

Introducing ENNs: A Measure of the Size of Interest Rate Swap Markets Update for Positions as of September 14, 2018

by

Lee Baker, Richard Haynes, John Roberts, Rajiv Sharma, Bruce Tuckman and Nicholas Warren¹

February, 2019

The tables below provide an update on the notional and entity-netted notional (ENN) size of the CFTC-regulated interest rate market.² Entity-netted notionals were introduced in a paper published earlier this year and aim to provide a metric for risk transfer in swaps that is comparable to the size of other interest rate markets.³ The tables below represent aggregated interest rate swap position data as of September 14, 2018 for U.S.-reporting entities.

In this update, we introduce histograms that provide information about the distribution of ENNs exposures for each participant group. To create these histograms, for each Legal Entity Identifier (LEI) we calculate the ratio: $\text{ENNs Long} / (\text{ENNs Long} + \text{ENNs Short})$, which takes values between 0 and 1.⁴ A ratio of one half for a given LEI indicates that this entity's ENNs are balanced between the counterparties against which it is long and the counterparties against which it is short. A ratio near 0, on the other hand, would mean that the entity is net short against almost all of its counterparties.

The histograms group LEIs, by ratio, into five equally sized buckets.⁵ The blue bars in each bucket represent the sum of long ENNs for all of the LEIs that fall in that ratio bucket; the red bars in each bucket represent the sum of short ENNs for all of the LEIs in that ratio bucket. Given this construction, the red bars dominate in the leftmost buckets and the blue bars dominate in the rightmost buckets.

The histograms provide some ENNs detail beyond that in Table 4. For instance, if a participant category in Table 4 had roughly equivalent long and short ENNs values, this could indicate that most entities in this category were roughly balanced between long and short exposures. Or, it could indicate that some entities in this category were mostly long and other entities were mostly short. The histograms allow us to distinguish between these two possibilities.

ENNs exposures, as shown in the new histograms, match many of the business line descriptions found in the original ENNs white paper. For instance, swap dealers (Figure 1) intermediate between end users, matching long positions with a subset of customers against a roughly balanced set of short positions with a second customer set. The histograms confirm this intuition – the largest amount of ENNs exposure is found in the third, middle bucket, where the ratio of long ENNs to total ENNs falls between

¹ 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.

² The tables include the following interest rate product types: fixed-for-floating swaps, FRAs, OIS, Swaptions and Caps/Floors.

³ The link to the original paper can be found [here](#). An update as of June 2018 can be found [here](#).

⁴ Recall that "long" is receiving fixed, which is economically like owning bonds, i.e., losing money if rates rise.

⁵ The bucket ranges are set to be [0,0.2), [0.2,0.4), [0.4,0.6), [0.6,0.8), and [0.8,1].

40% and 60%. This largest bucket is followed by the second and fourth, slightly less balanced, with the two outside buckets the smallest by aggregate ENNs.

In contrast to the swap dealers, most of the other categories have significant ENNs exposures in the first and last buckets. End users generally use swaps markets to hedge residual interest rate risk, and most end users in a given category will have a similar risk profile. In the original white paper we noted that corporate entities (Figure 7) often pay fixed to hedge future issuance (and so are short) and often receive fixed to transform fixed to floating rate debt (and so are long). The histogram for corporate entities matches these risk profiles, with the first currently larger than the second. Pension funds and insurance companies (Figures 5 and 6) concentrate in the fifth bucket (long), since they receive fixed in swaps to hedge the interest rate risk of their liabilities that has not been fully hedged by their corporate bond portfolios.

We continue to refine our data aggregation and calculation methodologies; this has resulted in some changes to the original September tables. One of the more significant changes is an improved identification of which swaps are cleared. This adjustment resulted in additional netting and lower final ENNs values: long and short total ENNs were above \$17tn in the prior publication, but they are now below \$15.5tn. We have also continued to improve our classification of legal entities into participant sectors, which has resulted in a slight change in the distribution of notional and ENNs in Tables 1 and 4.

