
Interest, Debt and SOFR Update

September 2018

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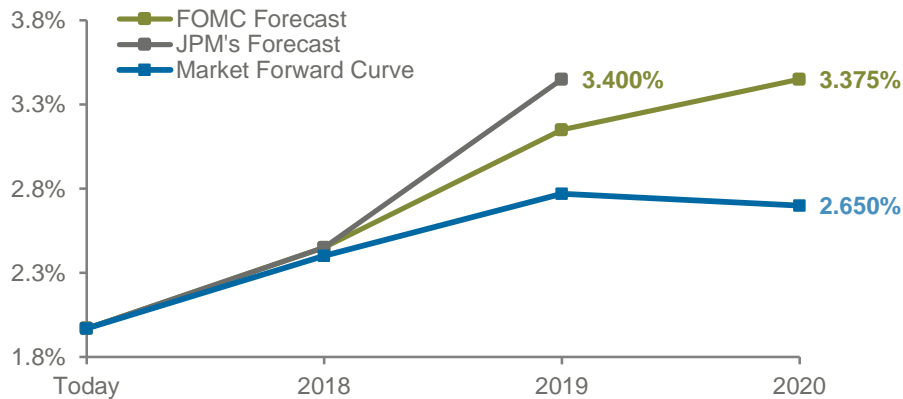
J.P. Morgan Research expects Treasury yields to rise and the Fed to hike rates two more times in 2018 and four times in 2019

J.P. Morgan interest rate forecasts

	Current	3Q'18	4Q'18	1Q'19	2Q'19
Fed Funds Target Rate (JPM)	2.00%	2.25%	2.50%	2.75%	3.00%
Consensus		2.25%	2.50%	2.70%	2.90%
3m LIBOR (JPM)	2.33%	2.35%	2.70%	3.10%	3.25%
Consensus		2.43%	2.63%	2.79%	2.97%
2Y UST (JPM)	2.71%	2.85%	3.05%	3.20%	3.30%
Consensus		2.68%	2.83%	2.94%	3.04%
5Y UST (JPM)	2.82%	3.00%	3.10%	3.25%	3.35%
Consensus		2.85%	2.95%	3.05%	3.14%
10Y UST (JPM)	2.94%	3.10%	3.20%	3.35%	3.40%
Consensus		2.97%	3.09%	3.19%	3.26%
30Y UST (JPM)	3.10%	3.20%	3.25%	3.35%	3.40%
Consensus		3.19%	3.30%	3.39%	3.47%

Source: J.P. Morgan Research Forecasts (9/7/18) and Bloomberg Consensus Forecasts (9/10/2018). JPM Fed Funds forecast indicate 1 hike each quarter

FOMC dots vs. market expectations



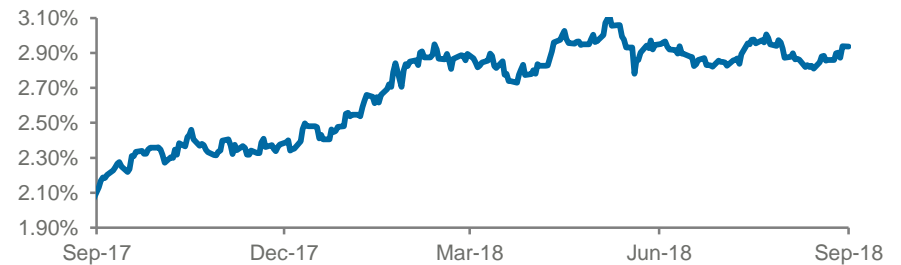
Source: FOMC year-end Fed Funds Rate projections, 6/13/18. Market forward curve, 9/10/18. JPM forecasts: 2 more hikes in 2018 and 4 in 2019

Potential interest rate catalysts

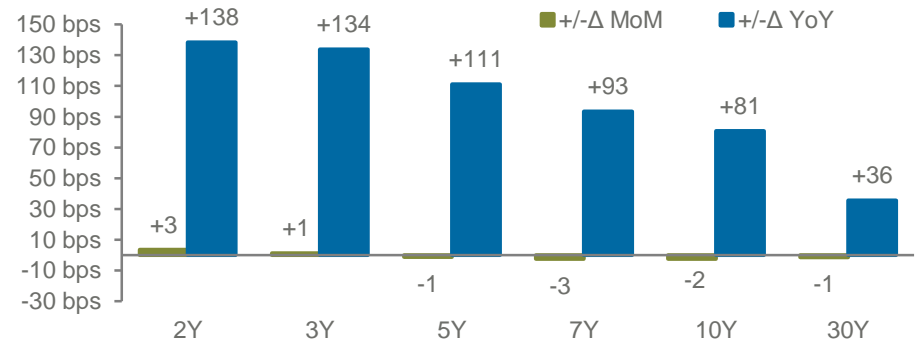


- Markets begin to price an increased number of Fed hikes
- Unemployment rate drifts lower as wages increase
- Upward surprise in inflation data driven by commodity prices
- Increased UST supply as budget deficit increases
- Fed slows the pace of hiking if inflation disappoints
- Tax / infrastructure plan less meaningful than anticipated
- Trade war / trade tensions increase
- Geopolitical instability

