IHS Markit™

Securities Finance Quarterly Review

Q3 2017

Welcome back to the third instalment of our quarterly review.

Overall, we are encouraged by a general stabilization of revenues from the slide evidenced in the opening half of the year. Europe and Asia are showing real signs of resilience, and we are also seeing increased demand for US equities which have been the largest drag on the industry's revenue year to date. Fixed income lending also continues to go from strength to strength. We feel that these developments give the industry a real chance to make up for lost ground over Q4, especially since final quarter of last year was the weakest of an otherwise strong year.

On the research front, we chose to focus our attention on the less observable attributes of the industry, mainly collateral tolerances. As you will see from these pieces, the change in borrower behavior and regulatory changes in the decade since the financial crisis have had the downstream impact of creating a glut in inventory which has been wholly unattractive, save for the few specials that are in demand. Changing risk practices to broaden out collateral acceptability is no easy task; however, these conversations can't be fully informed without first quantifying the size of the foregone opportunity.

Another less observable, yet equally disruptive, force shaping our industry is technology. With this in mind, the review will now feature a technology and market structure interview that will provide a platform for industry leaders to discuss the latest trends influencing their business.

Regards,

Pierre Khemdoudi & Ed Marhefka

Managing directors and global co-heads of Securities Finance and Delta One products, IHS Markit

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Securities lending helps passive funds gain upper hand

The term "disruption" is often bandied about, however there is no denying that the asset management industry has felt more than its fair share of disruptive innovation in the years since the financial crisis. Much like more parochial niches such as retail, food distribution or even mattresses, the twin siren songs of improved efficiency and lower cost promised by upstart passive funds have proved too much of a temptation for investors to resist. Spurred on by the desire to cut costs, and the growing realization that the extra costs levied by incumbent fund managers don't guarantee outperformance, the steady trickle of inflows into passive funds has now turned into a deluge.

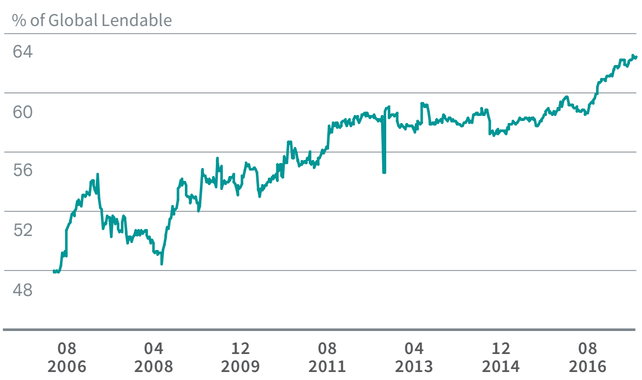
Money riding this wave of disruption is showing no signs of drying up anytime soon, as it has only taken to mid-August for the global ETF industry to beat its previous full year inflow record.

The $4.3bn now managed by ETFs globally, and the even larger sum allocated to passive fund trackers, is now starting to make waves in the securities lending space. In fact, these funds are now responsible for nearly two thirds of all global securities lendable inventory according to the funds contributing to the Markit Securities Finance database. Not surprisingly, this share has grown significantly over the last decade since passive funds were responsible for less than half of the global inventory before the crisis in 2008.

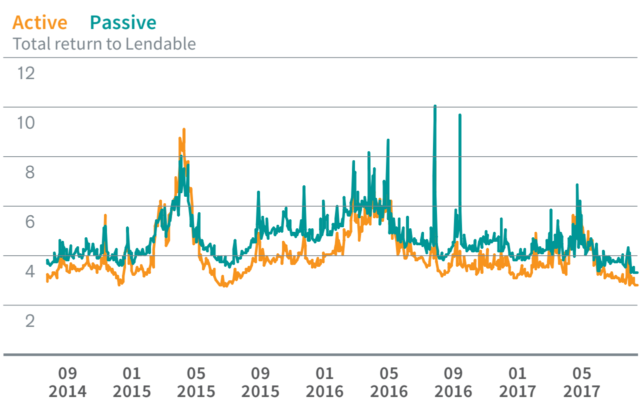
Astonishingly, these "boring" funds are actually able to generate more revenues in the securities lending market than their actively managed peers. Over the last three years passive funds have earned an average total return of 5.1bps, a full 14% more than the 4.5bps earned by actively managed funds over the same period.

One reason behind this consistent outperformance can be attributed to the willingness of passive funds to be pragmatic when it comes to the type of assets which they are willing to receive as collateral for securities lending transactions.

PASSIVELY MANAGED INVENTORY SHARE



SECURITIES LENDING RETURNS BY MANAGEMENT STYLE



Our data indicates that 36% of active funds will only accept the highest quality G7 bonds as non-cash collateral. Passively managed funds on the other hand are much less picky when it comes to collateral given that only 20% of these funds by AUM will only lend securities against the highest quality collateral. This means that fully 80% of all passive inventories are available to borrowers with some sort of lower quality collateral such as G10 bonds or equities.

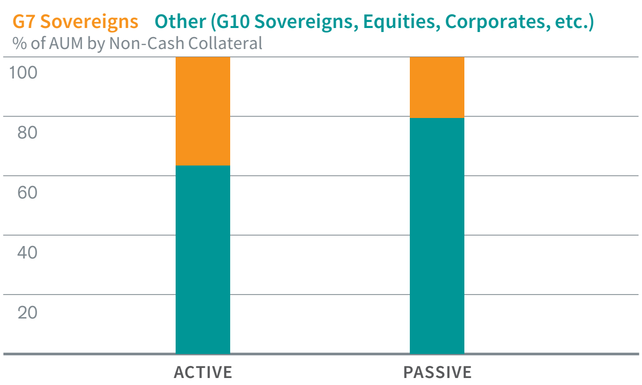
These numbers may not seem drastic at first glance, but chronic industry oversupply means this is very much a buyers' market when it comes to selecting potential counterparties. The advent of derivatives clearing regulation has further fueled this trend as borrowers now have to ration collateral for other activities within their organizations.

Ironically, these collateral shortages have created opportunities in the market, but mainly for lenders who are willing to lend out high quality liquid assets to holders of relatively lower quality collateral.

European sovereign bonds, which is one such asset class, highlights this trend perfectly. The funds which are willing to lend out the asset class against assets other than G7 government bonds have been able to generate an average total return of 4.8bps over the last three years. Pickier G7 only lenders haven't been able to achieve even half these returns over the same period of time mostly due to the fact that the utilization rates achieved by their inventory has been half of those achieved by their less selective peers.

For now, passive investment funds have been better able to capitalize on the collateral shortage given that their willingness to accept more readily available collateral turns them into more attractive potential counterparts. Being able to use ancillary activities, such as securities lending, to drive down the cost of their already inexpensive products is part of the disruptive appeal of passive funds, and the collateral shortage has made a tough competitor even tougher.

ACTIVE VS PASSIVE COLLATERAL PREFERENCE



Market insights - from machine learning to machine lending

Dan COPIN, Head of Equity Finance at CACEIS, joins us for the initial instalment of this feature to discuss an exciting project that saw the team at CACEIS leverage machine learning technology to handle a portion of their securities lending transactions.

CACEIS recently spearheaded a machine learning initiative. Can you please give a brief overview of the project and what you managed to achieve?

The project started with a general thought on how to apply machine learning to our everyday life as a securities lender. Our market handles huge flow volumes and our traders have to consider a multitude of parameters at the time of dealing. At CACEIS, we keep up to date with all technological advances in order to innovate and offer an ever more efficient service to clients, so we simply asked ourselves: what can machine learning do to improve our securities lending program?

To remain efficient in the face of increasingly demanding constraints and with the technology now available, we are exploring the possibility of optimising and securing our operations. The first step is to correctly model our numerous constraints, which is not a simple task in itself.

What were some of the biggest challenges you had to overcome to incorporate machine learning into your workflows?

The first challenge and absolute priority for CACEIS is to ensure machine learning is incorporated securely into our processes. Beyond the fundamental security issue, the first practical challenge we encountered is the management of different languages and database models used within CACEIS. To be able to optimise operations, you must first understand and make your needs understood.

