

# Virtu Enters into Definitive Agreement to Acquire ITG

Acquisition Will Combine Virtu's Best-in-Class Trading and Technology Platform with ITG's World-Class Customer Franchises

#### Disclaimer



#### **Cautionary Statement Regarding Forward Looking Statements**

This presentation may contain "forward-looking statements" made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Statements regarding Virtu Financial, Inc.'s ("Virtu's" or "our") business that are not historical facts are forward-looking statements. Forwardlooking statements should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of the times at, or by which, such performance or results will be achieved. The Company assumes no obligation to update forward-looking statements to reflect actual results, changes in assumptions or changes in other factors affecting forward-looking information, and if the Company does update one or more forwardlooking statements, no inference should be drawn that the Company will make additional updates with respect thereto or with respect to other forwardlooking statements. Forward-looking statements are based on information available at the time and/or management's good faith belief with respect to future events, and is subject to risks and uncertainties, some or all of which are not predictable or within Virtu's control, that could cause actual performance or results to differ materially from those expressed in the statements. Those risks and uncertainties include, without limitation: fluctuations in trading volume and volatilities in the markets in which we operate; the ability of our trading counterparties and various clearing houses to perform their obligations to us; the performance and reliability of our customized trading platform; the risk of material trading losses from our market making activities; swings in valuations in securities or other instruments in which we hold positions; increasing competition and consolidation in our industry; the acquisition of Investment Technology Group, Inc. ("ITG") not being timely completed, if completed at; risks associated with the financing of the transaction; prior to the completion of such acquisition, our respective businesses experiencing disruptions due to transaction-related uncertainty or other factors making it more difficult to maintain relationships with employees, business partners or governmental entities; the effect of the acquisition of ITG on existing business relationships, operating results, and ongoing business operations generally; the significant costs and significant indebtedness that we have incurred and expect to incur in connection with the acquisition of ITG; the risk that we may encounter significant difficulties or delays in integrating the two businesses and the anticipated benefits, cost savings and synergies or capital release may not be achieved; the assumption of potential liabilities relating to ITG's business; risks and uncertainties with respect to the integration of KCG Holdings, Inc. and related synergy realization the risk that cash flow from our operations and other available sources of liquidity will not be sufficient to fund our various ongoing obligations, including operating expenses, capital expenditures, debt service and dividend payments; regulatory and legal uncertainties and potential changes associated with our industry, particularly in light of increased attention from media, regulators and lawmakers to market structure and related issues; potential adverse results form legal or regulatory proceedings; our ability to remain technologically competitive and to ensure that the technology we utilize is not vulnerable to security risks, hacking and cyber-attacks; risks associated with third party software and technology infrastructure. For a discussion of the risks and uncertainties which could cause actual results to differ from those contained in forward-looking statements, see Virtu's Securities and Exchange Commission filings, including but not limited to Virtu's Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K filed with the SEC.

#### **GAAP and Non-GAAP Results**

This presentation includes certain non-GAAP financial measures, including Adjusted EPS, Adjusted Net Trading Income, Normalized Adjusted Pre-Tax Net Income, EBITDA, Adjusted EBITDA, Trading Capital, Adjusted Operating Expense and Adjusted Compensation Expense. Non-GAAP financial measures should be considered only as supplemental to, and not as superior to, financial measures prepared in accordance with GAAP. Other companies may use similarly titled non-GAAP financial measures that are calculated differently from the way we calculate such measures. Accordingly, our non-GAAP financial measures may not be comparable to similar measures used by other companies. We caution investors not to place undue reliance on such non-GAAP measures, but instead to consider them with the most directly comparable GAAP measure. Non-GAAP financial measures have limitations as analytical tools, and should not be considered in isolation, or as a substitute for our results as reported under GAAP. A reconciliation of non-GAAP measures to the most directly comparable financial measure prepared in accordance with GAAP is included at the end of this presentation.



## Combination of ITG & Virtu Creates Global, Scaled Leader in Execution Services, Workflow Technology and Market Making

#### ITG's Leading Suite of Agency Offerings To Benefit from Virtu's Technology

Diverse & High | Quality Revenue | Streams

- Net trading income ("NTI") from Virtu's stable, consistent Execution Services commission business increases to comprise 37% of total NTI, reducing consolidated earnings volatility
- Virtu is the only firm that gives clients the option to access liquidity from institutional, retail, and principal sources, and the addition of ITG's Workflow Technology offering bolsters Virtu's ability to distribute its unique combination of liquidity
- The addition of Workflow Technology & Analytics products allows Virtu to offer clients a complete suite of agency services that are embedded into their daily operations

Operating Scale Achievements

- Virtu will be able to leverage its scalable, firm-wide technology infrastructure to enhance ITG's Execution Services offering – from order routing and algorithm performance to middle- and back-office efficiency – as well as Workflow Technology and Analytics products
  - o These enhancements will facilitate liquidity provision & enhance execution quality

Significant Value Creation

- Identified \$123 million of net expense synergies and \$125 million of releasable capital
- Acquisition is highly accretive to Virtu's earnings per share with fully phased-in cost savings

## Virtu's & ITG's Business and Technological Capabilities are Highly Complementary



Combination of Virtu's continuously improving trading technology and dense liquidity with ITG's global client reach and industry-leading products creates a truly one-of-a-kind leader in the marketplace



#### **Technology**

Efficiency and scale manifested through a singular, global, continuously improving multi-asset class infrastructure

#### **Liquidity**

Global liquidity across equities, ETFs, FX, fixed income, and commodities from institutional, retail, and principal trading



#### **Execution Services**

Integrated customer franchise with long-standing relationships in the Americas, EMEA, and APAC

#### **Workflow Technology**

Clients offered direct access to deep liquidity and enhanced trading experience

#### **Analytics**

Empowers clients to improve returns and reduce end-to-end costs of investing









Virtu's financial technology will optimize all aspects of ITG's business, from order routing and algo performance to middle- and back-office efficiency, enhancing overall client experience and reducing friction

Virtu's market making provides liquidity to retail and institutional clients, which results in a unique portfolio of positions that allows us to provide enhanced opportunities for trading equities, ETFs, blocks and FICC globally.

