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J.P.Morgan





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## 36<sup>th</sup> Annual Winter Seminar

Offices of Waller Law – 511 Union Street, Suite 2700  
December 14<sup>th</sup>, 2017

Presented by:

# J.P.Morgan

### Agenda:

- 7:45 – 8:30 Registration and Breakfast
- 8:30 – 8:45 State of the Membership – AFP Nashville President
- 8:45 – 9:35 Session 1 Keynote Speaker – Brian Preston, The Money Guy - Investing like Warren Buffett
- 9:40 – 10:30 Session 2: Hans Hurdle, PNC Bank – Capital Markets
- 10:30 – 10:40 Break
- 10:40 – 11:30 Session 3: Chris Scribner, Regions Bank – Political Action Committee Update
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- 4:15 – 6:30 Happy Hour – Oak Bar, Hermitage Hotel

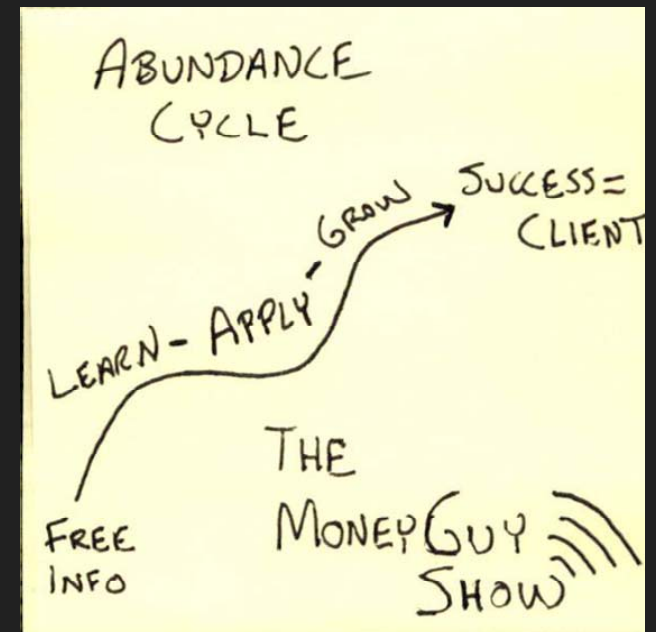


# 7 Life Changing Lessons From Warren Buffett

Brian Preston, CPA/PFS, CFP® & Bo Hanson, CFA, CFP®

The Money Guy Show – [www.MoneyGuy.com](http://www.MoneyGuy.com)

# Who Are We and Why Should You Care?!



We Are More Than Just a Friendly Voice...

# So, Why Are We Here...?

...Because March is right around the corner.

# And What Makes March So Exciting?



## BUFFETT PARTNERSHIP, LTD.

810 KIRKBIT PLAZA  
OMAHA, NEBRASKA 68101  
TELEPHONE 648-4310

WARREN E. BUFFETT, GENERAL PARTNER  
WILLIAM SCOTT  
JOHN M. KENNEDY

January 20, 1966

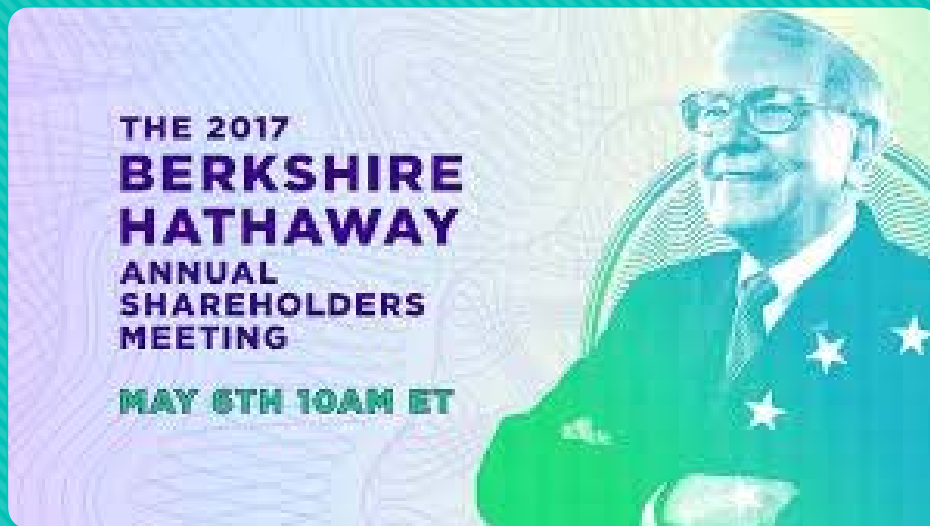
### Our Performance in 1965

Our War on Poverty was successful in 1965.

Specifically, we were \$12,304,060 less poor at the end of the year.

Last year under a section in the annual letter entitled "Our Goal" (please particularly note it was not headed "Our Promise"), I stated we were trying to achieve "... An average advantage (relative to the Dow) of ten percentage points per annum for BPL before allocation to the general partner - again with large amplitudes in the margin from perhaps 10 percentage points worse than the Dow in a bad year to 25 percentage points better when everything clicks."

My fallibility as a forecaster was quickly demonstrated when the first year fell outside my parameters. We achieved our widest margin over the Dow in the history of BPL with an overall gain of 47.2% compared to an overall gain (including dividends which would have been received through ownership of the Dow) of 14.2% for the Dow. Naturally, no writer likes to be publicly humiliated by such a mistake. It is unlikely to be repeated.

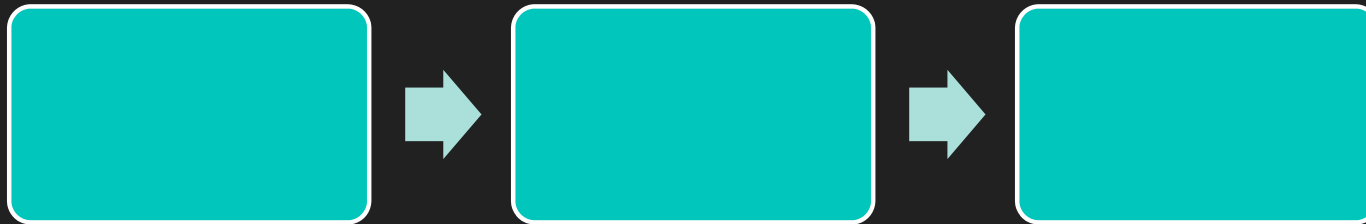


**A Big Year For Fans and Students of Warren!**

# 7 Life Changing Lessons From Warren Buffett:

1. Make The Most Of Your Mind And Body
2. Take The Extra Step That Others Won't
3. Connecting Matters
4. Being A Contrarian Can Be Profitable
5. Optimism Is A Good Thing
6. Keep Your Emotions In Check
7. Know What You Can Control

# 1. Make The Most Of Your Mind And Body



**If you can afford a car  
you can afford two Gremlins.**

Until April 1, 1970, only an imported economy car could make that statement. Then American Motors introduced the Gremlin. And America had a car priced to compete with the imports. The two-passenger Gremlin lists for \$1,879, the four-passenger for \$1,959.<sup>1</sup>

The Gremlin gets the best mileage of any car made in America. It goes about 500 miles on a tank of gas. It normally goes 6,000 miles between oil changes, 24,000 between lube jobs. From bumper to bumper, it's just 2 1/4 inches longer than a Volkswagen. Yet its turning circle is 3 feet less than VW's. Which makes the Gremlin about the easiest car in the world to park and handle.

For a car this size, the Gremlin does surprisingly well on expressways. It is 10 inches wider, 7 inches lower and 765 pounds heavier than a VW, which means a smoother more stable ride. And its 128 hp engine goes from 0 to 60 in 15.3 seconds.

Aside from all these practical advantages, the Gremlin gives you something no imported economy car could ever offer. The fun of driving the new American car.

 \$1,959<sup>1</sup>  
4-passenger

 \$1,879<sup>1</sup>  
2-passenger

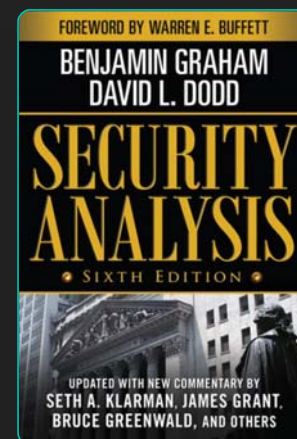
1. MSRP. Excludes Suggested Retail Price, taxes and local costs. If any destination charges, custom color or trim, body options, steel wheels, air conditioning, and other optional equipment are included.

Credit:  
HEIMANN, Jim  
70's All-American Ads  
Taschen  
via Barracouta.com

**American Motors**

## 2. Take The Extra Step That Others Won't

- Protégé of Benjamin Graham (Father of Value Investing) – How did he get that opportunity?
- You are not Harvard Material
- Security Analysis by Ben Graham and David Dodd

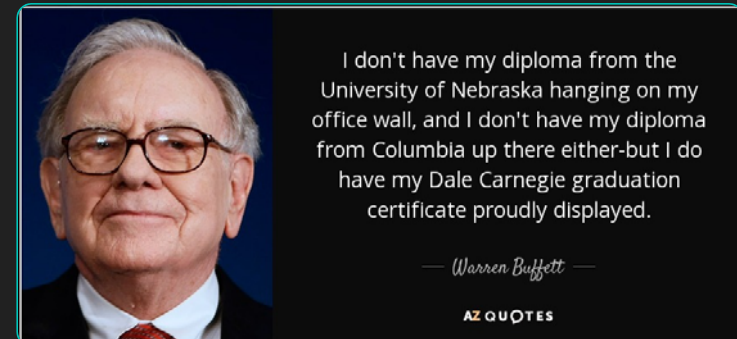


### 3. Connecting Matters

*"At the end of the day people won't remember what you said or did, they will remember how you made them feel."*

- Maya Angelou

- Warren is highly analytical and struggles to connect with the world.
- He found the ideal learning tool to overcome his struggle.
- How to Win Friends & Influence People by Dale Carnegie (1936)



## 4. Being A Contrarian Can Be Profitable

"Every decade or so, dark clouds will fill the economic skies, and they will briefly rain gold. When downpours of that sort occur, it's imperative that we rush outdoors carrying washtubs, not teaspoons."

Investors should remember that excitement and expenses are their enemies. And if they insist on trying to time their participation in equities, they should try to be fearful when others are greedy and greedy only when others are fearful.

Warren Buffett

QuoteAddicts.com

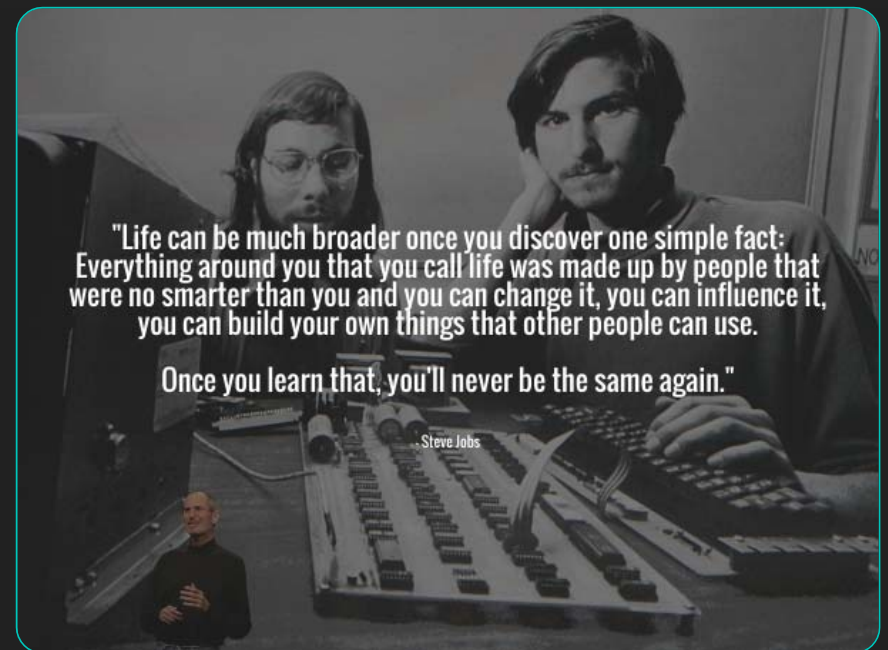
— WARREN BUFFETT —

**OPPORTUNITIES  
COME INFREQUENTLY.  
WHEN IT RAINS GOLD  
PUT OUT THE BUCKET  
NOT THE THIMBLE.**

## 5. Optimism Is A Good Thing

- "Early Americans, we should emphasize, were neither smarter nor more hard working than those people who toiled century after century before them. But those venturesome pioneers crafted a system that unleashed human potential, and their successors built upon it. This economic creation will deliver increasing wealth to our progeny far into the future. Yes, the build-up of wealth will be interrupted for short periods from time to time. It will not, however, be stopped. I'll repeat what I've both said in the past and expect to say in future years: Babies born in America today are the luckiest crop in history."

- Warren Buffett



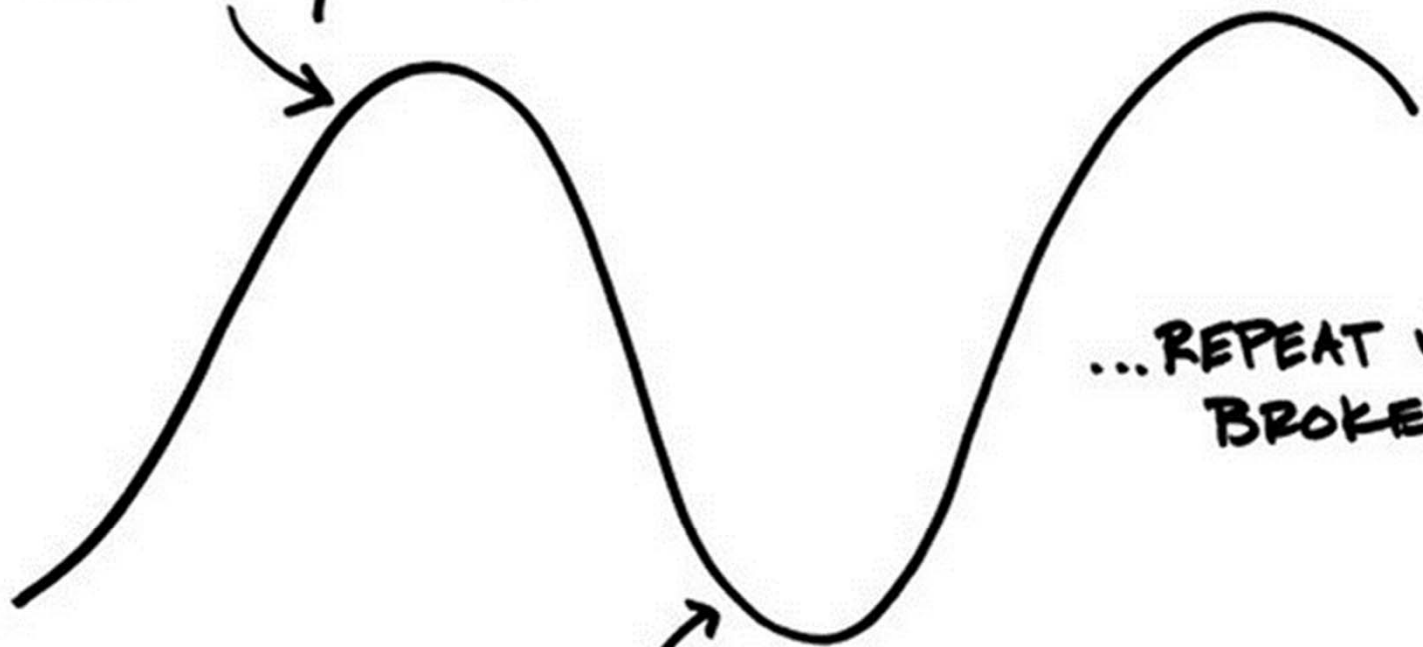
# 6. Keep Your Emotions In Check

(Specifically Fear And Greed)



- "American business – and consequently a basket of stocks – is virtually certain to be worth far more in the years ahead. Innovation, productivity gains, entrepreneurial spirit and an abundance of capital will see to that. Ever-present naysayers may prosper by marketing their gloomy forecasts. But heaven help them if they act on the nonsense they peddle."

GREED/BUY

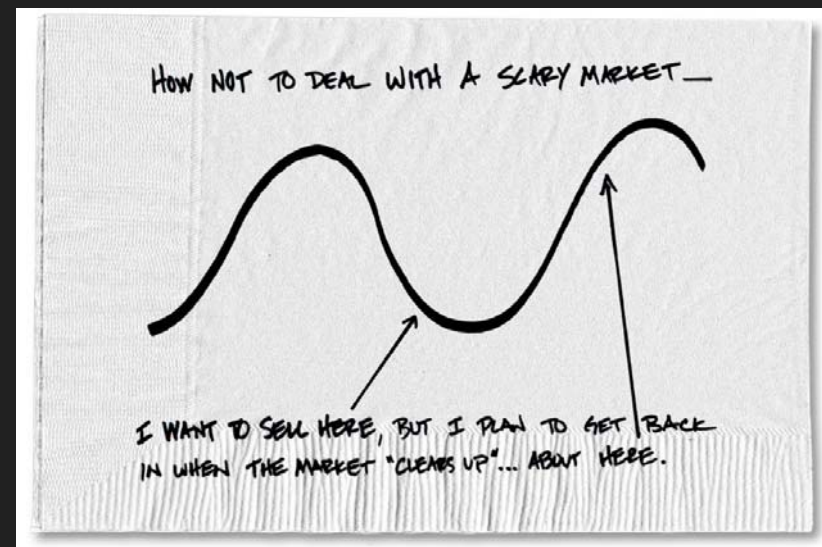


FEAR/SELL

...REPEAT UNTIL  
BROKE!

# 7. Know What You Can Control

- The Bet: In 2007, Warren offered to wager \$500,000 that no investment pro could select a set of at least five hedge funds that would, over ten years, match the performance of an unmanaged S&P 500 index fund.
- Results through 9 years...
  - Hedge Funds had delivered, through 2016, an average of 2.2% annually
  - S&P 500 had averaged an annual increase of 7.1%
- So what can you control?
  - Taxes
  - Fees
  - Asset Allocation
  - Risk Exposure
  - YOUR BEHAVIOR!!!



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SOMEONE IS SITTING IN THE SHADE  
TODAY BECAUSE SOMEONE PLANTED  
A TREE A LONG TIME AGO.

WARREN BUFFETT

Start Building  
Your Empire  
Today



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# Treasury Risk Management Market Update



December 14, 2017

# Today's Presenter

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## **Hans-Michael Hurdle Managing Director, Derivative Products Group, PNC's Capital Markets, LLC**

Hans Hurdle is a managing director with the Derivative Products Group. His responsibilities include managing risk management teams in Illinois, Wisconsin, Indiana, Missouri, Michigan, Ohio, Kentucky, Tennessee and Pennsylvania. In addition, he directly covers commercial, middle market and large corporate clients in Indiana, Kentucky and Tennessee. Hurdle has more than twenty years of experience in capital markets and commercial banking. Prior to joining PNC in 2003, he was a managing director in M&T Bank's Investment Banking Group. Prior to joining the banking industry, he earned a bachelor's degree from New York State University and thereafter served at the National Security Agency as an intelligence officer and Chinese linguist. He became a Certified Public Accountant in 1993 and completed a two year bank credit training program in 1994.