Historical 10Y UST yield



MoM and YoY changes in UST yields



Source: Bloomberg

Overview of financing alternatives

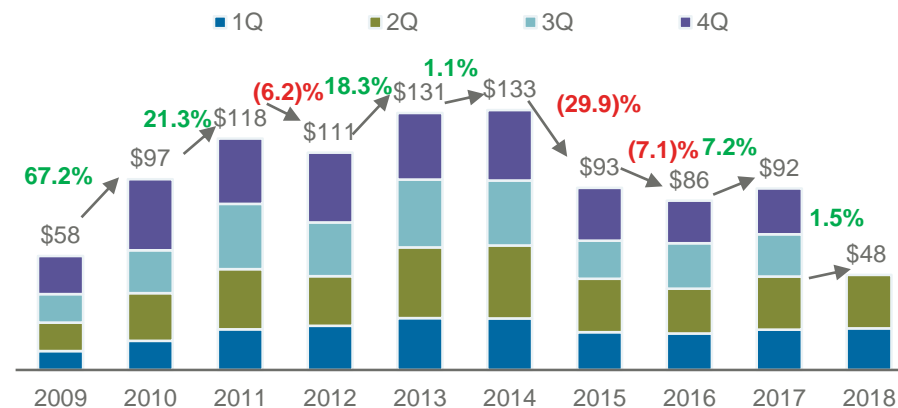
	Public Ratings Not Required			Public Ratings Required		Equity/Equity Linked	
	ABL	Pro rata	Private Placement	Term Loan B	High Yield	Convertible Debt	Equity
Ranking	Senior	Senior	Senior	Senior	Senior or Subordinated	Senior or Subordinated	N/A
Secured	A/R, inventory and PPE	Depends on overall credit profile	Secured or Unsecured	Secured	Typically unsecured	Unsecured	N/A
Investor base	Relationship banks	Relationship banks	U.S. insurance companies	Institutional	Institutional	Institutional	Institutional
Ratings	None required	None required	None required	Moody's and S&P	Moody's and S&P	None required	None required
Minimum size	None	None	\$50-\$500 million	Minimum \$175 million	Minimum \$200 million	\$50 million	Flexible depending on need
Tenor	3 to 5 years	3 to 5 years	Up to 15 years	6 to 7 years	Up to 10 years	3 to 30 years	N/A
Floating/Fixed	Floating per LIBOR (grid-based)	Floating per LIBOR (grid-based)	Fixed	Floating per LIBOR	Fixed	Predominantly fixed	N/A
Amortization	None	Customizable; can be back-end loaded or straight-line	None required but can be customized	1% per year (bullet payment at maturity)	None	None	N/A
Execution timeline	6-7 weeks	6-7 weeks	6-8 weeks	6-8 weeks	6-8 weeks	2-3 weeks	-2 weeks
SEC reporting	None	None	None	None	Yes	Yes	Yes
Financial covenants	Springing	Maintenance based	To be in line with bank facility	Maintenance based (Covenant-lite)	Incurrence based	None	N/A
Benefits	<ul style="list-style-type: none"> ✓ Lowest cost ✓ Increased flexibility with springing financial covenants ✓ No public ratings required 	<ul style="list-style-type: none"> ✓ Lowest cost and simpler execution ✓ No public ratings required 	<ul style="list-style-type: none"> ✓ Fast certain execution with high degree of customization ✓ No public disclosure ✓ No amortization pressure ✓ No ancillary business required 	<ul style="list-style-type: none"> ✓ Typically pre-payable at par ✓ De minimus amortization ✓ Longer tenor vs. TLA ✓ Access to deep and liquid investor base when market is open 	<ul style="list-style-type: none"> ✓ No amortization pressure ✓ Flexible incurrence-based covenants ✓ Provides ability to increase total leverage 	<ul style="list-style-type: none"> ✓ Low cash coupon ✓ No covenants ✓ No ratings required ✓ Fast execution ✓ Provides ability to increase total leverage 	<ul style="list-style-type: none"> ✓ Investors receptive to acquisition-driven offerings ✓ Ability to articulate acquisition rationale ✓ Relatively efficient execution
Considerations	<ul style="list-style-type: none"> ✗ Increased reporting requirements ✗ Field exams and appraisals ✗ Capacity limited to borrowing base ✗ Collateral required 	<ul style="list-style-type: none"> ✗ Market limited in size ✗ Amortization ✗ Financial covenants ✗ Limited senior leverage tolerance ✗ Lenders focused on free cash flow generation 	<ul style="list-style-type: none"> ✗ Maintenance-based financial covenants (pari passu with banks) ✗ Limited pre-payment flexibility with a make-whole premium ✗ More difficult to amend agreement 	<ul style="list-style-type: none"> ✗ Public ratings required ✗ More volatile market conditions ✗ Inclusion of LIBOR floor typical in current market ✗ Spread premium over bank financing 	<ul style="list-style-type: none"> ✗ Higher cost of execution ✗ Road show required ✗ More volatile market conditions ✗ Public ratings required ✗ Non-callable in early years/ever ✗ Disclosure requirements 	<ul style="list-style-type: none"> ✗ Some equity dilution if stock price rises above conversion price (can be offset by net-share settlement and call spread overlay) ✗ Disclosure requirements 	<ul style="list-style-type: none"> ✗ Dilutive to existing shareholders ✗ Relatively higher cost of capital ✗ Risk of temporary overcapitalization if acquisition is not consummated ✗ Disclosure requirements

While the commercial bank loan market continues to be borrower friendly, certain regulatory trends may influence future financing structures

Commentary

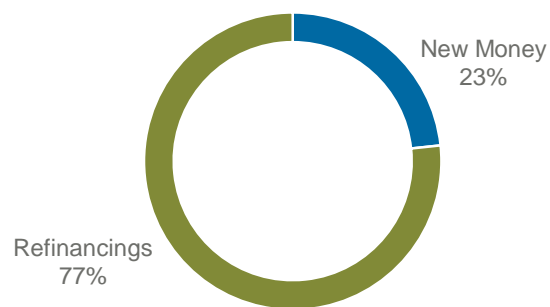
- While non-sponsored volume was slightly up year-over-year, the number of deals was down 8% in 1H18
- 2Q18 non-sponsored issuance of \$27.3B was up 29% from 1Q18 and was flat relative to 2Q17
- 1H18 non-sponsored issuance of \$48.5B was just slightly up from 1H17's \$47.8B
- Refinancings surged in 2Q18 to highest level in 3.5 years, new money stayed at low levels
 - 2Q18 non-sponsored refis of \$21.3B, were up 35% from 1Q18 and up 20% from 2Q17
 - 2Q18 non-sponsored new money issuance reached \$5.9B, up 11% from 1Q18 but down 37% from 2Q17
- There is increased optimism in the market for positive economic growth, which could drive increased borrower activity; however, it is coupled with uncertainty over energy prices, the effect of rising interest rates and healthcare and international trade laws