### **Acquisition Provides Significant Benefits**

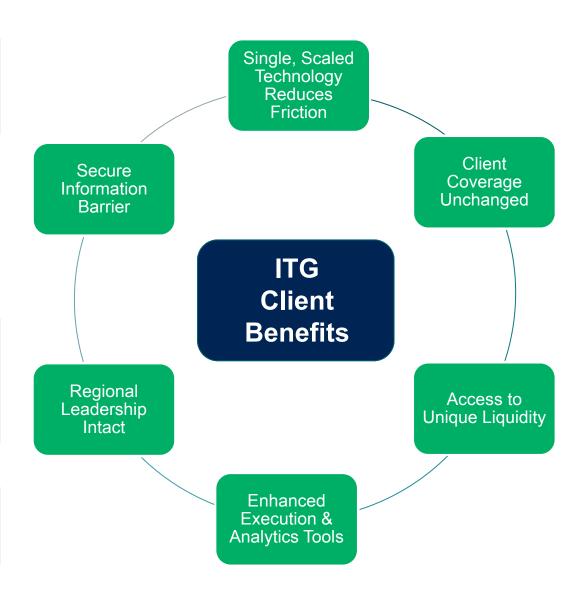


Clients benefit from Virtu's single R&D plant and common infrastructure that supports its scaled, multi-asset class, global trading platform

ITG's Workflow Technology and TCA products, enhanced by Virtu's technological expertise, will continue to provide clients best-in-class execution and analytics tools

Clients will now have the option to transparently interact with Virtu's unique liquidity offerings to improve their execution quality in global equities, ETFs, blocks, FX, fixed income, and commodities

Preservation of regional management teams and account coverage will minimize client disruption



## Virtu to Enhance Existing Safeguards to Protect Client Information



#### Physical and Logical Safeguards of Client Information

Market Making

**Execution Services** 

Workflow Technology

**Analytics** 

#### Virtu has established policies and procedures designed to safeguard sensitive client information



#### **Logical Security**

- Technology access controls to segregate sensitive information
- Review of approved personnel and permissions



#### **Physical Separation**

 Analytics, POSIT, and POSIT Alert segments in particular will continue to be in a segregated area with restricted keycard access



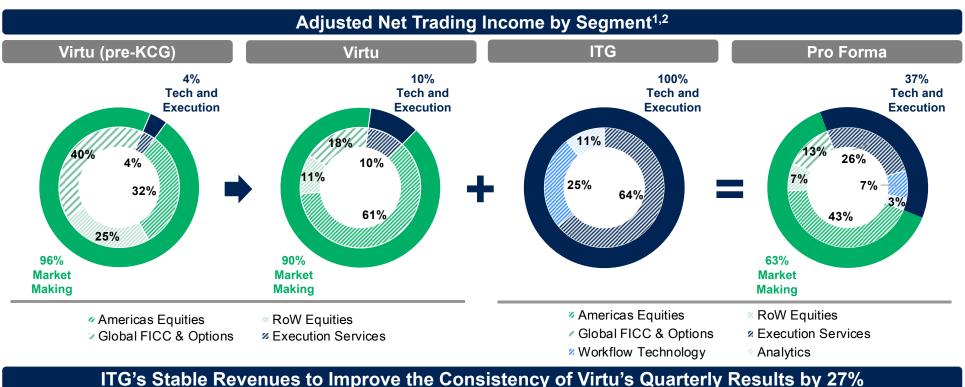
#### **Independent Audit**

· Will employ independent third-party auditors

#### Acquisition Creates a Diverse and Stable Revenue Base



#### About 37% of Virtu's Adjusted Net Trading Income Will Come from Commissions and Fees





<sup>1 &</sup>quot;Virtu (pre-KCG)" represents 1H 2017, while all others represent LTM 9/30/18; Adjusted Net Trading Income ("ANTI") for ITG calculated as Total Revenue less Transaction Processing Expense (100% of Transaction Processing Expense is assumed to be allocable to Execution Services); ANTI from Unallocated and Corporate are excluded

<sup>&</sup>lt;sup>2</sup> Pro forma for KCG acquisition and BondPoint disposition

<sup>&</sup>lt;sup>3</sup> Volatility is equal to standard deviation divided by the mean over the seven quarter period

### Acquisition of ITG: Transaction Summary



## Terms & Conditions

- Virtu to acquire ITG, Inc. for \$30.30 per share, or approximately \$1 billion equity value
- 100% cash consideration
- Virtu has received commitments from Jefferies and Royal Bank of Canada to provide debt financing for the transaction and to refinance Virtu's existing term loan of \$400 million

## Financing and Leverage

 Total leverage 2.8x based on trailing 12 months as of 9/30/18 – target leverage 2.0x to 2.25x by year-end 2020

#### **Leadership Team**

- Virtu CEO Douglas Cifu and CFO Joseph Molluso will continue to lead the firm
- ITG's business will be combined with Virtu's existing agency brokerage business and ITG's existing regional leadership will report directly to CEO Doug Cifu
  - o Rob Boardman, CEO of ITG Europe
  - o Etienne Phaneuf, CEO of ITG Canada
  - o Michael Corcoran, CEO of ITG Asia

## Anticipated Closing

Expected to close in the first half of 2019

## Significant Expense & Capital Synergies



Combination Reduces Operating Expense and Releases Excess Capital
Virtu Anticipates \$123 million of annual net cost savings and \$125 million of capital synergies

- Consolidation of ITG's trading applications, execution tools, and post-trade operations to Virtu's single technology infrastructure, creating additional operating scale and improving ITG's margin – particularly in the U.S.
- Combination of broker-dealers and trading operations, reducing duplication and unlocking capital
- Time to achieve: 18-24 months