Any particular reason why you chose fixed income as the starting point for your initiative?
You have to start somewhere, and there are more parameters available for fixed income. The nomenclature is also easier to manage compared to equities. For example, it is simpler to identify the ISINs in the bond borrowing requests we receive by email and to extract the data we need for our analysis.

Automation within securities lending isn't a particularly new trend, yet the industry is still much more manual than many other financial functions. Do you think new tools such as machine learning will help change this dynamic?
This activity has been more manual than all the others for a very long time, perhaps always, because it is one of the few to be totally over the counter. Remember that securities lending was once a back-office activity provided as service and has evolved enormously since then to become an actual performance enhancement service.

Regulators are pushing the industry to automate through such things as increasingly burdensome reporting constraints, and the arrival of SFTR will not improve that situation. Negotiation platforms have existed for many years now, and numerous FinTechs have been created and are keen to look into standardisation of the activity. All this will eventually lead to a change from manual processing to standardised automated processing. To be clear, machine learning is not the driving force behind this change, but one of the possible answers to it.

How do you expect the trading function to evolve in the coming years, and do you think that machine learning will ever be able to replicate soft skills picked up through years of experience as a trader?
It is important to be realistic at this stage, machine learning is not intended to replicate human soft skills but to reallocate human skills to added value tasks. As a matter of fact we believe that the trading function will evolve in order to increase efficiently in the management of flows and regulatory constraints that are linked to the activity. This means that traders will focus on determining a set of parameters on a daily basis and then fine tune them on a real-time basis depending on market needs and movements.

To summarise how our machine learning approach works, we receive a request from the market, the machine learning allows us to look at all the underlyings and the parameters and then responds to the request with a quotation. As soon as a deviation from the norm is identified, the trader systematically takes over and modifies the self-defined parameters to negotiate the specific trade.

In conclusion, Humans remain at the centre of the process because they will always be the only ones able to bring significant added value to the business.

Dan Copin

Head of Equity Finance at CACEIS

Asian Equities

Asian securities lending revenues continued to build momentum over the quarter.

The last six months have seen Asian securities lending revenues rebound from a disappointing first quarter into what is shaping up to be a relatively strong 2017 for the industry. Overall, revenues managed to build on the 2% YOY increase registered in Q2 with a solid 9% increase YOY in Q3. This large jump in revenue was derived mostly from the lender balance side, which grew by a tenth over the third quarter.

The established Japanese and Australian markets provided a large part of the revenue uplift, as revenues across these two markets grew by $36.6m and $7.9m respectively over the third quarter. This helped counteract the $24.8m fall in revenues experienced by lenders of South Korean equities.

The very strong 42% growth in fees on Japanese loans was fueled by a mix of better lender balances and improved pricing power that led to weighted average fees that were nearly a quarter larger than those achieved in Q3 2016. This helped the country's two largest fee generating specials, Cyberdyne and Sharp, deliver $24m of combined revenue over the quarter -- more than a fifth of the Japanese total.

Hong Kong lending also continued to build momentum over the quarter. The market, which was able to more than halve its Q1 deficit over the second quarter, returned to growth in Q3 when aggregate revenues grew by over 6%. Activist short sellers have played a large role in helping the industry's revenues recover given the market's two largest specials have been the target of activist short selling campaigns.

Overview

Quarterly Revenues
$292M ▲ 9%

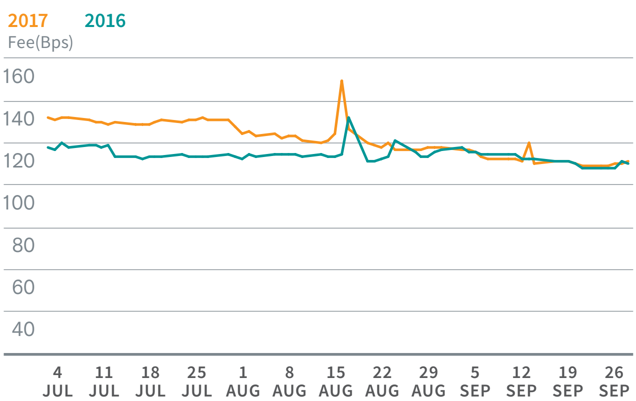
Average Balances
$146B ▼ 7%

Weighted Average Fee
1.41% ▲ 0%

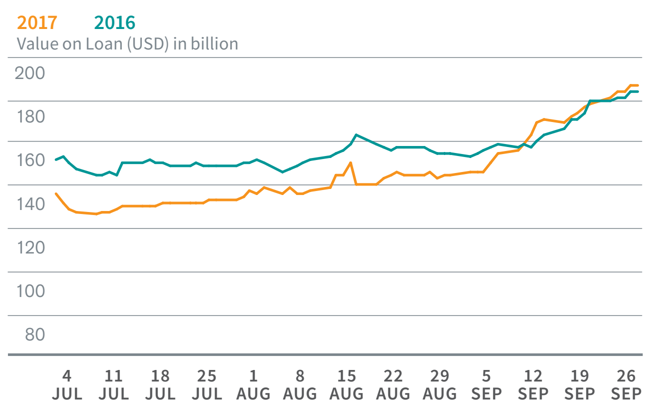
Average Inventory
$1.5T ▲ 29%

Utilisation
5.22% ▼ 14%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

South Korean fees continue to fall off after specials cool

Japan responsible for most top specials

Australian revenues bounce back after tough first and second quarter

Consumer tech continues to attract the most shorts

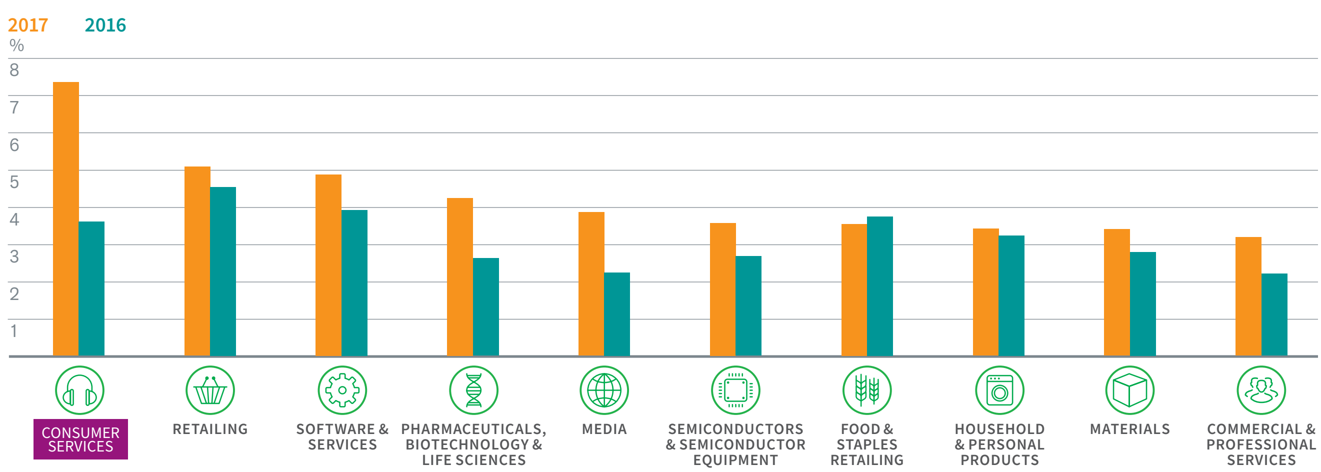
AVERAGE VALUE ON LOAN

Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
Australia	25.19	45.6%	21.38	3.4%	0.68%	50%	234.73	23.9%	5.82	-11.6%
Hong Kong	59.76	6.5%	25.26	-11.0%	1.36%	2%	313.03	28.3%	5.37	-16.6%
Japan	122.80	42.4%	73.80	-5.6%	1.31%	22%	727.18	30.4%	5.00	-8.3%
Malaysia	5.98	-20.4%	0.83	-36.3%	3.46%	0%	11.40	12.4%	5.85	-28.5%
New Zealand	0.99	54.1%	0.46	32.5%	1.08%	15%	6.28	2.6%	5.42	37.1%
Singapore	6.73	-11.1%	2.60	-31.0%	1.30%	29%	48.65	22.2%	4.02	-41.7%
South Korea	42.33	-37.0%	11.69	-24.5%	2.99%	-37%	117.40	37.0%	4.65	-26.4%
Taiwan	26.12	10.5%	9.11	12.9%	2.51%	-6%	51.58	33.3%	7.74	-11.8%
Thailand	2.14	41.8%	0.72	2.2%	1.78%	53%	13.37	37.6%	3.49	-31.1%

