traded, over-the-counter (OTC) derivatives and their clumsy, expensive, government-mandated clearing counterparties (OTC CCPs.) The FFD may be traded and cleared as though it is a futures contract. Perhaps, if successful, it will ultimately end OTC CCPs’ ‘systemically important’ classification, reducing our more than $1 trillion estimate of the government’s implicit credit exposure created by OTC CCPs. Section 1 describes the proposed instruments and their purpose and Section 2 explains the source of the OTC derivative markets’ inefficiency. Section 3 shows how OTC derivatives create unnecessary risk and destroy value in bankruptcy – changing the nature of the systemic risk they create but not the amount. Section 4 describes the new instruments. Section 5 concludes the note.

Keywords: over-the-counter; OTC; clearing counterparty; futures; swaps; Lehman Brothers bankruptcy; exchange; dark pool; derivative; innovation.


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1 Introduction

Elsewhere, Dew (2015a) describes a financial market portfolio disequilibrium that began when over-the-counter (OTC) derivatives were introduced in the early 1970s and grew until the Financial Crisis of 2007 (hereafter, crisis).

Throughout this period, the regulators and legislators have altered the burden of the credit risk these instruments create, shifting it from OTC derivatives dealers to taxpayers.
and to the other creditors of the dealers, through increasingly permissive legislation and regulation, in an effort to simultaneously improve the profitability of derivatives trading, while reducing the systemic risk that rose with the mushrooming growth of OTC derivatives. The two most important legislative changes are:

1. Special treatment of derivatives in bankruptcy.
2. The Dodd–Frank mandate to clear OTC inter-dealer derivatives positions.

The two are related. Without special treatment in bankruptcy, OTC derivatives clearing would not be effective in the event of a dealer bankruptcy. Ultimately legislation and regulation have transferred much of the credit burden from banks to taxpayers and the dealers’ other debt holders, by mandating bank dealer use of OTC clearing counterparties (OTC CCPs) which government agencies then designated ‘systemically important’.

In another paper, Dew (2015b) introduces other innovations to dealer market micro-structure designed to return the financial system to a safer, simpler, more transparent equilibrium, reducing the need for the government’s implicit market subsidy.

Futures-friendly derivatives (FFDs) are unique among the innovations found in Dew (2015b) for multiple reasons. First, they are easiest to implement, because only existing electronic infrastructure is needed. Second, they have a substantial measurable minimum economic benefit.

Importantly, FFDs are not futures, not securities and not OTC derivatives. Thus, there is no existing regulatory framework that would immediately apply to them.

This fact might present regulatory opportunity. The regulatory entities (The Securities and Exchange Commission (SEC), The Commodity Futures Trading Commission (CFTC) and various bank regulatory bodies) that have regulatory jurisdictions based largely on their regulation of the underlying instruments (commodities and financial assets) used to determine the derivatives’ values, might be reregulated based on the properties of the derivatives themselves, for example.

The primary objective of the FFD is to compete with OTC derivatives traded among dealers and often cleared through OTC CCPs, providing a safer, simpler alternative that is cleared in the way that financial futures are cleared, instead of by OTC CCPs. If successful, FFDs might dramatically reduce the importance of the OTC CCPs – perhaps ultimately ending their systemically important classification.

FFDs differ in their contractual terms from OTC trades in three primary ways:

1. The reset and payment dates are on fixed calendar dates.
2. Payments are made on the same day payment amounts are determined.
3. The FFD origination and settlement method is unique. No other financial instrument is opened or settled as is an FFD.

These changes address the three primary weaknesses of OTC derivatives:

1. OTC derivatives simultaneously create credit risk for both counterparties to a trade. The total expected value of payments on trade initiation is zero, but there are future payment obligations on both sides of each derivatives trade, resulting in credit risk to both parties. Futures do not have this property and so are less risky.
2 OTC derivatives transactions change payment dates as time passes. Thus a sale
today does not have payments matching a purchase yesterday, and so the two
agreements do not result in zero future obligations, even if the two agreements are at
the same price. Thus sales and purchases do not offset, as do futures, and the credit
risk from one OTC derivative purchase is only multiplied by the credit risk from an
OTC sale on the next day.