Expected Fully-Phased Cost Savings (\$mm)			
Technology, communications & data processing	\$18 mm	<ul> <li>Savings associated with harmonizing technology; includes savings from elimination of redundant infrastructure and market data</li> </ul>	
Occupancy, overhead & redundancies	\$115 mm	<ul><li>Integration of support functions</li><li>Optimization of real estate and other costs</li></ul>	
Dis-synergies	-\$10 mm		
Total savings, net <sup>1</sup>	\$123 mm		
Non-cash savings <sup>2</sup>	\$29 mm		
Cash savings, net	\$94 mm		

<sup>&</sup>lt;sup>1</sup> Represents 34% of ITG's LTM 9/30/18 operating expense base

<sup>&</sup>lt;sup>2</sup> Includes depreciation & amortization and stock-based compensation

## Highly Accretive to Virtu



	(\$mm)
ITG standalone net income – FY 2020 public consensus <sup>1</sup>	~\$66
Plus: ITG LTM 9/30/18 share-based compensation (after tax) <sup>2</sup>	~\$19
Plus: Net cost savings, fully phased in (after tax) <sup>2,3</sup>	~\$87
Less: Incremental interest expense (after tax) <sup>2</sup>	~(\$46)
Total after-tax earnings contribution	~\$127

<sup>&</sup>lt;sup>1</sup> Represents Consensus Adjusted Net Income estimates, per Bloomberg

<sup>&</sup>lt;sup>2</sup> Assumes a 23% effective tax rate

<sup>&</sup>lt;sup>3</sup> Net cost savings assumed fully phased in; excludes savings related to stock-based compensation



## Significant Unmodeled Upside from Revenue and Additional Cost Synergies

## Revenue and Incremental Expense Synergies from Increased Opportunities to Service Clients

## Brokerage and Exchange Fee Tiers

Savings from aggregating activity to achieve better volume tiers with exchanges and clearing or prime brokers

#### Natural Crossing Opportunities

Increased order volumes provide additional opportunities to cross natural buyers and sellers

#### Algorithm Technology Combination

• Combination of Virtu's and ITG's products and technology yield a superior offering that will increase penetration among existing clients and adoption from new clients

#### **Execution Improvements**

 ITG's global offering to be enhanced by Virtu's continuously improving technology and its trading experience on over 235 markets

### Enlarged Footprint

• Virtu's first-hand experience in geographies and asset classes in which ITG's clients have incumbent execution needs will drive increased revenue opportunities





#### **Anticipated \$125 million in capital releases**

 To be obtained by combining and rationalizing legal entities and regions, consolidating excess capital buffers while retaining significant capital

#### **Enhanced EBITDA and Free Cash Flow**

 Post-integration profitability to improve meaningfully from legacy ITG businesses given \$123 million of run-rate synergies

#### **Expeditious pay down of acquisition-related debt**

- Virtu expects to realize the majority of the capital synergies within the first year of integration, subject to regulatory approvals
- Target leverage of 2.0x to 2.25x by year-end 2020

#### Sources & Uses



Sources (\$mm)	
Excess Cash	\$37
New Term Loan	1,500
Total Sources	\$1,537

Uses (\$mm)	
Offer Value of Equity	\$1,039
Refinance Virtu Term Loan	400
Estimated Transaction Fees & Expenses <sup>1</sup>	75
Estimated Change in Control Payments	22
Refinance ITG Debt	2
Total Uses	\$1,537

## Pro-Forma Leverage



#### **Current**

VIRT Leverage Position (\$mm)	
Current Debt Amount	\$931
LTM 9/30/18 Adjusted EBITDA	531
4Q 2017 Adjusted EBITDA	108
1Q 2018 Adjusted EBITDA	223
2Q 2018 Adjusted EBITDA	112
3Q 2018 Adjusted EBITDA	88
Debt / LTM Adj. EBITDA	1.75x

VIRT Debt Description			
(\$mm)	Rate	Maturity	Amount
Term Loan	5.09%	2022	\$400
Bonds	6.75%	2022	500
Japannext	5.00%	2020	31
Total	5.98%		\$931

ITG Leverage Position (\$mm)	
Current Debt Amount	\$2
LTM 9/30/18 Adjusted EBITDA	110
4Q 2017 Adjusted EBITDA	24
1Q 2018 Adjusted EBITDA	33
2Q 2018 Adjusted EBITDA	29
3Q 2018 Adjusted EBITDA	25
Debt / LTM Adj. EBITDA	0.02x

#### **Pro Forma**

Pro Forma Leverage Position (\$mm)	
Pro Forma Debt Amount	\$2,031
LTM 9/30/18 Adjusted EBITDA after Synergies	735
LTM Adjusted EBITDA	641
Expected Net Cash Synergies	94
Debt / LTM Adj. EBITDA	2.76x

Pro Forma Debt Description (\$mm)	Rate	Maturity	Amount
New Term Loan	TBD	2025	1,500
Bonds	6.75%	2022	500
Japannext	5.00%	2020	31
Total			\$2,031

## **Trading Capital**



Virtu Assets (\$mm)	9/30/2018
Cash and equivalents	\$415.9
Securities borrowed	1,305.8
Securities purchased under agreements to resell	10.0
Receivables from broker dealers and clearing organizations	1,115.8
Trading assets, at fair value	2,926.8
Property, equipment and capitalized software, net	117.5
Goodwill	836.6
Intangibles, net of accumulated amortization	90.1
Deferred taxes	178.1
Other assets	242.0
Total Assets	\$7,238.5

Virtu Liabilities and Equity (\$mm)	9/30/2018
Short term borrowings, net	\$14.6
Securities loaned	800.1
Securities sold under agreements to repurchase	301.2
Payables to broker dealers and clearing organizations	952.3
Trading liabilities, at fair value	2,398.1
Tax receivable agreement obligations	199.3
Accounts payable and accrued expenses and other liabilities	284.2
Long-term borrowings, net	904.0
Total Liabilities	\$5,853.9
Equity	1,384.6
Total Liabilities and Equity	\$7,238.5

Trading Capital (\$mm)	9/30/2018
Sum of Trading Assets	\$5,774.2
Sum of Trading Liabilities	\$4,466.4
Total Trading Capital	\$1,307.8
ITG Trading Capital at 9/30/18	204.9
Pro Forma Trading Capital	\$1,512.7