# Treasury Risk Management Market Update

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## Agenda

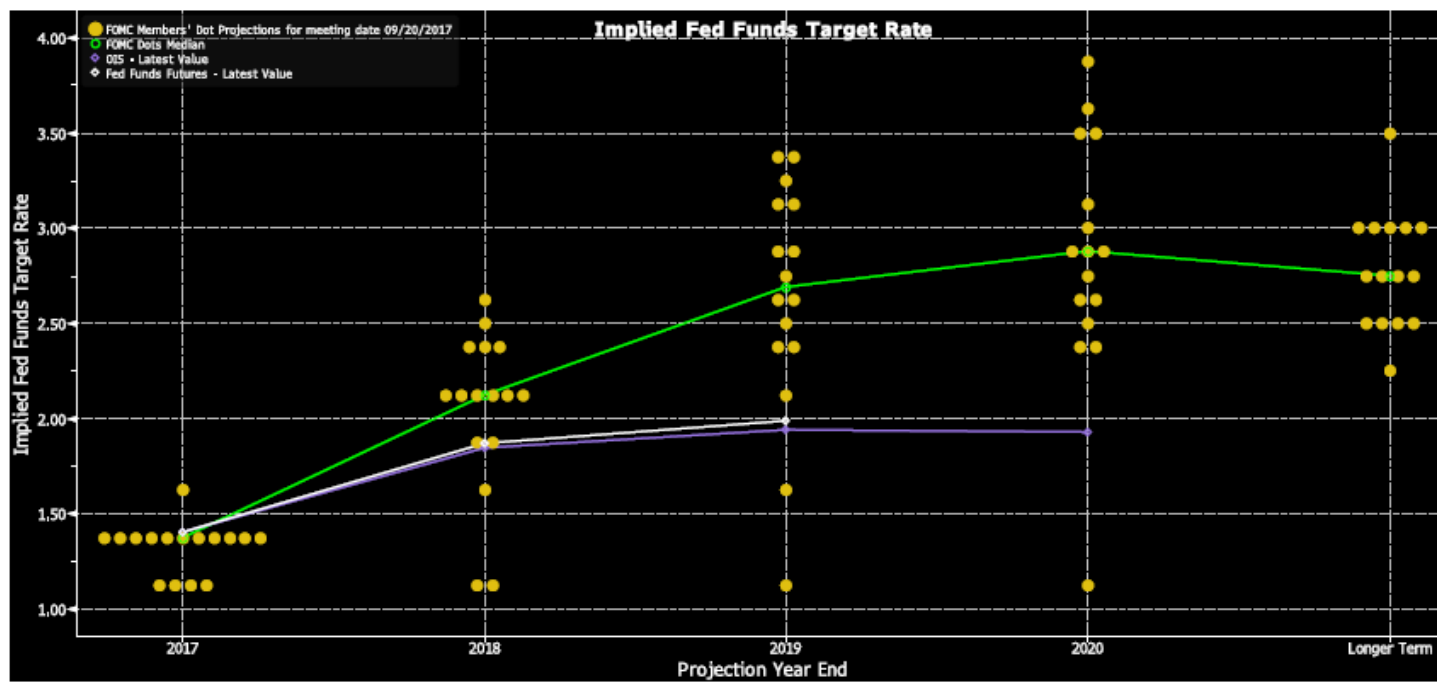
- I. Interest Rate and Currency Market Updates
- II. The Future of LIBOR
- III. FASB's Recent Guidance on Hedge Accounting
- IV. Quantifying Cash Flow at Risk
- V. Overview of Treasury Derivative Products
- VI. Credit Exposure under Interest Rate Derivatives
- VII. Questions
- VIII. Appendix: PNC Capital Markets Background and Contact Information

# Section I

## Interest Rate and Currency Market Updates

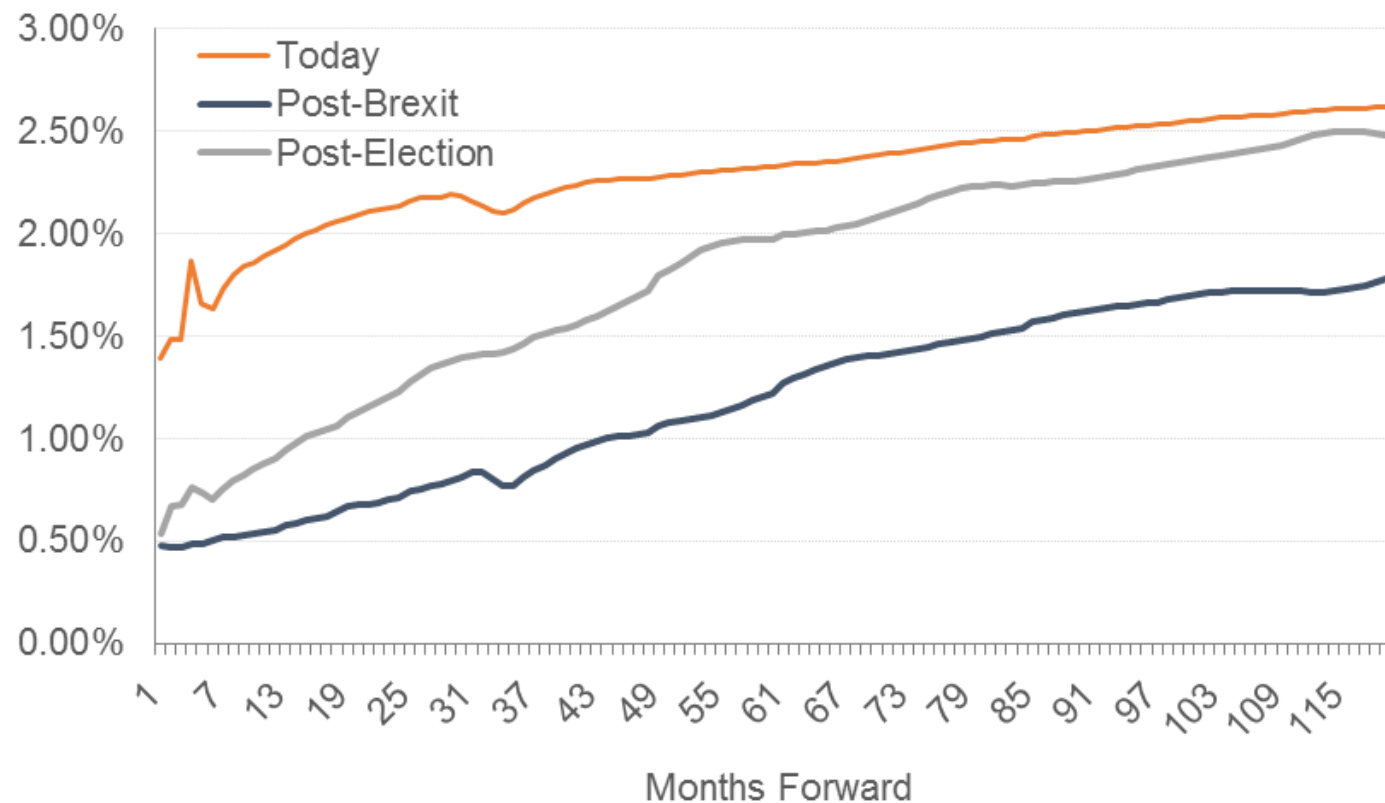
# FOMC Participant Fed Funds Expectation by Year

- In June, the Federal Open Market Committee (FOMC) raised the Federal Funds target range by 25 bps to 1.00% - 1.25%, the second rate increase in 2017 and fourth such increase since Dec. '15. In October, the FOMC began the gradual normalization of its \$4.5Tn balance sheet.
- On November 3rd Jerome Powell was announced as the replacement to Janet Yellen as the Fed Chair. Powell, a Republican, originally in George Bush's administration, is a current member of the Board of Governors of the Federal Reserve. His nomination will likely continue existing policies and provide stability to the market.
- Currently the market is implying a 100% probability of an additional 25 bp rate hike in December of this year. PNC expects one more increase in the fed funds rate this year and three increases in 2018.



Source: Bloomberg Finance LP

# 1-Month LIBOR Forwards



Source: Bloomberg Finance LP, PNC Bank NA

# 1-Month LIBOR vs. 5- and 10-Yr Swap Rates



Source: Bloomberg Finance LP

# Impact of a Strong USD for International Business

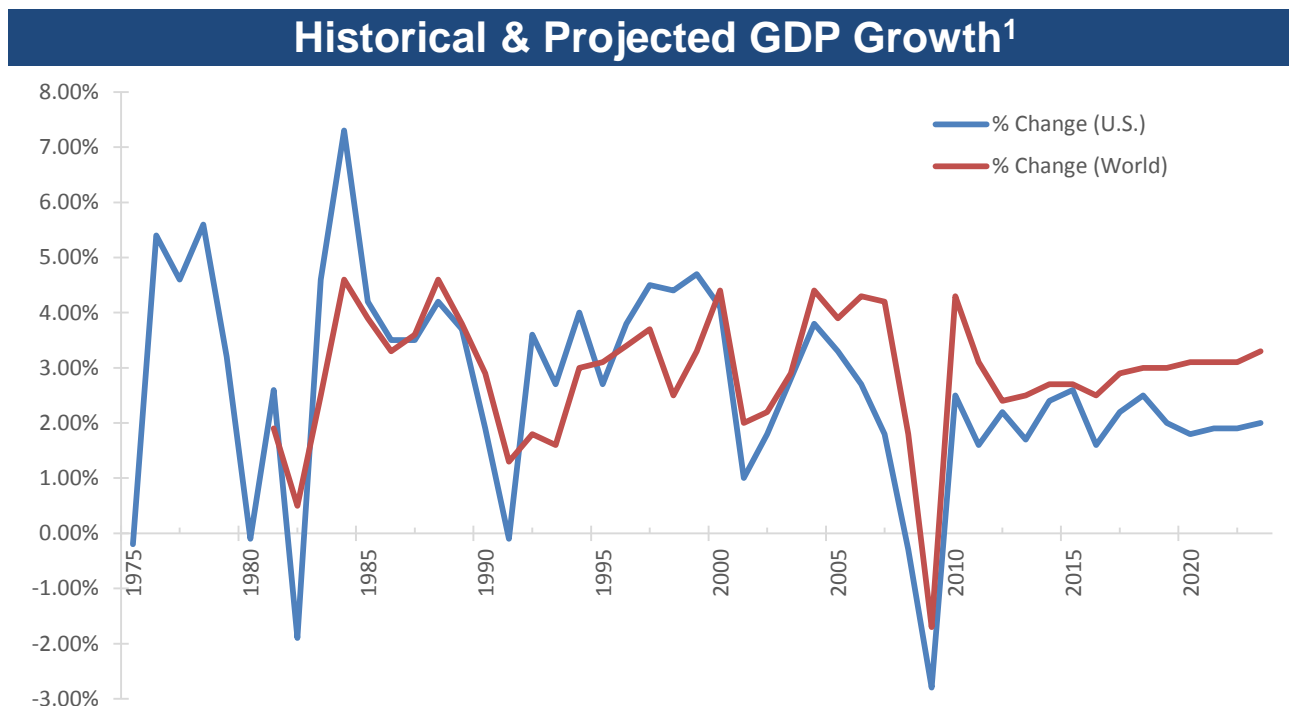
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- Importers have realized significant cost savings for foreign purchases. A strong U.S. dollar brings great purchasing power to American businesses.
- Importers are also locking into forward contracts and utilizing option structures to preserve cost savings and participate in potential upside.
- Exporters that sell goods overseas in US dollar terms are starting to become priced out of international markets. With an appreciation of nearly 20% in the USD, their goods have become 20% more expensive for foreign customers to buy.
- Exporters are getting feedback from foreign customers asking to cut into margin by adjusting USD price.
- Exporters are offering to price goods in local currency to help foreign clients with the market volatility, and are using forward contracts to protect their margins over time.
- PNC Foreign Exchange helps importers and exporters understand and manage foreign exchange volatility.

# Economic Growth Trends

**Successful companies in the U.S. are becoming increasingly dependent on the international marketplace for growth**

- World Trade growth rates projected above 4.0% over five years to 2022.<sup>1</sup>
- Over the next five years, import penetration is forecasted to continue increasing.<sup>1</sup>
- In the manufacturing sector, imports are expected to grow by an average 0.9 percentage points annually, to an estimated 34% market share in 2023.<sup>1</sup>



- U.S. GDP growth rates projected below 2.0% over five years to 2022.<sup>1</sup>
- Global GDP growth rates projected above 3.0% over five years to 2022.<sup>1</sup>

Sources: (1) IBIS World Business Environment Reports

# Foreign Exchange Global Update

- Highlights of currency trends across the world



Elections in Germany and France kept pro-EU governments in power while elections in some smaller countries saw populist movements rebuffed for the most part. Catalonia's bid for independence from Spain was seen as euro negative. The European Central Bank is expected to keep rates unchanged in December; Politics and monetary policy will continue to be the major catalysts for euro movement.



Prime Minister Theresa May has had her hands full with Brexit negotiations; The U.K. has struggled to move past preliminary Brexit talks, most notably due to the Irish border policy issue. The Northern Ireland DUP is the key support within May's government and wishes to be treated like the rest of the U.K., while the EU and Ireland will fight for an open border. Any further stall in negotiations will indicate sterling weakening.



The Canadian dollar had surprisingly positive November job market data; unemployment was at a low and the economy appeared to have promising job growth. Many economists did not expect a rate hike to come any time soon, but given such positive data, many are beginning to predict a rate hike sooner rather than later, leaving room for the Canadian dollar to appreciate even more.



The Japanese yen currently sits near the top of its 2017 trading range and about 3.0% stronger since the beginning of the year. Political risks have been abundant lately with North Korean tensions increasing as rhetoric heats up and the snap election called by PM Abe saw his ruling party remain victorious.



After an abysmal 2016, the Mexican peso has strengthened nearly 12 percent this year on a softer dollar, rising interest rates in Mexico, and a substantial increase in consumer confidence in Mexico. NAFTA talks continue to be a peso catalyst, as Mexico does not have a back-up trade agreement with the U.S. if negotiations were to crumble



The Chinese renminbi has gained nearly 5% against the USD year-to-date as the People's Bank of China has loosened controls to deepen ties to global markets and fuel a slowing economy. China's foreign exchange reserves rose in October, for the ninth month in a row, reflecting capital controls meant to curb outflows and stabilize the currency. Further appreciation could exceed PBoC tolerance, potentially prompting intervention.



# Euro Market Update

## Historical and Future Currency Drivers

— Historical — PNC Forecast — Bloomberg Average — Bloomberg High — Bloomberg Low



The EUR-USD cross is the most widely traded currency pair in the foreign exchange markets and the euro has a 57.6% weight in the US dollar index (DXY). For this reason the euro has an outsized influence on what is considered the overall value of the US dollar. Politics and monetary policy have been the key drivers behind recent moves in the two markets. Immediately following the US election, the euro weakened by almost 7% as expectations of swift tax reform and infrastructure spending buoyed US assets. Congressional set-backs as well as perceived weakness in the Republican Party stymied progress on those pieces of legislation. While US equities continued to make new highs, the dollar lost over 15% against the euro. Throughout the year, several elections in Europe provided volatility, however, the overall trend remained intact.

In the past year, the Federal Reserve has raised interest rates three times while also curtailing its quantitative easing program. The European Central Bank on the other hand has kept rates steady at negative levels and extended the duration of its bond buying activities. Recent headline inflation readings showed a 1.50% year-over-year (YoY) increase in November, up from the 1.40% seen in October. Core inflation numbers, that exclude more volatile price categories such as energy and food, showed 0.90% across those two months. These readings are far below the ECB's 2.00% goals as wage growth remains weak; labor cost growth has averaged less than 1.50% YoY. Unemployment rates continue to fall, however, with the most recent report showing 8.80% in October. This is down from a recent high of 12.00% seen in early 2013 but above the 7.00% seen pre-2008. Nevertheless, economic growth has been solid with Q3 of 2017 showing a 2.60% YoY increase in real GDP. All-in-all these factors should allow the ECB to continue accommodative monetary policies in the near future.

The ECB will meet the day after the FOMC December meeting ; implied probabilities here show interest rates will stay unchanged. A renewed push by the Trump administration to pass meaningful tax reform began last month; the bill will likely be watered down and changed in coming months. The euro has weakened recently on the news.

Source: Bloomberg and PNC Economics

## Section II

# The Future of LIBOR

# The Future of LIBOR

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- Update:
  - As recently as November 24, 2017, the UK's Financial Conduct Authority ("FCA") confirmed that all 20 banks which currently provide LIBOR quotes will continue to support the benchmark until an alternative is adopted in 2021. This an important step towards an orderly transition, further reducing potential market disruption.
  - On July 27, 2017, Andrew Bailey, the chief executive of the FCA, the regulator of LIBOR — announced a plan to phase out the LIBOR interest rate benchmark by the end of 2021. The regulator expressed concerns over the future sustainability of LIBOR given an "absence of active underlying markets."
- Overview:
  - LIBOR: The London Interbank Offered Rate (LIBOR) is a benchmark interest rate for seven maturities (overnight to 12 months) quoted in five currencies. A panel of 11 to 20 banks is surveyed for each currency calculated. The result is the average of the interest rates these banks charge to provide unsecured funding in the London interbank market for a given period in a given currency to other banks.
  - LIBOR is widely used as a benchmark rate in lending, borrowing and derivative transactions, relating to an estimated \$350 trillion of financial instruments.

# The Future of LIBOR

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- History of Changes to LIBOR
  - April 2013, the U.K.'s chancellor of the exchequer recommended that contributing to and administering LIBOR become regulated activities and that the FCA should be appointed as the regulator of LIBOR.
  - On February 1, 2014, the Intercontinental Exchange Benchmark Administration (IBA) took over as the administrator of LIBOR to bring greater transparency and a more robust governance and oversight framework.
  - The IBA established an independent oversight committee to monitor and scrutinize how it manages and calculates the benchmark.
  - LIBOR submission banks have improved controls around their submissions, with each bank now required to have a senior executive responsible for rate submissions.

# The Future of LIBOR

- Finding an Alternative:
  - In the United States, work began on finding alternative interest rate benchmarks in November 2014. At that time, the Federal Reserve Board of New York convened a working group of industry participants, regulators and central banks known as the Alternative Reference Rates Committee (ARRC).
  - The ARRC was convened to identify a set of alternative reference interest rates more firmly based on observable transactions and that comply with appropriate governance structures.
  - The Committee stated that its goal was not to eliminate USD LIBOR completely, but rather to move a significant portion of derivatives trading from instruments referencing USD LIBOR to a more robust alternative rate.
  - On June 22, 2017, the ARRC identified a broad Treasuries repurchase agreement (repo) financing rate (the cost of borrowing cash secured by U.S. government debt) as the rate that represents best practice for use in certain U.S. dollar derivatives and other financial contracts.
  - The ARRC believes the broad repo rate meets requirements for “depth of the underlying market and its likely robustness over time; the rate’s usefulness to market participants; and whether the rate’s construction, governance, and accountability would be consistent with the IOSCO Principles for Financial Benchmarks.”
  - The proposed repo-based rate is a concept that needs further refinement. There are a variety of pros and cons, operational challenges, and determinations of market acceptance that need to be evaluated and weighed even before an official index can be constructed.

# The Future of LIBOR

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- Managing Legacy Agreements:
  - If LIBOR ceases to be published, the 2006 ISDA Definitions allow for the calculation agent to poll a panel of reference banks to determine LIBOR. However, given the desire of most panel banks to rid themselves of the potential liability associated with providing these types of “judgment” rates, the emergence of a “private LIBOR” index seems unlikely.
  - ISDA is currently working to establish fallback mechanisms that would apply in the event LIBOR is permanently discontinued. This includes working on an amendment to the 2006 ISDA Definitions to add selected fallback rates and the development of a proposed plan to amend legacy contracts referencing LIBOR to include the amended definitions.
  - Many industry observers are expecting an industrywide consensus to emerge around a replacement rate over time.

## Section III

# FASB's Recent Guidance on Hedge Accounting

# FASB's Recent Guidance on Hedge Accounting

- On August 28, 2017, the FASB issued significant amendments to hedge accounting. The amendments can be adopted immediately in any interim or annual period (including the current period). The mandatory effective date for calendar year-end public companies is January 1, 2019. All others have an additional year to adopt. Conclusion: These amendments will change how all types of companies account for and disclose hedges. The new guidance may be (but is not required to be) adopted immediately.
- More hedging strategies will be eligible for hedge accounting. These include hedges of a contractually-specified price component of a commodity purchase or sale, hedges of the benchmark rate component of the contractual coupon cash flows of fixed-rate assets or liabilities, hedges of the portion of a closed portfolio of prepayable assets not expected to prepay, and partial-term hedges of fixed-rate assets or liabilities (e.g., the first and second years of a five-year bond).
- Timing of effectiveness assessments
  - Public business entities, public not-for-profit entities, and financial institutions will have until the end of the first quarter in which a hedge is designated to perform an initial assessment of a hedge's effectiveness. All other companies will have until their financial statements are available to be issued.
- Effectiveness assessments
  - After initial qualification, the new guidance permits a qualitative effectiveness assessment for certain hedges instead of a quantitative test, such as a regression analysis, if the company can reasonably support an expectation of high effectiveness throughout the term of the hedge. An initial quantitative test to establish that the hedge relationship is highly effective is still required.