Non-sponsor quarterly issuance (\$bn)



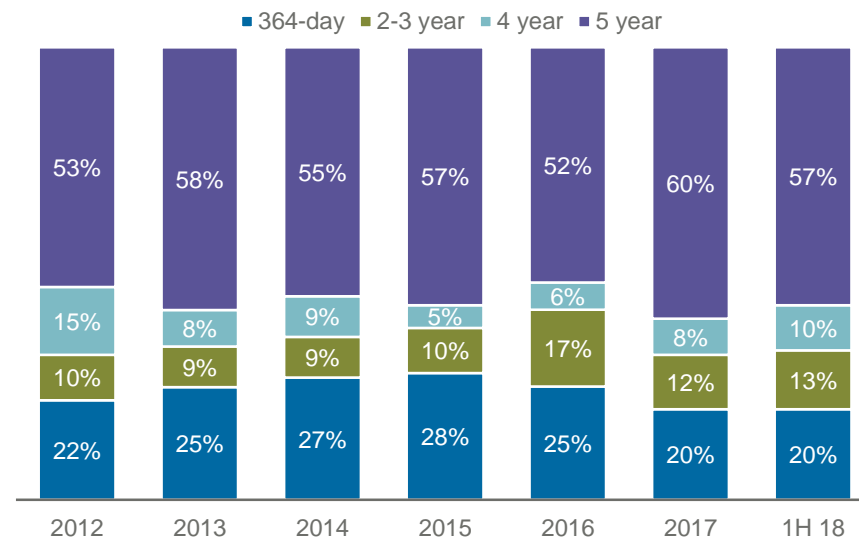
Source: Thomson Reuters
Note: Represents deal sizes less than or equal to \$500.0 million

Non-sponsored new money and refinancings



Source: Thomson Reuters

Tenor mix (\$ volume)



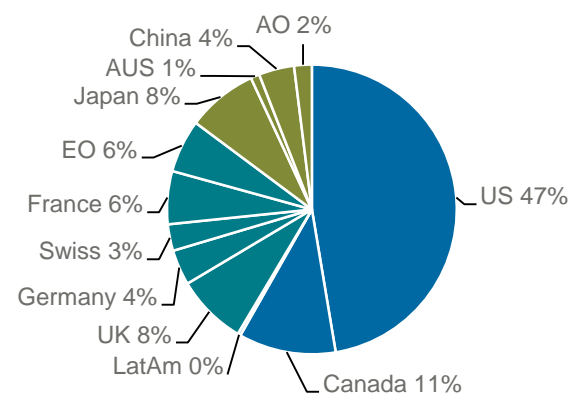
Source: Dealogic (6/30/18)

Lender participation rates are close to historical highs

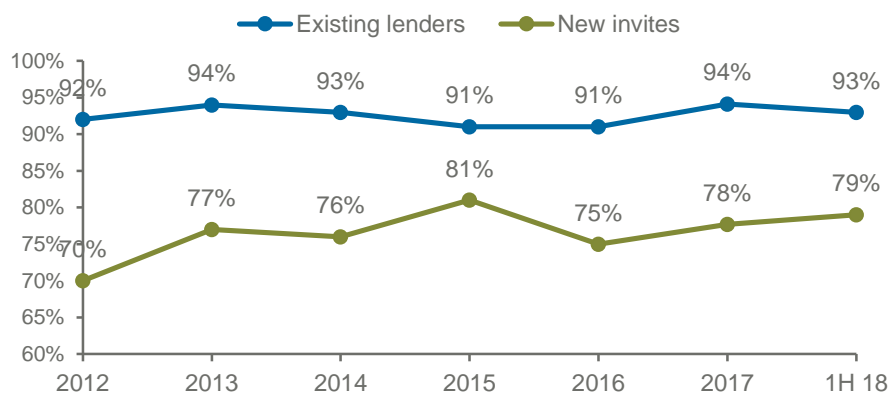
Commentary

- Overall, lender tone remains constructive, with lending decisions driven largely by relationship strength and future ancillary business opportunities
 - Potential changes to bank regulations continue to drive capital allocation decisions
 - Some banks have undergone strategic reviews and decided to exit certain businesses, which in turn has reduced relationship profitability and appetite for participation in credit facilities
- Changing regulation can also affect the profitability of lines of business unrelated to a credit facility
 - Individual banks are bound by different regulatory constraints, in some cases with national regulations being the most restrictive and overshadowing global regulation

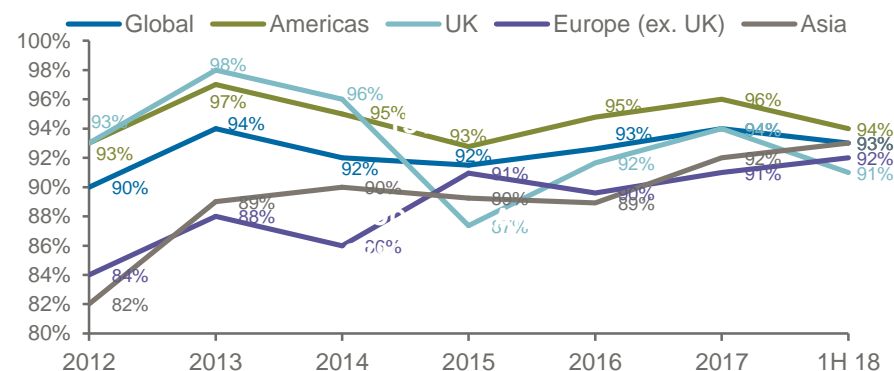
Hit rates (in JPM led deals)