## Adjusted EBITDA Reconciliation – ITG



Adjusted EBITDA Reconciliation (\$mm)	4Q 2017 Total	1Q 2018 Total	2Q 2018 Total	3Q 2018 Total
Adjusted EBITDA as reported by ITG	\$19	\$24	\$23	\$19
Plus: Non-cash stock-based compensation	5	8	6	6
Adjusted EBITDA	\$24	\$33	\$29	\$25

## **Earnings Presentation**

Third Quarter 2018

#### **Executive Summary**



#### **Business performance**

- Generated \$177.9 million of Adjusted Net Trading Income ("Adjusted NTI")<sup>1</sup>
- Average daily Adjusted NTI of \$2.82 million for the quarter
- Normalized Adjusted EPS<sup>1</sup> of \$0.22
- Adjusted EBITDA<sup>1</sup> of \$88.3 million

#### **Continued progress on integration and expense synergies**

- Adjusted Operating Expense<sup>1</sup> of \$105.6 million for 3Q 2018, down 1% from 2Q 2018 and down 21% from 1Q 2018
  - o On track against 2H 2018 Adjusted Operating Expense guidance of \$212-222 million
- Current headcount 512, inclusive of 40 new hires since January 1, 2018
- Forecasted gross synergies of ~\$338 million, based on FY 2019 guidance
  - Using the 3Q 2018 run rate, we have realized \$343 million in annualized gross synergies

#### **Balance sheet management progress**

- Additional prepayments of \$115 million of Term Loan in 3Q 2018
- Current total debt at \$931 million; previously repaid \$750 million since closing of the KCG acquisition in July 2017
  - o Debt-to-LTM Adj. EBITDA: 1.75x
  - Refinanced Term Loan to LIBOR + 275 basis points in September 2018
- Initiated an incremental \$50 million share repurchase program in 1Q 2018 with excess capital; this program was expanded to \$100 million in July 2018
  - o To date 2.37 million shares have been repurchased at an average cost of \$26.08, totaling \$61.9 million

Quarter-to-date 4Q environment is meaningfully ahead of 3Q and 2Q 2018 Execution Services 4Q 2018 run rate significantly outperforming 32% uptick in US Equity ADV

## Adjusted NTI<sup>1</sup> Highlights

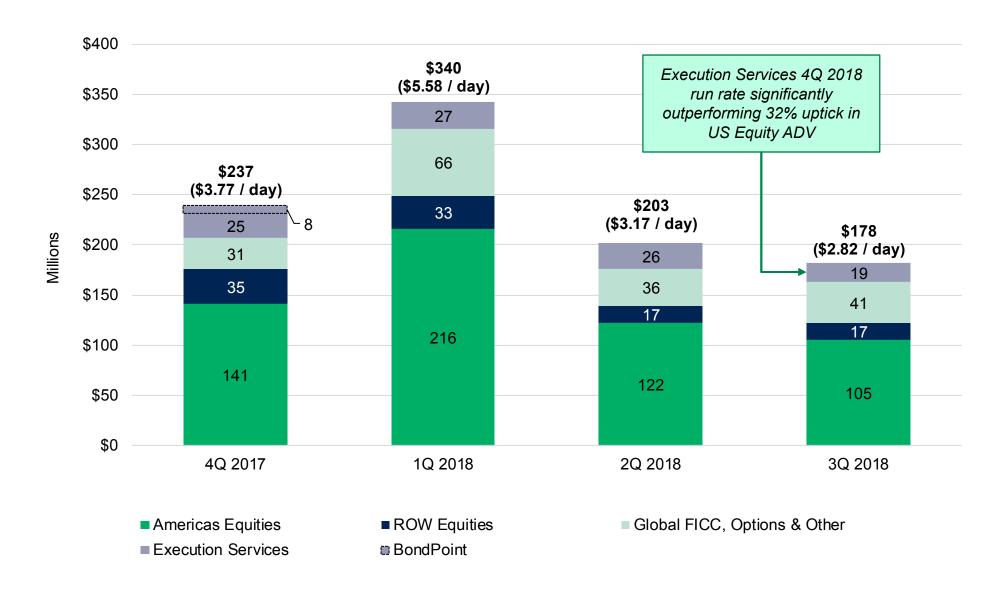


Adjusted Net Trading Income (NTI) 1	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 v	October 201
(\$mm)	Total	Total	Total	Total	2Q 2018	v 3Q 2018
Market Making						
Adjusted NTI	\$204.1	\$313.5	\$176.7	\$158.9	- 8.6%	
Average Daily Adjusted NTI	\$3.24	\$5.14	\$2.76	\$2.52	- 0.078	
Execution Services						
Adjusted NTI	\$33.2	\$26.7	\$26.3	\$19.0	- 26.4%	
Average Daily Adjusted NTI	\$0.53	\$0.44	\$0.41	\$0.30	- 20.4%	
Execution Services (ex-BondPoint)						
Adjusted NTI	\$24.9	\$26.7	\$26.3	\$19.0	26.40/	
Average Daily Adjusted NTI	\$0.40	\$0.44	\$0.41	\$0.30	- 26.4%	
Grand Total						
Total Adjusted NTI	\$237.3	\$340.3	\$202.9	\$177.9	- 10.9%	
Total Average Daily Adjusted NTI	\$3.77	\$5.58	\$3.17	\$2.82	- 10.9%	
Grand Total (ex-BondPoint)						
Total Adjusted NTI	\$229.0	\$340.3	\$202.9	\$177.9	- 10.9%	
Total Average Daily Adjusted NTI	\$3.63	\$5.58	\$3.17	\$2.82	- 10.9%	
Market Metrics (Average Daily)						
US Equity Consolidated Volume (mm shares)	6,372	7,621	6,859	6,387	- 6.9%	+ 32.4%
Realized Volatility of S&P 500 Index	5.71	19.82	12.42	7.35	- 40.8%	+ 206.6%
Implied Volatility of S&P 500 Index (VIX)	10.31	17.36	15.34	12.86	- 16.2%	+ 50.5%
IBKR Retail Equity Volume (mm shares)	899	1,075	765	676	- 11.6%	- 3.9%
Number of Trading Days	63	61	64	63		

<sup>&</sup>lt;sup>1</sup> This reflects a non-GAAP measure. Please refer to slides at the end of this presentation for reconciliation to the equivalent GAAP measure.