3 The OTC derivatives market is not homogeneous. There is no requirement that
the payment dates and values match, further reducing the possibility of offsetting
transactions. The result is that the number of outstanding OTC positions are
vastly larger than the number of outstanding futures positions, and the credit risk
of each OTC derivative, much greater than that of a futures contract in the same
instrument.

The effect of the difference between FFDs and OTC cleared derivatives is that FFDs
may be marked to market in cash at market-determined closing prices at least daily.
Therefore, they may be exchange-traded and cleared with the same trading properties as
futures. As a result, the credit risk of cleared OTC trades would be reduced from the
multi-year exposure of OTC CCPs to the intra-day credit exposure of futures clearing
houses.

2 Why are existing OTC instruments so risky?

The OTC derivative is, in essence, a vehicle intended to substitute a small credit risk for a
substantial interest rate (or other market price) risk in portfolios of commercial
companies that defer the recognition of financial gains and losses. The objective of OTC
derivatives’ commercial end users that leads to OTC derivatives’ credit risk is that
commercial hedgers using deferral accounting in lending and borrowing use derivatives
to reduce both the substance of, and the appearance of, interest rate risk in their
statements of financial condition.

They do this by deferring the payment of income on swaps along with the deferred
payments of interest on loans and deposits. This waiting creates credit risk, but it is
essential in deferral environments, since in the world of real assets, production of income
necessarily happens after the production process is planned and financed. Loans cannot
serve their purpose without the delays of deferral accounting.

Since in fact the use of derivative hedges does tend to reduce interest rate risk in a
commercial loan portfolio, an instrument that makes this increased safety apparent to the
bank’s stockholders makes sense in portfolios subject to deferral accounting. For these
customers, the lost value from the extra credit risk of these derivatives may be offset by
even greater added value in reporting clarity.

FFDs have no direct contribution to make in transactions between OTC dealers and
these customers. Indeed, OTC swaps were originally promoted to commercial users
because the marking-to-market of the existing hedging instrument, Eurodollar futures,
while providing economic relief from interest rate risk, resulted in financial statements
that appeared to have greater interest rate risk. Thus the use of FFDs, also marked-to-
market, in this environment would be counterproductive.
3 Why is OTC dealer portfolio inefficiency so disastrous?

But in the portfolios of OTC derivatives dealers, there are no deferral accounting-related benefits, since dealer positions are reported at fair value. It is in these dealer portfolios that FFDs are valuable.

Because of the bilateral credit risk of OTC derivatives, OTC dealers cannot easily trade them, and thus cannot participate in the two fundamental activities of portfolio management, portfolio market valuation and risk diversification.

In the world of price-risky financial markets and portfolios, investor assessment of portfolio valuation waits for no one. So OTC dealers must base their valuation of portfolio risk and return on personal valuations, or non-market external valuations such as those provided by OTC CCPs. The exchanges have no alternative but to form their own estimates of market prices, since the instruments are untraded. The absence of knowledge of market portfolio value, along with the inability to diversify, create excess risk not borne in ordinary portfolio management.

This disequilibrium risk resulting from derivatives dealers’ inability to trade ultimately limited participation in the business of providing commercial hedgers with derivatives to large dealer banks.

According to the ISDA research notes, concentration of OTC derivatives among major dealers (ISDA, 2010, p.2) 81.7% of total OTC interest rate swaps have the 14 largest (G14) swaps dealers as counterparties. The Office of the Comptroller of the Currency (OCC) in the “OCC’s Quarterly Report on Bank Trading and Derivatives Activities, Second Quarter 2015”, indicates that four large commercial banks (Bank of America, Citigroup, Goldman Sachs and JP Morgan Chase) represent 91.1% of the total US banking industry notional amounts and 81.5% of industry NCCE. (NCCE is the regulatory measure of credit exposure of bank derivatives positions.)