TOP 10 REVENUE GENERATING STOCKS

Instrument Name	Ticker	Sector	Country	Revenue Generated ($)
Sharp Corp	6753	Consumer Durables & Apparel	Japan	14,797,334
Cyberdyne Inc	7779	Health Care Equipment & Services	Japan	9,144,057
Celltrion Inc	068270	Pharmaceuticals, Biotechnology & Life Sciences	Korea	5,729,261
Fullshare Holdings Ltd	607	Real Estate	Hong Kong	4,733,847
China Evergrande Group	3333	Real Estate	Hong Kong	4,078,488
Byd Co Ltd	1211	Automobiles & Components	Hong Kong	3,021,114
Jig-Saw Inc	3914	Software & Services	Japan	2,523,444
Line Corp	3938	Software & Services	Japan	2,385,661
Oci Co Ltd	010060	Materials	Korea	2,290,899
Metaps Inc	6172	Software & Services	Japan	2,278,019

AVERAGE % OF SHARES ON LOAN



European Equities

European lending revenues rebounded in Q3 when the industry's YOY revenue gap fell significantly.

Although overall industry revenues across European equities were down by 5% over Q3, this tally marks a strong rebound from the first six months of the year when aggregate revenues fell by 23% YOY. The rebound in revenues was helped by a 10% increase in lender balances as the markets rallied in the wake of the French election.

France was the standout performer in the region as revenues grew by over 16% to 43.4m. While this is encouraging, it's worth noting that a large part of France's revenue haul came thanks to a single special — energy conglomerate Total — that delivered half of the country's total quarterly revenue contribution. Last year's runaway special, Swedish tech firm Fingerprint Cards, continued to deliver for lenders, despite an 80% fall in its share price since the start of the year.

Fees continue to be held down due in part to the relentless pace of inventory buildup. The total value of all European equities now sitting in lending programs stands at a record high of $2.4 trillion, which is more than a fifth higher than the average registered in Q3 of last year. No one market has been immune from this buildup in inventory as each of the region's 17 largest markets registered an increase in lendable inventory since Q3 2016.

The UK managed to climb to the top of the region's earning leaderboard. Unlike France, UK lending revenues are much more evenly distributed as the single largest fee generating special, Royal Dutch Shell, contributed less than 5% of the country's total revenue.

Overview

Quarterly Revenues
$218M ▼ 5%

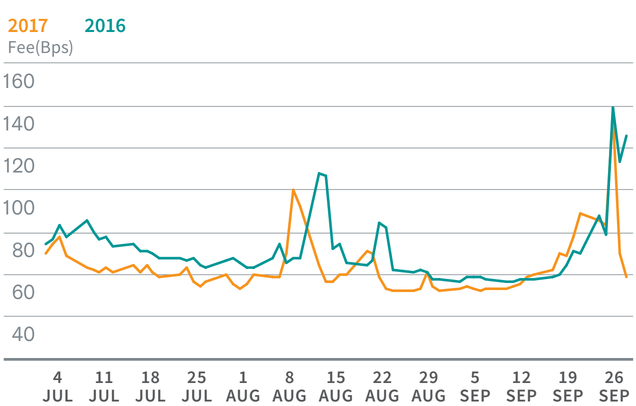
Average Balances
$203B ▲ 10%

Weighted Average Fee
1.31% ▼ 21%

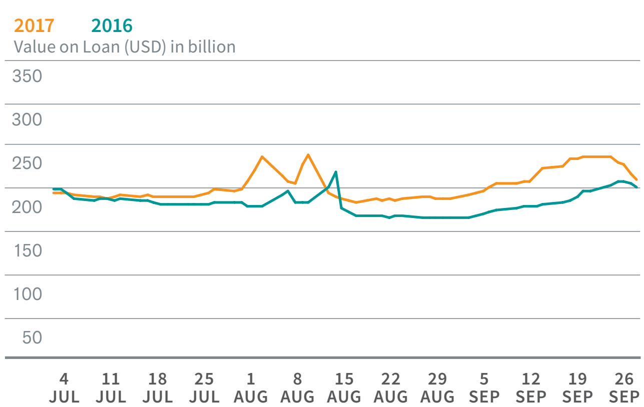
Average Inventory
$2.4T ▲ 21%

Utilisation
5% ▼ 12%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

UK largest market over the quarter

Total generated half the French revenue

Energy short sellers have returned

Lendable grew across every single European market

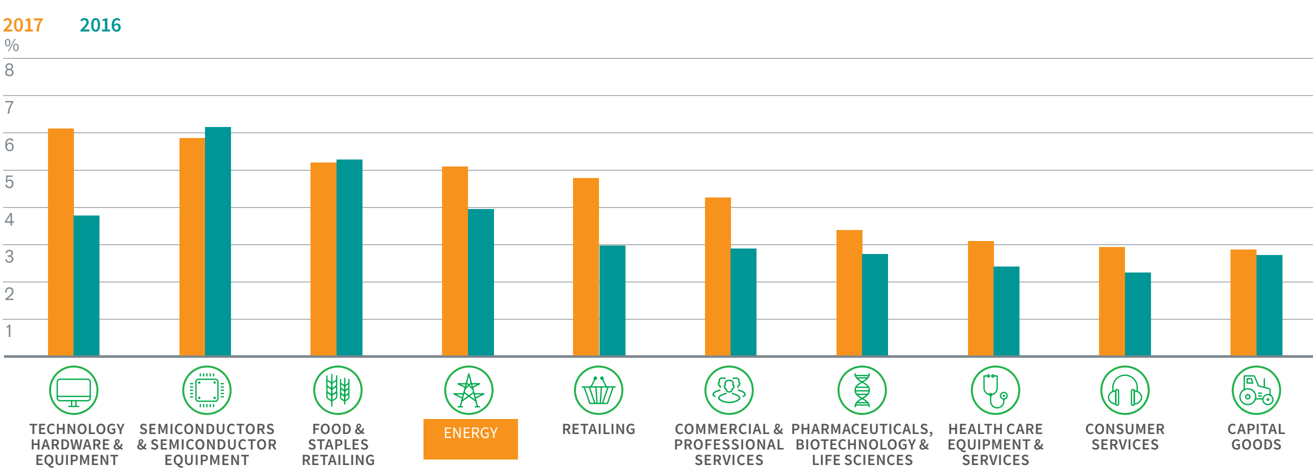
AVERAGE VALUE ON LOAN

Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
Austria	1.15	-15.1%	1.40	-4.7%	0.58%	-3%	13.47	74.8%	5.67	-48.5%
Belgium	3.69	35.1%	4.15	1.5%	0.57%	23%	66.50	21.8%	3.73	-5.5%
Denmark	4.43	-31.3%	6.88	38.4%	0.37%	-53%	66.56	22.6%	6.92	19.6%
Finland	3.31	-24.0%	4.84	-14.2%	0.38%	-13%	35.11	11.6%	9.36	-22.1%
France	43.38	16.4%	34.48	16.6%	0.94%	14%	353.73	34.5%	5.06	-21.6%
Germany	25.82	-11.4%	28.59	2.8%	0.66%	1%	350.01	17.5%	4.32	-22.3%
Greece	0.80	22.7%	0.04	13.4%	9.89%	2%	2.10	93.7%	1.49	-36.6%
Italy	16.46	68.6%	14.21	33.9%	0.79%	24%	100.22	53.9%	7.95	-6.7%
Netherlands	12.47	29.0%	13.19	27.9%	0.59%	1%	126.76	28.1%	6.38	2.1%
Norway	9.96	-26.0%	4.40	11.8%	1.61%	-26%	28.46	38.5%	8.34	-27.2%
Poland	3.62	24.2%	1.45	44.2%	1.22%	-12%	11.26	61.1%	9.98	-6.9%
Portugal	0.50	-75.2%	0.75	15.5%	0.46%	-77%	7.25	23.4%	5.57	-14.3%
Spain	8.84	-31.8%	8.92	3.5%	0.75%	-21%	109.30	45.3%	4.03	-38.7%
Sweden	19.53	-40.8%	16.45	31.7%	0.72%	-52%	115.75	36.5%	8.87	-10.2%
Switzerland	14.03	-5.5%	19.14	-6.9%	0.41%	-5%	307.93	9.8%	4.21	-5.5%
Turkey	5.54	-20.3%	0.91	-3.1%	3.15%	-6%	11.06	32.7%	6.19	-33.8%
UK	44.44	3.5%	42.21	4.1%	0.62%	7%	667.29	8.8%	4.17	-8.9%