## Adjusted Net Trading Income<sup>1</sup>





<sup>&</sup>lt;sup>1</sup> This reflects a non-GAAP measure. Please refer to slides at the end of this presentation for reconciliation to the equivalent GAAP measure.

## **Operating Expenses Trajectory**



Adjusted Operating Expenses <sup>1</sup> (\$mm)	1Q 2018 Actual	2Q 2018 Actual	3Q 2018 Actual	FY 2019 Guidance
Occupancy, Overhead and Cash Compensation	\$71	\$46	\$50	\$190 - \$196
Communications and Data Processing	47	44	40	170 - 174
Depreciation & Amortization	15	16	16	62
Adjusted Operating Expenses	\$133	\$107	\$106	\$422 - \$432
Annualized Adjusted Operating Expenses <sup>2</sup>	532	427	423	427
2016 Total Adjusted Operating Expenses	765	765	765	765
Annual Expense Synergies <sup>2</sup>	\$233	\$338	\$343	\$338

Adjusted Operating Expenses <sup>1</sup>	3Q 2018	2H 2018	%
(\$mm)	Actual	Guidance	Realized <sup>2</sup>
Adjusted Operating Expenses	\$106	\$212 - \$222	49%

<sup>&</sup>lt;sup>1</sup> This reflects a non-GAAP measure. Please refer to slides at the end of this presentation for reconciliation to the equivalent GAAP measure.

<sup>&</sup>lt;sup>2</sup> Assumes midpoint of guidance.

## **Debt Capitalization**



22

	(\$mm)
Current Debt Outstanding	\$931
LTM 3Q 2018 Adjusted EBITDA <sup>1</sup>	531
Debt / LTM Adj. EBITDA	1.75x

Debt Description	Rate	Maturity	07 Nov 2018
Term Loan	5.09% <sup>2</sup>	2022	\$400
Bonds	6.75%	2022	500
Japannext <sup>3</sup>	5.00%	2020	31
Total	5.98% <sup>4</sup>		\$931

<sup>&</sup>lt;sup>1</sup> This reflects a non-GAAP measure. Please refer to slides at the end of this presentation for reconciliation to the equivalent GAAP measure.

<sup>&</sup>lt;sup>2</sup> Current rate of 3-month LIBOR + 275 bps

<sup>3 3.5</sup>B JPY

<sup>&</sup>lt;sup>4</sup> Blended rate November 7, 2018

### Virtu Capital Return since IPO



Adjusted EPS <sup>1</sup> & Dividend Payouts since IPO	2Q15 to 4Q15 <sup>2</sup>	FY 2016	FY 2017	1Q 2018	2Q 2018	3Q 2018
Normalized Adjusted EPS <sup>1</sup>	\$0.93	\$0.97	\$0.57	\$0.76	\$0.31	\$0.22
Dividends Declared	\$0.72	\$0.96	\$0.96	\$0.24	\$0.24	\$0.24
Cumulative Payout Ratio	77%	88%	107%	89%	88%	89%

Cumulative Capital Return since IPO	
Cumulative Adjusted EPS since IPO	\$3.77
Cumulative Dividends per Share since IPO	\$3.36
Cumulative % Payout since IPO	89%
Share Buyback Amount per Share <sup>3</sup>	\$ 0.32
Cumulative % Payout after Buyback	98%

Share Repurchase Update:	
Shares Repurchased To Date	2,373,350
Average Price	\$26.08
Total Amount Repurchased	\$61.9 million
Total Repurchase Authorized	\$100.0 million

Note: Numbers may not foot due to rounding.

<sup>&</sup>lt;sup>1</sup> This reflects a non-GAAP measure. Please refer to slides at the end of this presentation for reconciliation to the equivalent GAAP measure.

<sup>&</sup>lt;sup>2</sup> Virtu Financial, Inc. went public in 2Q 2015.

<sup>&</sup>lt;sup>3</sup> Calculated as total dollar amount of shares repurchased to date divided by weighted average fully diluted shares outstanding.

## **Balance Sheet and Trading Capital**



Assets (\$mm)	9/30/2018
Cash and equivalents	\$415.9
Securities borrowed	1,305.8
Securities purchased under agreements to resell	10.0
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#### Market Metrics and Volumes