Indeed, it may be argued that the credit risks of derivative instruments encouraged some of these institutions to become large dealer banks, rather than investment banks, since commercial hedgers now see bank-domiciled OTC derivatives as safer following government bail-outs of near-fails of banks in the derivatives markets during the crisis.

And the clumsy structure of OTC derivatives (from a dealer point-of-view) was not addressed when dealers were simply mandated by government to clear their derivatives positions through the OTC CCPs. As a result, clearing counterparties that clear OTC derivatives are not as effective in reducing systemic risk as are futures exchanges.

The main difference is that OTC CCPs have exposure to long-term credit risk, the underlying OTC derivatives’ disease, unlike futures exchange clearing houses. An OTC square peg was pounded into a futures exchange round hole.

The most significant observable negative effect of this long-term credit risk is the large negative market value of OTC CCPs. Dew (2015a) estimates the source of this negative value, credit risk estimated to be in excess of $1 trillion.

This credit exposure was an issue early in the history of OTC derivatives. Extreme changes in the law and in regulation of banks have been made in an attempt to prevent the potential for multiple large losses that OTC derivatives present. The most important of these changes in law are the provisions that give derivatives priority in bankruptcy. Industry lobbying and, undoubtedly, regulatory fear of derivatives-related credit defaults resulted in changes in the bankruptcy code, called ‘priority provisions’, set forth in
Chapter 11, US Congress no. 507 and no. 726. In these rules, counterparties to a
derivatives trade are exempted from the ‘stay’ preventing creditors from taking action
against the debtor and its assets. Derivatives counterparties can seize, value, and sell
collateral they possess immediately without permission from the court.

This treatment in bankruptcy loomed large in the settlement of claims against
the estate of Lehman Brothers (cf. Allen, 2012; Fleming and Sarkar, 2014; Lubben,
2009). The closing of clearing positions that are central to this discussion are the futures
positions of Lehman with the Chicago Mercantile Exchange (CME) and the OTC interest
rate swaps positions of Lehman with LCH.Clearnet. CME had (controversially) made
provision for the closing of Lehman’s futures positions prior to the 15 September, 2008,
declaration of bankruptcy. More to the point of this discussion, both CME and
LCH.Clearnet had closed out all Lehman positions by 19 September, 2008, four days
after bankruptcy was declared.

How was this accomplished? The CCPs had the ability to unilaterally net their own
estimates of position value with the failing party, then seize and liquidate the estate’s
collateral, without any automatic stay. The CCPs had the right to choose the method
of market valuation of positions and the method of loss calculation, provided it is
“an amount that party reasonably determines in good faith to be its total losses”.

In short, the CCPs settled quickly because there is no legal impediment to settling
positions at a disadvantage to the remaining creditors of the Lehman estate. The losses to
Lehman’s estate from the firm’s futures positions (all with CME group) approximate
$3.3 billion. Estimates of Lehman’s losses in OTC derivatives vary from $75 billion to
$33 billion (cf. Wiggins et al., 2014).

The CCPs, by isolating inter-dealer trades and assigning them a common value,
undoubtedly reduce the direct contribution of derivatives to systemic risk. But reducing
the share of dealers’ debtors to claims in bankruptcy might possibly lead to contagion
from that source in later crises, particularly in light of the largely uncleared market in
single-name credit default swaps.

This provides an indication of the ex post cost of OTC derivatives in bankruptcy,
but not an indication of the ex ante cost. Derivative dealers with cleared positions
arguably actually profited from the default. (CME, for example, collected margin funds
$1.3 billion more than the approximately $2 billion value of Lehman’s futures position
losses.) Since there is no way to estimate the market value of Lehman’s OTC CCP
position, there is no way to know whether LCH.Clearnet’s claim of full value collection
is accurate. We do know that remaining creditors of Lehman did very poorly, collecting
roughly $0.23 on the dollar to date.

The ex ante cost to derivatives dealing of this event to derivatives dealers is likely to
be substantially greater, however, as the other creditors of Lehman learn from their
losses. Debt securities purchased from derivatives dealers may begin to contain covenants
limiting the size of dealers’ OTC derivatives positions relative to their debt obligations,
for example.