# FASB's Recent Guidance on Hedge Accounting

- Recognition of derivative gain or loss
  - For cash flow hedges, if the hedge is highly effective, all changes in the fair value of the derivative hedging instrument will be recorded in other comprehensive income. They will be reclassified to earnings when the hedged item impacts earnings.
  - On the other hand, for fair value hedges, because the change in fair value of the hedged item and the derivative hedging instrument will still be recorded in current earnings, if the hedge is not perfectly effective, there will be an income statement impact.
- Presentation
  - The change in fair value of the derivative will be recorded in the same income statement line item as the earnings effect of the hedged item.
- Excluded components
  - In addition to option premiums and forward points, the new guidance permits cross-currency basis spreads to be excluded from the assessment of hedge effectiveness. Companies may also make an accounting policy election (to be applied consistently to similar hedges) to recognize changes in fair value of excluded components either:
    - (1) in other comprehensive income, to be amortized into earnings over the life of the derivative, or
    - (2) in earnings currently

*Disclosure: Additional disclosures include cumulative basis adjustments for fair value hedges and the effect of hedging on individual income statement line items*

## Section IV

# Quantifying Cash Flow at Risk

# Managing Interest Rate Risk

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Identify  
Exposures

Quantify  
Exposures

Evaluate Hedge  
Strategies

Execute Risk  
Management  
Strategy

# Does my Borrower Have Exposure?

- Many companies that utilize cash flow/asset based revolving lines of credit having a term loan, a commercial mortgage loan, or several other types of credit facilities from a commercial bank, may find themselves exposed to the FOMC raising the target federal funds rate.
- Bank financing is commonly extended at variable rates of interest (i.e. LIBOR, Prime) in practice as a bank's source of funding for its loan book is typically short term and variable rate in nature (customer deposits).
- Your Derivative Products Group's representative can assist in identifying and quantifying your company's current and anticipated exposure to interest rates.
- Example identifying current and projected debt exposed to variable and fixed interest rates:

## Pro Forma Debt Capitalization

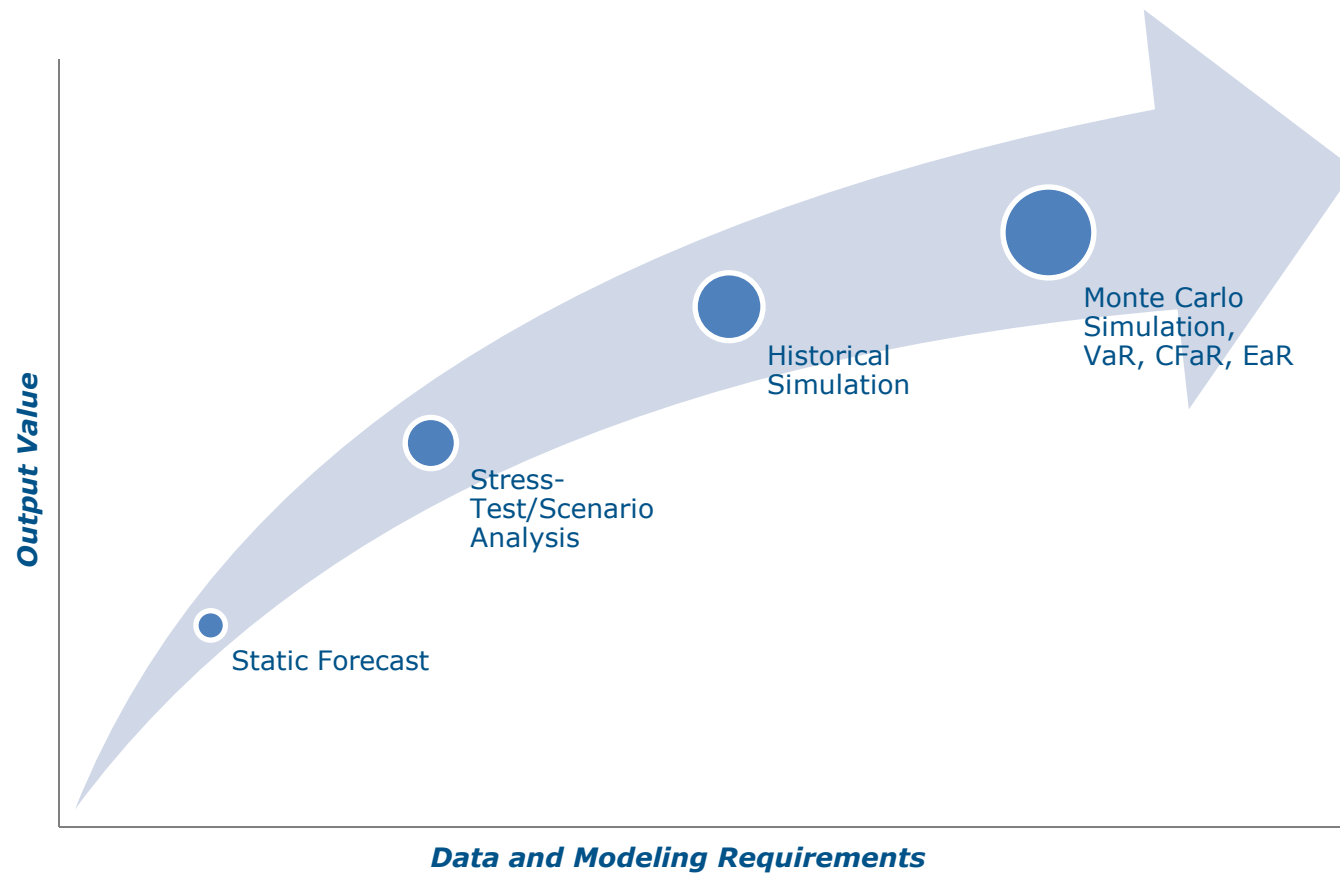
(\$ in Millions)

Based on management prepared current balance and projections

	<u>Current</u>	<u>Pro Forma</u>	<u>2015E</u>	<u>2016E</u>	<u>2017E</u>	<u>2018E</u>	<u>2019E</u>
<b><u>Floating Rate Debt</u></b>							
Revolving Line of Credit	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Capex Term Loan	4.0	4.0	3.5	3.0	2.5	2.0	1.5
Mortgage Term Loan	9.0	9.0	8.8	8.3	7.8	7.3	6.8
Total Floating Rate Debt	20.0	20.0	19.3	18.3	17.3	16.3	15.3
<b><u>Fixed Rate Debt</u></b>							
Capital Leases	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Fixed Rate Debt	3.0	3.0	3.0	3.0	3.0	3.0	3.0
<b>Total Debt</b>	<b>23.0</b>	<b>23.0</b>	<b>22.3</b>	<b>21.3</b>	<b>20.3</b>	<b>19.3</b>	<b>18.3</b>
Fixed Rate Debt to Total Debt	13.0%	13.0%	13.5%	14.1%	14.8%	15.5%	16.4%
Total Debt to LTM EBITDA	2.5x	2.5x	2.2x	1.9x	1.6x	1.3x	1.0x
LTM EBITDA to LTM Interest Expense	8.0x	8.0x	8.5x	9.0x	9.5x	10.0x	10.5x
LTM EBITDA Margin	19.5%	19.5%	19.5%	19.5%	19.5%	19.5%	19.5%

# Quantify the Risk - Models to Evaluate Corporate Risks

Risk measurement methodologies range from simple to more complex. The methodology used is a function of each unique borrowing scenario.



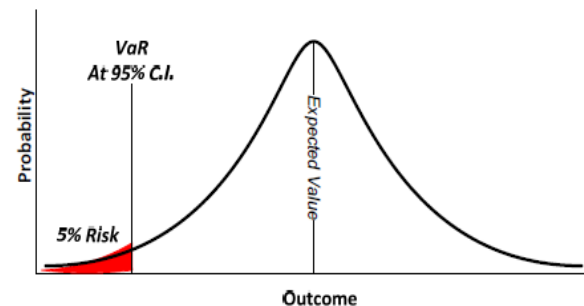
# Risk Models: VaR and CFaR/EaR

A

## Value-at-Risk (VaR)

- Summarizes total risk in a portfolio of financial assets/liabilities, e.g. “how bad can things get.” VaR estimates the probability that a given loss might occur over a specified time period. For example, 95% confident that the portfolio will not lose more than \$10MM over next 1-day horizon, or 5% chance of losing more.
- Pros: (i) Visibility to many alternative paths and extreme situations. (ii) Single number (\$-value).
- Cons: (i) Short-term focused.

A

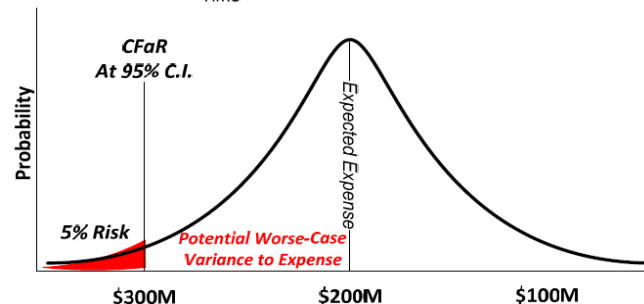
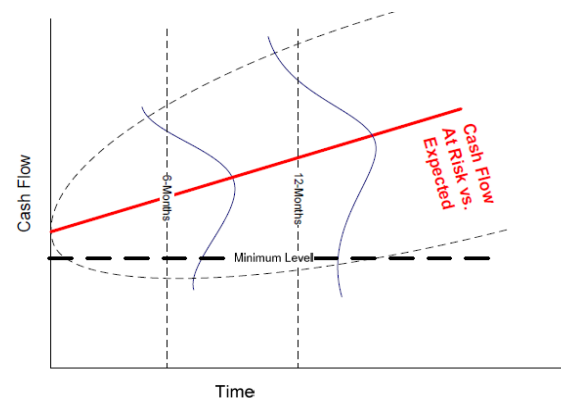


B

## Cash Flow-at-Risk (CFaR)/Earnings-at-Risk (EaR)

- Similar to VaR, but focuses on cash flows or earnings over a longer time horizon. This methodology helps a CFO or Treasurer answer the question, “How large could the deviation between planned cash and actual cash-flow be?”
- CFaR measures the cash that would be paid or received with X% certainty over a given time period. For example, 95% confident that interest expense will not exceed \$300M over the next six months. As this methodology quantifies cash flow downside risks, it’s more relevant for the corporate risk manager.

B



# Example Cash Flow at Risk Scenario Analysis

## Cash Flow at Risk Summary:

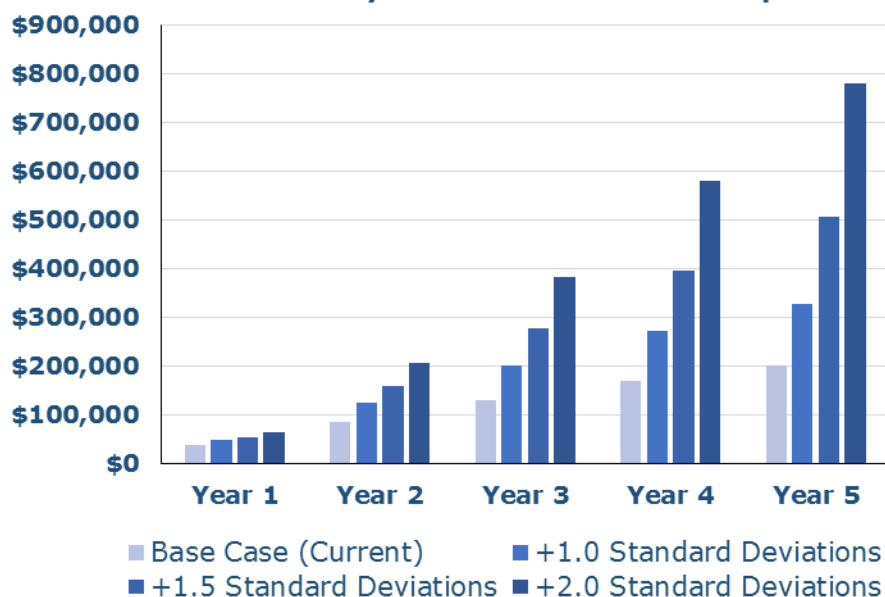
Sensitivity to Rising Rates Total Projected Interest Expense			
Interest Profile:	0% Fixed	50% Fixed	100% Fixed
Base Case	\$624,197	\$647,048	\$669,900
+1.0 Standard Deviations	\$973,877	\$821,889	\$669,900
+1.5 Standard Deviations	\$1,397,104	\$1,033,502	\$669,900
+2.0 Standard Deviations	\$2,015,891	\$1,342,895	\$669,900

Annual Interest Expense on 0% Fixed Bank Debt						Total Projected Interest Expense
	Year 1	Year 2	Year 3	Year 4	Year 5	
Current LIBOR Forwards	0.60%	1.10%	1.47%	1.84%	2.10%	
Base Case (Current)	\$37,383	\$85,551	\$130,587	\$169,394	\$201,281	\$624,197
Implied Year End LIBOR	0.83%	1.65%	2.32%	2.99%	3.46%	
+1.0 Standard Deviations	\$47,605	\$124,366	\$201,879	\$271,347	\$328,680	\$973,877
Implied Year End LIBOR	1.01%	2.21%	3.30%	4.50%	5.44%	
+1.5 Standard Deviations	\$55,131	\$159,824	\$278,533	\$397,246	\$506,370	\$1,397,104
Implied Year End LIBOR	1.24%	2.95%	4.70%	6.77%	8.56%	
+2.0 Standard Deviations	\$63,981	\$205,508	\$384,425	\$581,703	\$780,274	\$2,015,891
<b>Incremental Interest Expense</b> <b>(Current LIBOR Forwards vs.</b>						
<b>+2 Std. Dev. Increase)</b>	<b>\$26,598</b>	<b>\$119,956</b>	<b>\$253,838</b>	<b>\$412,309</b>	<b>\$578,992</b>	

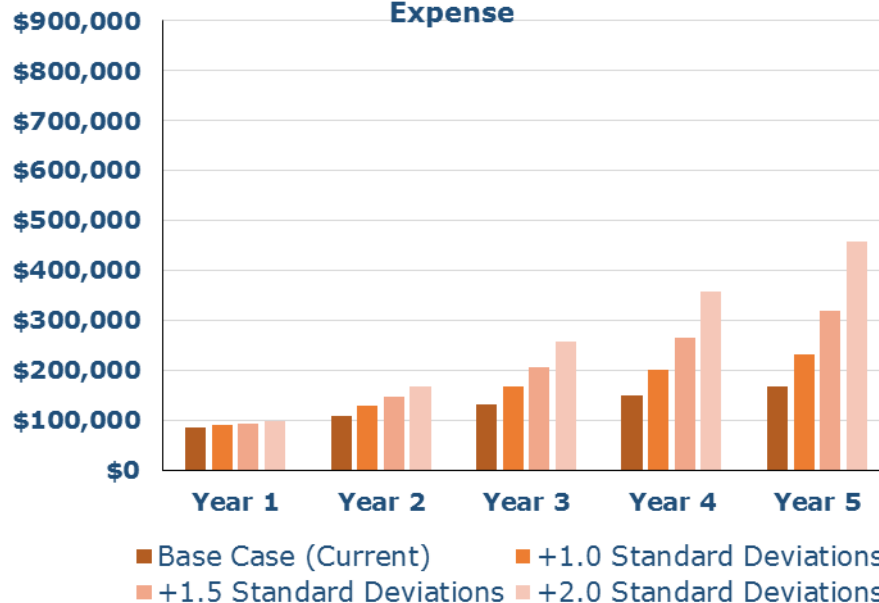
- The tables above illustrate both annual and cumulative interest expense for \$10MM of debt over five years under 0%, 50%, and 100% fixed rate debt scenarios. Four interest rate market conditions were assumed: **(1)** Base Case: Forward LIBOR curve is recognized; **(2)** +1.0 std. dev. **(3)** +1.5 std. dev. **(4)** +2.0 std. dev.
- Std. dev. adjustments assume today's LIBOR forward rates shifted +1.0, 1.5, and 2.0 std. dev. assuming a lognormal distribution and flat volatility.
- Interest expense figures are exclusive of LIBOR borrowing credit spread and are not present valued.

# Cash Flow at Risk Scenario Analysis

Scenario Analysis: 0% Fixed Interest Expense



Scenario Analysis: 50% Fixed Interest Expense



- The charts above graphically illustrate the interest expense for \$10MM of debt under the four market conditions discussed on the prior slide.
- The magnitude of the interest expense increase depends on actual rates. By hedging a portion or all of the debt, as illustrated by the chart on the right (50% depicted), borrowers gain some certainty regarding future cash flows.

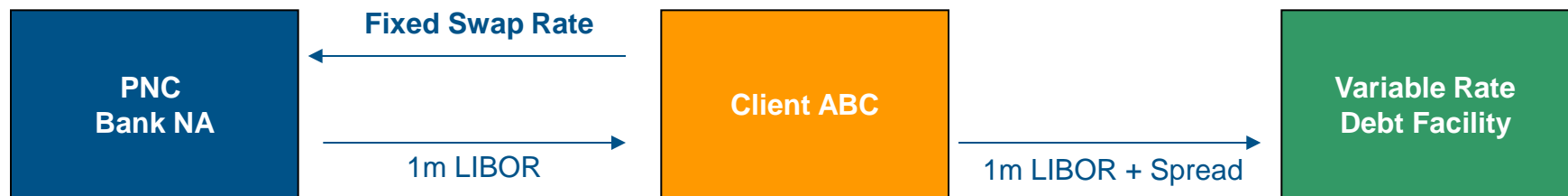
## Section V

# Overview of Treasury Derivative Products

# Interest Rate Risk Management

## Interest Rate Swap

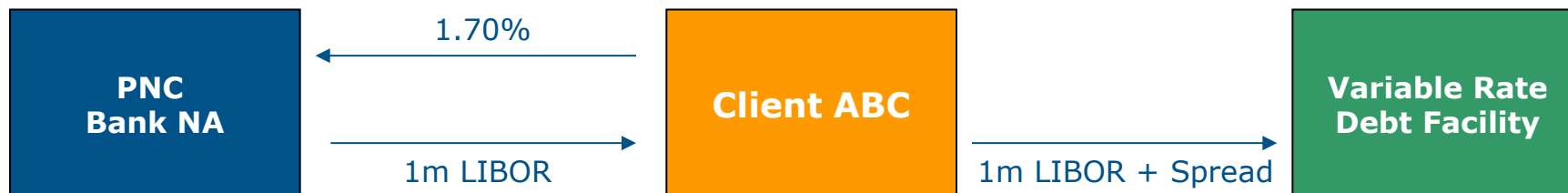
- Description
  - An interest rate swap is a contractual agreement that modifies the interest rate profile of an underlying instrument
  - Most commonly, two counterparties agree to exchange interest cash flows with one counterparty paying a fixed rate and the other paying a floating rate.
- Common Applications
  - Allows borrowers to access their cheapest source of funds (either fixed or floating), then convert to meet desired risk profile. (Comparative advantage/Price discovery)
  - Protect against rising floating interest rates
- Key Features
  - Swaps can be customized to meet risk management strategy
  - Swaps may have a positive or negative valuation determined by future interest rate movements
  - **Swaps are a separate contract from the underlying financing**
- Credit Exposure
  - Counterparty must be approved to do swap transactions



# Interest Rate Risk Management

## Current USD Swap Rates

- Notional Amount: USD 10,000,000
- Amortization: None
- Effective Date: March 24, 2016
- Maturity Date: March 24, 2021
- Fixed Rate Payer: Client ABC
- Floating Rate Payer: PNC Bank, National Association
- **Fixed Leg: 1.70%, monthly, Actual/360**
- Floating Leg: 1-month LIBOR, monthly, Actual/360
- All rates are for indicative purposes only and are subject to change via market movements



*\*Please note that the rates below are based on all other terms matching the scenario above*

Tenor	Spot	3mo. Fwd	6mo. Fwd	9mo. Fwd	12mo. Fwd	24mo. Fwd
1 year	0.66%	0.80%	0.97%	1.15%	1.32%	1.89%
2 year	0.99%	1.15%	1.31%	1.47%	1.61%	2.06%
3 year	1.29%	1.42%	1.56%	1.69%	1.81%	2.19%
4 year	1.52%	1.64%	1.75%	1.87%	1.97%	2.28%
5 year	1.70%	1.80%	1.90%	2.00%	2.08%	2.36%
7 year	1.95%	2.03%	2.11%	2.19%	2.26%	2.48%
10 year	2.19%	2.25%	2.31%	2.37%	2.43%	2.59%

# Interest Rate Risk Management

## Interest Rate Cap

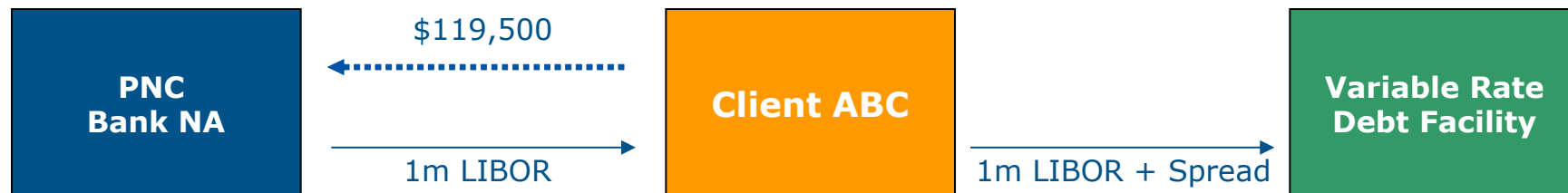
- Description
  - An interest rate cap is a contractual agreement between a buyer and a seller limiting the buyer's floating interest rate exposure to a predetermined level for a specified time period.
  - The buyer pays a one-time, upfront premium in exchange for the protection against rising rates
- Common Applications
  - In conjunction with a variable rate financing, Client ABC may want to mitigate its interest rate risk by buying a cap which would protect against a benchmark rate rising through predetermined protection levels.
- Key Features
  - Caps can be customized to meet risk management strategy
  - **Caps are a separate contract from the underlying financing**
  - Unlike a swap where the client pays a fixed rate, a cap buyer has a maximum rate of interest at the strike rate but has the ability to float down with LIBOR
- Credit Exposure
  - Client pays premium upfront, thus caps have no credit exposure
  - PNC is the only party to perform under the cap
  - Cap premiums settle in 2 business days. Settlement risk is the risk client doesn't pay the premium



# Interest Rate Risk Management

## Interest Rate Cap Example

- Notional Amount: USD 10,000,000
  - Amortization: None
  - Effective Date: March 24, 2016
  - Maturity Date: March 24, 2021
  - Cap Buyer: Client ABC
  - Cap Seller: PNC Bank, National Association
  - Capped Rate: 1-month LIBOR, monthly, Actual/360
  - Strike Rate: 3.00%, monthly, Actual/360
  - **Cap Premium: \$119,500**
- All rates are for indicative purposes only and are subject to change via market movements



\*Please note that the information below is based on all other terms matching the scenario above.

Tenor	<u>2.00% Strike</u>	<u>3.00% Strike</u>
1 year	\$50,100	\$50,000
2 year	\$56,500	\$51,500
3 year	\$81,600	\$60,200
4 year	\$127,500	\$82,000
5 year	\$197,800	\$119,500

# Interest Rate Risk Management

## Treasury Lock

- Description
  - A Treasury Lock is an agreement between two parties, a buyer and a seller, to lock-in a forward yield on a specific U.S. treasury security with a specific par amount for a predetermined period of time.
  - On the termination date, the buyer (seller) of the FTA receives a payment if the yield on the treasury security is above (below) the locked-in yield, providing the buyer with a hedge against rising treasury rates and the seller with a hedge against falling treasury rates.
- Common Applications
  - Treasury Locks can be used to mitigate interest rate risk movement prior to market pricing of the private debt issuance.
- Key Features
  - There are no upfront fees to enter into an Treasury Lock.
  - The “locked-in” yield is a forward yield rather than the current market yield. The forward yield is the market’s expectation of where the treasury yield will be on the expiration date.
  - The agreement can be terminated any time on or before the expiration date, where the client either pays or receives a termination value depending on the movement of treasury rates.
  - The contract is an entirely separate agreement from any underlying credit agreement.
- Credit Exposure
  - Counterparty must be approved to do swap transactions

# Interest Rate Risk Management

## Permanent Market Hedging: Components of Interest Rate Risk

$$\begin{array}{lcl} \text{10-Year Treasury} & + & \text{Loan Spread} \\ 2.40\% & + & \text{TBD} \end{array} = \begin{array}{l} \text{Loan Rate} \\ \text{TBD} \end{array}$$

$$\begin{array}{lcl} \text{10-Yr Tr.} & + & \text{Swap Spread} \\ 2.40\% & + & (0.03\%) \end{array} + \begin{array}{l} \text{Credit Spread} \\ \text{TBD} \end{array}$$

$$\begin{array}{c} \text{10-Yr Spot Swap Rate} \\ 2.37\% \end{array}$$

Asset  
Risk

Company  
Risk

Swap spread and Spot swap rate is illustrated on a 3M LIBOR, semi-bond basis

# T-Lock Termination Scenario Example

- Yields Rise: Treasury Yield > Actual T-Lock Rate, T-Lock is an asset to the Borrower. Borrower will receive payment from PNC Bank for the value of the T-Lock.
- Yields Fall: Treasury Yield < Actual T-Lock Rate, T-Lock is a liability to the Borrower. Borrower will make a payment to PNC Bank for the value of the T-Lock.