Table 1 (updates original Table 2): Notional Amounts and ENNs by sector (\$ Trillions)

| (1) | <u>Notional Amounts</u> | | <u>Notional Amounts in 5-Year Equivalents</u> | | | | (8) |
|--------------------------------|-------------------------|--------------|---|--------------|--------------------|---------------------|-------------------|
| | (2) | (3) | (4) | (5) | (6) | (7) | |
| <u>Sector</u> | <u>Long</u> | <u>Short</u> | <u>Long</u> | <u>Short</u> | <u>ENNs (Long)</u> | <u>ENNs (Short)</u> | <u>ENNs (Net)</u> |
| Swap Dealer | 161.1 | 160.3 | 85.1 | 83.9 | 9.2 | 8.0 | 1.3 |
| Bank | 31.6 | 32.1 | 21.4 | 21.9 | 2.0 | 2.5 | -0.5 |
| Hedge Fund | 22.0 | 21.1 | 7.2 | 7.4 | 0.9 | 1.1 | -0.2 |
| Asset Manager | 4.8 | 4.8 | 3.4 | 3.5 | 1.0 | 1.2 | -0.1 |
| Insurance | 0.9 | 0.9 | 1.4 | 1.0 | 0.6 | 0.3 | 0.4 |
| Pension Fund | 1.8 | 1.6 | 2.3 | 1.7 | 0.9 | 0.3 | 0.6 |
| Corporate | 0.7 | 1.3 | 0.5 | 1.0 | 0.3 | 0.8 | -0.5 |
| Gov't/Quasi-Gov't | 1.1 | 1.3 | 0.6 | 1.2 | 0.1 | 0.6 | -0.5 |
| Unclassified | 0.6 | 1.5 | 0.4 | 0.7 | 0.1 | 0.5 | -0.4 |
| Total w/ CCP Adjustment | 224.9 | 224.9 | 122.5 | 122.5 | 15.4 | 15.4 | 0.0 |

Table 2 (updates original Table 4): Notional Amounts and ENNs by product type (\$ Trillions)⁶

| <u>Product</u> | <u>Notional Amounts</u> | | <u>Notional Amounts in 5-Year Equivalents</u> | |
|--------------------------------|-------------------------|--------------|---|--------------------|
| | <u>Long</u> | <u>Short</u> | <u>Long</u> | <u>ENNs (Long)</u> |
| Fixed-for-Floating Swaps | 120.0 | | 100.3 | 12.6 |
| FRAs | 42.2 | | 5.7 | 0.7 |
| OIS | 37.9 | | 9.7 | 1.2 |
| Swaptions | 13.6 | | 6.4 | 0.8 |
| Cap/Floor | 10.8 | | 0.2 | 0.0 |
| Total w/ CCP Adjustment | 224.2 | | 122.4 | 15.4 |

Table 3 (updates original Table 5): Notional Amounts and ENNs by currency (\$ Trillions)

| <u>Currency</u> | <u>Notional Amounts</u> | | <u>Notional Amounts in 5-Year Equivalents</u> | | <u>ENNs</u> | <u>ENNs</u> |
|--------------------------------|-------------------------|--------------|---|--------------|---------------|----------------|
| | <u>Long</u> | <u>Short</u> | <u>Long</u> | <u>Short</u> | <u>(Long)</u> | <u>(Short)</u> |
| USD | 92.2 | 92.4 | 46.0 | 45.9 | 7.3 | 7.3 |
| EUR | 62.8 | 62.8 | 42.8 | 42.8 | 4.3 | 4.3 |
| GBP | 23.6 | 23.6 | 12.1 | 12.0 | 1.5 | 1.4 |
| AUD | 8.3 | 8.4 | 2.9 | 3.0 | 0.3 | 0.3 |
| JPY | 7.3 | 7.3 | 6.1 | 6.1 | 0.6 | 0.6 |
| CAD | 7.2 | 7.2 | 2.8 | 2.8 | 0.2 | 0.2 |
| Other | 23.1 | 23.1 | 9.7 | 9.7 | 1.1 | 1.1 |
| Total w/ CCP Adjustment | 224.9 | 224.9 | 122.5 | 122.5 | 15.4 | 15.4 |

⁶ Product-level ENNs in this table simply allocate total ENNs in the same proportions as the distribution of product-level notional amounts.