Regional hit rates for existing lenders (in JPM led deals)



1H 18 participation in JPM led deals



Source: J.P. Morgan U.S. general corporate investment grade loan transactions

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Leveraged loan market update

Key themes

- Leveraged loans currently have 40 deals in market for \$24.9bn, with ~68% of dollars in market driven by new money supply
 - 1 deal priced for \$150mm in the U.S. leveraged loan market last week
 - 742 deals have priced for \$560.4bn (62% Refi) YTD
 - U.S. in-market calendar stands at 40 deals for \$24.9bn
 - MTD 2 US CLOs have priced totaling \$0.9bn (\$0.0bn of which was ex-refi)
- Leveraged loan funds reported an inflow totaling \$151mm for the holiday shortened week ending September 5th, which is comparable to the prior \$158mm inflow
 - The past week's inflow incorporates \$140mm of inflows for actively managed funds and \$11mm of inflows for the Loan ETFs
 - Inflows year-to-date for loan mutual funds totaling \$15.0bn (\$729mm ETF) compare to a \$13.1bn inflow in 2017

Recent trends

LL demand (\$bn)

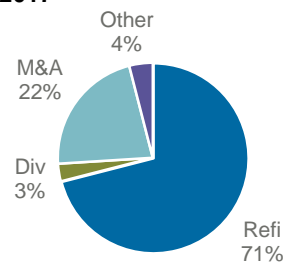
	YTD		FY	
	'18	'17	'17	'16
Flows	15.0	17.5	13.1	9.2
CLOs	204.3	194.7	282.2	111.8

New issue volume (\$bn)

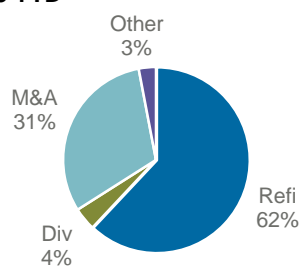
	YTD		FY	
	'18	'17	'17	'16
Refi	348.1	492.2	695.7	203.3
Ex-Refi	212.3	199.8	286.7	284.7
Total	560.4	692.0	982.4	488.0

Use of proceeds

FY 2017



2018 YTD



JPM LL index trading prices



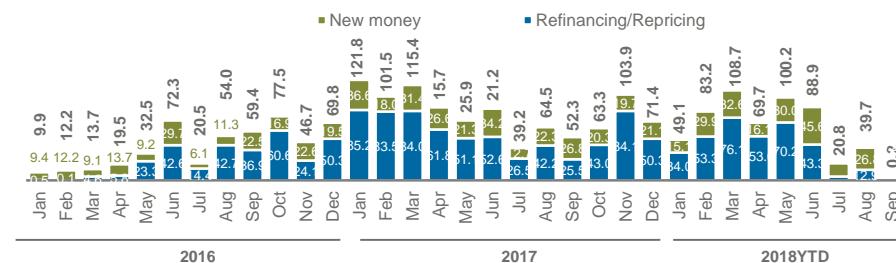
JPM LL index yields (3yr)



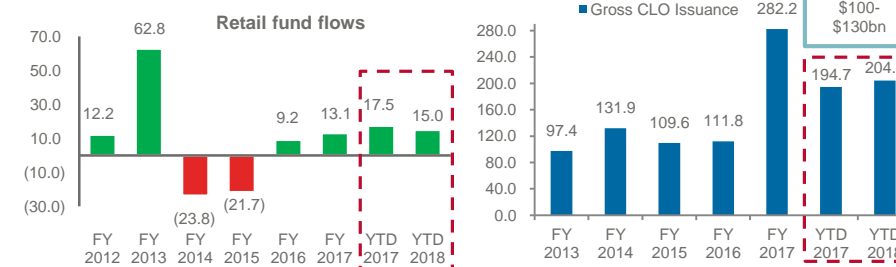
Source: JPMLLI (as of 09/07/18)

Source: JPMLLI (as of 09/07/18)

Monthly leveraged loan new issuance (\$bn)



LL demand remains robust (\$bn)



Source: Lipper (as of week ending 09/05/18)

High yield market update

Key themes

- As expected, leveraged finance markets had an active start back from the summer slowdown, and JPMorgan led the charge
 - The heavy new money calendar began to launch to the market, with ~30bn of the ~\$85bn forward pipeline identified as of last week already launched between the loan and bond markets
 - J.P. Morgan has led all of the high yield supply that has cleared / launched since the holiday weekend, and is a bookrunner / lead left on the two largest term loan transactions in market between Thomson Reuters / Akzo Nobel
- High-yield bond funds reported an outflow totaling \$639mm for the holiday shortened week ending September 5th, only the second outflow for the HY asset class in the past nine weeks
 - HY ETFs reported outflows totaling \$398mm and Actively Managed HY Funds reported outflows totaling \$242mm
 - Outflows for HY bond funds total \$23.9bn YTD or 7.9% of beginning period AUM, including \$20.6bn of outflows for actively managed funds (or 7.8% of AUM) and \$3.3bn of outflows for HY ETFs (6.4% of AUM)

Recent trends

HY fund flows (\$bn)

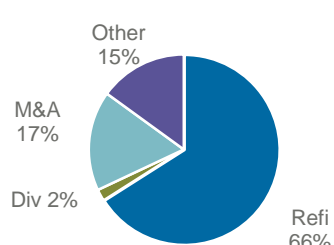
	YTD		FY	
	'18	'17	'17	'16
AMF	(20.6)	(13.9)	(22.8)	4.9
ETF	(3.3)	1.8	2.2	4.7
Total	(23.9)	(12.1)	(20.6)	9.6

New issue volume (\$bn)