Base Case - 10 Year Example	
T-Lock Rate	2.43%
Hedge Amount	\$18,200,000
Amortization	None
Cash Settle Date	3 Months Fwd

<<Reduced Hedge Amount accounts for amortization on Term Loan

Scenario	1 -100 bps	2 -50 bps	Base 0 bps	3 +50 bps	4 +100 bps
Replacement Yield	1.43%	1.93%	2.43%	2.93%	3.43%
Cash Settlement	-\$1,703,609	-\$829,521		\$787,460	\$1,535,211

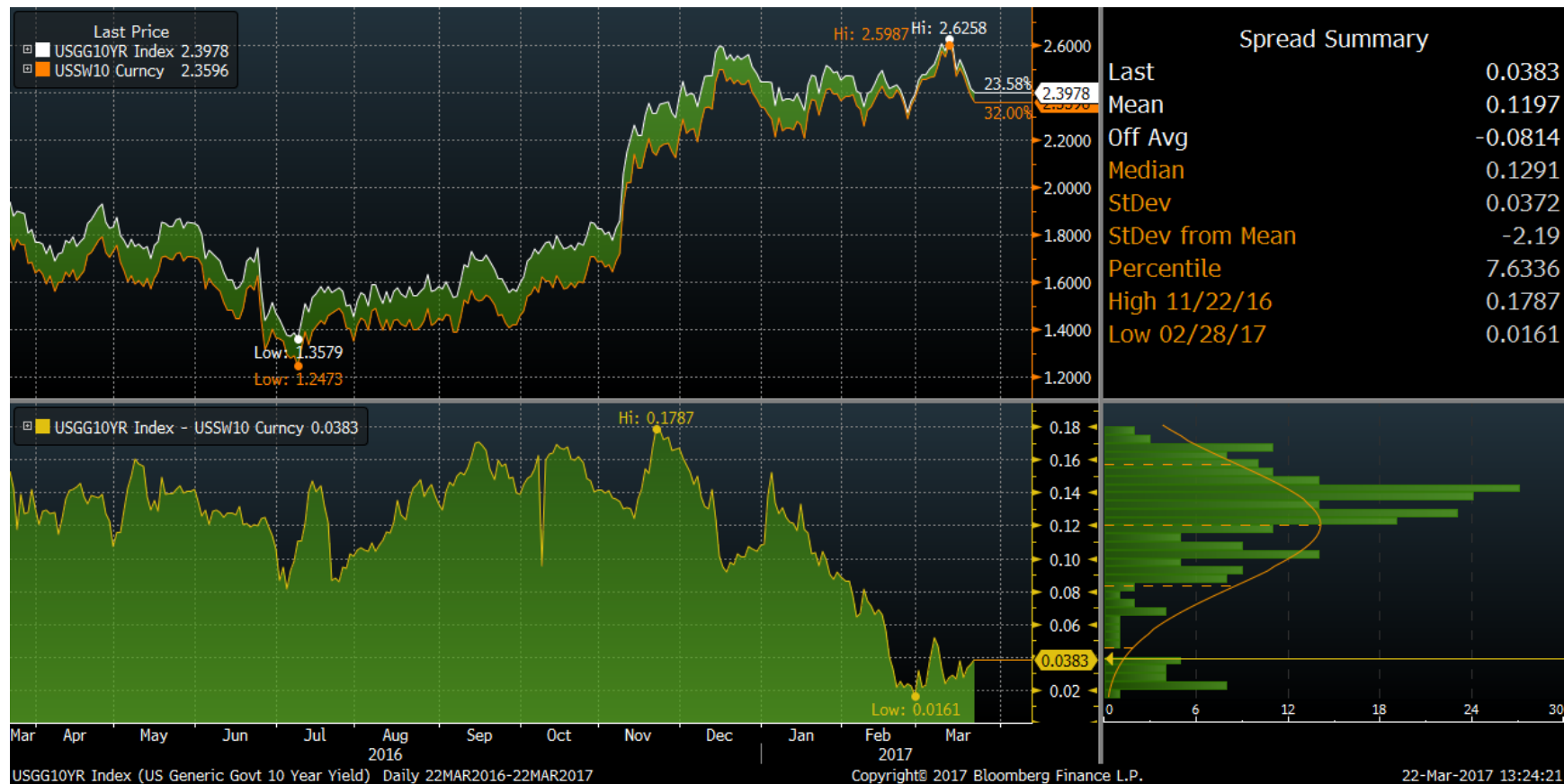
Assumptions The Mark to Market values are a one-time buyout cost/revenue for unwinding the Treasury-Lock.

These “buy-out” costs are estimates only and assume a parallel shift in the yield curve. Market conditions and the shape of yield curve may result in differences between actual costs and these estimates.

Please see PNC’s Standard Disclaimer for further information that may be relevant to you or your contemplated transaction. Derivative products (“Derivatives”) are obligations of PNC Bank, National Association (“PNC Bank”), **Member FDIC**. Derivatives are **not FDIC insured** and may lose value. This is not an offer to sell or a solicitation of an offer to buy any security. This is for information purposes only and you should consult independent legal, accounting, tax and other professional advisors. All performance, returns, prices, or rates are for illustrative purposes only, may not be achievable, actual results will vary, and may be adversely affected by exchange rates, interest rates or other factors. Any information, values or opinions expressed or implied herein are based on your input and subject to change without notice. Under no circumstances is PNC Bank liable for any lost profits, lost opportunities, or any indirect, consequential, incidental, special, punitive, or exemplary damages arising out of any use, reliance, or any opinion, estimate or information contained herein or any omission therefrom. PNC Bank, its affiliates, shareholders, directors, officers, or employees may initiate long or short positions or issue such securities or options or other derivative instruments based thereon. The information contained herein is confidential and may not be disclosed, duplicated, copied, disseminated or distributed by any means to any other person or entity without PNC Bank’s prior written consent.

The above information was derived from PNC’s proprietary models. These models are calibrated from market based data, including swap rates, basis rates, foreign exchange spot and forward rates, deposit rates, interest rate futures, and option volatilities. Sources may include publicly observable data, non-public “subscription” based data, or data obtained from PNC’s own market makers. PNC’s models use the “Income Approach,” as defined by ASC 820 (formerly FAS 157). Under this method, PNC’s models calculate forward rates relevant to the appropriate index and currency using the above mentioned market based data, and then discounts the projected cash flows using the same market based data. Options and other exotic structures may further incorporate option volatilities to weigh the probability of those cash flows for valuations. Early termination, assignment, liquidity or credit considerations, bid-offer spreads, cost of carry, or use of capital will impact the amount payable by either party and vary materially from the above indicative values.

# Historical Spread: 10-Year Treasury vs. Swap Rate



Source: Bloomberg Finance LP

# Interest Rate Risk Management

## Collar

- Description
  - An Interest Rate Collar ("Collar") is an agreement between the seller of the Collar and a borrower to limit the borrower's floating interest rate exposure to specified levels for a specified period of time.
  - The borrower creates a Collar by buying an interest rate cap and simultaneously selling an interest rate floor.
  - The sale of the floor to PNC sets a minimum interest rate that the borrower must pay, even if floating rates drop below that floor strike level. By foregoing rates below this floor level, the borrower can reduce, or even eliminate the premium typically associated with a cap.
- Key Features
  - Collar are typically structured with no upfront premium payable by the buyer.
  - Collar terms are flexible, allowing borrowers to design a strategy that mirrors their underlying loan facility.
  - Collars are available on a number of different floating indices, including: LIBOR, Prime, Commercial Paper, Fed Funds and BMA.
  - A collar can be terminated at any time, with the borrower paying or receiving a termination value depending on the movement of rates.
  - The collar is an entirely separate agreement from any underlying credit agreement.

# Interest Rate Risk Management

## Yield Curve Efficient Swaps

- Description
  - An Yield Curve Efficient Swap is a contractual agreement in which two counterparties agree to exchange interest payments at different rates through a stated maturity date.
  - Unlike a traditional swap, the interest rate that a borrower will pay on a step-up swap increases over time according to a pre-determined schedule.
  - The strip swaps presented on a weighted average basis are equal to a single swap executed today on the full amount.
  - The advantage of strip swaps are that they allow you to take advantage of a lower fixed rate today, but your fixed interest cost will increase  $T + 1$  years from now as you move out the yield curve.
- Key Features
  - A borrower may enter into a step-up swap with no upfront cost.
  - Step-up swap terms are flexible, allowing borrowers to tailor a swap agreement to meet their particular needs.
  - Swaps are available on a number of different floating indices, including: LIBOR, Prime, Commercial Paper, Fed Funds and BMA.
  - A swap can be terminated at any time, where the client either pays or receives a termination value depending on the movement of rates.
  - The step-up swap gives the borrower more financial flexibility than a traditional swap by offering a lower initial interest rate.

# Case Study: Middle Market Tennessee Client

- Company X is considering a variety of float-to-fix interest rate swap options to meet both the hedging requirement and obtain desired fix vs. floating rate debt exposure:
  1. **Blended cancelable swap:** In the event Company X restructures its balance sheet and deleverages, the swap may need to be amended or terminated. By entering into a cancelable swap, Company X reserves the right to terminate the swap obligation at zero cost beginning at the specified exercise date. Monthly cancelable options are listed with exercise dates beginning both 24 and 36 months from today.
  2. **Unblended cancelable swap:** Same flexibility as above.
  3. **Blended non-cancelable swap and strip swaps:** Terminate existing swap and blend the termination value into the new deal or multiple deals, accounting for the negative mark through a higher fixed rate. The strip swaps presented on a weighted average basis are equal to a swap executed today on the full amount. The advantage of strip swaps are that they allow you to take advantage of a lower fixed rate today, but your fixed interest cost will increase T + 1 years from now as you move out the yield curve.
  4. **Unblended non-cancelable swap and strip swaps:** Keep the existing swap in place and execute a new swap, or swaps, for the incremental notional difference. As the swap is not blended, you will pay the market swap fixed rate.

### 3. Blended Non-Cancelable Indicative Pricing

	Total	Yearly "Strip Swaps"				
		i	ii	iii	iv	v
<b>Beginning Notional</b>	\$52,500,000	\$52,500,000	\$48,402,316	\$42,938,737	\$37,102,641	\$31,142,373
<b>Effective Date</b>	10-Mar-16	10-Mar-16	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19
<b>Maturity</b>	31-Dec-20	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19	31-Dec-20
<b>Swap Fixed Rate</b>	1.24%	0.80%	1.07%	1.31%	1.54%	1.76%
<b>Blended Amount</b>	107,700	23,811	26,288	22,962	19,151	15,487
<b>Amortized Financing Charge</b>	<u>0.06%</u>	<u>0.06%</u>	<u>0.06%</u>	<u>0.06%</u>	<u>0.06%</u>	<u>0.06%</u>
<b>Blended Swap Fixed Rate</b>	<b>1.30%</b>	<b>0.86%</b>	<b>1.13%</b>	<b>1.37%</b>	<b>1.60%</b>	<b>1.82%</b>
<b>LIBOR Borrowing Spread</b>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>
<b>Effective All-In Fixed Rate</b>	<b>5.05%</b>	<b>4.61%</b>	<b>4.88%</b>	<b>5.12%</b>	<b>5.35%</b>	<b>5.57%</b>

Swap pricing indicative and subject to change

## 4. Unblended Non-Cancelable Indicative Pricing

	Total	Yearly "Strip Swaps"				
		i	ii	iii	iv	v
<b>Beginning Notional</b>	\$12,498,500	\$12,498,500	\$14,401,316	\$42,938,737	\$37,102,641	\$31,142,373
<b>Effective Date</b>	10-Mar-16	10-Mar-16	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19
<b>Maturity</b>	31-Dec-20	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19	31-Dec-20
<b>Swap Fixed Rate</b>	1.40%	0.81%	1.07%	1.31%	1.54%	1.76%
<b>LIBOR Borrowing Spread</b>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>	<u>3.75%</u>
<b>Effective All-In Fixed Rate</b>	<b>5.15%</b>	<b>4.56%</b>	<b>4.82%</b>	<b>5.06%</b>	<b>5.29%</b>	<b>5.51%</b>

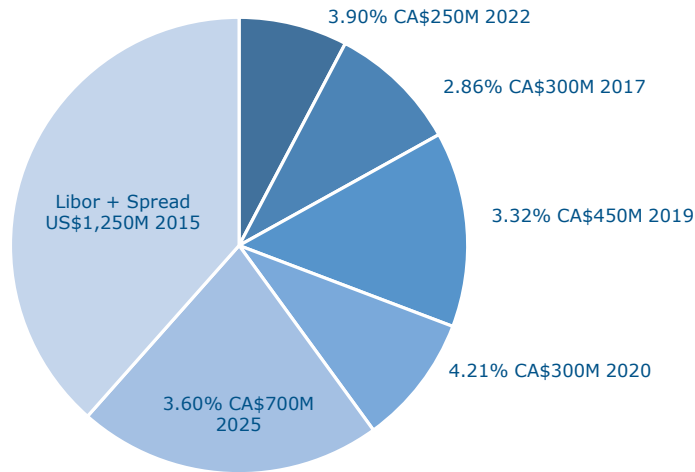
Swap pricing indicative and subject to change

# Cross Currency Interest Rate Swaps

- Cross currency interest rate swaps “X-ccy swaps” enable borrowers to fund a loan in any currency other than their functional currency.
- The cross currency swap allows the borrower seeking the foreign currency denominated loan to mitigate both interest rate and currency risk in one structure.
- Typical uses of a cross currency swap are intercompany loans to foreign subsidiaries and funding acquisitions of foreign companies.
- Important factors that determine if a cross currency swap is appropriate, and for properly structuring the swap are:
  - Is an initial exchange of principal necessary?
  - If so, and the domestic entity is borrowing the funds, is it borrowing at a fixed or floating interest rate?
  - Does the foreign entity desire a fixed or floating interest rate?
  - **Will the foreign entity be required to follow a strict principal and interest payment schedule?**
  - **Will the foreign entity generate sufficient cash flows to service this debt?**

# Case Study: ABC Company

## Debt Profile



Debt Instrument	Outstanding	Coupon	Hedge Adjusted Currency Exposure
Fixed Rate Note	CA\$250.0	3.90%	CA\$250.0
Fixed Rate Note	CA\$300.0	2.86%	CA\$300.0
Fixed Rate Note	CA\$450.0	3.32%	CA\$450.0
Fixed Rate Note	CA\$300.0	4.21%	CA\$300.0
Fixed Rate Note	CA\$700.0	3.60%	US\$574.3
Revolver	USD\$1,250M	Libor + C.S.	US\$1,250M

Total CAD Dollar Denominated Exposure	CA\$1,300.0
Total US Dollar Denominated Exposure	US\$1,824.3

## Cross-Currency Swap Background

- On June 2, 2015 ABC Company ("ABC") issued CA\$700mm of ten year senior unsecured notes at a coupon rate of 3.60%.
- Between June 12, 2015 and June 19, 2015, ABC entered into cross-currency interest rate swap agreements for a total notional amount of CA\$700mm, converting a portion of total Canadian dollar denominated debt into US dollars.

Receive - Notional(M)	Receive - Rate	Pay - Notional (M)	Pay - Rate	Maturity
CA\$175.0	3.60%	US\$142.2	3.8099%	2-Jun-25
CA\$175.0	3.60%	US\$147.2	3.8650%	2-Jun-25
CA\$100.0	3.60%	US\$81.2	3.8540%	2-Jun-25
CA\$100.0	3.60%	US\$81.2	3.8700%	2-Jun-25
CA\$100.0	3.60%	US\$81.2	3.8570%	2-Jun-25
CA\$50.0	3.60%	US\$41.3	3.8230%	2-Jun-25

**PNC Bank, NA**  
**4-Nov-15**  
**mid-market mark**  
 (\$11,295,662)

## Section VI

# Credit Exposure under Interest Rate Derivatives

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# Credit Exposure under Interest Rate Derivatives

## How do we Calculate Derivative Credit Exposure?

- We shock the yield curve, note all potential outcomes, and calculate the PEAK (worst case) exposure over the life of the swap, to a 2 standard deviation certainty. There is a 2.5% probability that the actual exposure could ever exceed the PEAK exposure.
- Example:
  - \$10,000,000 notional, 5 year term, present value of 1 basis point = \$5,000
  - DCE at various time intervals:
    - 1 year: \$505,000
    - 2 year: \$435,000
    - 3 year: \$315,000
    - 4 year: \$175,000
    - 5 year: \$15,000

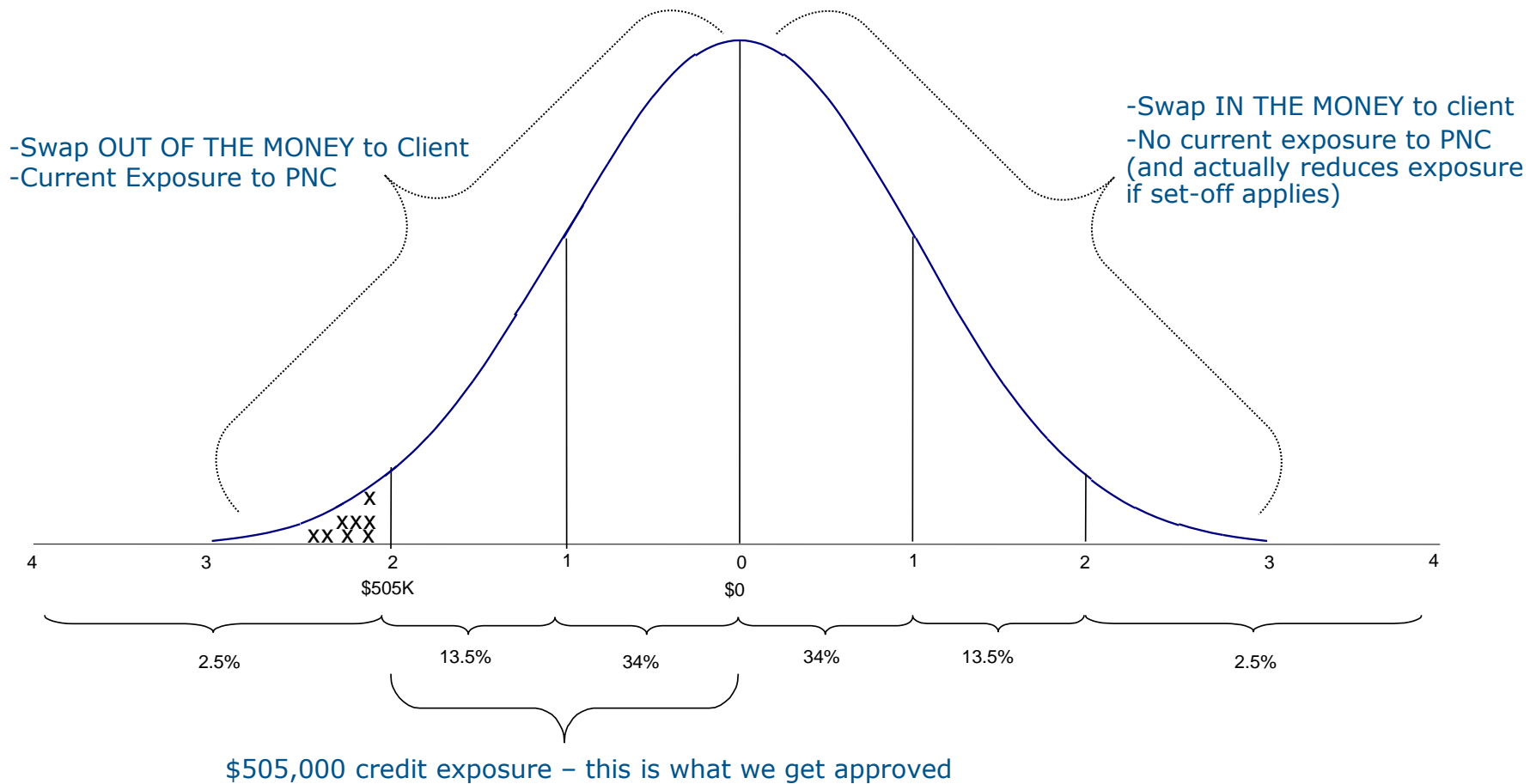
PEAK DCE. This is what we get approved.