Table 4 (updates original Table 6): Notional and ENNs by sector (\$ Trillions) and Clearing Ratios

| <u>Sector</u> | <u>Notional Amounts</u> | | | | <u>Notional Amounts in 5-Year Equivalents</u> | | | |
|--------------------------------|-------------------------|-----------------------|--------------|-----------------------|---|-----------------------|------------------------|-----------------------|
| | <u>Long</u> | <u>Cleared</u> (%) | <u>Short</u> | <u>Cleared</u> (%) | <u>ENNs</u> (Long) | <u>Cleared</u> (%) | <u>ENNs</u> (Short) | <u>Cleared</u> (%) |
| Swap Dealer | 161.1 | 84 | 160.3 | 84 | 9.2 | 35 | 8.0 | 26 |
| Bank | 31.6 | 91 | 32.1 | 92 | 2.0 | 56 | 2.5 | 70 |
| Hedge Fund | 22.0 | 78 | 21.1 | 84 | 0.9 | 51 | 1.1 | 73 |
| Asset Manager | 4.8 | 78 | 4.8 | 78 | 1.0 | 65 | 1.2 | 77 |
| Insurance | 0.9 | 60 | 0.9 | 59 | 0.6 | 53 | 0.3 | 53 |
| Pension Fund | 1.8 | 59 | 1.6 | 66 | 0.9 | 35 | 0.3 | 47 |
| Corporate | 0.7 | 19 | 1.3 | 13 | 0.3 | 8 | 0.8 | 7 |
| Gov't/Quasi-Gov't | 1.1 | 65 | 1.3 | 73 | 0.1 | 19 | 0.6 | 47 |
| Unclassified | 0.6 | 63 | 1.5 | 30 | 0.1 | 45 | 0.5 | 18 |
| Total w/ CCP Adjustment | 224.9 | 84 | 224.9 | 84 | 15.4 | 41 | 15.4 | 41 |