TOP 10 REVENUE GENERATING STOCKS

Instrument Name	Ticker	Sector	Country	Revenue Generated ($)
Total Sa	FP	Energy	France	20,485,755
Fingerprint Cards Ab	FING B	Technology Hardware & Equipment	Sweden	7,433,524
Nordea Bank Ab	NDA SEK	Banks	Sweden	6,167,911
Axa Sa	CS	Insurance	France	5,222,567
Sanofi Sa	SAN	Pharmaceuticals, Biotechnology & Life Sciences	France	4,002,841
Statoil Asa	STL	Energy	Norway	3,817,264
Wirecard Ag	WDI	Software & Services	Germany	3,696,291
Danone Sa	BN	Food, Beverage & Tobacco	France	2,763,450
Banco Popular Espanol Sa	POP	Banks	Spain	2,622,008
Bnp Paribas Sa	BNP	Banks	France	2,363,497

AVERAGE % OF SHARES ON LOAN



Americas Equities

2016 continues to be a tough act to follow for the industry's largest revenue generating region.

The pace of the revenue slowdown in the opening half of the year has accelerated in Q3, with revenues falling by 22% YOY. This decline in revenues is attributable to falling balances across the region and lenders not being able to command the type of pricing power for loans than the same period in 2016. The US market once again drove the fall in revenues as its quarterly tally was 24% lower than the total generated in Q3 2016.

This quarter hasn't been a total loss for the industry – balances across the region managed to climb by 5% to $553bn. Although encouraging, the pickup in balances looks unlikely to materially change the supply/demand dynamics across the region, given that the industry is still chronically oversupplied. This supply glut has been further exacerbated over the quarter as lending inventory grew by 15.8% YOY.

Canadian equities weren't able to register the same increase in balances over the quarter: their balances fell by over a third YOY. Revenues held up relatively better thanks to a 22% increase in fees achieved, but they still fell by just under 6%.

Recently listed Snap continued to reap rewards for beneficial owners willing to lend out their holdings. All-in-all, these investors were able to generate a very healthy $26.7m of fees over the quarter — $1m more than the second most in demand stock, electric carmaker Tesla.

The revenue generated from lending out ADRs was flat year on year at $44m. Lenders weren't able to capitalize on the bumper 27% surge in balances over the quarter as the fees fell by 24%.