Model here assumes rates to fall 101 basis points ( $505,000 / 5,000 = 101$ )

# Credit Exposure under Interest Rate Derivatives

## How do we Calculate Derivative Credit Exposure?

- We assume a bell curve distribution



# Section VII

## Questions

## Section VIII

### Appendix: PNC Capital Markets Background and Contact Information

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# Derivative Products Group

## Capabilities Overview

### Derivative Products Group Overview

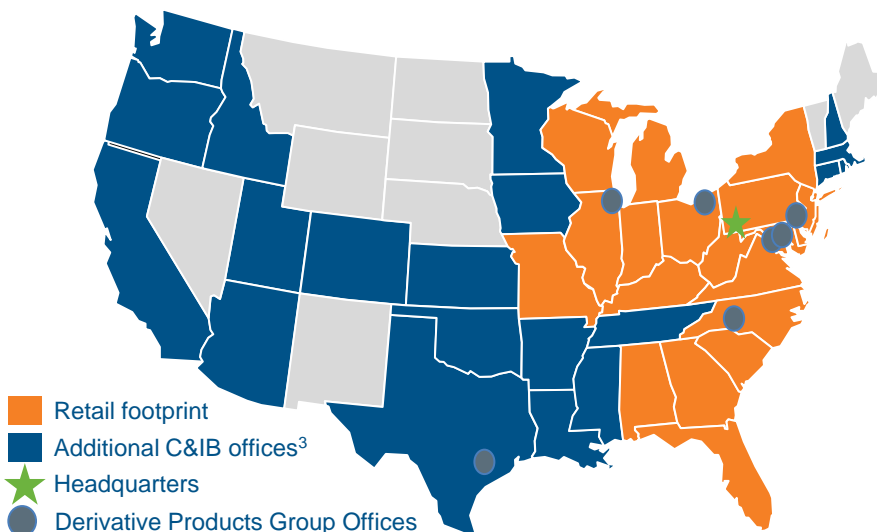
- PNC's Derivative Products Group ("DPG") manages a portfolio of customer interest rate derivative transactions representing \$210 billion of notional and over 9,900 active trades<sup>1</sup>
- We offer a broad platform to execute flexible and innovative solutions designed to meet short and long term hedging needs
- DPG consists of over 30 professionals with extensive financial markets expertise across 8 offices
- We employ a relationship-based approach to identify, quantify, and formulate customized interest rate hedging solutions for PNC customers and prospects
- The desk provides extensive product offerings, trading a number of floating rate indices including LIBOR, Prime, Commercial Paper, SIFMA, Fed Funds, CMT, and CMS
- We frequently lead derivative transactions and deliver participation and syndication strategies on behalf of counterparties

### Strength as a Counterparty

- PNC Bank, National Association ("PNC") is the counterparty to all customer interest rate derivative transactions and is a provisionally registered swap dealer with the CFTC
- Customers who enter into derivative transactions with PNC have a federally chartered bank with a strong balance sheet as a counterparty
- PNC does not use any special purpose corporations or subsidiaries to execute client interest rate transactions

	Moody's	S&P	Fitch
<b>PNC Bank, N.A.<sup>2</sup></b>			
Issuer Rating	A2	A	A+
Short-term Deposits	P-1	A-1	F1
Outlook	STABLE	STABLE	STABLE

### National Presence & Regional Focus



# Derivative Products Group

## Capabilities Overview

### DPG Market Position

- PNC operates the 7th largest interest rate derivatives book among U.S. banks<sup>1</sup>
- DPG offers hedging capabilities competitive with the largest market participants while often providing more flexibility and ideas to meet client-specific needs
- PNC's large and active derivative book across the broader bank adds scale and depth that augments our \$210 billion of customer trades

Rank by Notional <sup>1</sup>	U.S. Based Banks
1	Citibank
2	JPMorgan Chase & Co.
3	Goldman Sachs
4	Bank of America Corp.
5	Wells Fargo & Co.
6	HSBC
7	<b>PNC Bank</b>
8	Bank of New York Mellon
9	US Bancorp
10	TD Bank

### Value-Add Services & Solutions

- ✓ Interest rate risk management expertise
- ✓ Consultative, relationship-based approach
- ✓ In-depth market knowledge and timely commentary
- ✓ Individual swap portfolio analytics and peer analyses
- ✓ Ongoing mark-to-market valuations
- ✓ Comprehensive operational and reporting platform

### Sector Expertise



### Interest Rate Management Products

- ✓ Swaps, Swaptions
- ✓ Forwards Rate Locks
- ✓ Accreting Hedges
- ✓ Basis Swaps
- ✓ Strategic Unwinds
- ✓ Cancellables
- ✓ Caps, Floors, Collars
- ✓ Novations

# PNC Derivatives Products Group

## Contact Information

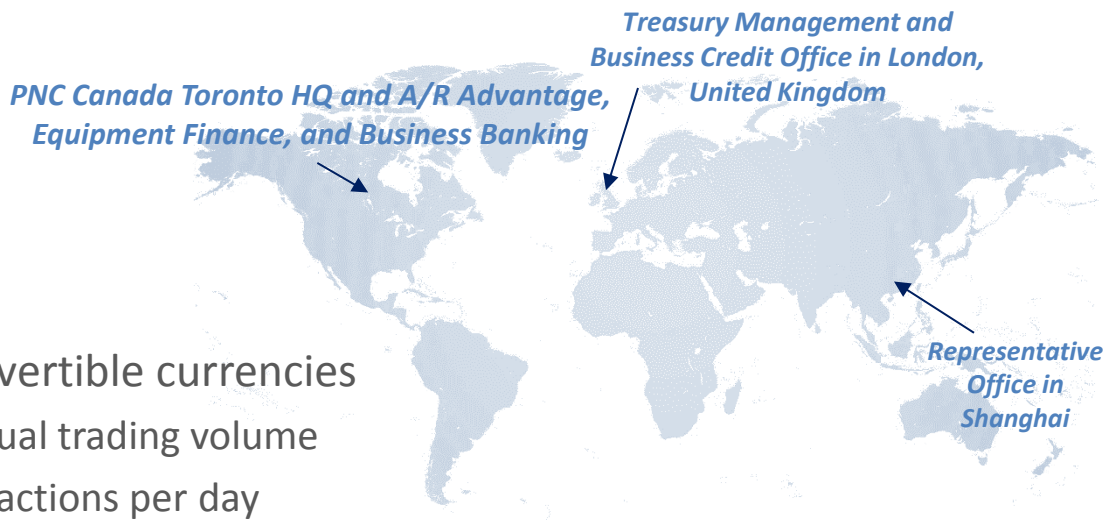
- Baltimore
  - Hans Hurdle 410-237-5314
  - Howard Sakin 410-237-5315
  - Gregory Speake 410-237-5339
- Charlotte
  - Ryan Garr 704-686-1179
  - Doug Thornton 704-686-1113
  - Travis Tillman 704-571-0696
- Chicago
  - Alex Bauman 312-338-8199
  - Patrick Zann 312-338-6935
- Cleveland
  - Dan Chorba 216-222-2599
  - Greg Hill 216-222-3019
  - Edwin Martinez 216-222-9646
- Washington DC
  - Marc Gordon 202-835-4463
- Houston
  - Jim Rees 844-281-4499
  - Risa Shen 412-645-7848
- Philadelphia
  - Alex Doane 215-585-6090
  - Matthew Gelles 215-585-1434
  - Tina Hwang 215-585-1200
  - Haren Nayagan 215-585-6377
  - Kyle Patino 215-585-1204
- Pittsburgh
  - Bridget Davis 412-768-8075
  - Amber Evanco 412-762-8391
  - Adam Goff 412-762-8426
  - James Isler 412-768-5872
  - Pat King 412-467-1502
  - Guy Kossuth 412-768-7977
  - Jeff Mazur 412-762-6911
  - Sean McMurray 412-762-7765
  - Tom Neal 412-762-6370
  - Rick Pierce 412-768-8762
  - Chelsea Rheam 412-768-1389

# PNC Foreign Exchange Highlights

## Solutions to Effectively Manage International Cash Flow

- FX sales offices located in:

Atlanta	Charlotte
Chicago	Cleveland
Detroit	Indianapolis
Milwaukee	Philadelphia
Pittsburgh	Washington D.C.



- Active trader in most freely convertible currencies

- In excess of \$120 billion in annual trading volume
- Process more than 1,000 transactions per day

- Offer a variety of electronic dealing platforms

- PINACLE Funds Transfer module offers a quick and reliable method for moving USD for same day settlement or foreign currency for spot value. Companies can originate payments as a single or repetitive transaction or use the payment file import functionality to load in a file of payment instructions to be saved for future use.
- PINACLE FX enables buying and selling of currencies on either spot or forward maturity
- File Upload act as a data link to process high volume of transactions
- Third Party Interface offers customizable user interface to third party systems.
- PINACLE FX Netting facilitates the netting of foreign cash flows among subsidiaries and their respective corporate headquarters.

# PNC International Capabilities

## Treasury Management

- **Canada Branch & Express**
  - Accounts, Receivables, Payables & IR
- **Multicurrency Accounts**
- **Multibank Services**
  - Reporting & Payments
- **PNC Gateway Services**
  - White-glove overseas account set up
- **Multinational Card Solutions**
  - Canada & Europe
- **International Wires**
  - USD & Currency
- **Foreign Cash Letter & Collections**
- **International Information Reporting via PINACLE**

## Trade

- **Trade Services**
  - Letters of Credit
  - Documentary Collections
  - Banker's Acceptances
- **Trade Finance**
  - Ex-Im Bank/ Working Capital

## Capital Markets

- **FX Risk Management**
  - Forwards
  - Swaps
  - Options
- **FX Market Updates**
  - Trends
  - Updates
  - Forecasts
- **PINACLE FX**
  - FX trade execution online
- **PINACLE FX Netting**
  - Netting intra-company currency payments

## Lending & Other Services

- **Overseas Offices**
  - Canada Branch
  - Shanghai Representative Office
- **AFP Country Profile Reports**
  - (32 countries)
- **Multicurrency Lending**
- **Asset Based Lending**
  - Canada & UK
- **M&A Advisory**
  - Harris Williams & Co.



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## 36<sup>th</sup> Annual Winter Seminar

Offices of Waller Law – 511 Union Street, Suite 2700  
December 14<sup>th</sup>, 2017

Presented by:

# J.P.Morgan

### Agenda:

- 7:45 – 8:30 Registration and Breakfast
- 8:30 – 8:45 State of the Membership – AFP Nashville President
- 8:45 – 9:35 Session 1 Keynote Speaker – Brian Preston, The Money Guy - Investing like Warren Buffett
- 9:40 – 10:30 Session 2: Hans Hurdle, PNC Bank – Capital Markets
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- 4:15 – 6:30 Happy Hour – Oak Bar, Hermitage Hotel





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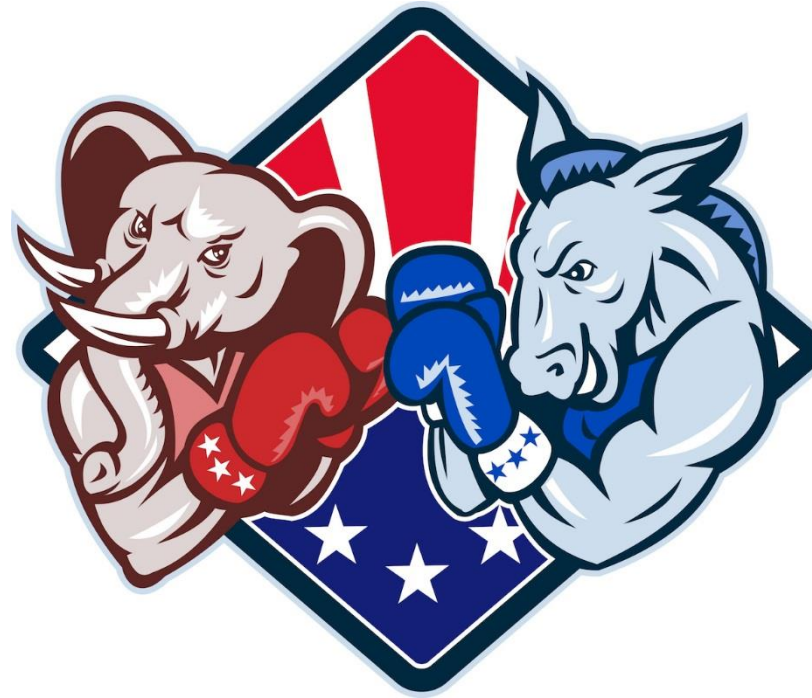
Thank you to our sponsors:

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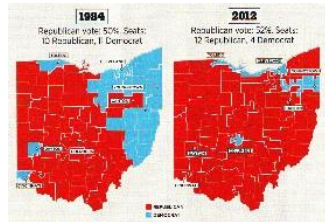


# Report from Washington: The “I Wouldn’t Take It Word for Word” Edition

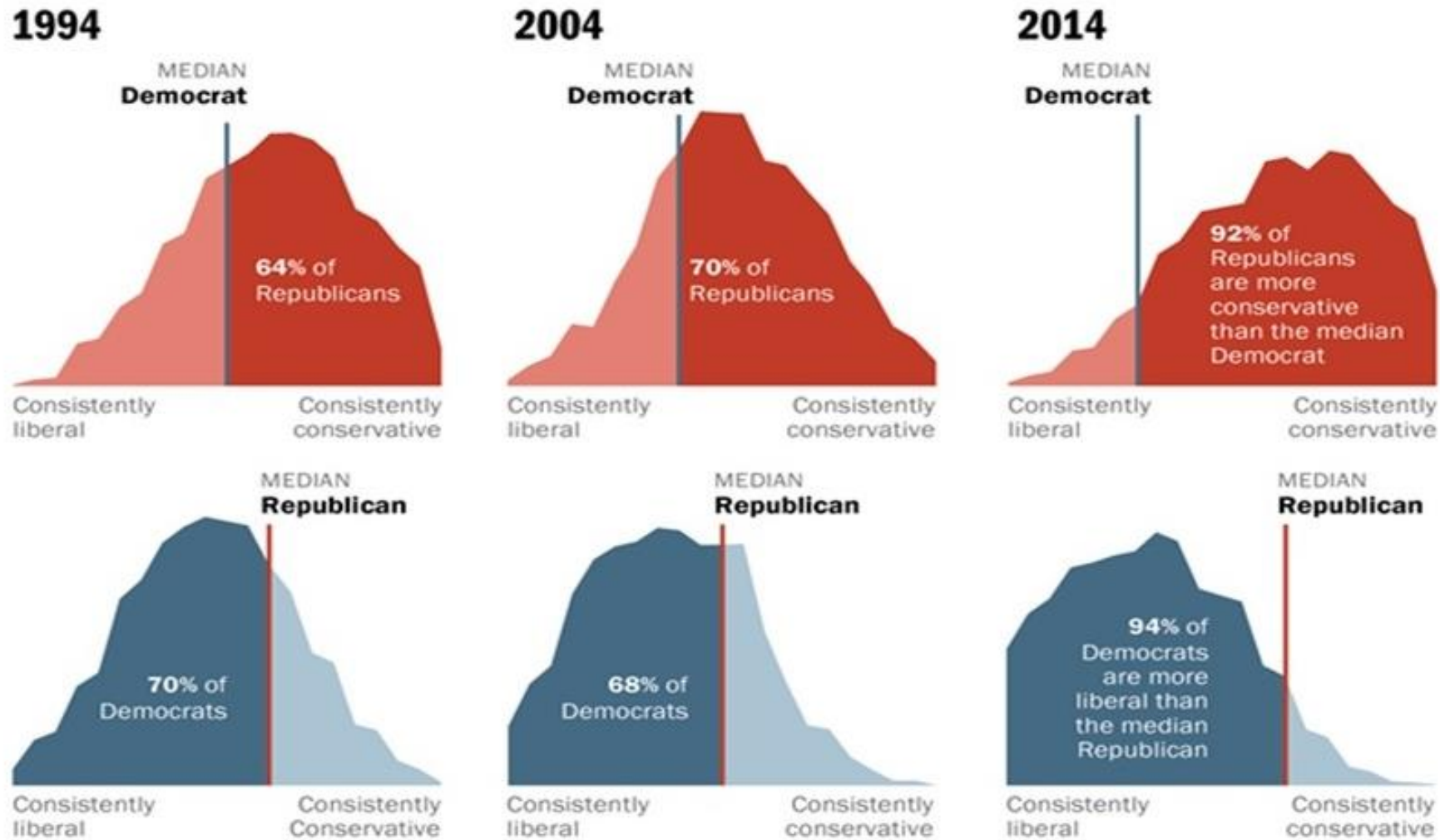
December 2017



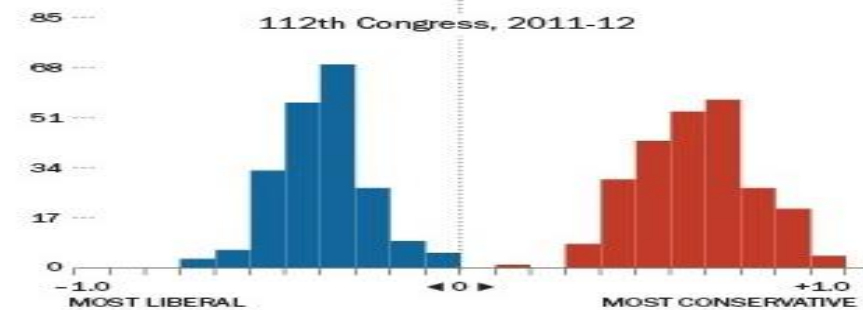
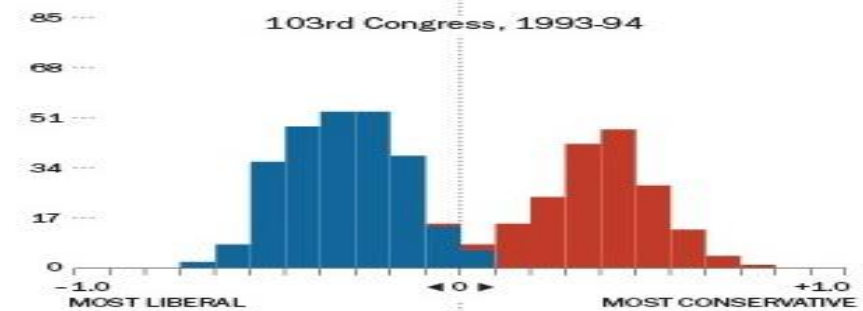
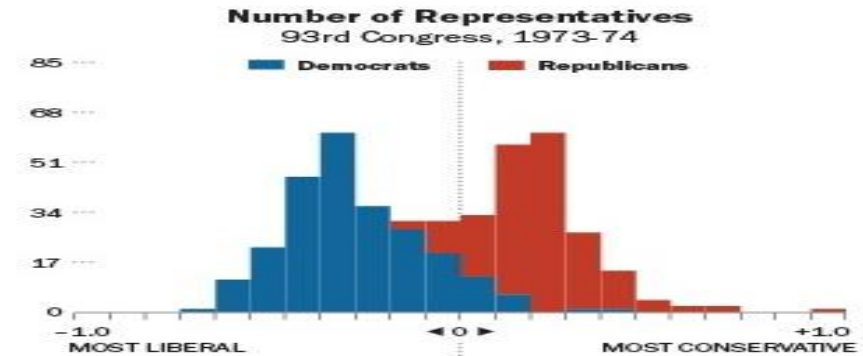
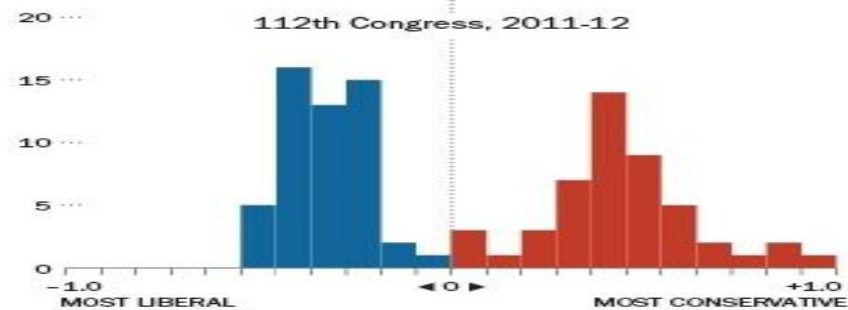
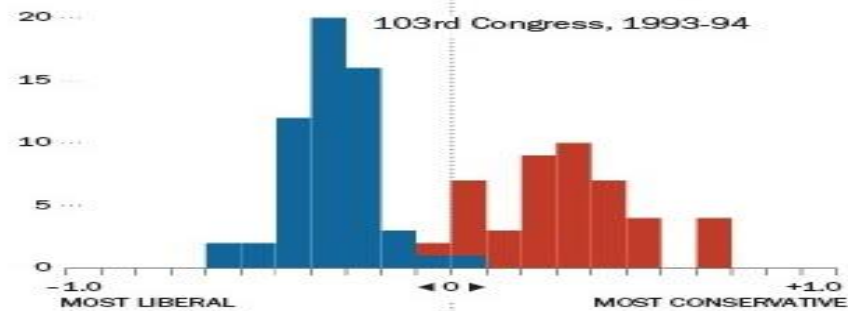
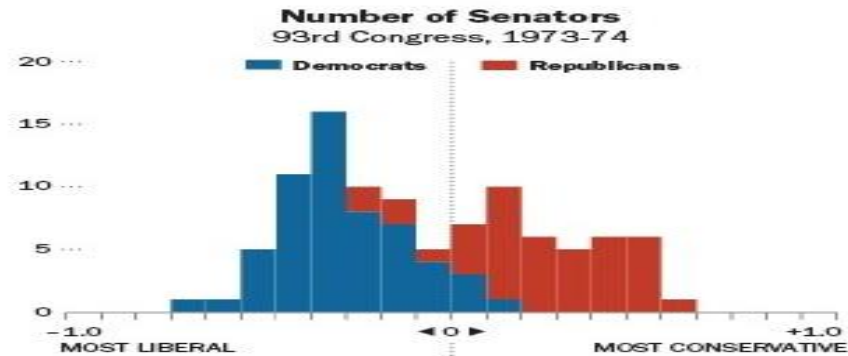
# Politics Today: Partisan and Polarized