Figure 1: Histogram of Swap Dealer ENNs

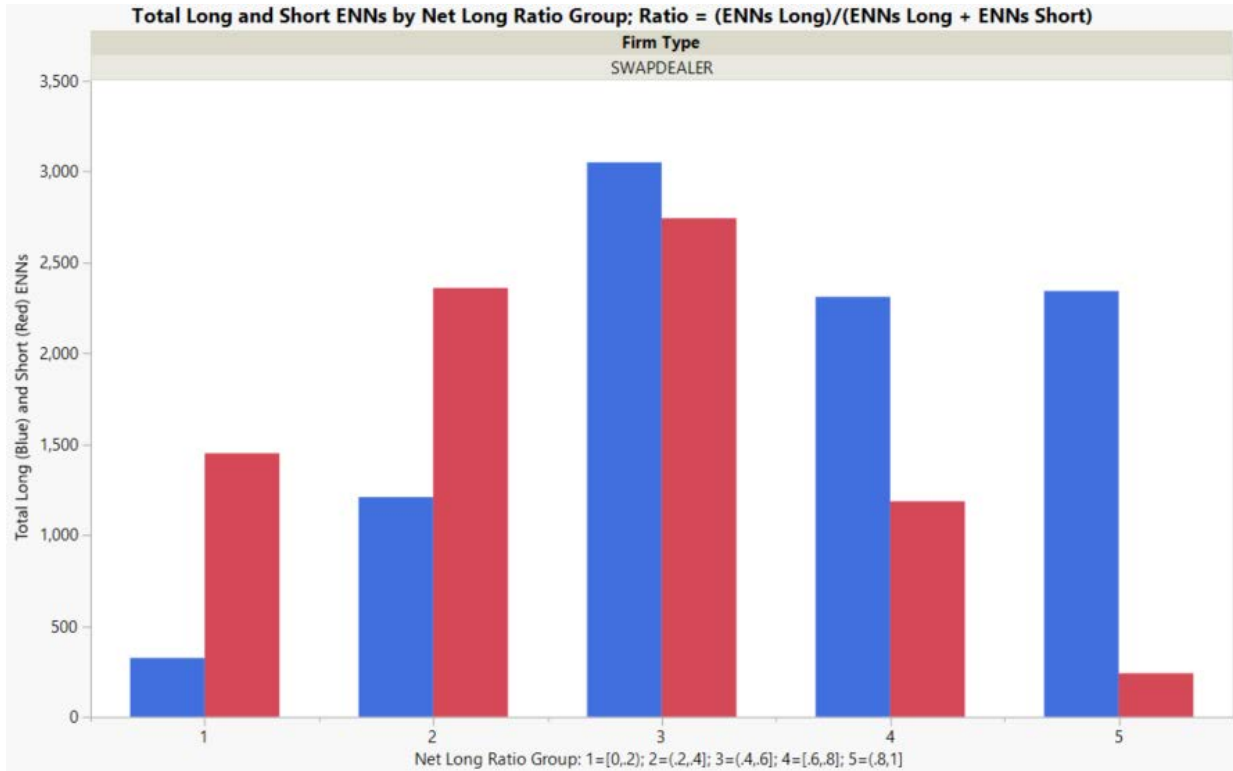


Figure 2: Histogram of Bank ENNs