Overview

Quarterly Revenues
$679M ▼ 22%

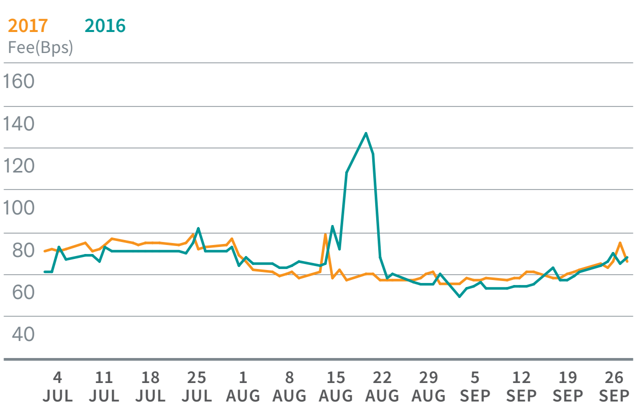
Average Balances
$524B ▼ 4%

Weighted Average Fee
0.59% ▼ 12%

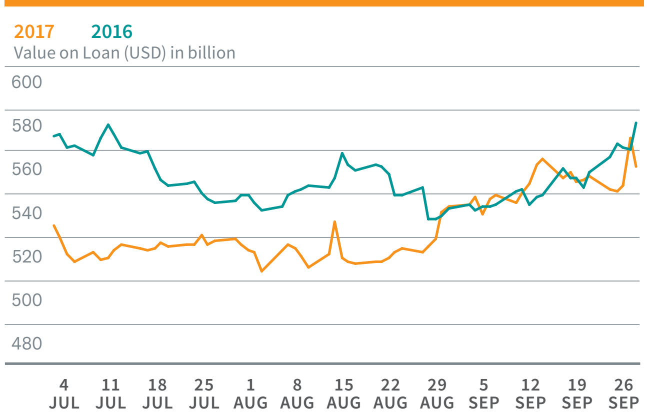
Average Inventory
$7.6T ▲ 16%

Utilisation
5% ▼ 17%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

US fees continue to atrophy

ADR revenues were flat yoy

Balances grew by 5% over the quarter

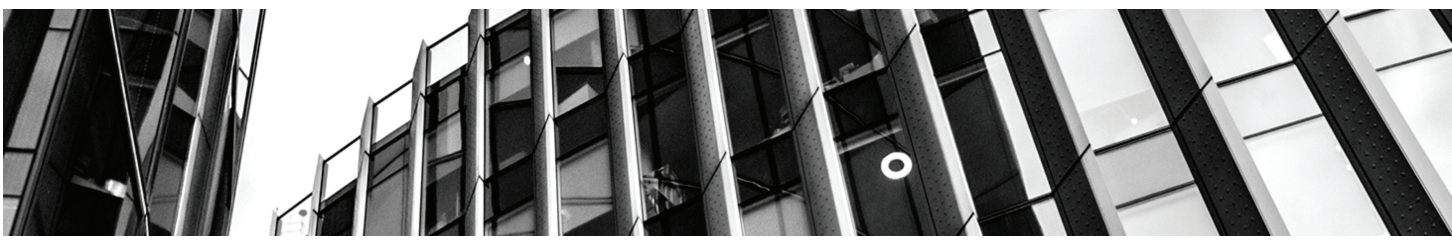
Snap continues to trade special

AVERAGE VALUE ON LOAN

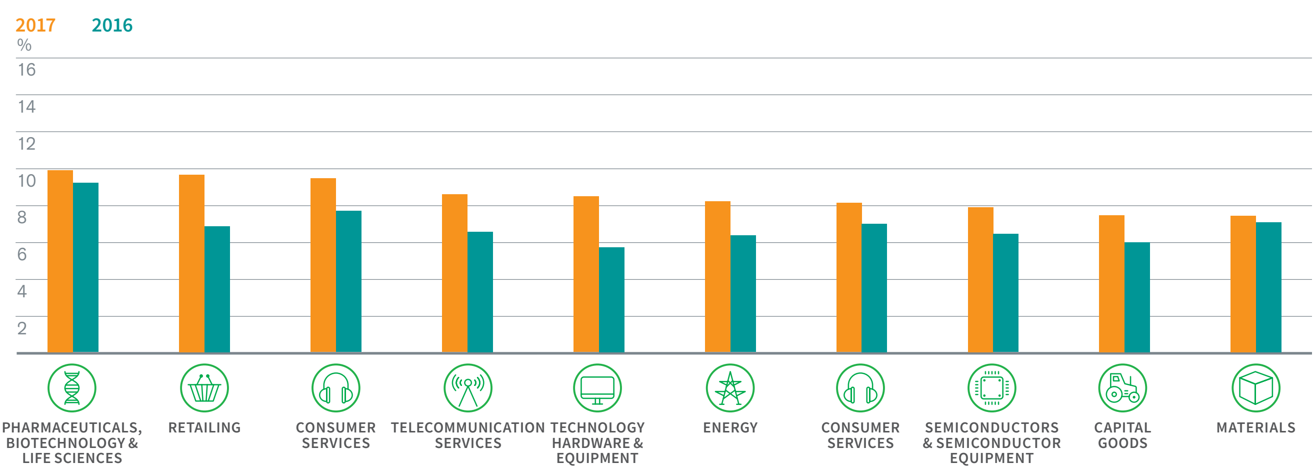
Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
Brazil	0.72	-	0.66	311.4%	1.20%	-	2.92	44.1%	8.06	-
Canada	80.98	-5.8%	44.55	-33.6%	0.86%	22%	479.14	11.9%	7.44	-29.1%
Mexico	1.08	-7.3%	0.80	28.1%	0.49%	-25%	28.21	21.6%	2.31	1.4%
USA	596.31	-24.1%	478.05	-0.5%	0.57%	-15%	7,131.51	16.0%	4.85	-15.2%
ADRs	44.30	0.0%	46.86	26.9%	0.39%	-24%	193.71	30.2%	19.07	4.6%

TOP 10 REVENUE GENERATING STOCKS

Instrument Name	Ticker	Sector	Country	Revenue Generated ($)
Snap Inc	SNAP	Software & Services	USA	26,695,960
Tesla Inc	TSLA	Automobiles & Components	USA	25,997,365
Under Armour Inc	UAA	Consumer Durables & Apparel	USA	20,568,916
Rh	RH	Retailing	USA	17,630,893
Visa Inc	V	Software & Services	USA	9,769,662
Gopro Inc	GPRO	Consumer Durables & Apparel	USA	9,304,726
Home Capital Group Inc	HCG	Banks	Canada	8,836,543
Sears Holdings Corp	SHLD	Retailing	USA	8,271,649
Sirius Xm Holdings Inc	SIRI	Media	USA	8,023,095
Applied Optoelectronics Inc	AAOI	Technology Hardware & Equipment	USA	7,861,527



AVERAGE % OF SHARES ON LOAN



Exchange Traded Funds

ETFs continued their winning streak over the third quarter but at a much slower pace.

ETFs revenues grew by 1% YOY in the quarter to reach $40.8m. The pace of growth achieved in Q3 was sharply lower than in the second quarter mostly due to a general lack of demand from borrowers. Fees achieved in the quarter notched up a relatively healthy 10% increase to 62bps.

European listed products powered the entirety of the industry's growth; the region was the only one to register growth over the quarter, with revenues up by a third to $4.3m. European revenues were also more evenly distributed than the rest of the market. The largest fee generating fund in Europe, the iShares Core FTSE 100 UCITS ETF generated less than 5% of the region's total ETF lending revenue.

The same can't be said for the rest of the ETF market however. The iShares iBoxx $ High Yield Corporate Bond Fund, the largest fee generating ETF globally, generated nearly a fifth of all revenues earned by beneficial owners over the quarter.

The growth of ETFs is fueling a surge in in securities lending markets. On average, there were 29% more ETF holdings in lending programs over the quarter than Q3 of 2016. This surge in inventory, which has vastly outpaced the industry's AUM growth, speaks to the increased adoption of ETFs among institutional investors, who provide a large part of the securities lending inventory.

Although inventories are rising sharply, demand and revenues remain concentrated, indicating there is still some way to go before ETFs become the go-to tool for actively traded markets.

Overview

Quarterly Revenues
$41M ▲ 1%

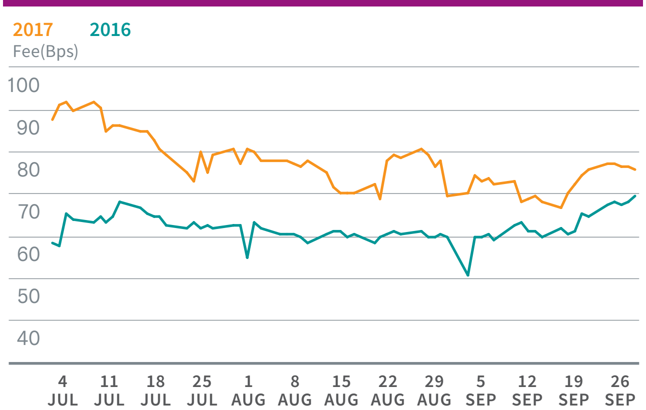
Average Balances
$44B ▼ 1%

Weighted Average Fee
0.62% ▲ 10%

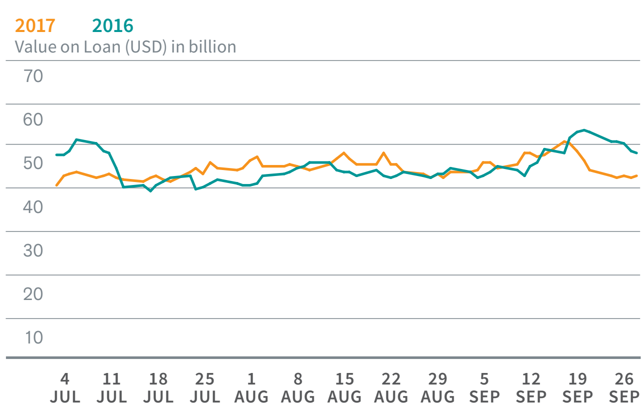
Average Inventory
$235B ▲ 29%

Utilisation
10% ▼ 19%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

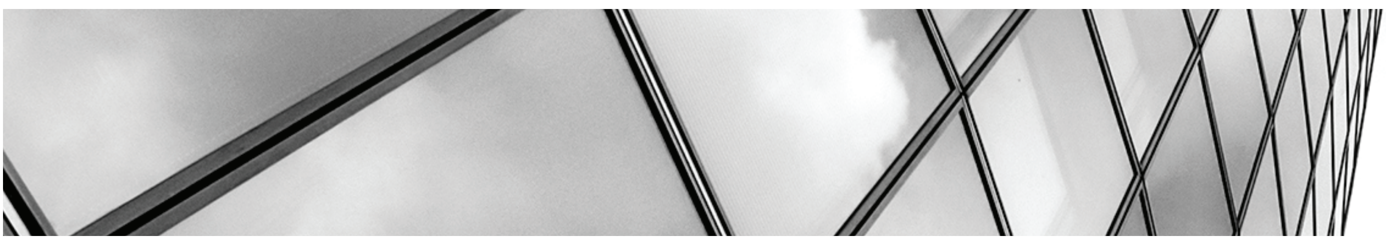
Europe drove the market over the quarter	HYG delivered over twice the fees out of any fund	Lendable inventory continues to climb in Europe and North America	Realized fees continue to hold up despite surge in inventory

AVERAGE VALUE ON LOAN

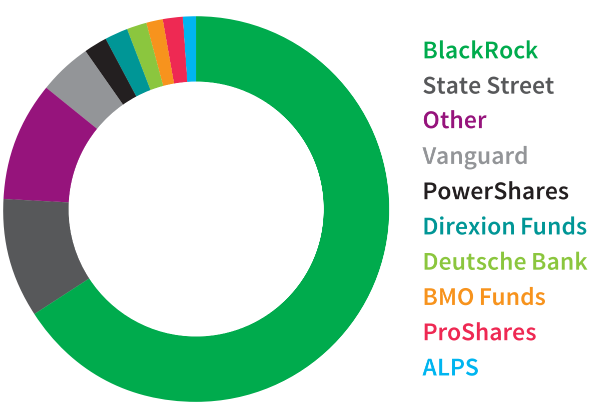
Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
North America	34.66	-2.9%	39.08	-2.8%	0.59%	9%	143.79	20.5%	15.13	-15.6%
Asia	4.89	29.3%	4.33	34.8%	1.36%	-8%	43.37	31.1%	3.25	7.3%
Europe	0.73	-23.5%	0.65	-42.0%	1.30%	9%	1.25	-16.3%	17.17	-13.2%