A second factor that will weaken the bankruptcy exception will be the incentive of the
dealer’s creditors to replace ordinary debt with debt in the form of derivatives such as
credit default swaps. The effect of this will be to create an ever-greater exemption from
the provisions of bankruptcy, reducing any gain in systemic protection the OTC CCPs
provide.
4 Changing the OTC market

The FFD, is a different, exchange-traded, type of derivative, designed to replace the existing OTC instruments in the market-valued portfolios of the dealers. We explain FFDs by providing a simple example, an FFD for an interest rate swap, in the appendix, generalising it in this section to include any OTC derivative.

The generalised instruments, following the appendix example, open trades on any trade date, but place quarterly resets, payments and maturities on fixed calendar dates. Alignment of resets and payments, for example, with Eurodollar futures settlement dates eases replacement of OTC derivatives by futures-like instruments.

FFDs are opened by a same-day cash transaction and entry of an exchange-traded contract on the trade date. This payment + position (P&P) method is unique to FFDs and is the essential technique that bridges OTC- and exchange-trading. The cash payment on the trade date might be any amount agreed by fixed payer and fixed receiver. Later P&P dates are associated with settlement of the exchange-traded agreements. They are made on the rate or price reset dates (instead of waiting until the end of the reset period as with ‘plain vanilla’ derivatives). This mimics the less credit-risky settlement method of the forward rate agreement (FRA) market, where reset and payment are on the same day.

The trade date spot payment leaves only a futures-like forward position, all that remains of the OTC trade after the spot payment. Each FFD would then be marked-to-market daily and might be settled on the nearby March-quarterly-cycle Eurodollar futures settlement date by another P&P, payment of the present value of the difference between the FFD settlement yield and the Eurodollar futures settlement yield at the close, and simultaneous entry into the next-shortest maturity FFD at the previous market close.

5 Conclusion

This proposal is advanced in the interest of providing competition for unnecessarily credit risky OTC derivatives and the associated taxpayer-subsidised OTC CCPs. It introduces a substitute for OTC derivatives called FFDs, a new futures-like exchange-traded instrument. Any exchange – futures, securities or dark pool – using futures-like repricing and margining methods, can list this instrument, technologically speaking. Since FFDs are not futures, not securities, and not OTC, any clearing house might clear them, as far as existing regulations are concerned. FFDs do not depend on services – like Markit, ICE, or CME Group – that might be uncooperative if unduly influenced by the dealer banks that dominate the OTC trading alternative to FFDs.

Acknowledgement

The views expressed are the author’s and do not necessarily reflect the views of Tecnológico de Monterrey.
References

Note
1One of the reasons OTC swaps cannot be traded is that they have no discoverable market price after the trade date. This problem is the focus of a paper by Joe Rennison appearing in the Financial Times, “CME losing ground to LCH: Clearenthe battle”, 10 December, 2015. The paper explains that because the staff of the OTC CCP, not the market itself, determines the daily closing prices of individual swaps, the ‘values’ of two identical swaps on the two exchanges differ over substantial periods of time. According to the report, the difference in value is sometimes in the millions of dollars. This increases collateral and margining costs for users of both markets, and is forcing the dealers to limit themselves to a single exchange.

Appendix: FFD example
The example of an interest rate swap FFD here greatly oversimplifies the computation of actual market values of FFD interest rate swaps for reasons of exposition. This example is accompanied by a diagram, Figure A1, which shows the use of the transactions schematically.

The market, in reality, would consider matters other than the simple yield curve arithmetic here in price formulation. Since the contract settles at a market price, not a price index, the market will factor pricing issues such as convexity, the present value adjustment, and multiple yield curves into the FFD price, rather than depending on the index provider or exchange to determine value. Since such precision is an unnecessary burden to the reader, all values and time intervals are approximate and arithmetic rather than geometric averages are used. In the example, the spot and forward yield curves for 3-month intervals over the year following the current month of June, in annualised terms, is found in Table A1. (Note that in each table, the first forward rate is the same as the spot rate.)
**Figure A1** The life cycle of an FFT

**Table A1** Annualised spot and forward yield curve, 3-month intervals for the year beginning June

<table>
<thead>
<tr>
<th></th>
<th>June–September (%)</th>
<th>September–December (%)</th>
<th>December–March (%)</th>
<th>March–June (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot curve</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Forward curve</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

For the purposes of the example, we determine payment and interest rate reset dates as follows. We assume the current date is in June, three months from the Eurodollar futures settlement dates for the month of September (1/4 year). Resets and payments are on
futures settlement dates in September and December of the current year and on March of
the following year. We assume the size of the Notional Principle Amount of the swap is
$1 million.