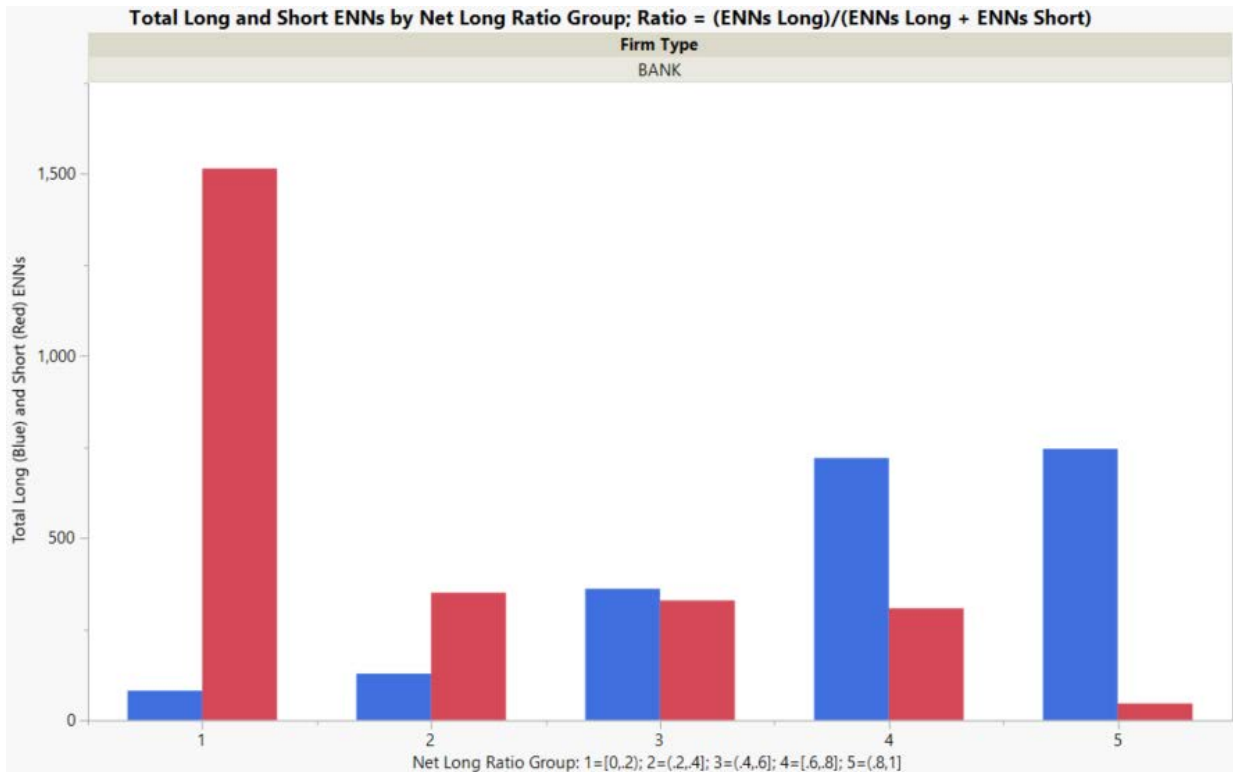


Figure 3: Histogram of Asset Manager ENNs

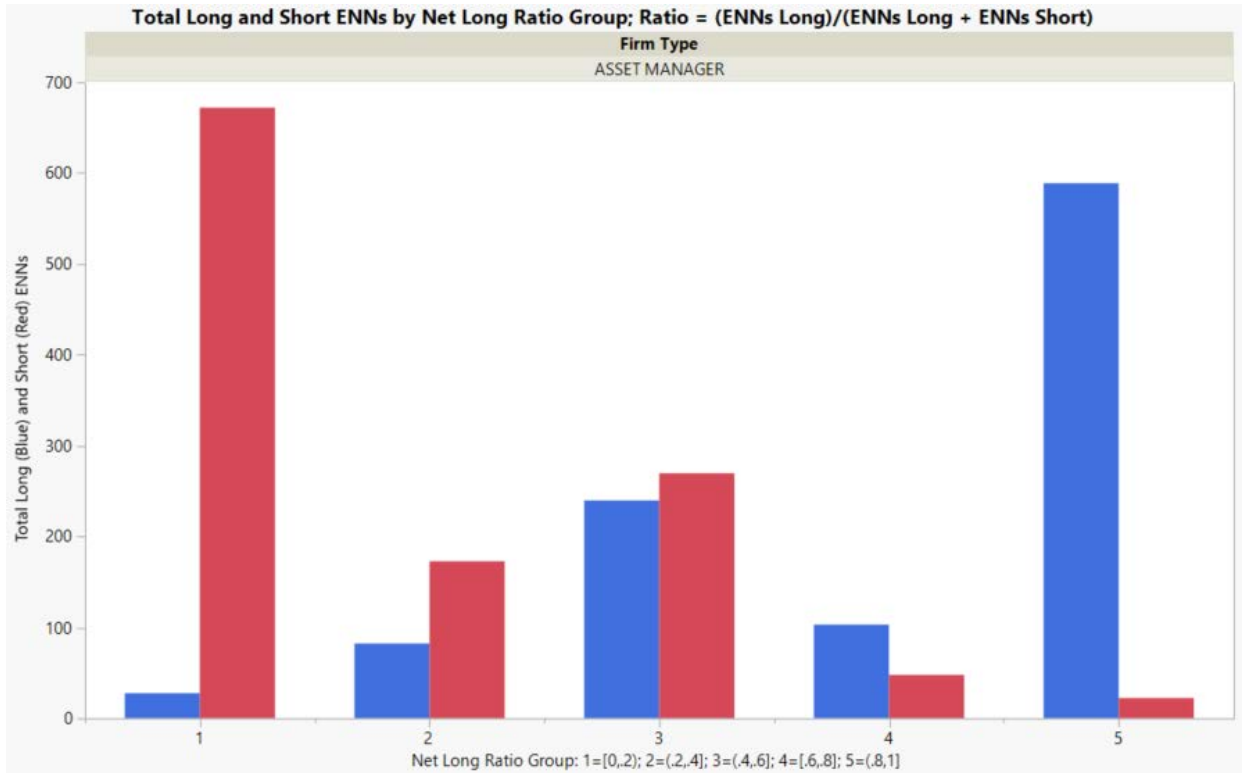


Figure 4: Histogram of Hedge Fund ENNs