TOP 10 REVENUE GENERATING FUNDS

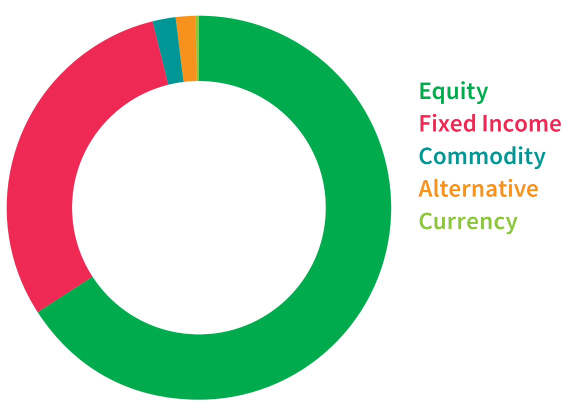
Instrument Name	Ticker	Listing Country	Asset Class	Q3 Revenue Generated ($)
iShares Iboxx $ High Yield Corporate Bond Fund	HYG	USA	Fixed Income	7,542,880
iShares Russell 2000 Etf	IWM	USA	Equity	3,641,173
iShares Msci Emerging Markets Etf	EEM	USA	Equity	1,674,204
iSharesMsci Mexico Investable Market Index Fund	EWW	USA	Equity	1,107,690
Spdr S&P 500 Etf Trust	SPY	USA	Equity	727,527
Spdr Bloomberg Barclays High Yield Bond Etf	JNK	USA	Fixed Income	612,135
iShares China Large-Cap Etf	FXI	USA	Equity	495,003
iShares Msci Brazil Index Fund	EWZ	USA	Equity	396,525
iShares Jpmorgan Usd Emerging Markets Bond Etf	EMB	USA	Fixed Income	378,753
Spdr S&P Biotech Etf	XBI	USA	Equity	350,818



LENDING REVENUES BY ISSUER



LENDING REVENUES BY ASSET CLASS



Corporate Bonds

Corporate bonds once again defied the equities headwinds and generated 6% more revenues over Q3.

Conventional bonds once again drove the industry's revenue forward –an increase in both balances and lender fees caused beneficial owners to reap 5% more revenue from lending YOY.

High yield bonds once again made up the nearly all of largest revenue generating bonds, but the revenues generated from lending investment grade bonds were still the driving force behind the strong showing for the asset class.

Although the majority of lending revenues were generated from conventional bonds, convertible bonds managed to outpace the revenue growth experienced by the wider field. The strong 20% growth registered from lending convertible bonds was driven by a mix of increased demand and better pricing.

Revenues generated from lending out asset backed securities were challenged once again and the asset class saw its aggregate securities lending revenue fall by over a third in Q3.

Corporate bond lending programs haven't grown at the same pace as the rest of the industry, which ensured that they were one of the few asset classes to achieve a higher utilization rate than during the same period over 2016.

Overview

Quarterly Revenues
$184M ▲ 5%

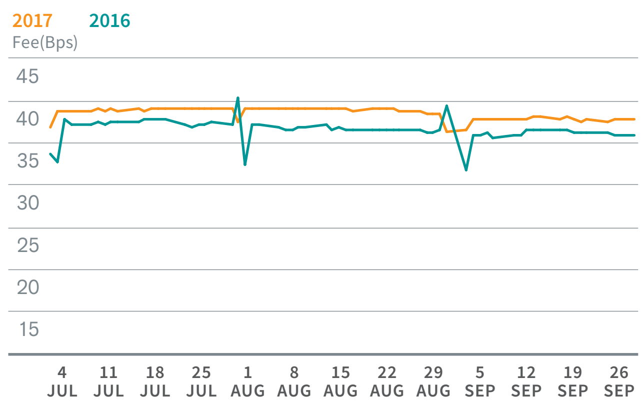
Average Balances
$173B ▲ 8%

Weighted Average Fee
0.36% ▲ 2%

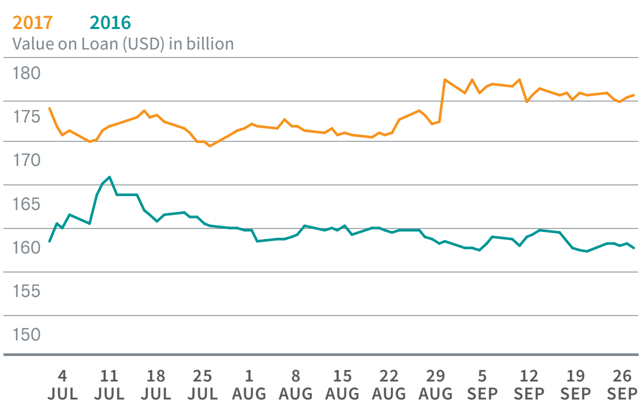
Average Inventory
$3T ▲ 5%

Utilisation
5% ▲ 8%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

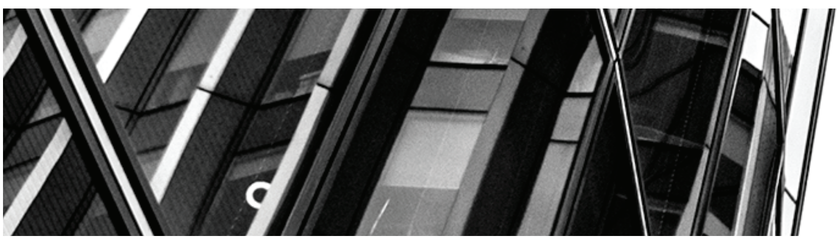
Revenue uplift continues to be driven by loan balances	Conventional bonds delivered over 90% of the revenues	High yield bonds responsible for nine of the top 10 specials	Energy related bonds continue to see strong demand to borrow

AVERAGE VALUE ON LOAN

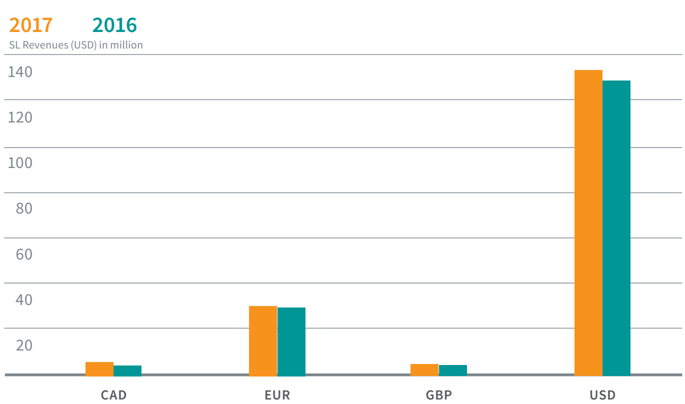
Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
Asset Backed Securities	0.12	-38.1%	0.23	-12.2%	0.17%	-43%	216.94	-2.8%	0.10	-3.0%
Conventional Bonds	173.97	4.4%	166.23	8.2%	0.35%	2%	2,838.41	6.1%	5.36	7.6%
Convertible Bonds	10.08	20.1%	6.67	14.9%	0.73%	5%	43.32	-5.5%	10.60	24.0%