In this example, the first payment, on the first swap 'reset date', is known at the time
of the trade, since it depends only on current spot interest rates. So the credit risk of the
swap can be reduced here on FFDs by paying the present value of the known payment
immediately.

In practice, any amount agreed by buyer and seller would do. In our example, the spot
payment associated with the FFD is the present value of accrued interest from the trade
date to the first FFD settlement date in September. The expression for that is:

\[
PMT = \frac{(4\% - 1\%) \times $1 \text{ million}}{4 \left(1 + \frac{1\%}{4}\right)}
\]

The FFD fixed rate is 4%, and its first floating rate is 1%. The first payment is the fixed
side payment minus the floating side payment multiplied by the notional principal
amount (NPA) discounted to present value by the 3-month spot rate. This is identical to
the first payment on a plain vanilla swap except that payment is not delayed on an FFP.
The payment is shown in Figure A1, box 2 above the first dotted line.

This payment leaves a series of unknown future payments, since all forward
payments depend on actual 3-month rates on the payment date. This remaining series of
commitments is itself an FFD, with an unknown fixed-side yield with expected value
depending on forecasts, as do futures contracts.

The exchange lists the forward portion of the FFD. In our example, the price of the
FFD forward is determined by the 3-month forward spot and forward curves with start
date at the September Eurodollar futures settlement date and end date at the settlement
date of the Eurodollar futures contract in June, one year from the start date of the FFD.
The seller of the FFD enters a short position in the exchange-traded 9-month FFD on the
trade date as indicated by box 3 in the diagram. The yield curves consistent with the
current market yields starting in three months are found in Table A2.

<table>
<thead>
<tr>
<th>Table A2</th>
<th>Spot and forward yield curves for the 9-months from September to next June, value-dated in June of the current year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>September–December</td>
</tr>
<tr>
<td>Spot curve</td>
<td>3</td>
</tr>
<tr>
<td>Forward curve</td>
<td>3</td>
</tr>
</tbody>
</table>

This 9-month FFD forward contract is entered as part of the spot one-year FFD swap.
It has a market fixed-side rate of 5% or a price of 100 – 5 = 95.

On the first September FFD settlement date, we assume that anticipated 3-month rates
have fallen by 1%. The 9-month FFD is therefore trading at 4% as indicated in Table A3,
and the nearby Eurodollar futures is trading at 2%. The 9-month FFD is settled by
payment of:
and the 9-month FFD position is transferred by entry of a short position in the 6-month December FFD at the price at the close of the market on the settlement day of the September contract \((100 - 5 = 95)\). This appears on the diagram below the second dotted line, June FFD settlement date. The payment (box 5) and transfer (box 4) in the FFD market are contract terms. They are not approximations, although the market rates and prices themselves are approximate.

In September, the spot and forward curves for settlement in December are.

**Table A3**  Forward and spot Eurodollar rates for December, value-dated in September

<table>
<thead>
<tr>
<th></th>
<th>December–March</th>
<th>March–June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot curve</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Forward curve</td>
<td>4</td>
<td>6</td>
</tr>
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</table>

Assuming anticipated forward interest rates do not change, the 6-month FFD for settlement in December is still trading at \(100 - 5\% = 95\). The expiring December Eurodollar futures contract is trading at 4\%, so there is a payment (box 7) of

\[
PMT_{\text{Dec}} = \frac{5\% - 4\%}{4} \times \$1 \text{ million}
\]

and transfer to the March Eurodollar futures contract (box 6) at a price of 94 = 100 – 6.