# Republicans Shift to the Right.... Democrats Shift to the Left



# Polarization: No Middle Ground in Congress

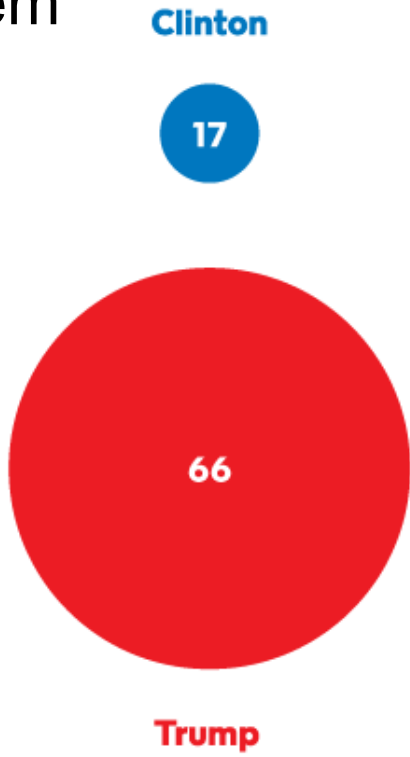
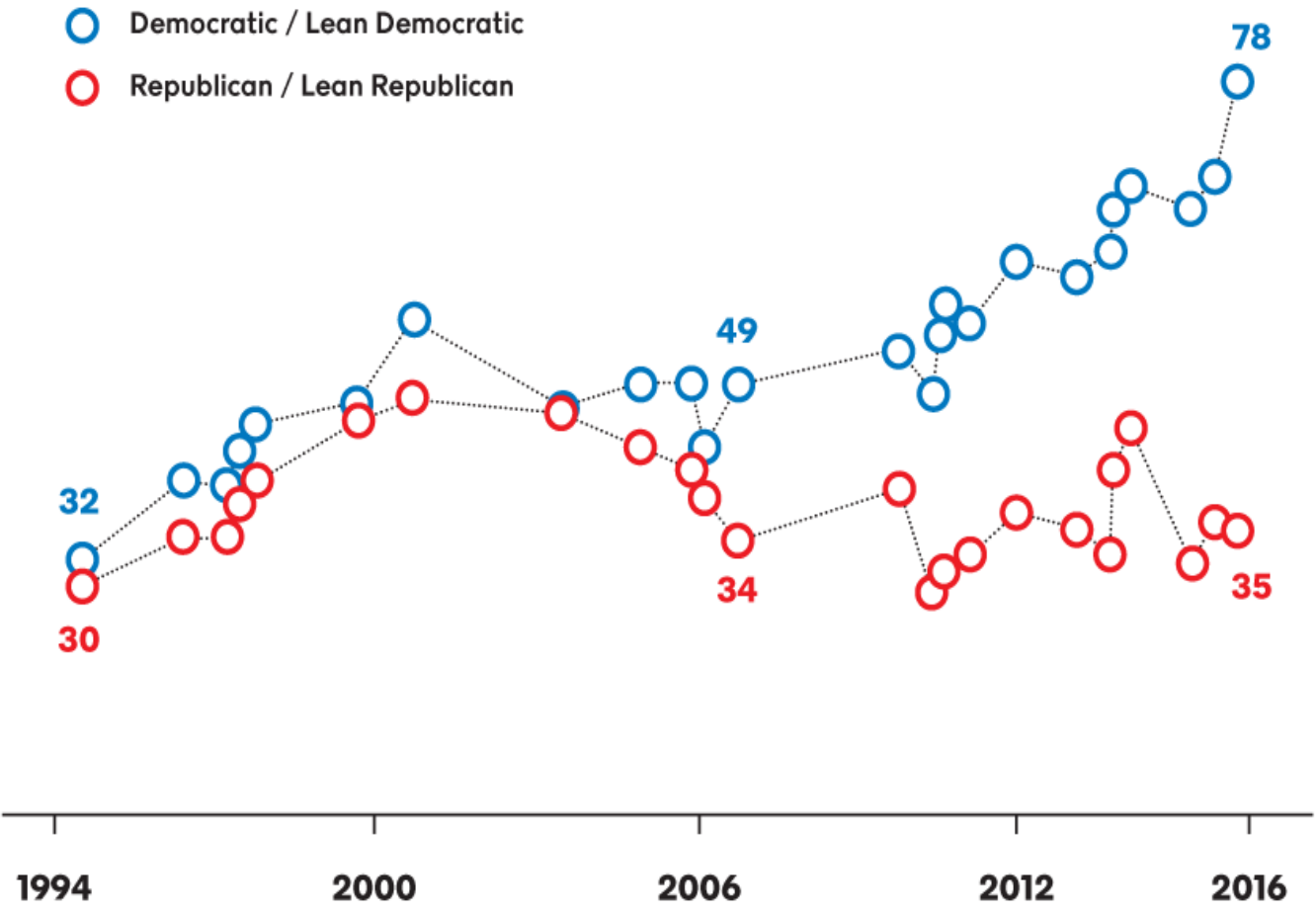


Sources: Royce Carroll, Jeff Lewis, James Lo, Nolan McCarty, Keith Poole and Howard Rosenthal, Voteview.com  
PEW RESEARCH CENTER

# Partisanship & Polarization: A Policy View

**Immigration:** Strengthens our country.....

.....is a problem



# The GOP Controls Washington

- Trump's politics are unconventional
  - No allegiance to Republican norms or institutions
  - Tweets and “fake” news—reaching directly to his voters
- Trump's policies are conventional GOP....to the extent he has policy interests
  - Tax cuts
  - Less regulation
- Republicans in power
  - The GOP is not just one party but several parties
  - Changes to the regulatory state/the “fourth estate”
  - Why tax reform is different from repealing Obamacare
  - Tax policy is policy, politics and math

# 60+

Executive Orders/Memorandums

# 25+

**Cabinet-level agency decisions**  
to stop or slow major rulemakings

# 15

**Congressional Review Acts**  
more in the works (2 defeats)

**Executive Order: Repeal 2 exiting rules for each new rule**

**Issue Areas Targeted by Trump Rules and Regulations**

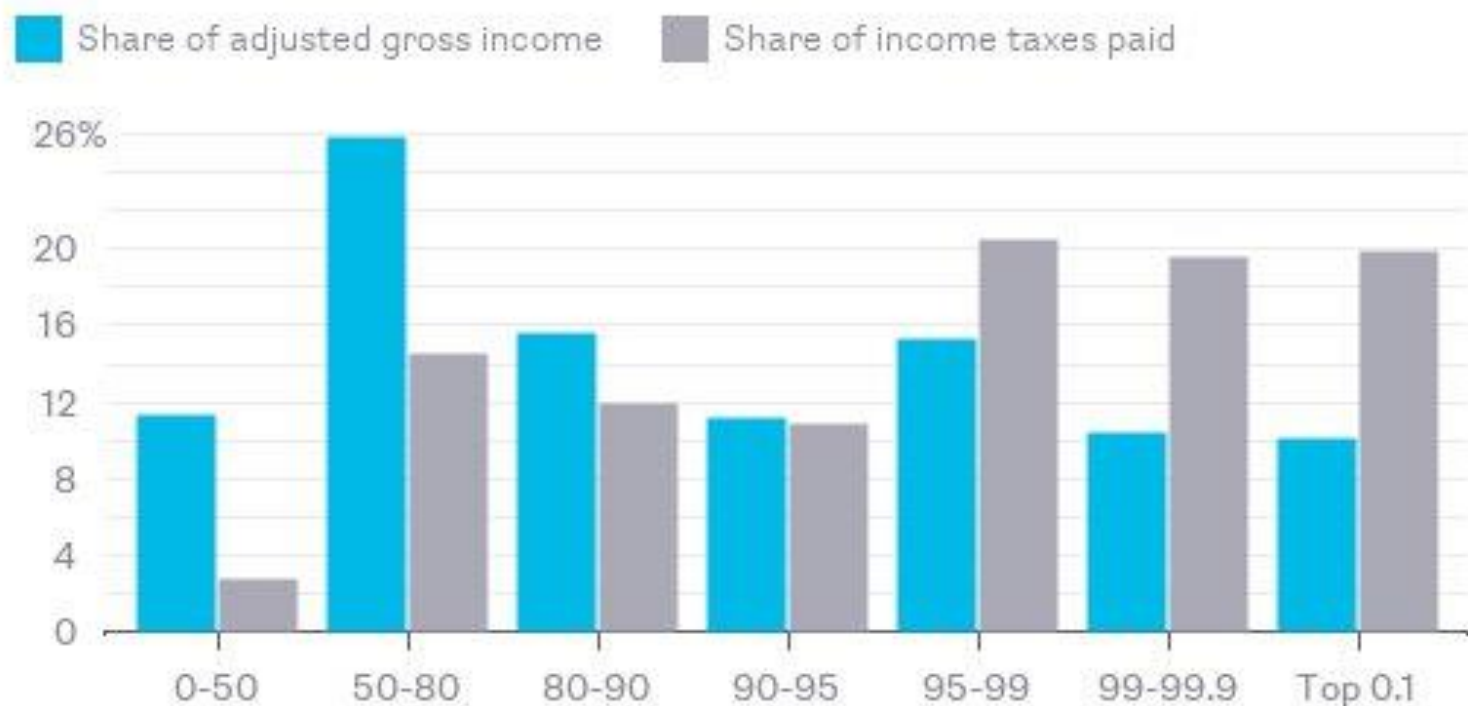
**Energy & Environment: 50%**

**Labor & Finance: 16%**

**All Others: 34%**

## Who Pays the Income Taxes

Income and federal income taxes paid, by income percentile, 2014



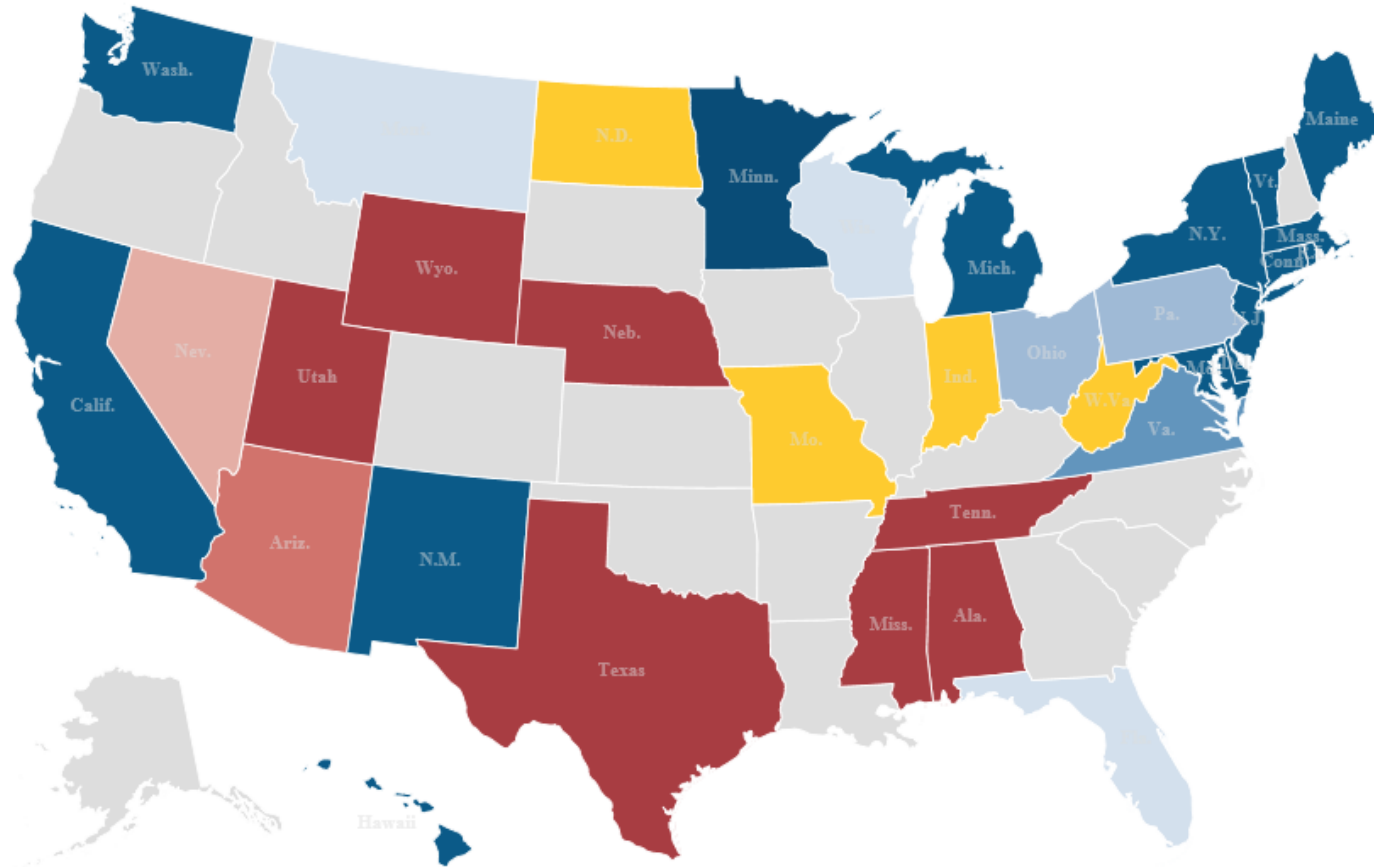
Source: Internal Revenue Service

BloombergView

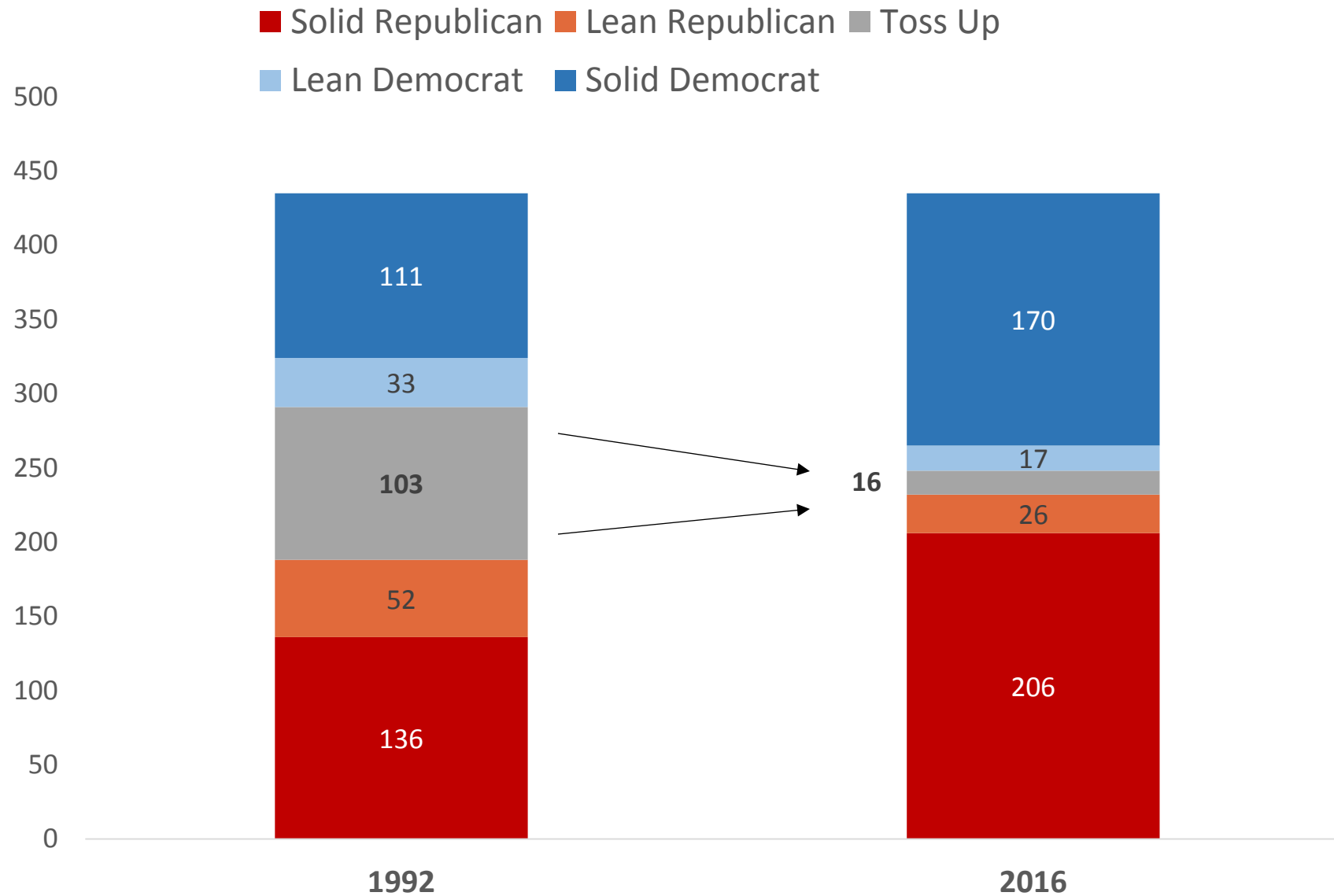
# The Senate Midterm Map

GOP Majority:  
52-48

Democrats  
“defend”:  
✓ 25 of 33 seats  
✓ 10 in states  
Trump won



## House: Decline of Swing Districts, Rise of Landslide Districts



# House Midterm Map: 6 Tossups; 19 Likely/Lean D, and 39 Likely/Lean GOP

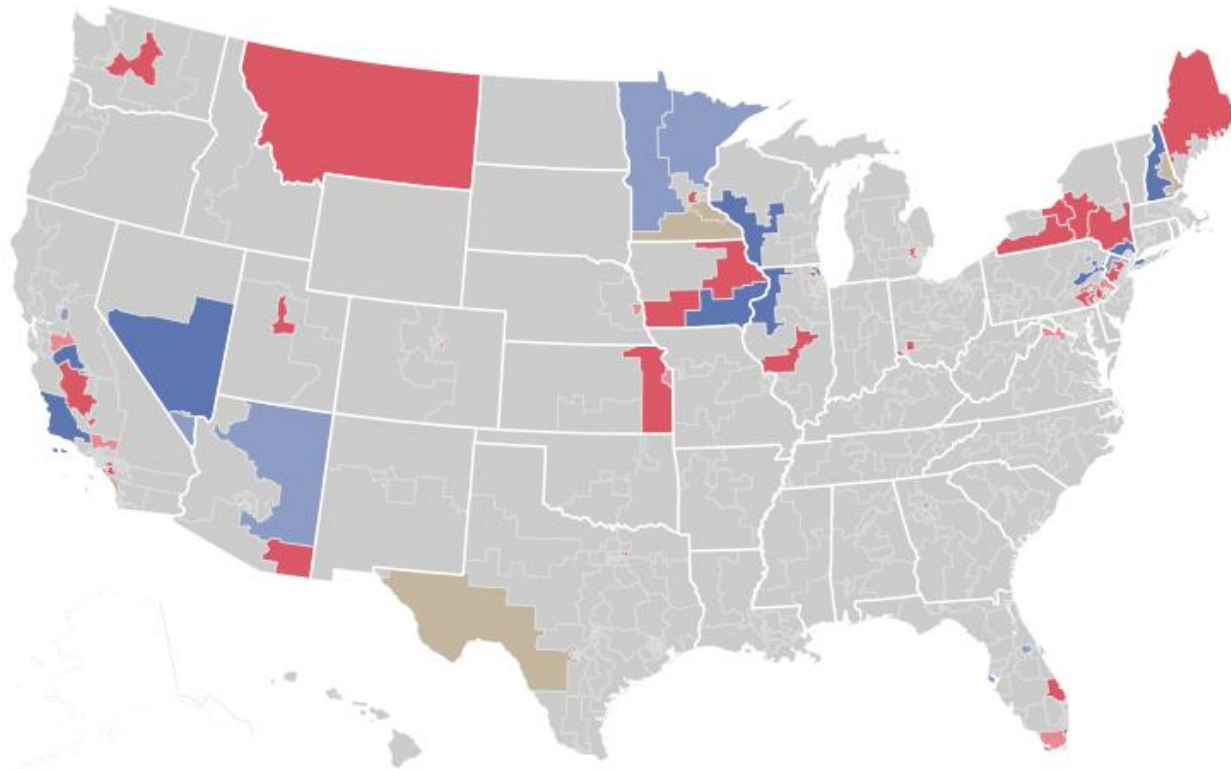
FLIP THE HOUSE?

GOP Majority:  
242-193

Democrats need  
+24 net gain to  
retake House.

HRC > GOP in 23  
DJT > DEM in 11

Does Trump's 35%  
approval rate matter?





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Offices of Waller Law – 511 Union Street, Suite 2700  
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Presented by:

# J.P.Morgan

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## WHY THE FINANCIAL SERVICES SECTOR IS UNDER CYBER ATTACK FROM TRANSNATIONAL CRIMINAL ENTERPRISES?