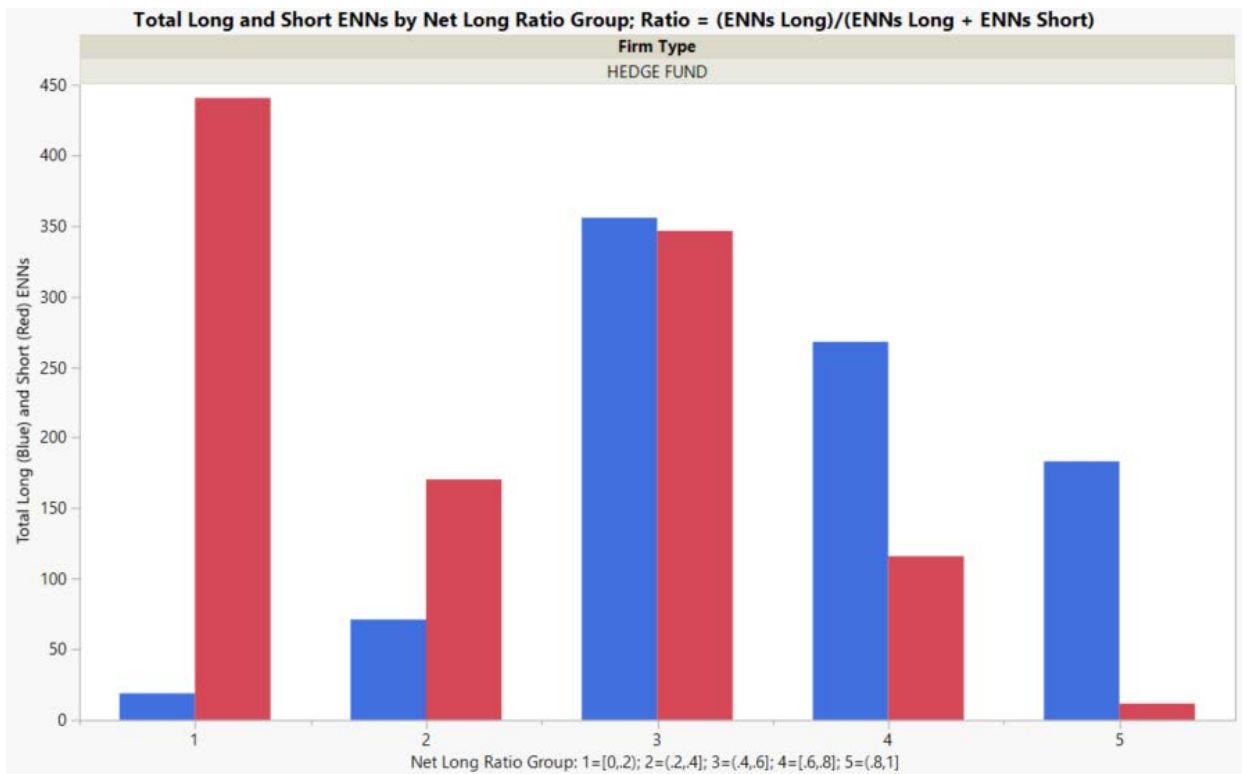


Figure 5: Histogram of Pension Fund ENNs

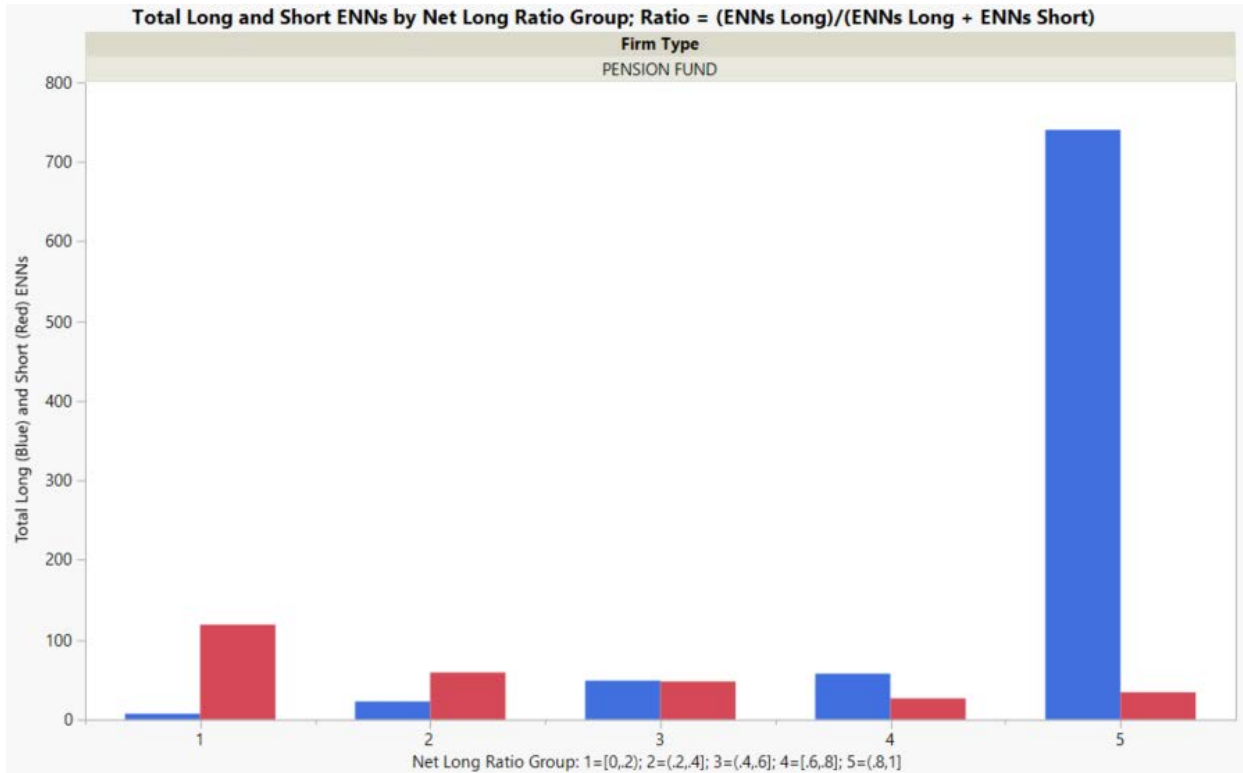