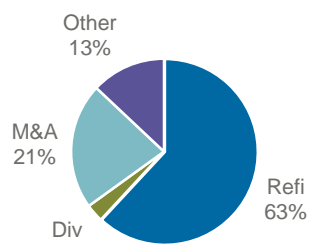
	YTD		FY	
	'18	'17	'17	'16
Refi	90.8	127.5	188.7	143.9
Ex-Refi	53.7	55.4	97.2	85.4
Total	144.5	182.9	285.8	229.3

Use of proceeds

FY 2017



2018 YTD

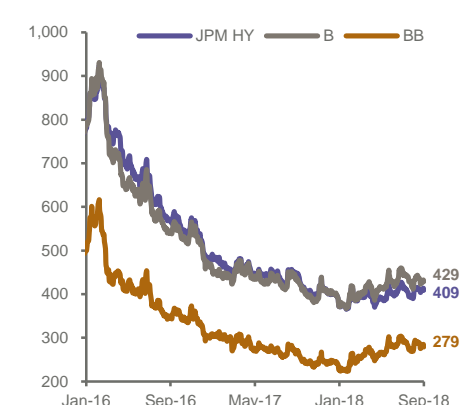


JPM high yield YTW index



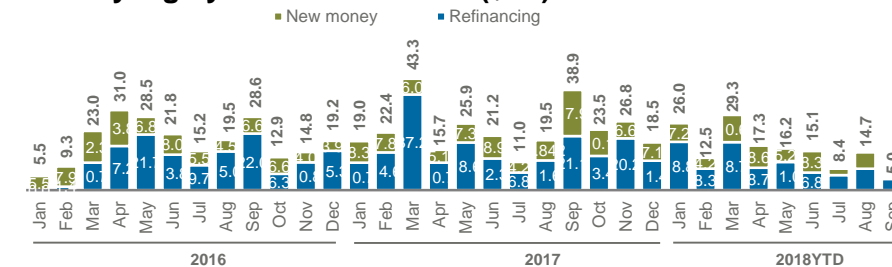
Source: JPMHYI (as of 09/07/18)

JPM high yield STW index

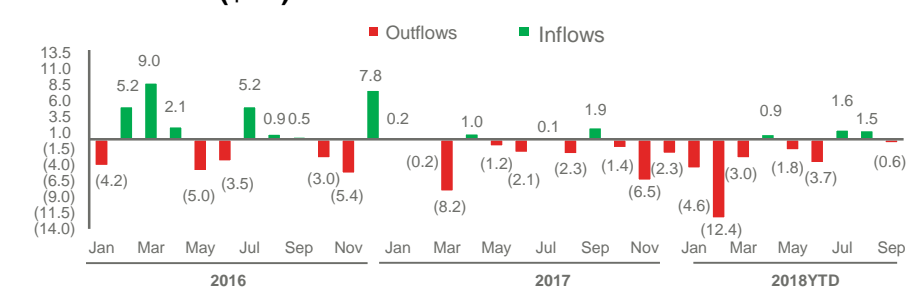


Source: JPMHYI (as of 09/07/18)

Monthly high yield new issuance (\$bn)



HY fund flows (\$bn)

