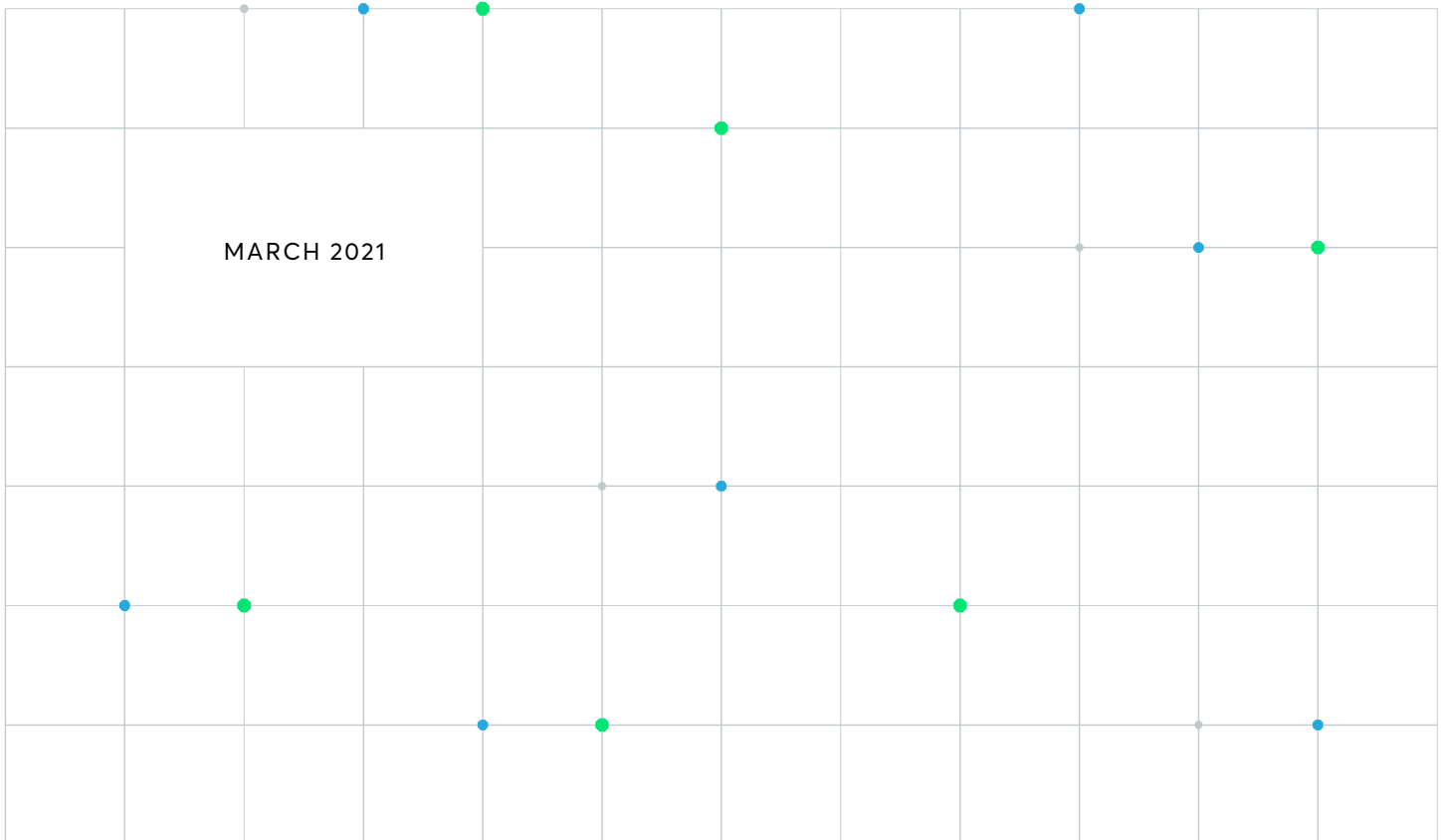


Treasury Cash Market Penetration (TCMP)

Shifting from Primary Dealer to TRACE Data

by Bobby Timberlake



Background on Cash Treasury Volume Data

One of the measures for assessing the growth of the Treasury Futures complex is the ratio of notional-weighted trade activity compared to underlying cash market volumes. Cash and futures markets are viewed as complementary, so cash volume is shown as a relative performance metric to serve as a proxy for overall level of market activity.