Americas Equities	Туре	Units	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs. 2Q 2018	3Q 2018 vs. 3Q 2017
Volume Benchmarks (ADV)											
U.S. Equity Consolidated ADV	Shares	М	6,843	6,852	6,093	6,372	7,621	6,859	6,387	- 6.9%	+ 4.8%
U.S. Notional Value ADV	\$USD	В	270	276	260	273	382	331	312	- 5.8%	+ 20.0%
Volatility Benchmarks (ADV)											
SPX Implied Volatility - QTD	#	#	11.69	11.43	10.94	10.31	17.36	15.34	12.86	- 16.2%	+ 17.5%
SPX Realized Volatility - QTD	#	#	6.78	7.33	7.14	5.71	19.82	12.42	7.35	- 40.8%	+ 3.0%
Ratio: Realized Volatility / VIX	Ratio	%	58.0%	64.2%	65.2%	55.4%	114.2%	81.0%	57.2%	- 29.4%	- 12.3%
SPX Intraday Volatility	#	%	0.57%	0.55%	0.48%	0.45%	1.38%	0.99%	0.60%	- 39.9%	+ 24.8%
EMEA Equities	Туре	Units	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs. 2Q 2018	3Q 2018 vs. 3Q 2017
Volume Benchmarks (ADV)										2010	00, 2011
Pan-EU Equity Shares (incl auction)	Shares	М	4,978	5,340	4,052	4,419	5,503	4,836	4,244	- 12.2%	+ 4.7%
Pan-EU € Notional Value (incl auction)	Euro	В	45.51	48.58	41.10	44.68	50.83	47.41	41.34	- 12.8%	+ 0.6%
Volatility Benchmarks (ADV)											
SX5E Implied Volatility - QTD	#	#	15.50	16.27	14.32	12.87	17.00	14.90	14.23	- 4.5%	- 0.6%
SX5E Realized Volatility - QTD	#	#	9.71	12.07	10.16	8.49	14.88	12.19	10.77	- 11.7%	+ 6.0%
Ratio: Realized Volatility / Implied	Ratio	%	63%	74%	71%	66%	88%	82%	76%	- 7.5%	+ 6.6%
SX5E Intraday Volatility	#	%	0.86%	0.91%	0.85%	0.80%	1.16%	1.00%	0.87%	- 13.0%	+ 2.7%
APAC Equities	Туре	Units	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs. 2Q 2018	3Q 2018 vs. 3Q 2017
Volume Benchmarks (ADV)										2010	00 2011
TSE ADV	Shares	М	2,259	2,234	2,101	2,078	1,934	1,779	1,627	- 8.5%	- 22.6%
TSE Notional ADV	¥	В	2,600	2,759	2,550	3,252	3,406	2,941	2,793	- 5.0%	+ 9.6%
OSE Nikkei 225 Futures (Total)	Contracts	s #	185,310	176,683	156,692	210,212	261,965	168,804	183,972	+ 9.0%	+ 17.4%
Volatility Benchmarks (ADV)											
NKY Implied Volatility - QTD	#	#	18.13	16.07	14.65	16.29	21.70	17.01	16.50	- 3.0%	+ 12.6%
NKY Realized Volatility - QTD	#	#	14.89	10.91	9.38	11.82	23.36	10.72	13.82	+ 28.9%	+ 47.3%
Ratio: Realized Volatility / VNKY	Ratio	%	82%	68%	64%	73%	108%	63%	84%	+ 32.8%	+ 30.9%
NKY Intraday Volatility	#	%	0.81%	0.69%	0.57%	0.87%	1.30%	0.81%	0.94%	+ 15.6%	+ 63.6%

## Market Metrics (continued)



Global Commodities	Туре	Units	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs. 2Q 2018	3Q 2018 vs. 3Q 2017
Futures Contract Volume (ADV)											
CME Energy ADV	Contracts	M	2.497	2.632	2.693	2.489	2.754	2.630	2.199	- 16.4%	- 18.3%
ICE Energy ADV	Contracts	M	2.847	2.892	2.616	2.627	2.893	2.742	2.451	- 10.6%	- 6.3%
Total Energy	Contracts	М	5.344	5.524	5.309	5.116	5.647	5.372	4.650	- 13.4%	- 12.4%
Volatility Benchmarks (ADV)											
GS Comm Implied Volatility - QTD	#	#	254.84	260.66	263.67	272.17	273.50	268.23	264.73	- 1.3%	+ 0.4%
GS Comm Realized Volatility - QTD	#	#	6.80	5.64	4.60	3.57	3.67	5.30	6.09	+ 15.0%	+ 32.5%
Ratio: Realized Volatility/Implied	Ratio	%	2.67%	2.16%	1.74%	1.31%	1.34%	1.97%	2.30%	+ 16.6%	+ 32.0%
OVX Implied Volatility - QTD	#	#	29.34	30.93	29.19	25.21	25.18	27.29	26.28	- 3.7%	- 10.0%
OVX Realized Volatility - QTD	#	#	71.97	71.94	63.89	64.10	72.89	68.18	60.25	- 11.6%	- 5.7%
Ratio: Realized Volatility / Implied	Ratio	%	245%	233%	219%	254%	289%	250%	229%	- 8.2%	+ 4.8%
CBOE Energy Sector Vol	#	#	18.13	18.38	16.80	15.08	21.77	20.95	17.95	- 14.3%	+ 6.8%
CBOE/COMEX Gold Vol Index	#	#	14.38	12.19	12.00	10.92	11.68	11.02	10.91	- 1.0%	- 9.1%
Global Currencies	Туре	Unite	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs.	3Q 2018 vs.
	Type	Office	10, 2017	2017	0Q 2011	TQ 2011	10, 2010	2010	0Q 2010	2Q 2018	3Q 2017
Spot and Futures Volume (ADV)											
Hotspot ADV FX	\$USD	M	28,811	27,927	29,036	32,431	42,224	38,414	34,556	- 10.0%	+ 19.0%
Reuters ADV FX	\$USD	M	89,908	88,323	90,723	91,094	108,206	103,666	95,206	- 8.2%	+ 4.9%
EBS ADV FX	\$USD	M	55,517	51,006	56,474	50,097	65,167	72,740	82,873	+ 13.9%	+ 46.7%
FastMatch FX	\$USD	M	17,661	20,494	18,313	17,183	20,192	21,429	19,397	- 9.5%	+ 5.9%
CME FX ADV	Contracts	K	894	879	971	941	1,100	1,035	944	- 8.8%	- 2.8%
Volatility Benchmarks (ADV)											
CVIX Implied Volatility - QTD	#	#	10.04	7.91	8.09	7.36	7.77	7.23	7.42	+ 2.7%	- 8.2%
CVIX Realized Volatility - QTD	#	#	50.00	59.74	29.22	24.39	36.20	33.31	35.93	+ 7.9%	+ 23.0%
Ratio: Realized Volatility / Implied	Ratio	%	4.98	7.55	3.61	3.31	4.66	4.61	4.84	+ 5.0%	+ 33.9%
JPMVXYG7 Implied Volatility - QTD	#	#	10.10	7.98	8.17	7.41	7.83	7.34	7.54	+ 2.6%	- 7.8%
JPMVXYG7 Realized Volatility - QTD	#	#	35.16	39.53	27.67	22.76	39.44	29.54	29.55	+ 0.0%	+ 6.8%
Ratio: Realized Volatility / Implied	Ratio	%	3.48	4.95	3.39	3.07	5.04	4.02	3.92	- 2.5%	+ 15.8%
JPMorgan Emerging Market Volatility	#	#	10.08	8.34	7.64	7.97	8.11	8.94	11.19	+ 25.2%	+ 46.5%
CBOE/CME FX € Vol Index	#	#	8.49	8.29	8.22	6.70	7.97	7.57	7.42	- 1.9%	- 9.7%
CBOE/CME FX¥ Vol Index	#	#	11.72	9.28	9.47	8.33	8.97	7.68	7.58	- 1.4%	- 20.0%
CBOE/CME FX £ Vol Index	#	#	10.06	8.38	8.04	8.07	8.85	7.98	8.50	+ 6.6%	+ 5.8%
Options, Fixed Income, & Other Securiti	es Type	Units	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	3Q 2018 vs. 2Q 2018	3Q 2018 vs. 3Q 2017
Futures and Options Contract Volume (A	(DV)									<b>LQ 2010</b>	00, 2011
OCC ADV	Contracts	М	16.56	16.68	16.18	17.35	22.41	18.81	18.29	- 2.7%	+ 13.0%
VIX Futures Volume	Contracts		255,161	306,381	330,864	284,008	382,685	252,674	227,376	- 10.0%	- 31.3%
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#### Virtu GAAP Income Statement