Figure 6: Histogram of Insurance Company ENNs

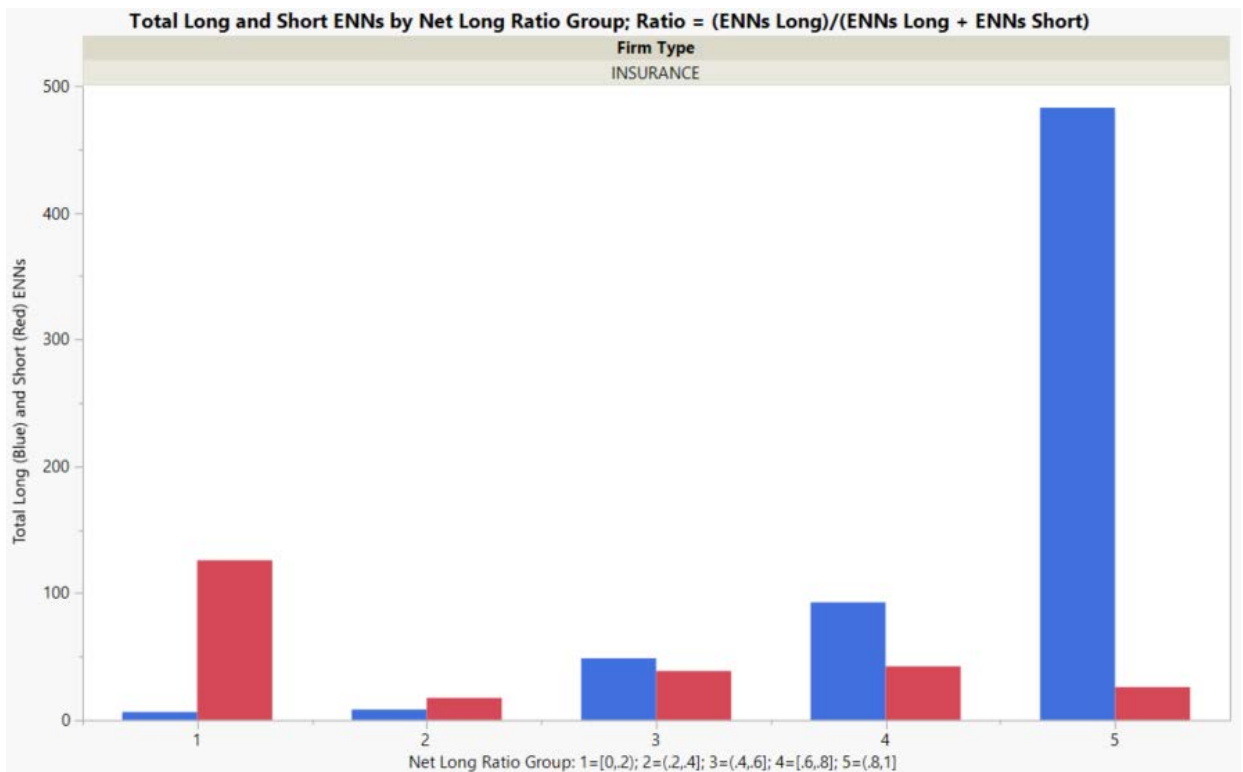


Figure 7: Histogram of Corporate ENNs