Traditionally this has been measured using the best available market data, a survey of Primary Dealers performed once a week by the Federal Reserve Bank of New York¹. Multiple reasonability checks indicated that this data was a fair representation of the market size, although it does not capture every trade. As of Q4 2020, there are 24 primary dealers, listed in the table at right.²

Updated Thursday afternoons, the US Treasury Coupons data contains the prior week's activity, running from Thursday through the following Wednesday on a one-week lag. For example, on Thursday, April 16, 2020, data was posted for Wednesday the 2nd through Thursday the 8th (the Ending dates in the table below).

Data is provided in buckets reasonably similar to the Treasury futures tenors, allowing a rough comparison at different parts of the curve, however the CME Group cash market penetration ratio is based on totals across all tenors. The weekly ratio fluctuates substantially, in particular due to the cyclical trading volumes of Treasury futures tied to the quarterly delivery cycle and roll.

NY Fed Primary Dealer List

Amherst Pierpont Securities LLC	HSBC Securities (USA) Inc.
Bank of Nova Scotia, New York Agency	Jefferies LLC
BMO Capital Markets Corp.	J.P. Morgan Securities LLC
BNP Paribas Securities Corp.	Mizuho Securities USA LLC
Barclays Capital Inc.	Morgan Stanley & Co. LLC
BofA Securities, Inc.	NatWest Markets Securities Inc.
Cantor Fitzgerald & Co.	Nomura Securities International, Inc.
Citigroup Global Markets Inc.	RBC Capital Markets, LLC
Credit Suisse AG, New York Branch	Societe Generale, New York Branch
Daiwa Capital Markets America Inc.	TD Securities (USA) LLC
Deutsche Bank Securities Inc.	UBS Securities LLC.
Goldman Sachs & Co. LLC	Wells Fargo Securities, LLC

¹ Primary dealer statistics: <https://www.newyorkfed.org/markets/gsds/search#data-PDTRGSC>

² Primary dealer list: <https://www.newyorkfed.org/markets/primarydealers>

As an example of this, below are an excerpt of Primary Dealer cash totals, Futures totals, and the corresponding TCMP ratios following the March 2020 price volatility spike. The significant weekly swings can be seen in the rightmost column:

TH-W ENDING:	PRIMARY DEALER (PD) CASH ADV (\$B)	FUTURES ADV (\$B)	FUTURES % OF CASH
3/4/20	\$876	\$1,206	138%
3/11/20	\$738	\$902	122%
3/18/20	\$638	\$632	99%
3/25/20	\$716	\$465	65%
4/1/20	\$700	\$394	56%
4/8/20	\$548	\$319	58%
4/15/20	\$386	\$285	74%
4/22/20	\$349	\$274	79%
4/29/20	\$435	\$257	59%
5/6/20	\$400	\$294	73%
5/13/20	\$406	\$339	83%
5/20/20	\$364	\$382	105%
5/27/20	\$406	\$1290	318%

Because of this, the TCMP ratio is tracked on a rolling 13-, 26-, and 52-week basis, and reported as an annual percentage going back to 2004. Recent growth in the futures saw the ratio cross 100% near the beginning of 2018, and above 120% in early 2020.

FINRA TRACE data

In July 2017, FINRA began collecting daily Treasury transaction data from all of its registered broker-dealers, a broader population of market participants than Primary Dealers. As of March 2021, the broker-dealers number approximately 3500³. Transactions are tracked using FINRA's Trade Reporting and Compliance Engine (TRACE) data which has been used for Corporate Bonds for many years. The initial period of Treasury TRACE data collection was visible only to regulators.

In fall 2018, regulators provided some analysis publicly in partnership with the Fed's blog, Liberty Street Economics⁴. This sample covered a 12-month period from August 2017 to July 2018. For Treasury notes and bonds (also called Coupons), the ADV for this period was \$472 billion as reported by TRACE. The Primary Dealer weekly average for this same period was \$393 billion. This suggested TRACE totals exceed PD numbers by **20%** and served as our initial baseline.

In March 2020, FINRA began making weekly reports available to the public⁵, including data bucketed by tenor and execution type. This data is typically posted on Tuesdays, for the previous calendar week of Monday through Friday. For example, on Tuesday, April 21, 2020, data would be posted for Monday the 13th through Friday the 17th. The two-day difference in measurement periods relative to the Primary Dealer data (which has periods of Thursday to Wednesday) mean that the two datasets cannot be precisely compared with one another, although a visual inspection suggests they are closely correlated over longer time periods.