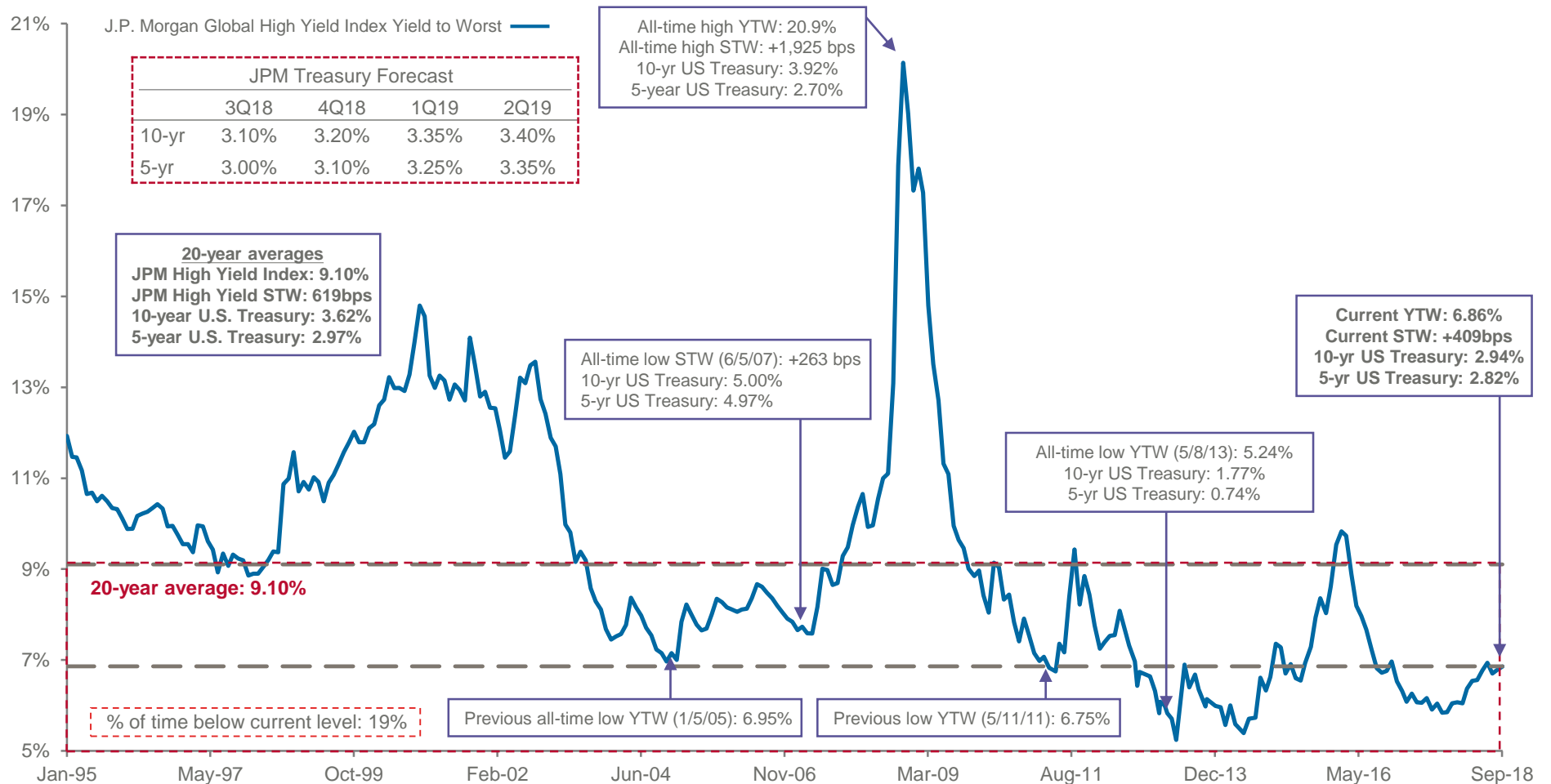


Source: Lipper (as of week ending 09/05/18)

Rates are now below historical averages

Despite the recent volatility in the high yield market, yields are now below historical averages

JPM High Yield Index Yield to Worst



Source: J.P. Morgan High Yield Research

Transitioning from LIBOR to a new benchmark rate

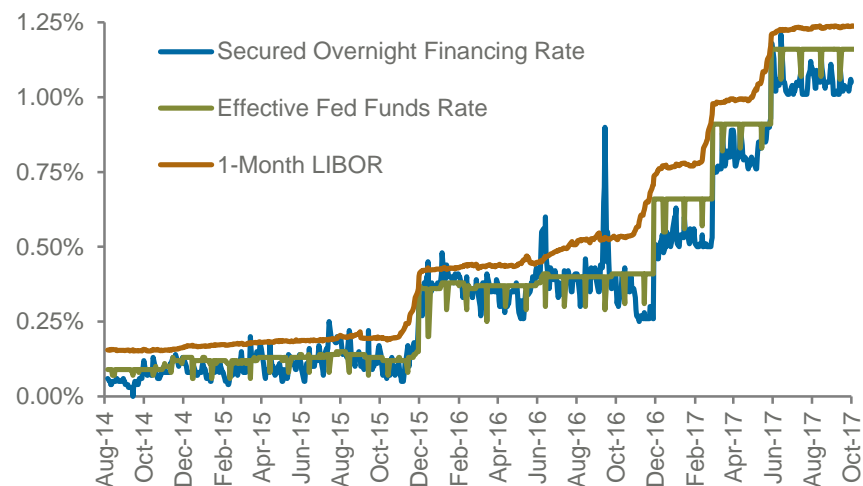
Secured Overnight Financing Rate (“SOFR”) overview and implementation timeline

Overview

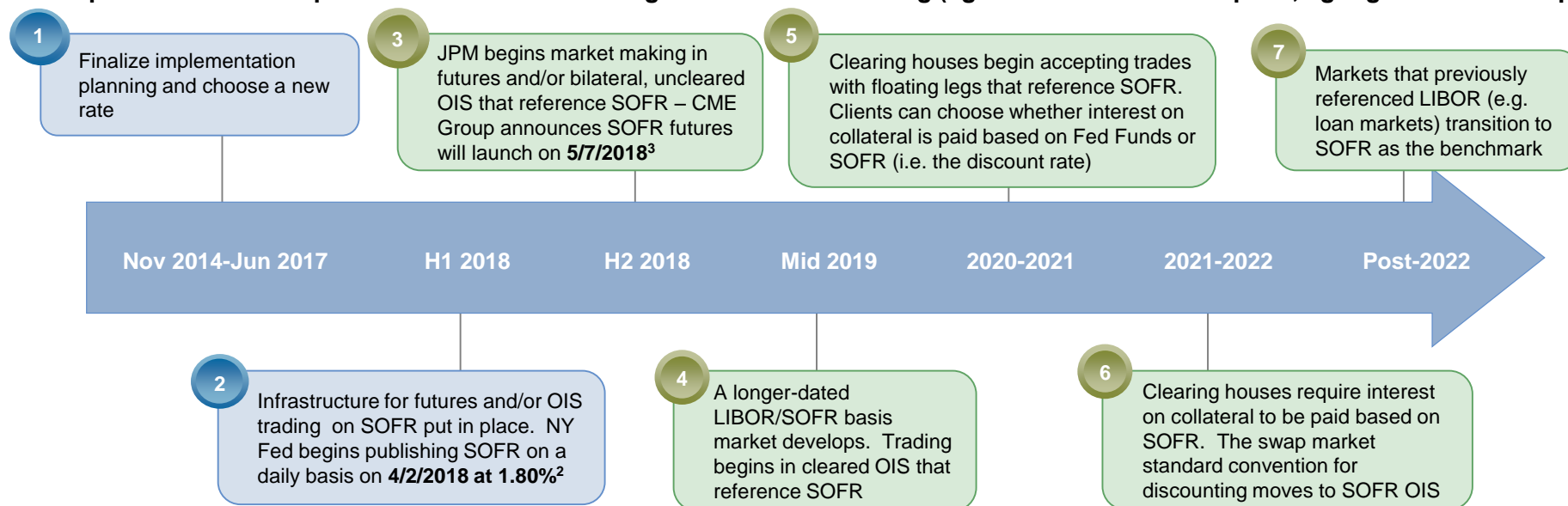
- In June 2017, the Alternative Rate Reference Committee identified the SOFR as its preferred alternative to USD Libor, with the goal of replacing LIBOR in both the derivative and funding markets
- SOFR represents where banks can fund overnight on a collateralized basis and is published daily at 8:00am EST by the Federal Reserve Bank of New York, along with certain statistics regarding market volume
- The rate is calculated as a volume-weighted median of tri-party repo transactions, general collateral finance repo transactions, and bilaterally settled Treasury repo transactions cleared by the Fixed Income Clearing Corporation
- From the above, the NY Fed will exclude all bilateral transactions with rates below the 25th volume-weighted percentile rate
- This trimming process aims to eliminate outliers (i.e. securities trading "special")
- Work is ongoing to create 1m, 3m, and 6m term indices

