

**Interest Rate ENNs: Futures Addendum**  
**Analysis as of June 15, 2019**

by

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Entity-netted notionals were introduced in a paper published in the beginning of 2018; ENNs, in that original paper, aimed to provide a measure for the amount of risk transfer in rate swaps that is comparable to measures used for other interest rate markets, such as U.S. Treasury securities and corporate bond markets.<sup>2</sup> More recently, the work developing entity-netted notional values for the interest rate market has been expanded to include similar measures for credit and FX swap markets.

One other significant interest rate market regulated by the CFTC is the rates futures market. By volume, the largest domestic rates futures contracts are U.S. Treasury futures (with multiple contracts referencing Treasury securities with maturities from 2 years to 30 years) and Eurodollar futures, which settle against 3M USD Libor.<sup>3</sup> Like the swap market, we can derive a similar ENNs measure for the aggregate interest rate futures market to gain a more complete view of interest rate derivatives risk held by U.S. trading entities.

The original ENNs white paper noted two weaknesses of using notional measures as indicators of portfolio risk. First, position notional numbers do not incorporate any risk-adjustments; a one million dollar 3 month tenor swap has the same notional as a one million dollar 30 year tenor swap, though the risk of the two swaps is significantly different. Second, position notionals do not include any netting for offsetting positions; a one million dollar receive-fixed swap is added to a one million dollar pay-fixed swap of similar tenor, even though the risk of one of the two swaps should offset the other. Any ENNs measure used to represent risk transfer in the futures markets should control for both of these weaknesses.

We base our futures ENNs measure on a methodology very similar to that for interest rate swaps. For swaps, all positions were adjusted to 5 year notional equivalents, and then these 5 year equivalents were netted within a given counterparty pair. This process can be mirrored for futures contracts; however, the market structure of futures trading simplifies some of this process. Because all futures trading is cleared, each market participant has only one counterparty, the CCP itself. In addition, offsetting futures contracts are automatically netted by the CCP, so the difference between gross positions and net positions is often smaller than for swaps. For example, most of the trading in U.S. Treasury futures is concentrated in the front month; because of this, at any one time a futures trader will likely have a single, netted U.S. Treasury futures position. In contrast, the average rate swaps trader will have a number of live swaps of similar tenors, likely with different fixed rates or maturity dates.

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<sup>1</sup> Office of the Chief Economist, Commodity Futures Trading Commission. While this paper was produced in the authors' official capacity, the analyses and conclusions expressed here are those of the authors and do not necessarily reflect the views of other Commission staff, the Office of the Chief Economist, or the Commission.

<sup>2</sup> The link to the original paper can be found [here](#). An update as of September 2018 can be found [here](#).

<sup>3</sup> More recently, in anticipation of the possible cessation of Libor in 2021, futures on one Libor replacement, the "secured overnight financing rate" or SOFR, have been introduced.

Most of these differences simplify the ENNs calculation for rates futures. Like swaps, we translate all futures to a five year equivalent notional. For all options on futures we include the relevant delta-adjustment. Because there is only one counterparty (the CCP), all netting for each market participant is restricted to a single counterparty pair. In the below tables we include information equivalent to that found in the interest rate swaps tables: the notional of open positions (including futures and options on futures), this open position notional translated into 5-year equivalents and, finally, the ENNs measure.<sup>4</sup> For the tables, we have netted positions only within an individual futures product.

On both a notional and an ENNs basis, the size of the interest rate futures market is smaller than that of the interest rate swaps market. Where the total notional of U.S. reported interest rate swaps falls above \$200tn, the aggregate notional of interest rate futures is roughly a third of this value. Similarly, the swaps market as measured by ENNs has a size of around \$15tn, significantly higher than the equivalent measure for futures. In Table 1, we provide two different measures for interest rate futures ENNs. The first, and larger, measure considers positions in different futures contracts as independent; netting is only done within a futures product. One could argue that futures products are more distinct than different tenor rate swaps, and thus should be considered separate markets. If this view is taken, the ENNs size of interest rate futures stands at just over \$2tn. By using a methodology equivalent to that in rate swaps, where netting across product types is allowed, ENNs falls roughly 25% more, to under \$2tn. This indicates that there is a moderate amount of netting across contracts.

ENNs is the result of two distinct adjustments, the 5 year tenor adjustment as well as netting longs against shorts. For futures, the first of the two adjustments is dominant. By far the largest rates futures market by position notional is the Eurodollar contract; that single contract series represents over \$79tn of the \$82tn of position notional. However, Eurodollar contracts represent exposure to 3-month rates, a maturity significantly shorter than the 5yr tenor adjustment used in the ENNs calculation. Because of its short effective tenor, Eurodollar position notional falls from over \$79tn to under \$1tn in 5yr equivalents, making similar in risk-adjusted size to the Treasury contracts. In contrast, the Ultra 30 year Treasury future increases, as expected, from \$0.1tn to \$0.66tn.