1. **Opening Case Studies/Stories involving business process attacks:**
  - a. **Using personal Gmail at work causes Ransomware.**
  - b. **W-2 Scam**
  - c. **BEC**
  - d. **Changing payment details**
  - e. **Common Factors:**
    - i. **CISOs, Next Gen Firewalls, PCI/HIPPA Compliant, Not using 2FA, Lack of employee awareness training and a senior executive who said “How did this happen”.**
2. **How Big Is the Problem?**
  - a. **(Scope)**
3. **Who am I and why I am here today.**
  - a. **Goal to prevent you from becoming the victim of a data breach or cybercrime incident. Might not be able to change your corporate culture, but I can show you how not to be the victim at home.**
4. **Can sum the last ten years of my career in four main points.**
  - a. **Nobody ever expects to be a victim:** I’m a small business, non-profit and I’m not as big as the big guys, I don’t have anything that anyone wants to steal. Every organization and individual has “stuff” the bad guys want (Money, access to bank accounts, email to attack others, human resources records, intellectual property and brand.
    - i. **What does the real estate industry have that bad guys want?**
  - b. **Imagine the bad guys steal your stuff and you contact law enforcement.** The chances of law enforcement getting your stuff back is slim to none.
    - i. **This includes Ransomware (having your data held hostage)**
    - ii. **How long can your business survive without access to your information?**
    - iii. **Importance of backing up your data and testing the back up.**
  - c. **The chance of us putting the bad guys in jail is challenging as the bad guys are located outside the United States in Eastern Europe, Asia and West Africa.**
    - i. **FBI overseas partnerships, Legat Program.**
  - d. **Over 90 percent of Cyber Crime Cases Could Have Been Prevented:**
5. **How to prevent becoming a victim**
  - a. **Think Before You Click**
    - i. **Spear Phishing Case Study**
  - b. **Why you need an intrusion detection system, even though its only 30 percent effective.**
  - c. **Password Reuse causes most incidents.**
    - i. **Yahoo Case Study.**
    - ii. **Email provider choices.**
  - d. **Separate Passwords for mission critical accounts.**

- i. I will not use the same password for multiple platforms.
  - e. How to create strong passwords for your accounts and how to remember them.
  - f. Two Factor or Multi Factor Authentication.
    - i. This will prevent most incidents.
    - ii. Need to do this on your email, social media (Especially work accounts), cloud, work logins and VPN
    - iii. All my victims did not have 2FA.
  - g. Separate computer for banking and finance.
    - i. No web surfing, email, social media.
  - h. Do not let your kids use your work computer.
  - i. Patching.
- 6. Capstone Business Email Compromise Case Study involving multi-million-dollar loss and could have easily been prevented with Step 5, a-h
- 7. Most asked questions during my past 500 presentations.
  - a. Are Macs Safer then PCs?
  - b. Is the cloud safe?
  - c. Is my bank app safe?
  - d. Why can't the government do more?
  - e. What do I do now?



# Public Service Announcement

FEDERAL BUREAU OF INVESTIGATION



**June 14, 2016**

Alert Number

**I-061416-PSA**

Questions regarding this PSA should be directed to your local **FBI Field Office**.

Local Field Offices:

[www.fbi.gov/contact-us/field](http://www.fbi.gov/contact-us/field)

## **BUSINESS E-MAIL COMPROMISE: THE 3.1 BILLION DOLLAR SCAM**

This Public Service Announcement (PSA) is an update to the Business E-mail Compromise (BEC) information provided in Public Service Announcements (PSA) 1-012215-PSA and 1-082715a-PSA. This PSA includes new Internet Crime Complaint Center (IC3) complaint information and updated statistical data.

### **DEFINITION**

BEC is defined as a sophisticated scam targeting businesses working with foreign suppliers and/or businesses that regularly perform wire transfer payments. The scam is carried out by compromising legitimate business e-mail accounts through social engineering or computer intrusion techniques to conduct unauthorized transfers of funds.

Most victims report using wire transfers as a common method of transferring funds for business purposes; however, some victims report using checks as a common method of payment. The fraudsters will use the method most commonly associated with their victim's normal business practices.

### **STATISTICAL DATA**

The BEC scam continues to grow, evolve, and target businesses of all sizes. Since January 2015, there has been a 1,300% increase in identified exposed losses<sup>1</sup>. The scam has been reported by victims in all 50 states and in 100 countries. Reports indicate that fraudulent transfers have been sent to 79 countries with the majority going to Asian banks located within China and Hong Kong.

The following BEC statistics were reported to the IC3 and are derived from multiple sources to include IC3 victim complaints and complaints filed with international law enforcement agencies and financial institutions:

Domestic and International victims:	22,143
Combined exposed dollar loss:	\$3,086,250,090

The following BEC statistics were reported in victim complaints to the IC3 from October 2013 to May 2016:

Domestic and International victims:	15,668
Combined exposed dollar loss:	\$1,053,849,635
➤ Total U.S. victims:	14,032
➤ Total U.S. exposed dollar loss:	\$960,708,616
➤ Total non-U.S. victims:	1,636
➤ Total non-U.S. exposed dollar loss:	\$93,141,019

<sup>1</sup> Exposed dollar loss includes actual and attempted loss in United States dollars.

## Federal Bureau of Investigation Public Service Announcement

### BACKGROUND

The victims of the BEC scam range from small businesses to large corporations. The victims continue to deal in a wide variety of goods and services, indicating a specific sector does not seem to be targeted.

It is largely unknown how victims are selected; however, the subjects monitor and study their selected victims using social engineering techniques prior to initiating the BEC scam. The subjects are able to accurately identify the individuals and protocols necessary to perform wire transfers within a specific business environment. Victims may also first receive “phishing” e-mails requesting additional details regarding the business or individual being targeted (name, travel dates, etc.).

Some individuals reported being a victim of various Scareware or Ransomware cyber intrusions immediately preceding a BEC incident. These intrusions can initially be facilitated through a phishing scam in which a victim receives an e-mail from a seemingly legitimate source that contains a malicious link. The victim clicks on the link, and it downloads malware, allowing the actor(s) unfettered access to the victim’s data, including passwords or financial account information.

The BEC scam is linked to other forms of fraud, including but not limited to: romance, lottery, employment, and rental scams. The victims of these scams are usually U.S. based and may be recruited as unwitting money mules.<sup>2</sup> The mules receive the fraudulent funds in their personal accounts and are then directed by the subject to quickly transfer the funds to another bank account, usually outside the U.S. Upon direction, mules may open bank accounts and/or shell corporations to further the fraud scheme.

### SCENARIOS OF BEC

Based on IC3 complaints and other complaint data<sup>3</sup>, there are five main scenarios by which this scam is perpetrated. BEC victims recently reported a new scenario (Data Theft) involving the receipt of fraudulent e-mails requesting either all Wage or Tax Statement (W-2) forms or a company list of Personally Identifiable Information (PII). This scenario does not always involve the request for a wire transfer; however, the business executive’s e-mail is compromised, either spoofed or hacked, and the victims are targeted in a similar manner as described in Scenario 2 of the BEC scam.

#### Scenario 5 (New): Data Theft

Fraudulent requests are sent utilizing a business executive’s compromised e-mail. The entity in the business organization responsible for W-2s or maintaining PII, such as the human resources department, bookkeeping, or auditing section, have frequently been identified as the targeted recipient of the fraudulent request for W-2 and/or PII. Some of these incidents are isolated and some occur prior to a fraudulent wire transfer request. Victims report they have fallen for this new BEC scenario, even if they were able to successfully identify and avoid the traditional BEC incident. The data theft scenario (Scenario 5) of the BEC first appeared just prior to the 2016 tax season.

---

<sup>2</sup> Money mules are defined as persons who transfer money illegally on behalf of others.

<sup>3</sup> Multiple source complaint data, not limited to IC3, describing the BEC scam is dated as far back as 2009.

## Federal Bureau of Investigation Public Service Announcement

### Scenario 1: Business Working With a Foreign Supplier

A business, which often has a long standing relationship with a supplier, is requested to wire funds for invoice payment to an alternate, fraudulent account. The request may be made via telephone, facsimile, or e-mail. If an e-mail is received, the subject will spoof the e-mail request so it appears very similar to a legitimate account and would take very close scrutiny to determine it was fraudulent. Likewise, if a facsimile or telephone call is received, it will closely mimic a legitimate request. This particular scenario has also been referred to as "The Bogus Invoice Scheme," "The Supplier Swindle," and "Invoice Modification Scheme."

### Scenario 2: Business [Executive] Receiving or Initiating a Request for a Wire Transfer

The e-mail accounts of high-level business executives (CFO, CTO, etc) are compromised. The account may be spoofed or hacked. A request for a wire transfer from the compromised account is made to a second employee within the company who is normally responsible for processing these requests. In some instances, a request for a wire transfer from the compromised account is sent directly to the financial institution with instructions to urgently send funds to bank "X" for reason "Y." This particular scenario has also been referred to as "CEO Fraud," "Business Executive Scam," "Masquerading," and "Financial Industry Wire Frauds."

### Scenario 3: Business Contacts Receiving Fraudulent Correspondence through Compromised E-mail

An employee of a business has his/her personal e-mail hacked. This personal e-mail may be used for both personal and business communications. Requests for invoice payments to fraudster-controlled bank accounts are sent from this employee's personal e-mail to multiple vendors identified from this employee's contact list. The business may not become aware of the fraudulent requests until that business is contacted by a vendor to follow up on the status of an invoice payment.

### Scenario 4: Business Executive and Attorney Impersonation

Victims report being contacted by fraudsters, who typically identify themselves as lawyers or representatives of law firms and claim to be handling confidential or time-sensitive matters. This contact may be made via either phone or e-mail. Victims may be pressured by the fraudster to act quickly or secretly in handling the transfer of funds. This type of BEC scam may occur at the end of the business day or work week and be timed to coincide with the close of business of international financial institutions.

## **CHARACTERISTICS OF BEC COMPLAINTS**

The IC3 has noted the following characteristics of BEC complaints:

- Businesses and associated personnel using open source e-mail accounts are predominantly targeted.
- Individuals responsible for handling wire transfers within a specific business are targeted.
- Spoofed e-mails very closely mimic a legitimate e-mail request.
- Hacked e-mails often occur with a personal e-mail account.
- Fraudulent e-mail requests for a wire transfer are well-worded, specific to the business being victimized, and do not raise suspicions to the legitimacy of the request.
- The phrases "code to admin expenses" or "urgent wire transfer" were reported by victims in some of the fraudulent e-mail requests.
- The amount of the fraudulent wire transfer request is business-specific; therefore, dollar amounts requested are similar to normal business transaction amounts so as to not raise doubt.

## Federal Bureau of Investigation Public Service Announcement

- Fraudulent e-mails received have coincided with business travel dates for executives whose e-mails were spoofed.
- Victims report that IP addresses frequently trace back to free domain registrars.

### **SUGGESTIONS FOR PROTECTION and BEST PRACTICES**

Businesses with an increased awareness and understanding of the BEC scam are more likely to recognize when they have been targeted by BEC fraudsters, and are therefore more likely to avoid falling victim and sending fraudulent payments.

Businesses that deploy robust internal prevention techniques at all levels (especially targeting front line employees who may be the recipients of initial phishing attempts), have proven highly successful in recognizing and deflecting BEC attempts.

Some financial institutions reported holding their customer requests for international wire transfers for an additional period of time, to verify the legitimacy of the request.

The following is a compilation of self protection strategies provided in the BEC PSAs from 2015.

- Avoid free web-based e-mail accounts: Establish a company domain name and use it to establish company e-mail accounts in lieu of free, web-based accounts.
- Be careful what is posted to social media and company websites, especially job duties/descriptions, hierarchical information, and out of office details.
- Be suspicious of requests for secrecy or pressure to take action quickly.
- Consider additional IT and financial security procedures, including the implementation of a 2-step verification process. For example -
  - Out of Band Communication: Establish other communication channels, such as telephone calls, to verify significant transactions. Arrange this second-factor authentication early in the relationship and outside the e-mail environment to avoid interception by a hacker.
  - Digital Signatures: Both entities on each side of a transaction should utilize digital signatures. This will not work with web-based e-mail accounts. Additionally, some countries ban or limit the use of encryption.
  - Delete Spam: Immediately report and delete unsolicited e-mail (spam) from unknown parties. DO NOT open spam e-mail, click on links in the e-mail, or open attachments. These often contain malware that will give subjects access to your computer system.
  - Forward vs. Reply: Do not use the "Reply" option to respond to any business e-mails. Instead, use the "Forward" option and either type in the correct e-mail address or select it from the e-mail address book to ensure the intended recipient's correct e-mail address is used.
  - Consider implementing Two Factor Authentication (TFA) for corporate e-mail accounts. TFA mitigates the threat of a subject gaining access to an employee's e-mail account through a compromised password by requiring two pieces of information to login: something you know (a password) and something you have (such as a dynamic PIN or code).

**Significant Changes:** Beware of sudden changes in business practices. For example, if a current business contact suddenly asks to be contacted via their personal e-mail address when all previous official correspondence has been

## Federal Bureau of Investigation Public Service Announcement

through company e-mail, the request could be fraudulent. Always verify via other channels that you are still communicating with your legitimate business partner.

- Create intrusion detection system rules that flag e-mails with extensions that are similar to company e-mail. For example, legitimate e-mail of *abc\_company.com* would flag fraudulent e-mail of *abc-company.com*.
- Register all company domains that are slightly different than the actual company domain.
- Verify changes in vendor payment location by adding additional two-factor authentication such as having a secondary sign-off by company personnel.
- Confirm requests for transfers of funds. When using phone verification as part of the two-factor authentication, use previously known numbers, not the numbers provided in the e-mail request.
- Know the habits of your customers, including the details of, reasons behind, and amount of payments.
- Carefully scrutinize all e-mail requests for transfers of funds to determine if the requests are out of the ordinary.

Additional information is publicly available on the United States Department of Justice website [www.justice.gov](http://www.justice.gov) publication entitled “Best Practices for Victim Response and Reporting of Cyber Incidents”.

### WHAT TO DO IF YOU ARE A VICTIM

If funds are transferred to a fraudulent account, it is important to act quickly:

- Contact your financial institution immediately upon discovering the fraudulent transfer
- Request that your financial institution contact the corresponding financial institution where the fraudulent transfer was sent
- Contact your local Federal Bureau of Investigation (FBI) office if the wire is recent. The FBI, working with the United States Department of Treasury Financial Crimes Enforcement Network, might be able to help return or freeze the funds
- File a complaint, regardless of dollar loss, at [www.IC3.gov](http://www.IC3.gov)

When contacting law enforcement or filing a complaint with the IC3, it is important to identify your incident as “BEC”, provide a brief description of the incident, and consider providing the following financial information:

- Originating<sup>4</sup> Name:
- Originating Location:
- Originating Bank Name:
- Originating Bank Account Number:
- Recipient<sup>5</sup> Name:
- Recipient Bank Name:
- Recipient Bank Account Number:
- Recipient Bank Location (if available):
- Intermediary Bank Name (if available):
- SWIFT Number:
- Date:

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<sup>4</sup> The term “Originating” is synonymous with the term “Victim”

<sup>5</sup> The term “Recipient” is synonymous with the term “Beneficiary”

## Federal Bureau of Investigation Public Service Announcement

- Amount of Transaction:
- Additional Information (if available) - including “FFC” - For Further Credit; “FAV” – In Favor Of:

### **FILING A COMPLAINT WITH IC3**

Victims should always file a complaint regardless of dollar loss or timing of incident at [www.IC3.gov](http://www.IC3.gov) and, in addition to the financial information, provide the following descriptors:

- IP and/or e-mail address of fraudulent e-mail
- Date and time of incidents
- Incorrectly formatted invoices or letterheads
- Requests for secrecy or immediate action
- Unusual timing, requests, or wording of the fraudulent phone calls or e-mails
- Phone numbers of the fraudulent phone calls
- Description of any phone contact to include frequency and timing of calls
- Foreign accents of the callers
- Poorly worded or grammatically incorrect e-mails
- Reports of any previous e-mail phishing activity



How to Protect Your Networks from

# RANSOMWARE

This document is a U.S. Government interagency technical guidance document aimed to inform Chief Information Officers and Chief Information Security Officers at critical infrastructure entities, including small, medium, and large organizations. This document provides an aggregate of already existing Federal government and private industry best practices and mitigation strategies focused on the prevention and response to ransomware incidents.



# Protecting Your Networks from Ransomware

Ransomware is the fastest growing malware threat, targeting users of all types—from the home user to the corporate network. On average, more than 4,000 ransomware attacks have occurred daily since January 1, 2016. This is a 300-percent increase over the approximately 1,000 attacks per day seen in 2015. There are very effective prevention and response actions that can significantly mitigate the risk posed to your organization.

Ransomware targets home users, businesses, and government networks and can lead to temporary or permanent loss of sensitive or proprietary information, disruption to regular operations, financial losses incurred to restore systems and files, and potential harm to an organization's reputation.

Ransomware may direct a user to click on a link to pay a ransom; however, the link may be malicious and could lead to additional malware infections. Some ransomware variants display intimidating messages, such as:

“Your computer was used to visit websites with illegal content. To unlock your computer, you must pay a \$100 fine.”

“You only have 96 hours to submit the payment. If you do not send money within provided time, all your files will be permanently encrypted and no one will be able to recover them.”

## *What is Ransomware?*

...

Ransomware is a form of malware that targets your critical data and systems for the purpose of extortion. Ransomware is frequently delivered through spearphishing emails. After the user has been locked out of the data or system, the cyber actor demands a ransom payment. After receiving payment, the cyber actor will purportedly provide an avenue to the victim to regain access to the system or data. Recent iterations target enterprise end users, making awareness and training a critical preventive measure.

## *Protecting Your Networks*

### Educate Your Personnel

Attackers often enter the organization by tricking a user to disclose a password or click on a virus-laden email attachment.

Remind employees to never click unsolicited links or open unsolicited attachments in emails. To improve workforce awareness, the internal security team may test the training of an organization's workforce with simulated phishing emails<sup>1</sup>.

### *Proactive Prevention is the Best Defense*

Prevention is the most effective defense against ransomware and it is critical to take precautions for protection. Infections can be devastating to an individual or organization, and recovery may be a difficult process requiring the services of a reputable data recovery specialist.

The U.S. Government (USG) recommends that users and administrators take the following preventive measures to protect their computer networks from falling victim to a ransomware infection:

### Preventive Measures

- Implement an awareness and training program. Because end users are targets, employees and individuals should be aware of the threat of ransomware and how it is delivered.
- Enable strong spam filters to prevent phishing emails from reaching the end users and authenticate inbound email using technologies like Sender Policy Framework (SPF), Domain Message Authentication Reporting and Conformance (DMARC), and DomainKeys Identified Mail (DKIM) to prevent email spoofing.
- Scan all incoming and outgoing emails to detect threats and filter executable files from reaching end users.
- Configure firewalls to block access to known malicious IP addresses.
- Patch operating systems, software, and firmware on devices. Consider using a centralized patch management system.
- Set anti-virus and anti-malware programs to conduct regular scans automatically.
- Manage the use of privileged accounts based on the principle of least privilege: no users should be assigned administrative access unless absolutely needed; and those with a need for administrator accounts should only use them when necessary.

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<sup>1</sup> For additional information on Avoiding Social Engineering and Phishing Attacks, please see US-CERT Security Tip (ST04-014), available at: <https://www.us-cert.gov/ncas/tips/ST04-014>



- Configure access controls—including file, directory, and network share permissions—with least privilege in mind. If a user only needs to read specific files, the user should not have write access to those files, directories, or shares.
- Disable macro scripts from office files transmitted via email. Consider using Office Viewer software to open Microsoft Office files transmitted via email instead of full office suite applications.
- Implement Software Restriction Policies (SRP) or other controls to prevent programs from executing from common ransomware locations, such as temporary folders supporting popular Internet browsers or compression/decompression programs, including the AppData/LocalAppData folder.
- Consider disabling Remote Desktop protocol (RDP) if it is not being used.
- Use application whitelisting, which only allows systems to execute programs known and permitted by security policy.
- Execute operating system environments or specific programs in a virtualized environment.
- Categorize data based on organizational value and implement physical and logical separation of networks and data for different organizational units.

### Business Continuity Considerations

- Back up data regularly. Verify the integrity of those backups and test the restoration process to ensure it is working.
- Conduct an annual penetration test and vulnerability assessment.
- Secure your backups. Ensure backups are not connected permanently to the computers and networks they are backing up. Examples are securing backups in the cloud or physically storing backups offline. Some instances of ransomware have the capability to lock cloud-based backups when systems continuously back up in real time, also known as persistent synchronization. Backups are critical in ransomware recovery and response; if you are infected, a backup may be the best way to recover your critical data.

### *What to Do If Infected with Ransomware*

Should preventive measures fail, the USG recommends that organizations consider taking the following steps upon an infection with ransomware:

- **Isolate the infected computer immediately.** Infected systems should be removed from the network as soon as possible to prevent ransomware from attacking network or share drives.
- **Isolate or power-off affected devices that have not yet been completely corrupted.** This may afford more time to clean and recover data, contain damage, and prevent worsening conditions.



- **Immediately secure backup data or systems by taking them offline.** Ensure backups are free of malware.
- **Contact law enforcement immediately.** We strongly encourage you to contact a local field office of the Federal Bureau of Investigation (FBI) or U.S. Secret Service immediately upon discovery to report a ransomware event and request assistance.
- **If available, collect and secure partial portions of the ransomed data that might exist.**
- **If possible, change all online account passwords and network passwords after removing the system from the network.** Furthermore, change all system passwords once the malware is removed from the system.
- **Delete Registry values and files to stop the program from loading.**

**Implement your security incident response and business continuity plan.** Ideally, organizations will ensure they have appropriate backups, so their response to an attack will simply be to restore the data from a known clean backup. Having a data backup can eliminate the need to pay a ransom to recover data.

**There are serious risks to consider before paying the ransom.** USG does not encourage paying a ransom to criminal actors. However, after systems have been compromised, whether to pay a ransom is a serious decision, requiring the evaluation of all options to protect shareholders, employees, and customers. Victims will want to evaluate the technical feasibility, timeliness, and cost of restarting systems from backup. Ransomware victims may also wish to consider the following factors:

- Paying a ransom does not guarantee an organization will regain access to their data; in fact, some individuals or organizations were never provided with decryption keys after paying a ransom.
- Some victims who paid the demand were targeted again by cyber actors.
- After paying the originally demanded ransom, some victims were asked to pay more to get the promised decryption key.
- Paying could inadvertently encourage this criminal business model.