Source: J.P. Morgan Research, *US Fixed Income Markets 2018 Outlook*, 11/22/2017, jpm.com

Historical comparison of SOFR vs. Fed Funds and 1m LIBOR



Basic steps envisioned in a paced transition and JPMorgan’s estimate of timing (light blue indicates complete, light green indicates pending)



Note: Timeline is subject to change

¹J.P. Morgan Research, *US Fixed Income Markets 2018 Outlook*, 11/22/2017, jpm.com

²Federal Reserve Bank, *Statement Regarding the Initial Publication of Treasury Repo Reference Rates*, 2/28/2018, newyorkfed.org, Bloomberg

³CME Group, *CME Group Announces New SOFR Futures Launch Date and Contract Specifications*, 3/1/2018, cmegroup.com

Frequently Asked Questions

FAQs

■ Why move to a new benchmark rate?

- As a consequence of the decline in wholesale unsecured short-term funding by banks, price discovery in unsecured short-term markets is less useful in determining LIBOR submissions. Transaction based submissions account for less than half of the submissions for USD 1-week and longer term LIBOR¹. In turn, the credibility and reliability of the benchmarks that reference these markets are affected
 - The market segments covered by SOFR in 3Q17 had an average daily volume of \$809bn, compared to \$213bn for OBFR (Overnight Bank Funding Rate), \$93bn for Fed funds and only \$2bn for 3 Month CP/CD²

■ Who determines what rate will become the new benchmark?

- In November 2014 the Financial Stability Board and Financial Stability Oversight Council convened the Alternative Reference Rates Committee (“ARRC”), which is composed of major OTC derivatives market participants and their domestic and international supervisors and central banks

■ What criteria were considered in selecting a new rate?

- Benchmark Quality
 - The degree to which the benchmark design ensured the integrity and continuity of the rate
- Methodological Quality
 - The degree to which the benchmark construction could satisfy the IOSCO Principles for soundness and robustness
- Accountability
 - Evidence of a process that ensures compliance with the IOSCO Principles
- Governance
 - Evidence of governance structures that promote the integrity of the benchmark
- Ease of Implementation
 - Anticipated demand for and relevance to hedging/trading
 - Existence of or potential for a term market in the underlying rate

■ Will non-USD benchmarks be changing as well?

- Similar efforts are taking place within other currency domains
- In particular, the UK, Japan, Eurozone, and Switzerland have committees similar to the ARRC in place

Additional Resources

- Alternative Reference Rates Committee Website
 - <https://www.newyorkfed.org/arrc/index.html>
- International Organization of Securities Commissions (July 2013), Principles for Financial Benchmarks
 - <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf>
- Federal Reserve Bank of New York Blog
 - <http://libertystreeteconomics.newyorkfed.org/2017/06/introducing-the-revised-broad-treasuries-financing-rate.html>

¹ICE, *ICE LIBOR Quarterly Volume Report – Q1 2018*, 3/31/2018, theice.com
2J.P. Morgan Research, *US Fixed Income Markets 2018 Outlook*, 11/22/2017, jpm.com

LIBOR in ISDA-based derivatives

- The Federal Securities Board estimates that the notional volume of outstanding products referencing USD LIBOR is greater than \$160 trillion¹
- Current LIBOR, under ISDA 2006 definitions, fallback may not be contractually robust enough to deal with the discontinuation of LIBOR as it relies on quotes from reference banks to construct a synthetic LIBOR-based rate¹
 - If members of the LIBOR panel have opted to leave, the ability of the calculation agent to source levels will be difficult¹
- ISDA is considering new language to trigger the LIBOR (or any other IBOR) fallback index, including:²
 - Public statement of the insolvency of the relevant IBOR administrator (with no successor)
 - Public statement that IBOR administrator will cease publishing IBOR permanently or indefinitely
 - Public statement that IBOR has been permanently or indefinitely discontinued
 - Public statement that IBOR may no longer be used
 - Time of Trigger – upon cessation (not announcement)
- ISDA is considering methodologies to compensate for the lack of LIBOR style credit spread in the overnight risk-free rate using a number of criteria²
 - Minimize and potentially eliminate the value transfer in the event that the fallback is applied:
 - Minimize and potentially eliminate the possibility for rate manipulation
 - Prevent distortion during initial transition in the event that the fallback is applied
- ISDA is currently planning a market survey for both vendors and end-users to help determine the following:²
 - Spread methodology and calculation & publication parameters
 - Suggested amendments to ISDA 2006 definitions
 - Appropriate implementation timing
 - Potential development of a protocol to amend legacy contracts

¹J.P. Morgan Research, *US Fixed Income Markets 2018 Outlook*, 11/22/2017, jpmm.com

²ISDA, *Development of Fallbacks for LIBOR and other Key IBORs*, 11/28/2017, isda.org

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LIBOR in municipal securities and sample fallback language

- **Many legacy floating-rate securities utilize LIBOR to determine their periodic interest rate¹**
 - The fallback for LIBOR often requires a calculation agent to poll dealers, a temporary fix which may be subject to challenge by investors or issuers
 - Often if dealer poll is not available, the rate may eventually default to the last LIBOR rate (then becomes fixed at that last LIBOR rate)
- **Amending legacy transactions could be challenging due to lack of flexibility in existing agreements¹**
 - While bi-lateral agreements (loans) may be easier to amend, securities are less flexible
 - Changes to the reference index generally require 100% investor consent and securities may not be currently callable and may also have certain tax implications
- **Some FRN documents have responded to the potential elimination of LIBOR additional provisions, including:**
 - Heightened risk factor disclosure around the potential for the LIBOR/IBORs to be discontinued
 - Additional issuer/borrower discretion around selecting/determining a substantially similar replacement index or naming a specific successor
- **Other markets/products have or are planning to implement some additional measures to prepare for LIBOR cessation, including²:**
 - Adding amendment procedures for the issuer/calculation agent to determine the replacement rate with either a 100% affirmative consent process or a negative consent process (investors could disagree with the replacement)
 - Reduce the consent requirement for changes to the index rate from 100% to majority consent
 - Adding additional call options for issuers (generally or in the event LIBOR is discontinued)
 - Providing a mechanism for determining the spread differential between SOFR and LIBOR

Some recent securities transactions have incorporated language relating to risks and fallback around LIBOR elimination, e.g.