Income Statement (\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018	YTD 9/30/18
Trading income, net	\$286.4	\$406.2	\$258.6	\$235.7	\$900.5
Commissions, net and technology services	62.2	53.8	46.6	40.3	140.7
Interest and dividends	22.1	17.9	21.9	21.5	61.3
Other	89.7	337.1	1.0	(2.3)	335.9
Total Revenues	\$460.4	\$815.1	\$328.1	\$295.1	\$1,438.3
Brokerage, exchange and clearance fees	81.7	87.8	73.3	68.6	229.8
Communications and data processing	48.3	49.5	48.8	39.5	137.8
Employee compensation and payroll taxes	66.4	64.7	41.2	44.8	150.7
Payment for order flow	15.7	16.3	15.8	18.3	50.4
Interest and dividends expense	36.1	33.6	35.0	32.6	101.2
Operations and administrative	28.1	19.9	16.6	17.3	53.7
Termination of office leases	1.9	20.0	1.8	1.4	23.3
Depreciation and amortization	18.2	15.3	16.2	16.0	47.6
Amortization of purchased intangibles and acquired capitalized software	8.9	6.9	6.8	6.4	20.0
Debt issue cost related to debt refinancing	1.1	6.0	2.4	3.3	11.7
Transaction fees and expenses	1.0	7.5	1.8	(0.3)	9.0
Share based compensation at IPO	0.2	0.0	0.0	-	0.0
Financing interest expense	24.0	19.0	18.8	17.7	55.5
Total Operating Expenses	\$331.5	\$346.5	\$278.5	\$265.7	\$890.7
Income before income taxes	\$128.9	\$468.5	\$49.6	\$29.4	\$547.6
Provision for income taxes	81.1	58.5	3.0	13.8	75.3
Net Income	\$47.8	\$410.0	\$46.6	\$15.6	\$472.3

### Adjusted Net Trading Income Reconciliation Consolidated Business



Adjusted Net Trading Income Reconciliation (\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018
Trading income, net	\$286.4	\$406.2	\$258.6	\$235.7
Commissions, net and technology services	62.2	53.8	46.6	40.3
Brokerage, exchange and clearance fees, net	(81.7)	(87.8)	(73.3)	(68.6)
Payments for order flow	(15.7)	(16.3)	(15.8)	(18.3)
Interest and dividends, net	(14.1)	(15.7)	(13.1)	(11.1)
Adjusted Net Trading Income	\$237.3	\$340.3	\$202.9	\$177.9

## Adjusted Net Trading Income Reconciliation Operating Segments



Adjusted Net Trading Income Reconciliation		Market	Making	
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018
Trading income, net	\$287.3	\$405.7	\$258.6	\$235.6
Commissions, net and technology services	7.1	8.5	6.8	6.6
Brokerage, exchange and clearance fees, net	(61.7)	(69.1)	(59.8)	(54.3)
Payments for order flow	(15.6)	(16.2)	(15.8)	(18.3)
Interest and dividends, net	(13.0)	(15.4)	(13.2)	(10.7)
Adjusted Net Trading Income	\$204.1	\$313.5	\$176.7	\$158.9

Adjusted Net Trading Income Reconciliation		Execution Services						
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018				
Trading income, net	(\$2.1)	\$0.5	(\$0.0)	\$0.1				
Commissions, net and technology services	55.1	45.3	39.8	33.7				
Brokerage, exchange and clearance fees, net	(20.0)	(18.8)	(13.5)	(14.3)				
Payments for order flow	(0.1)	(0.1)	(0.0)	(0.0)				
Interest and dividends, net	0.2	(0.3)	0.1	(0.4)				
Adjusted Net Trading Income	\$33.2	\$26.7	\$26.3	\$19.0				

Adjusted Net Trading Income Reconciliation		Corporate						
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018				
Trading income, net	\$1.2	-	-	-				
Commissions, net and technology services	-	-	-	-				
Brokerage, exchange and clearance fees, net	-	-	-	-				
Payments for order flow	-	-	-	-				
Interest and dividends, net	(1.2)	0.04	-	0.02				
Adjusted Net Trading Income	(\$0.05)	\$0.04	-	\$0.02				

## Adjusted Net Trading Income Reconciliation Market Making



Adjusted Net Trading Income Reconciliation		Americas Equities							
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018					
Trading income, net	\$186.7	\$273.2	\$166.6	\$146.4					
Commissions, net and technology services	7.1	8.5	6.7	6.5					
Brokerage, exchange and clearance fees, net	(31.2)	(41.1)	(28.7)	(23.2)					
Payments for order flow	(15.6)	(16.2)	(15.8)	(18.3)					
Interest and dividends, net	(5.9)	(8.7)	(6.5)	(5.9)					
Adjusted Net Trading Income	\$141.1	\$215.7	\$122.4	\$105.5					