³ FINRA Regulated Broker-Dealers: <https://www.finra.org/about/firms-we-regulate/broker-dealer-firms-we-regulate>

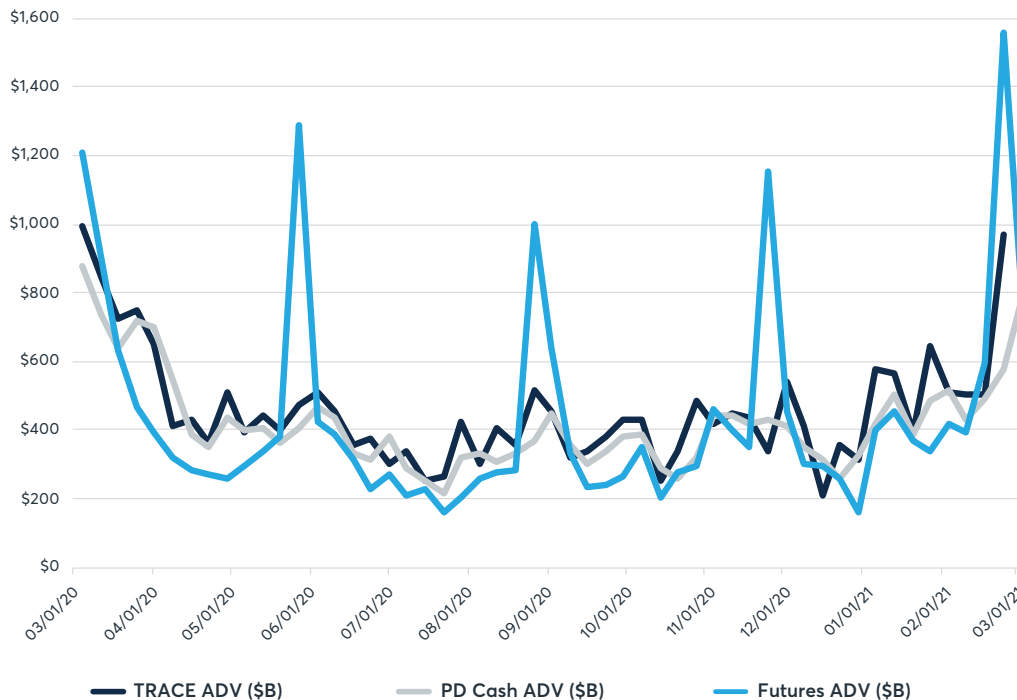
⁴ Liberty Street: <https://libertystreeteconomics.newyorkfed.org/2018/09/unlocking-the-treasury-market-through-trace.html>

⁵ TRACE Treasury Aggregates: <https://www.finra.org/filing-reporting/trace/data/trace-treasury-aggregates>

NEW TRACE DATA		LEGACY PRIMARY DEALER DATA	
M-F ENDING	TRACE ADV (\$B)	TH-W ENDING	PD ADV (\$B)
3/6/2020	\$995	3/4/2020	\$876
3/13/2020	\$845	3/11/2020	\$738
3/20/2020	\$722	3/18/2020	\$638
3/27/2020	\$750	3/25/2020	\$716
4/3/2020	\$649	4/1/2020	\$700
4/10/2020	\$413	4/8/2020	\$548
4/17/2020	\$433	4/15/2020	\$386
4/24/2020	\$364	4/22/2020	\$349
5/1/2020	\$512	4/29/2020	\$435
5/8/2020	\$395	5/6/2020	\$400
5/15/2020	\$445	5/13/2020	\$406
5/22/2020	\$400	5/20/2020	\$364
5/29/2020	\$475	5/27/2020	\$406

Contemporary results from March 2020 to Feb 2021 shows a **10%** premium for TRACE over Primary Dealer data. There is substantial week-to-week noise due to the misaligned dates, volume trends, and particularly around the roll periods in the 10 days preceding delivery month where futures volumes are outsized, shown in the chart below.