- **New Jersey Turnpike Authority Series 2017 C1-C6, Series 2017 D1-D4**
<https://emma.msrb.org/ES1049971-ES820346-ES1221585.pdf>
- **Michigan State Housing Development Authority Series 2017 A**
<https://emma.msrb.org/ES1058738-ES826824-ES1227961.pdf>
- **Metropolitan Transportation Authority Series B Remarketing and Series G4 Remarketing**
<https://emma.msrb.org/ES1054856-ES824031-ES1225204.pdf>
- **Manheim Township School District: Lancaster County, Pennsylvania General Obligation Notes, Series A of 2017**
<https://emma.msrb.org/EP1026338-EP795195-EP1196725.pdf>
- **BP Capital Markets FRNs**
<https://www.sec.gov/Archives/edgar/data/313807/000119312517286033/d407070d424b5.htm>

¹J.P. Morgan Research, *US Fixed Income Markets 2018 Outlook*, 11/22/2017, jpm.com

²Federal Reserve Bank of New York, *ARRC Roundtable*, 11/2/2017, newyorkfed.org

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2015 league tables

Leading stock-and-bond underwriters, by volume, 2015

Market sector	#1 ranked manager	2015 market share (%)	Change from 2014 (pct. points)
Stocks and Bonds			
Global Debt, Equity & Equity-related	J.P. Morgan	6.8	--
Global Fees ¹	J.P. Morgan	7.7	0.1
U.S. Debt, Equity & Equity-related	J.P. Morgan	11.3	(0.5)
U.S. Fees ¹	J.P. Morgan	11.6	0.9
Bonds²			
Global Debt	J.P. Morgan	6.8	0.1
Global High Yield Debt	J.P. Morgan	10.2	0.7
Global Investment Grade Debt	J.P. Morgan	7.1	0.4
U.S. Debt	J.P. Morgan	10.8	(0.4)
U.S. Investment Grade Debt*	J.P. Morgan	12.8	0.1
U.S. High Yield Debt*	J.P. Morgan	11.2	0.6
U.S. Financial Institutions	Citi	12.5	2.5
U.S. Asset-backed Securities	Citi	17.9	3.0
Syndicated Loans			
Global Syndicated Loans	J.P. Morgan	10.5	(1.8)
U.S. Syndicated Loans	J.P. Morgan	16.8	(2.2)

Source: Dealogic

¹ When fees are not disclosed Dealogic uses proprietary analytics to calculate them

² Includes government guaranteed debt issuance

Thursday, December 31, 2015

2016 league tables

Leading stock-and-bond underwriters, by volume, 2016

Market sector	#1 ranked manager	2016 market share (%)	Change from 2015 (pct. points)
Stocks and Bonds			
Global Debt, Equity & Equity-related	J.P. Morgan	6.6	(0.2)
Global Fees ¹	J.P. Morgan	8.1	0.4
U.S. Debt, Equity & Equity-related	J.P. Morgan	11.0	(0.3)
Bonds²			
Global Debt	J.P. Morgan	6.5	(0.3)
Global High Yield Debt	J.P. Morgan	9.5	(0.7)
Global Investment Grade Debt	J.P. Morgan	6.2	(0.9)
U.S. Debt	J.P. Morgan	10.6	(0.2)
U.S. Investment Grade Debt*	J.P. Morgan	11.7	(1.1)
U.S. High Yield Debt*	J.P. Morgan	10.6	(0.6)
U.S. Asset-backed Securities	Citi	13.7	(4.4)
Syndicated Loans			
Global Syndicated Loans	J.P. Morgan	11.8	1.5
U.S. Syndicated Loans	J.P. Morgan	16.8	--

Source: Dealogic

¹ When fees are not disclosed Dealogic uses proprietary analytics to calculate them

² Includes government guaranteed debt issuance

Friday, December 30, 2016

*WSJ Online

2017 league tables

Leading stock-and-bond underwriters, by volume, 2017

Market sector	#1 ranked manager	2017 market share (%)	Change from 2016 (pct. points)
Global Wallet and Leveraged Finance			
U.S. Total Leveraged Finance	J.P. Morgan	11.3	(0.5)
U.S. Core Leveraged Finance ¹	J.P. Morgan	9.1	0.3
Global IB Wallet	J.P. Morgan	8.2	0.3
Global DCM Wallet	J.P. Morgan	7.6	0.9
U.S. Core Leveraged Finance Wallet ¹	J.P. Morgan	10.5	1.0
Bonds			
Global Investment Grade Bonds	BAML	6.6	0.8
Global High Yield Bonds	J.P. Morgan	9.6	0.1
U.S. Investment Grade Bonds	J.P. Morgan	11.9	0.2
U.S. High Yield Bonds	J.P. Morgan	11.1	1.3
Syndicated Loans			
Global Investment Grade Loans	BAML	12.4	0.6
Global Leveraged Loans	J.P. Morgan	9.7	(0.5)
U.S. Investment Grade Loans	BAML	20.5	1.2
U.S. Leveraged Loans	J.P. Morgan	11.3	(0.9)

Source: Dealogic

¹ Core leveraged finance is a newly tracked category, based off of institutional loans and bonds, excluding ABL and Pro Rata loans

Friday, December 29, 2017