Adjusted Net Trading Income Reconciliation		ROW Equities						
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018				
Trading income, net	\$57.6	\$51.7	\$31.8	\$34.4				
Commissions, net and technology services	-	-	-	-				
Brokerage, exchange and clearance fees, net	(19.3)	(15.9)	(12.0)	(15.9)				
Payments for order flow	-	-	-	-				
Interest and dividends, net	(3.5)	(2.4)	(2.7)	(1.9)				
Adjusted Net Trading Income	\$34.8	\$33.4	\$17.0	\$16.6				

Adjusted Net Trading Income Reconciliation		Global FICC, Options, Other						
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018				
Trading income, net	\$45.0	\$82.1	\$55.8	\$58.1				
Commissions, net and technology services	0.01	(0.02)	0.1	0.1				
Brokerage, exchange and clearance fees, net	(12.0)	(12.5)	(16.3)	(14.9)				
Payments for order flow	-	-	-	-				
Interest and dividends, net	(2.4)	(3.3)	(3.2)	(2.5)				
Adjusted Net Trading Income	\$30.6	\$66.3	\$36.3	\$40.8				

Adjusted Net Trading Income Reconciliation	Unallocated						
(\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018			
Trading income, net	(\$2.0)	(\$1.2)	\$4.5	(\$3.4)			
Commissions, net and technology services	-	-	-	-			
Brokerage, exchange and clearance fees, net	0.8	0.5	(2.8)	(0.3)			
Payments for order flow	-	-	-	-			
Interest and dividends, net	(1.2)	(1.1)	(0.7)	(0.4)			
Adjusted Net Trading Income	(\$2.4)	(\$1.8)	\$1.0	(\$4.0)			

## Adjusted EPS Reconciliation



Adjusted EPS Reconciliation (\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018	YTD 9/30/18
Pre-Tax Income (Loss)	\$128.9	\$468.5	\$49.6	\$29.4	\$547.6
Intangible amortization	8.9	6.9	6.8	6.4	20.0
Debt issue costs related to financing	1.1	6.0	2.4	3.3	11.7
Severance <sup>1</sup>	4.7	3.7	2.6	1.3	7.6
Reserve for legal matter	2.8	-	0.4	1.6	2.0
Transaction fees and expenses	1.0	7.5	1.8	(0.3)	9.0
Trading related settlement income	(0.6)	-	-	-	-
Office lease termination	1.9	20.0	1.8	1.4	23.3
Write-down of assets	0.7	0.9	1.8	0.5	3.2
Shared based compensation	6.0	9.3	6.7	8.5	24.6
Connectivity early termination	-	2.5	4.6	-	7.1
Loss/(gain) on sale of business	-	(337.5)	-	2.3	(335.2)
Other	(89.7)	0.5	(1.0)	(0.1)	(0.6)
Normalized Adjusted Pre-Tax Income	\$65.7	\$188.3	\$77.4	\$54.6	\$320.3
Taxes (2018: 23%; 2017: 37%)	24.3	43.3	17.8	12.6	73.7
Normalized Adjusted Net Income	\$41.4	\$145.0	\$59.6	\$42.0	\$246.7
Weighted average fully diluted shares outstanding	188.2	190.1	191.1	192.0	190.9
Normalized Adjusted EPS	\$0.22	\$0.76	\$0.31	\$0.22	\$1.29

## EBITDA & Adjusted EBITDA Reconciliation



EBITDA / Adjusted EBITDA Reconciliation (\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018	YTD 9/30/18
Pre-Tax Income (Loss)	\$128.9	\$468.5	\$49.6	\$29.4	\$547.6
Interest expense	25.1	25.1	21.1	21.1	67.3
Depreciation and amortization	27.1	22.2	23.0	22.4	67.6
EBITDA	\$181.1	\$515.8	\$93.8	\$72.9	\$682.5
Loss/(gain) on sale of business	-	(337.5)	-	2.3	(335.2)
EBITDA less loss/(gain) on sale of business	\$181.1	\$178.2	\$93.8	\$75.2	\$347.2
EBITDA Margin	76.3%	52.4%	46.2%	42.3%	48.2%
Severance <sup>1</sup>	4.7	3.7	2.6	1.3	7.6
Reserve for legal matter	2.8	-	0.4	1.6	2.0
Transaction fees and expenses	1.0	7.5	1.8	(0.3)	9.0
Trading related settlement income	(0.6)	_	-	-	-
Office lease termination	1.9	20.0	1.8	1.4	23.3
Write-down of assets	0.7	0.9	1.8	0.5	3.2
Shared based compensation	6.0	9.3	6.7	8.5	24.6
Connectivity early termination	-	2.5	4.6	-	7.1
Other	(89.7)	0.5	(1.0)	(0.1)	(0.6)
Adjusted EBITDA	\$107.9	\$222.7	\$112.4	\$88.3	\$423.4
Adjusted EBITDA Margin	45.5%	65.4%	55.4%	49.6%	58.7%

### Adjusted Operating Expenses Reconciliation



Adjusted Operating Expenses Reconciliation (\$mm)	4Q 2017	1Q 2018	2Q 2018	3Q 2018	YTD 9/30/18
Employee compensation and payroll taxes	\$66.4	\$64.7	\$41.2	\$44.8	\$150.7
Operations and administrative	28.1	19.9	16.6	17.3	53.8
Communications and data processing	48.3	49.5	48.8	39.5	137.8
Depreciation and amortization	18.2	15.3	16.2	16.0	47.6
Less:					
Severance <sup>1</sup>	(4.7)	(3.7)	(2.6)	(1.3)	(7.6)
Share based compensation	(5.8)	(9.3)	(6.7)	(8.5)	(24.6)
Reserve for legal matters	(2.8)	-	(0.4)	(1.6)	(2.0)
Connectivity early termination	-	(2.5)	(4.6)	-	(7.1)
Write-down of assets	(0.7)	(0.9)	(1.8)	(0.5)	(3.2)
Adjusted Operating Expenses	\$147.0	\$132.9	\$106.8	\$105.6	\$345.3