TOP 10 REVENUE GENERATING BONDS

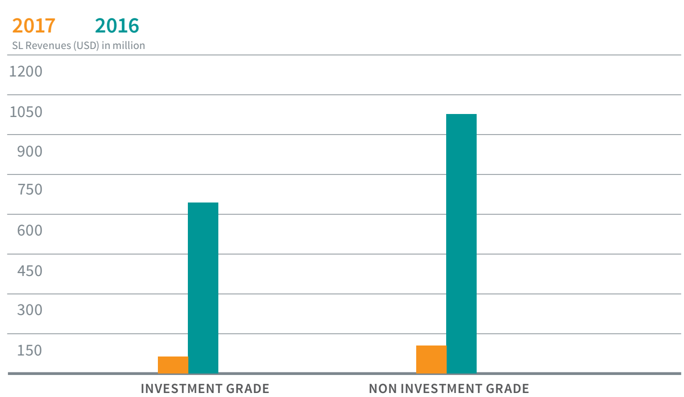
Instrument Name	ISIN	Listing Currency	Rating	Revenue Generated ($)
Chesapeake Energy Corp (8% 15-Jan-2025)	US165167CT21	USD	High Yield	1,682,816
Tenet Healthcare Corp (6.75% 15-Jun-2023)	US88033GCN88	USD	High Yield	1,529,251
Oasis Petroleum Inc (6.875% 15-Mar-2022)	US674215AG39	USD	High Yield	1,357,437
Anadarko Petroleum Corp (5.55% 15-Mar-2026)	US032511BN64	USD	High Yield	1,346,173
Whiting Petroleum Corp (5.75% 15-Mar-2021)	US966387AH55	USD	High Yield	1,265,940
Hertz Corp (5.5% 15-Oct-2024)	US428040CS68	USD	High Yield	1,212,077
Teva Pharmaceutical Finance Netherlands Iii Bv (3.15% 01-Oct-2026)	US88167AAE10	USD	High Yield	1,186,739
Avis Budget Car Rental Llc (5.5% 01-Apr-2023)	US053773AV98	USD	Investment Grade	1,110,644
Chs/Community Health Systems Inc (8% 15-Nov-2019)	US12543DAL47	USD	High Yield	971,574
Whiting Petroleum Corp (6.25% 01-Apr-2023)	US966387AP71	USD	High Yield	856,542



Q3 SECURITIES LENDING REVENUES BY DENOMINATION



Q3 SECURITIES LENDING REVENUES BY RATINGS CATEGORY



Government bonds

Government bonds have notched up another quarter of YOY growth greater than 25%.

The strong growth registered in the government bonds speaks to the strong demand to borrow them; average balances and fees were significantly higher than in the same period 12 months prior. Like corporate bonds, the growth in demand hasn't been met by a buildup in inventories, which ensured that utilization rates were 27% higher than during Q3 2016.

American government bonds once again generated nearly three quarters of the total revenue haul.

Revenues from European government bonds grew by a third over the quarter. This world-leading growth was achieved in large part by the fact that investors could lend more than a third of the asset than in the same period in 2016. Lenders were also able to charge 10% more to borrow the asset over the quarter, which speaks to the general shortage of high quality collateral in the wake of the ECB's ongoing quantitative easing program.

The demand for high quality liquid assets is also evidenced by the fact that German bunds were the only European bonds among the top ten largest revenues generating issuances.

Bonds issued by Asian and emerging market issuers once again failed to match the revenues earned over the same period in 2016. Securities lending revenues across both sets of bonds fell by 22% in Q3.

Overview

Quarterly Revenues
$423M ▲ 25%

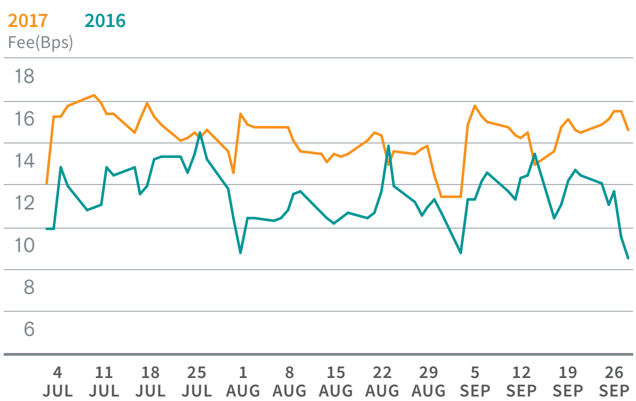
Average Balances
$1T ▲ 27%

Weighted Average Fee
0.12% ▲ 40%

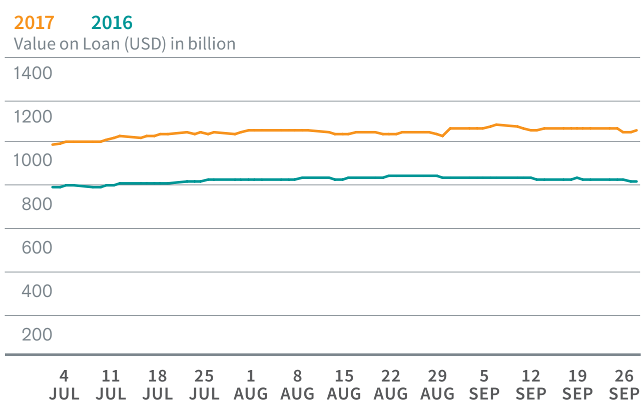
Average Inventory
$2.6T ▲ 0.6%

Utilisation
32.5% ▲ 27%

Q3 FEE TREND



Q3 BALANCE TREND



OVERVIEW

Utilisation rates jumped by over a quarter

Fees trend consistently higher than 2016

Germany only European issuer to feature among top specials

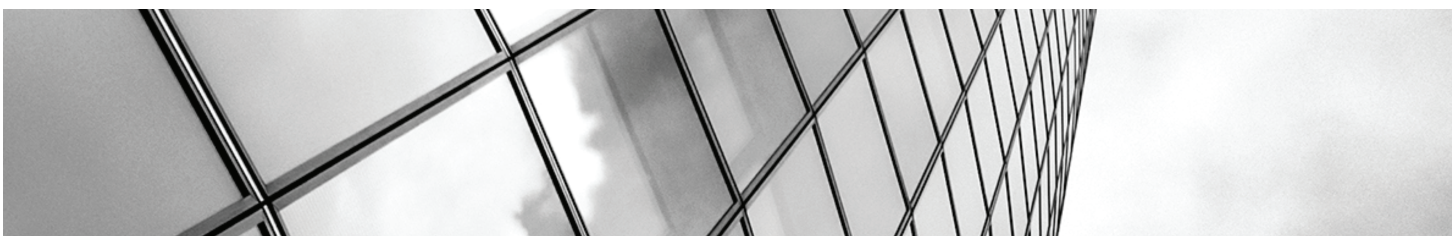
Emerging market bonds not able to replicate demand trends from developed market issuers

AVERAGE VALUE ON LOAN

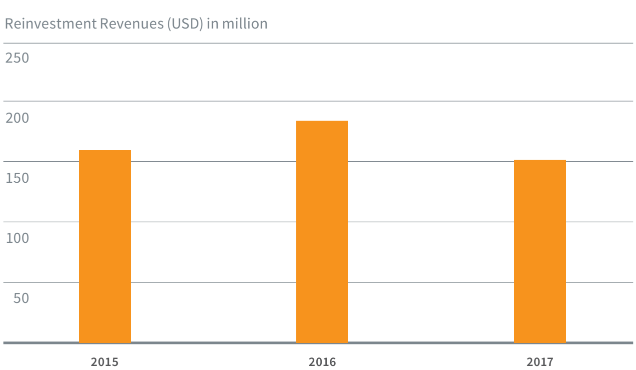
Country Details	Quarterly Securities Lending Income (USD M)	YoY Change	Average Value on Loan (USD Bn)	YoY Change	Weighted Fees	YoY Change	Average Lendable (USD Bn)	YoY Change	Average Utilisation	YoY Change
Americas	303.44	22.9%	629.77	33.9%	0.11%	83%	1,660.62	3.9%	32.47	26.3%
Asia	1.32	-22.6%	36.42	22.5%	0.03%	-38%	48.23	-3.6%	11.74	-18.2%
Europe	118.80	32.9%	378.39	17.8%	0.15%	10%	892.13	-4.6%	33.64	29.3%
Emerging Market Bonds	18.54	-22.7%	15.76	-0.8%	0.40%	-28%	187.15	10.8%	7.69	-2.5%