Primary Dealer Cash, TRACE Cash, and Futures ADV



Introducing the New Treasury Cash Market Penetration (TCMP) Methodology

With nearly two years of side by side data, we used the following methodology to create synthetic TRACE values for historical comparison:

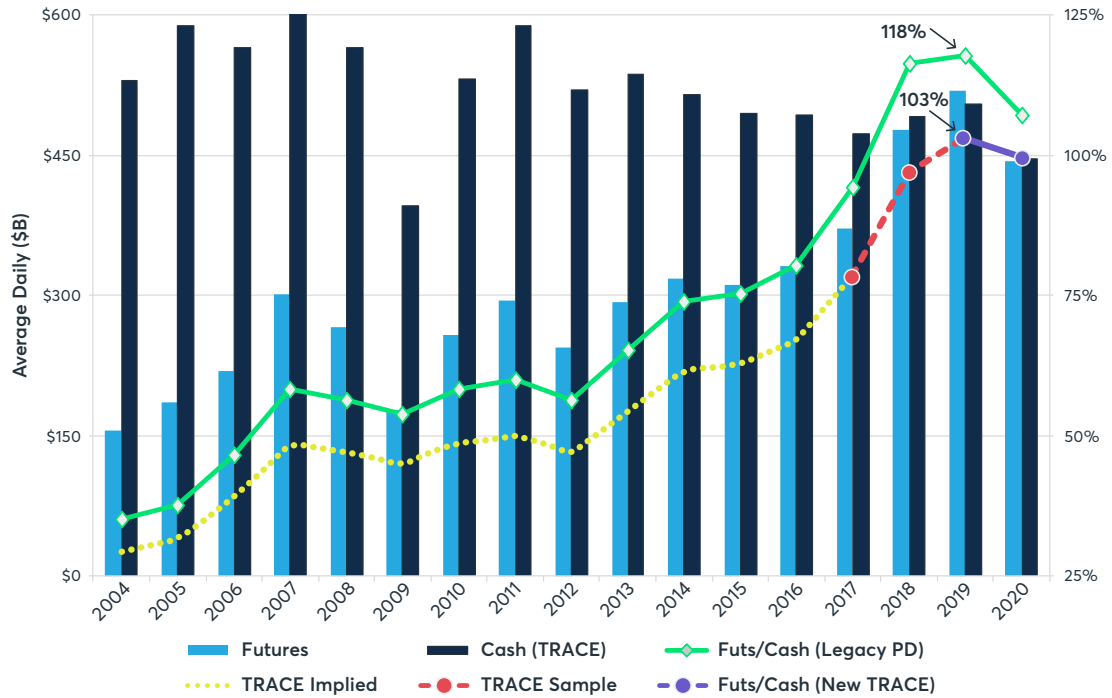
- Before 2017, scale PD values upward by the 20% premium in the 2017-2018 sample
- For 2017 & 2018, perform a weighting of scaled PD data and actual TRACE data
- For 2019, scale PD values by 14.25% (average of sample & current TRACE premiums)
- For 2020 and beyond, use actual TRACE data, which showed a 10% premium for the initial 12 months after weekly publication began

These time intervals are color-coded in the chart below.

DAILY NOTIONAL (\$B)					
YEAR	FUTURES	CASH (PD)	FUTURES/CASH (PD)	CASH (TRACE)	FUTURES/CASH (TRACE)
2004	\$155	\$441	35%	\$529	29%
2005	\$185	\$490	38%	\$588	31%
2006	\$219	\$471	47%	\$565	39%
2007	\$301	\$515	58%	\$618	49%
2008	\$266	\$471	56%	\$565	47%
2009	\$177	\$330	54%	\$396	45%
2010	\$257	\$442	58%	\$531	48%
2011	\$294	\$490	60%	\$588	50%
2012	\$244	\$433	56%	\$520	47%
2013	\$292	\$447	65%	\$536	54%
2014	\$317	\$428	74%	\$514	62%
2015	\$311	\$412	75%	\$494	63%
2016	\$331	\$411	80%	\$493	67%
2017	\$372	\$394	94%	\$473	79%
2018	\$477	\$410	116%	\$492	97%
2019	\$519	\$441	118%	\$504	103%
2020	\$444	\$414	107%	\$445	100%

This leads to a reduction in the Futures/Cash RCMP ratio. In the chart below, the dashed line is the new TRACE measure for the 2017-2018 sample data, with a dotted line for extrapolated values before that, and a solid line for contemporary data after.

CBOT Treasury Futures Volumes vs. Cash Treasury Volumes



The drop is to be expected, since the shift to a more thorough measure of cash trading volumes inflates the denominator in our futures/cash percentage. However, it should provide a more complete picture of the relative distribution of trading activity going forward.



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