In contrast, the netting adjustment has a smaller effect on futures market size. In aggregate, the cross-futures/options netting reduces the effective notional from just over \$3tn to just over \$2tn, a reduction of around 30% (though a larger 50% when netting is done not just within a futures contract but across contracts). For swaps, the netting adjustment reduced the effective notional by a much larger 78%. As noted, because all futures contracts are cleared at the CCP, significant netting is done automatically when the trade occurs, leading to less additional netting in the ENNs calculation.

The largest reduction between 5yr equivalent notional and ENNs is found in the Eurodollar contract, where the decrease is approximately 60%. Because each Eurodollar contract has a short tenor, traders often string many of them together for more long term rate exposures. Though these packs of Eurodollar contracts often provide the same directional exposure (e.g. all purchases), some traders choose to package contracts together to get more targeted rate curve strategies. For instance, a trader may go long the short end of the curve, short the middle of the rate curve and long longer-dated

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<sup>4</sup> The numbers in the tables represent positions as reported by large futures traders, data used to generate the CFTC's Commitment of Traders Report. For most liquid products, large traders comprise more than 90% of total open positions. However, because not all traders report as large traders: 1) the numbers do not represent the complete market and 2) reported long positions do not exactly match with reported short positions in the tables.

contracts. In these cases, the ENNs calculation would net the longs against the shorts, explicitly taking into consideration the offsetting exposures. These strategies are much less common in Treasury futures. Partly because of these package trades, netting across Eurodollar contracts is much more common than in other interest rate futures markets. So, where netting reduces the size of the Eurodollar market by around 60%, reductions for the Treasury contracts tend to be only around 20-25%.

In addition to the breakdown by product, Table 2 provides a breakdown of notional and ENNs by participant group. For these groupings, we use the participant types included in the Commitment of Traders report for financial futures: Asset Managers, Intermediaries, Leveraged Speculators, and Other. The distribution of notional and of ENNs is highly varied across groups. Both intermediaries and leveraged speculators hold large positions in Eurodollar futures and options, translating to large holdings on a notional basis (around \$16tn long and short for intermediaries and around \$56tn long and short for leveraged speculators). However, after the 5 year adjustment these numbers adjust to much smaller levels – well less than \$1tn for both categories. In fact, though Asset Managers are much smaller than both of these categories on a notional basis, after the 5 year adjustment, asset managers are at least three times as large as measured by the long 5 year equivalents.

Netting, as expected, further reduces the “size” of these four categories of participants. Generally, participant groups experience between 40 and 60 percent netting, similar to the netting levels in the contract-level breakdowns. The two major exceptions to this are the “Other” category (much less than average netting) as well as the non-financial category (much more than average netting). Accounts in the first category are more likely to be either all long or all short, leaving little room for cross expiration or cross product netting.

We plan to include updates to the futures ENNs measure on a quarterly basis, matching with the publication schedule of the current ENNs reports for rates, credit and FX swaps.

**Table 1: Futures ENNs by Financial Contract**

Contract	Notional Amounts (\$tns)		Notional Amounts in 5-Year Equivalents (\$tns)			
	Long	Short	Long	Short	ENNs Long	ENNs Short
<b>2 Year Note</b>	0.77	0.79	0.26	0.26	0.23	0.24
<b>5 Year Note</b>	0.69	0.69	0.41	0.41	0.32	0.32
<b>10 Year Note</b>	0.75	0.75	0.57	0.58	0.43	0.44
<b>Ultra 10 Year Note</b>	0.06	0.06	0.15	0.14	0.13	0.12
<b>30 Year Bond</b>	0.17	0.18	0.32	0.34	0.24	0.26
<b>Ultra 30 Year Bond</b>	0.10	0.11	0.66	0.72	0.53	0.59
<b>Eurodollar</b>	79.03	78.76	0.67	0.66	0.27	0.26
	<b>81.59</b>	<b>81.34</b>	<b>3.04</b>	<b>3.11</b>	<b>2.15</b>	<b>2.22</b>
<b>Aggregate Netting</b>					<b>1.58</b>	<b>1.66</b>

**Table 2: Futures ENNs by Participant Type**

Trader Type	Notional Amounts (\$tns)		Notional Amounts in 5-Year Equivalents (\$tns)			
	Long	Short	Long	Short	ENNs Long	ENNs Short
Asset Manager	6.52	7.36	1.85	0.98	1.04	0.17
Intermediary	15.14	17.02	0.36	0.66	0.14	0.44
Leveraged Speculator	58.72	55.85	0.62	1.34	0.23	0.97
Other Financials	0.95	0.87	0.20	0.12	0.17	0.08
Non-Financial	0.26	0.24	0.01	0.01	0.00	0.00
	<b>81.59</b>	<b>81.34</b>	<b>3.04</b>	<b>3.11</b>	<b>1.58</b>	<b>1.66</b>