TOP 10 REVENUE GENERATING BONDS

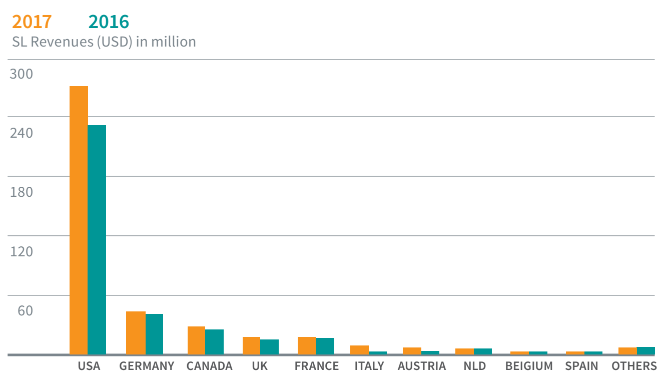
Instrument Name	ISIN	Currency	Issuer	Revenue Generated ($)
United States Treasury (2.25% 15-Feb-2027)	US912828V988	USD	USA	5,405,554
United States Treasury (2.875% 15-Aug-2045)	US912810RN00	USD	USA	3,462,053
Germany, Federal Republic Of (Government) (0.5% 15-Feb-2026)	DE0001102390	Euro	Germany	3,421,702
United States Treasury (2.875% 15-Nov-2046)	US912810RU43	USD	USA	3,075,942
United States Treasury (3% 15-May-2045)	US912810RM27	USD	USA	2,856,957
United States Treasury (0.75% 31-Jul-2018)	US912828S687	USD	USA	2,697,109
United States Treasury (2% 15-Nov-2026)	US912828U246	USD	USA	2,648,450
Germany, Federal Republic Of (Government) (3.25% 04-Jul-2042)	DE0001135432	Euro	Germany	2,565,526
United States Treasury (2.25% 15-Aug-2046)	US912810RT79	USD	USA	2,427,804
United States Treasury (0.75% 15-Jul-2019)	US912828S430	USD	USA	2,394,730



GOVERNMENT BOND REINVESTMENT REVENUES



Q3 REVENUES BY ISSUERS



Cash no longer king to borrow US equities

Dramatic shifts in the demand to borrow US equities – the most traded asset in the global lending market – have caused an increasingly large portion of lendable inventory to remain unused.

In the past, beneficial owners typically lent out US equities against cash collateral, but this trend started to lose favor to non-cash collateralized trades in recent years. Non-cash collateralized trades accounted for less than 10% of the volume of US equities transactions back in 2012, but their market share has now surged to 40% of the aggregate volume. This shift in collateral preferences is even starker in absolute dollar terms: non-cash balances have jumped more than sevenfold to $140bn since 2012, and cash collateralized trades have stagnated at the $200bn mark.

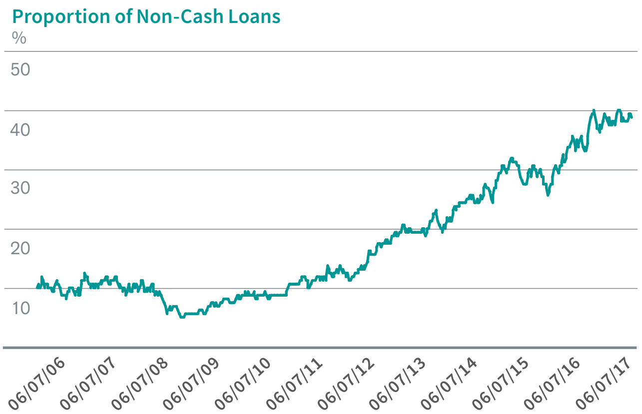
Much of the shift towards non-cash collateral can be directly linked to the implementation of post-crisis regulations that aimed to reduce bank/broker-dealer funding and liquidity risks; in reality, the new rules forced them to drastically adjust operating practices. Chief among those regulations is the Net Stable Funding Ratio (NSFR), which gauges the health of a bank's assets against the liabilities used to fund its activities. Although NSFR – which is slated to go live in January 2018 – doesn't implicitly dictate bank collateral practices, it creates a regulatory mismatch between the treatment of cash and non-cash collateral in securities lending transactions, making non-cash borrowing far more attractive for banks.

If lenders were free to accept non-cash collateral on equal terms, NSFR wouldn't lead to a dramatic shift in the US securities lending industry; however, the regulatory burdens placed on many US-domiciled lenders will cause a large portion of the US equity inventory to be less appealing to potential borrowers. This lack of appeal will be exemplified by diverging utilization paths between funds which can accept non-cash collateral and those that can't. According to the IHS Markit benchmarking analysis, in the last three years, the utilization rate of $3.5 trillion in US equities held by funds that can only accept cash collateral has shrunk by a quarter to a very meager 1.5%. Funds that can lend either all or part of their US equities against non-cash collateral have proven much more popular with borrowers – these funds now see utilization rates of 7.7%, or five times that of their cash-only peers.

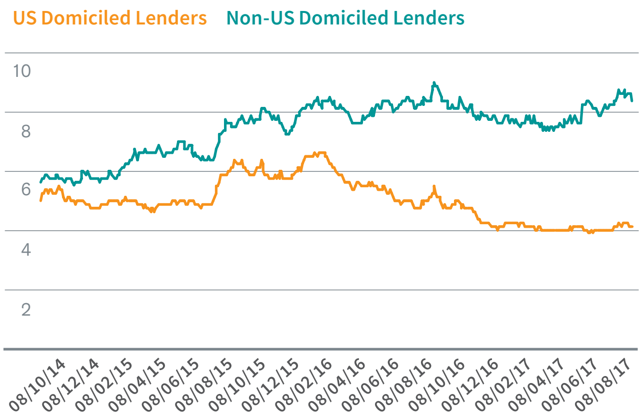
Although regulation has made cash-only lenders much less attractive to borrowers, borrowers still turn to them for high value intrinsic lending. This has enabled cash-only lenders to charge fees nearly three times higher than their less constrained peers. Intrinsic lending isn't enough to overcome their regulatory handicap, however, and the average return for cash-only US domiciled lenders has been less than half of those accepting non-cash collateral.

To rub salt on the wound for cash-only lenders, the returns made from reinvesting cash balances have remained anemic – despite the Fed's recent interest rate hikes. In fact, the average reinvestment returns on cash balances over the first three quarters of the year (26bps) have been more than a tenth lower than the 29.4bps achieved over the same period last year. Astonishingly, these returns are even less than the 27.7bps of cash average cash

US EQUITY LOANS



US EQUITY UTILISATION

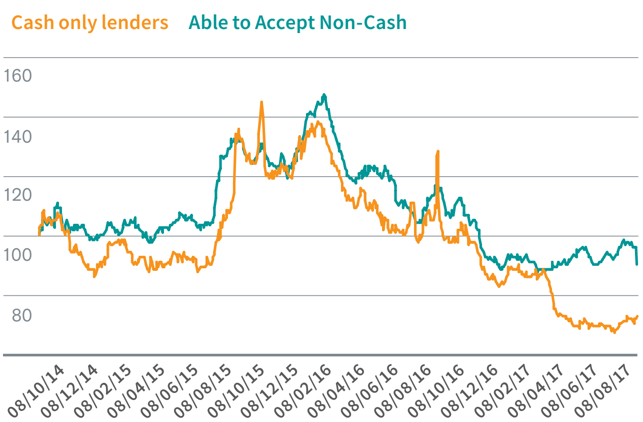


reinvestment return earned in the opening three quarters of 2015, which predated the Fed's interest rate hike.

Beneficial owners domiciled outside the US are far more likely to accept non-cash collateral, and have been large beneficiaries of the shift towards non-cash. These lenders have seen their US equity book of business grow from $60bn to $102bn over the last three years. This has enabled them to eclipse US domiciled lenders in utilization terms, and these funds now see twice the proportion of their assets out on loan versus their US peers. That is a staggering reversal of fortunes considering both sets of lenders used to achieve roughly similar utilization levels for US equities three years ago.

Although the sands of securities lending are always shifting, the pace and severity at which US cash trading fell out of favor speaks volumes about the lengths to which borrower behavior has changed over the last few years. And it also demonstrates how not catching the right regulatory trend can nearly wipe out the returns derived from securities lending.

DOMESTICALLY DOMICILED US EQUITY UTILISATION TREND (OCTOBER 2014=100)



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