## *How Law Enforcement Can Help*

Any entity infected with ransomware should contact law enforcement immediately. Law enforcement may be able to use legal authorities and tools that are unavailable to most organizations. Law enforcement can enlist the assistance of international law enforcement partners to locate the stolen or encrypted data or identify the perpetrator. These tools and relationships can greatly increase the odds of successfully apprehending the criminal, thereby preventing future losses.

Federal law enforcement places a priority on conducting cyber investigations in a manner that causes minor disruption to a victim entity's normal operations and seeks to work cooperatively and discreetly with that entity. Federal law enforcement uses investigative measures that avoid unnecessary downtime or displacement of a company's employees. Federal law enforcement closely coordinates its activities with the affected organization to avoid unwarranted disclosure of information.

As an affected entity recovers from a cybersecurity incident, the entity should initiate measures to prevent similar incidents. Law enforcement agencies and the Department of Homeland Security's National Cybersecurity and Communications Integration Center can assist organizations in implementing countermeasures and provide information and best practices for avoiding similar incidents in the future. Additionally, the affected organization should conduct a post-incident review of their response to the incident and assess the strengths and weaknesses of its incident response plan.

### *Ransomware Variants<sup>2</sup>*

Ransomware is a growing criminal activity involving numerous variants. Since 2012 when police locker ransomware variants first emerged, ransomware variants have become more sophisticated and destructive. Some variants encrypt not just the files on the infected device, but also the contents of shared or networked drives, externally attached storage media devices, and cloud storage services that are mapped to infected computers. These variants are considered destructive because they encrypt users' and organizations' files, and render those files useless until a ransom is paid.

Recent federal investigations by the FBI reveal that ransomware authors continue to improve ransomware code by using anonymizing services like "Tor"<sup>3</sup> for end-to-end communication to infected systems and Bitcoin virtual currency to collect ransom payments. Currently, the top five ransomware variants targeting U.S. companies and individuals are CryptoWall, CTB-Locker, TeslaCrypt, MSIL/Samas, and Locky. New ransomware variants are continually emerging.

### *CryptoWall*

CryptoWall and its variants have been actively used to target U.S. victims since April 2014. CryptoWall was the first ransomware variant that only accepted ransom payments in Bitcoin. The ransom amounts associated with CryptoWall are typically between \$200 and \$10,000. Following the takedown of the CryptoLocker botnet, CryptoWall has become the most successful ransomware variant with victims all over the world. Between April 2014 and June

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<sup>2</sup> For more information on Ransomware variants and other resources, visit <https://www.us-cert.gov/ncas/alerts/TA16-091A>

<sup>3</sup> Tor is free software for enabling anonymous communication. Tor directs Internet traffic through a free, worldwide, volunteer network consisting of more than 7,000 relays to conceal a user's location and usage from anyone conducting network surveillance or traffic analysis. (The name derives from the original software project name, *The Onion Router*.)

2015, IC3 received 992 CryptoWall-related complaints, with victims reporting losses totaling over \$18 million.<sup>4</sup> CryptoWall is primarily spread via spam email but also infects victims through drive-by downloads<sup>5</sup> and malvertising<sup>6</sup>.

### CTB-Locker

CTB-Locker emerged in June 2014 and is one of the first ransomware variants to use Tor for its C2 infrastructure. CTB-Locker uses Tor exclusively for its C2 servers and only connects to the C2 after encrypting victims' files. Additionally, unlike other ransomware variants that utilize the Tor network for some communication, the Tor components are embedded in the CTB-Locker malware, making it more efficient and harder to detect. CTB-Locker is spread through drive-by downloads and spam emails.

### TeslaCrypt

TeslaCrypt emerged in February 2015, initially targeting the video game community by encrypting gaming files. These files were targeted in addition to the files typically targeted by ransomware (documents, images, and database files). Once the data was encrypted, TeslaCrypt attempted to delete all Shadow Volume Copies and system restore points to prevent file recovery. TeslaCrypt was distributed through the Angler, Sweet Orange, and Nuclear exploit kits.

### MSIL or Samas (SAMSAM)

MSIL or Samas (SAMSAM) was used to compromise the networks of multiple U.S. victims, including 2016 attacks on healthcare facilities that were running outdated versions of the JBoss content management application. SAMSAM exploits vulnerable Java-based Web servers. SAMSAM uses open-source tools to identify and compile a list of hosts reporting to the victim's active directory. The actors then use psexec.exe to distribute the malware to each host on the network and encrypt most of the files on the system. The actors charge varying amounts in Bitcoin to provide the decryption keys to the victim.

### Locky

In early 2016, a destructive ransomware variant, Locky, was observed infecting computers belonging to businesses globally, including those in the United States, New Zealand, Australia, Germany and the United Kingdom. Locky propagates through spam emails that include malicious Microsoft Office documents or compressed attachments (e.g., .rar, .zip) that were previously associated with banking Trojans such as Dridex and Pony. The malicious attachments contain macros or JavaScript files to download the Locky files. Recently, this ransomware has also been distributed using the Nuclear Exploit Kit.

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<sup>4</sup> This number includes additional costs incurred by the victim. Expenses may be associated with network mitigation, network countermeasures, loss of productivity, legal fees, IT services, and the purchase of credit monitoring services for employees or customers.

<sup>5</sup> Drive by download" is the transfer of malicious software to the victim's computer without the knowledge of or any action by the victim.

<sup>6</sup> "Malvertising," is the use of malicious ads on legitimate websites. These malicious ads contain code that will infect a user's computer without any action from the user (i.e., the user does not have to click on the ad to become infected).



### Links to Other Types of Malware

Systems infected with ransomware are also often infected with other malware. In the case of CryptoLocker, a user typically was infected by opening a malicious attachment from an email. This malicious attachment contained Upatre, a downloader, which infected the user with GameOver Zeus. GameOver Zeus was a variant of the Zeus Trojan used to steal banking information and other types of data. After a system became infected with GameOver Zeus, Upatre would also download CryptoLocker. Finally, CryptoLocker encrypted files on the infected system and demanded a ransom payment.

The disruption operation against the GameOver Zeus botnet also affected CryptoLocker, demonstrating the close ties between ransomware and other types of malware. In June 2014, an international law enforcement operation successfully weakened the infrastructure of both GameOverZeus and CryptoLocker.



## *Federal Government Resources*

### **Reporting**

Federal Bureau of Investigation

Cyber Task Forces

[www.fbi.gov/contact-us/field](http://www.fbi.gov/contact-us/field)

Internet Crime Complaint Center

[www.ic3.gov](http://www.ic3.gov)

United States Secret Service

Electronic Crimes Task Force

[www.secretservice.gov/investigation/#field](http://www.secretservice.gov/investigation/#field)

Local Field Offices

[www.secretservice.gov/contact/](http://www.secretservice.gov/contact/)

### **Mitigation**

Department of Homeland Security

United States Computer Emergency Readiness Team (US-CERT)

[www.us-cert.gov](http://www.us-cert.gov)

NIST Cybersecurity Framework:

<http://www.nist.gov/cyberframework/>

NSA/IAD Top 10 Information Assurance Mitigations Strategies:

<https://www.iad.gov/iad/library/ia-guidance/iads-top-10-information-assurance-mitigation-strategies.cfm>



ASSOCIATION FOR  
FINANCIAL  
PROFESSIONALS  
Nashville



## 36<sup>th</sup> Annual Winter Seminar

Offices of Waller Law – 511 Union Street, Suite 2700  
December 14<sup>th</sup>, 2017

Presented by:

# J.P.Morgan

### Agenda:

- 7:45 – 8:30      Registration and Breakfast**
- 8:30 – 8:45      State of the Membership – AFP Nashville President**
- 8:45 – 9:35      Session 1 Keynote Speaker – Brian Preston, The Money Guy - Investing like Warren Buffett**
- 9:40 – 10:30    Session 2: Hans Hurdle, PNC Bank – Capital Markets**
- 10:30 – 10:40   Break**
- 10:40 – 11:30   Session 3: Chris Scribner, Regions Bank – Political Action Committee Update**
- 11:30 – 12:45   Lunch – sponsored by Institutional Cash Distributors**
- 12:45 – 1:35    Session 4: Scott Augenbaum, FBI – Cyber Threats**
- 1:35 – 2:25      Session 5: Edward Talisse, Fitch Ratings Agency – Treasury Management in a Low Rate Environment**
- 2:25 – 2:35      Break**
- 2:35 – 3:25      Session 6: Brinker Dailey, First Data – 2017 Top Payment Trends**
- 3:25 – 4:15      Session 7: Gina Brown, Nashville Chamber of Commerce – Growth in Nashville**
- 4:15 – 6:30      Happy Hour – Oak Bar, Hermitage Hotel**





ASSOCIATION FOR  
FINANCIAL  
PROFESSIONALS

FitchLearning

# The Treasury Challenge

December 14, 2017  
Nashville, TN

Edward Talisse



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# Treasury Strategic Challenges

Endogenous and exogenous random variables typically impact the Treasurer's ability to fully control the outcomes across the following key areas:

- Cash management strategy
- Funding strategy and capital structure optimization
- Liquidity management
- Risk management
- Relationship management with core banks
- Technology
- Regulation

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# Treasury Decision Making



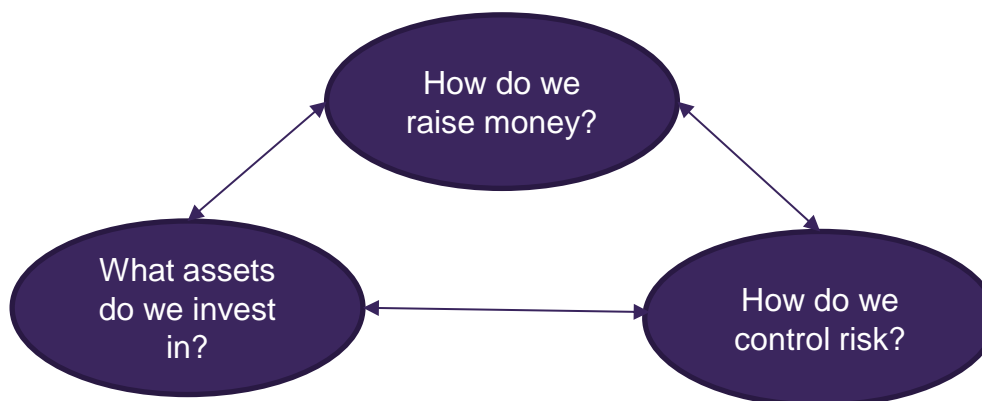
Idiosyncratic Business Objectives



Industry Outlook



Macro Economic Environment



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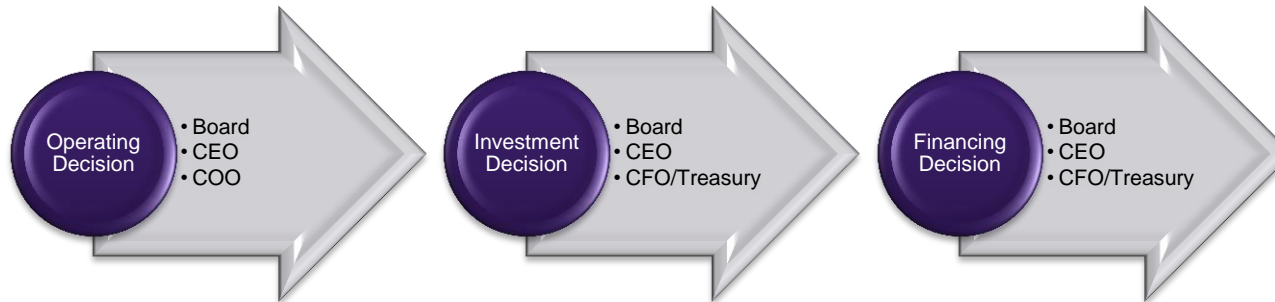
# Raising Funds

Raising the funds is the responsibility of treasury. Treasury needs to consider a number of questions, for example:

- Is additional finance raised as equity, debt, a hybrid or a combination?
- Does what is being invested in lend itself to asset-based finance? Could it be rented or leased and at what cost?
- Are there other existing assets that would be more easily financed, releasing funds for the new investment?
- To what providers of funds does your organization have access?

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# Operating, Financing and Investment Decisions



Fisher's separation theorem stipulates that the goal of any firm is to increase its value to the fullest extent, regardless of the preferences of the firm's owners. The theorem is named after American economist Irving Fisher, who first proposed this idea.

The theorem can be broken down into three key assertions. First, a firm's investment decisions are separate from the preferences of the firm's owners. Second, a firm's investment decisions are separate from a firm's financing decisions. And, third, the value of a firm's investments is separate from the mix of methods used to finance the investments. Investopedia 2017

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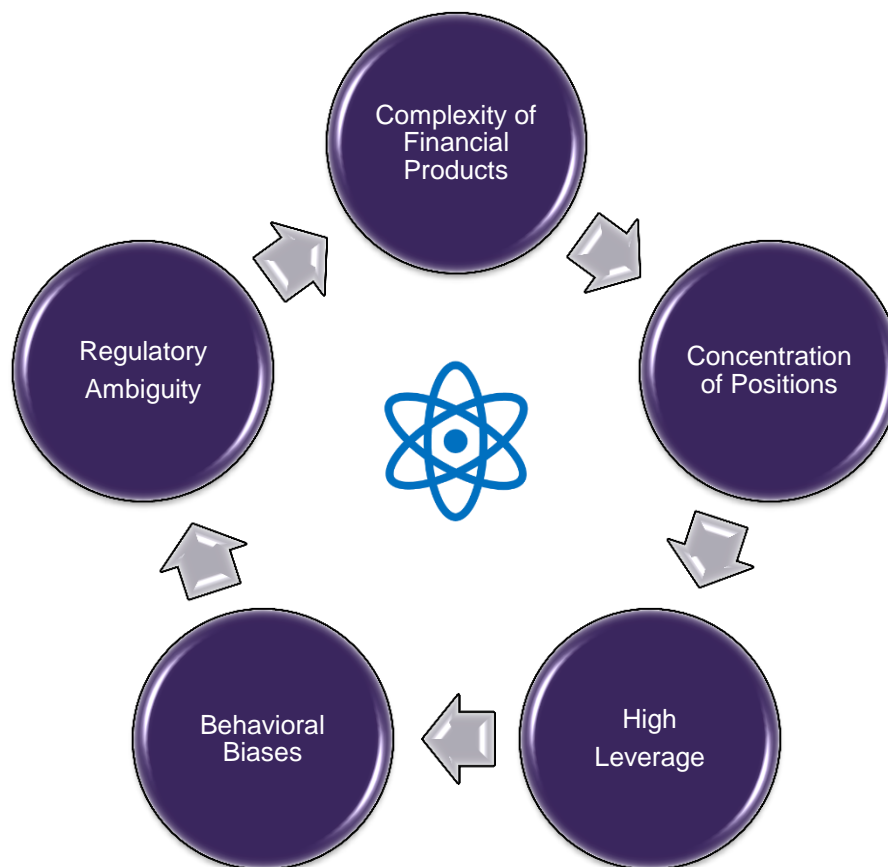
# Managing Risk

- Cash flow risk e.g. liquidity risk
- Price risk e.g. market risk
- Credit and counterparty risk
- Operational risk including legal, regulatory and reputational risk

Risk and uncertainty both relate to the same underlying concept—randomness. Risk is randomness in which events have measurable probabilities. Whereas risk is quantifiable randomness, uncertainty isn't. Financial market uncertainty relates to imperfect information *about how the world behaves*. Frank Knight in 1921 in Meaning of Risk and Uncertainty

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# What Contributes to Uncertainty in Financial Markets?



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# Treasury Investment Approach

1. Identify cash management, liquidity and funding characteristics
2. Formulate investment policy objectives, risk tolerance and constraints
3. Construct optimal portfolio based on opportunity set
4. Execute/implement target portfolio
5. Monitor and rebalance



## Classic Investment Objectives:

- Safety of Principal
- Liquidity
- Yield

## Advanced Investment Objectives:

- Real Yield
- Diversification
- After tax return

---

# Spectrum of Liquidity Solutions

Segment	Operating Cash	Working Capital	Investment Assets
Principal Use	Payroll, operating expenses	Qtrly tax payments, CAPEX	Long term spending needs
Time Horizon	1 day to 12 months	6 month to 2 years	Between 2 and 5 years
Risk-Reward Tolerance	Low risk, low expected return	Medium risk, medium expected return	Higher risk, higher expected return
Investment Types	Bank Deposits, CMBs	MMA, Repos	Bond Funds, SMA

Source: Wells Fargo AM September 2016

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# Investing Funds

Investing is any use of resources for future benefit. Will the investment will earn enough to cover the cost of funds and compensate for the risks involved?

- Use of leverage, explicit or embedded
- Use of derivatives
- CSA<sup>1</sup> terms and conditions
- FX hedging policy – transaction, translation and economic or operating exposure
- Benchmark selection
- Tracking error
- Performance attribution

1. A Credit Support Annex, or CSA, is a legal document which regulates credit support (collateral) for derivative transactions

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# Rate Risk or Spread Risk?

In Fixed Income, it is relatively easy to target separately rate risk and spread risk.

Rate Risk	Spread Risk
Macaulay duration	G -Spread
Modified duration	I-Spread
Convexity	Z-Spread <sup>1</sup>
DV01, and PV01	OAS
Volatility	Volatility
	Implied Probability of Default

1. The Zero-volatility spread (Z-spread) is the constant spread that makes the price of a security equal to the present value of its cash flows when added to the yield at each point on the spot rate Treasury curve where a cash flow is received.

# Bank Holding Company Metrics That Matter

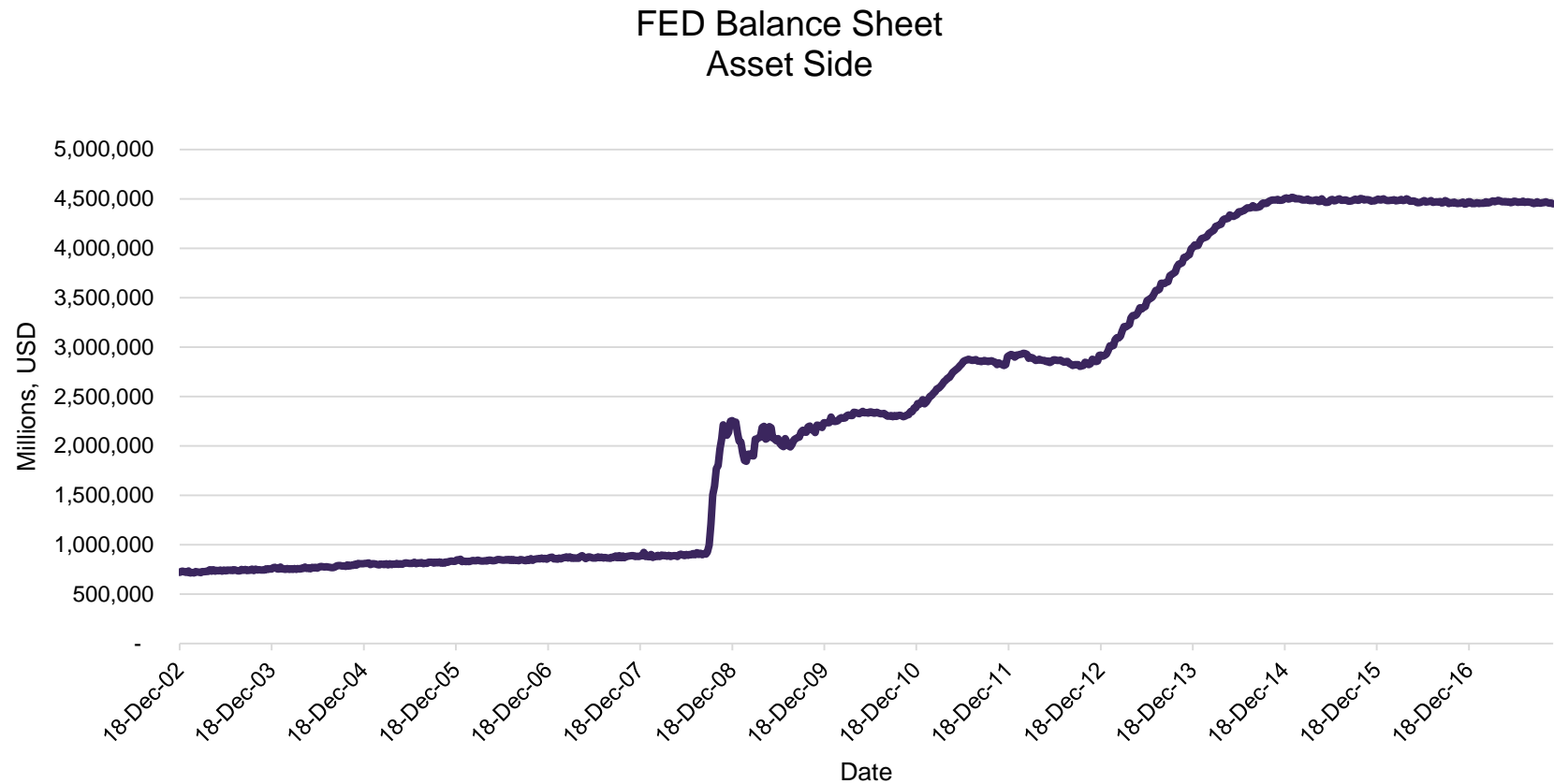
Metric	Calculation	Target
Tier 1 Capital	Tier 1 Capital/RWAs	~10%-15%
Liquidity Coverage Ratio	HQLA/Cash Outflows <sub>30d</sub>	>100%
Net Stable Funding Ratio	ASF/RSF <sup>1</sup>	>100
Supplemental Leverage Ratio	Tier 1 Capital/Total Exposure	~5%



Intense competition to acquire HQLA

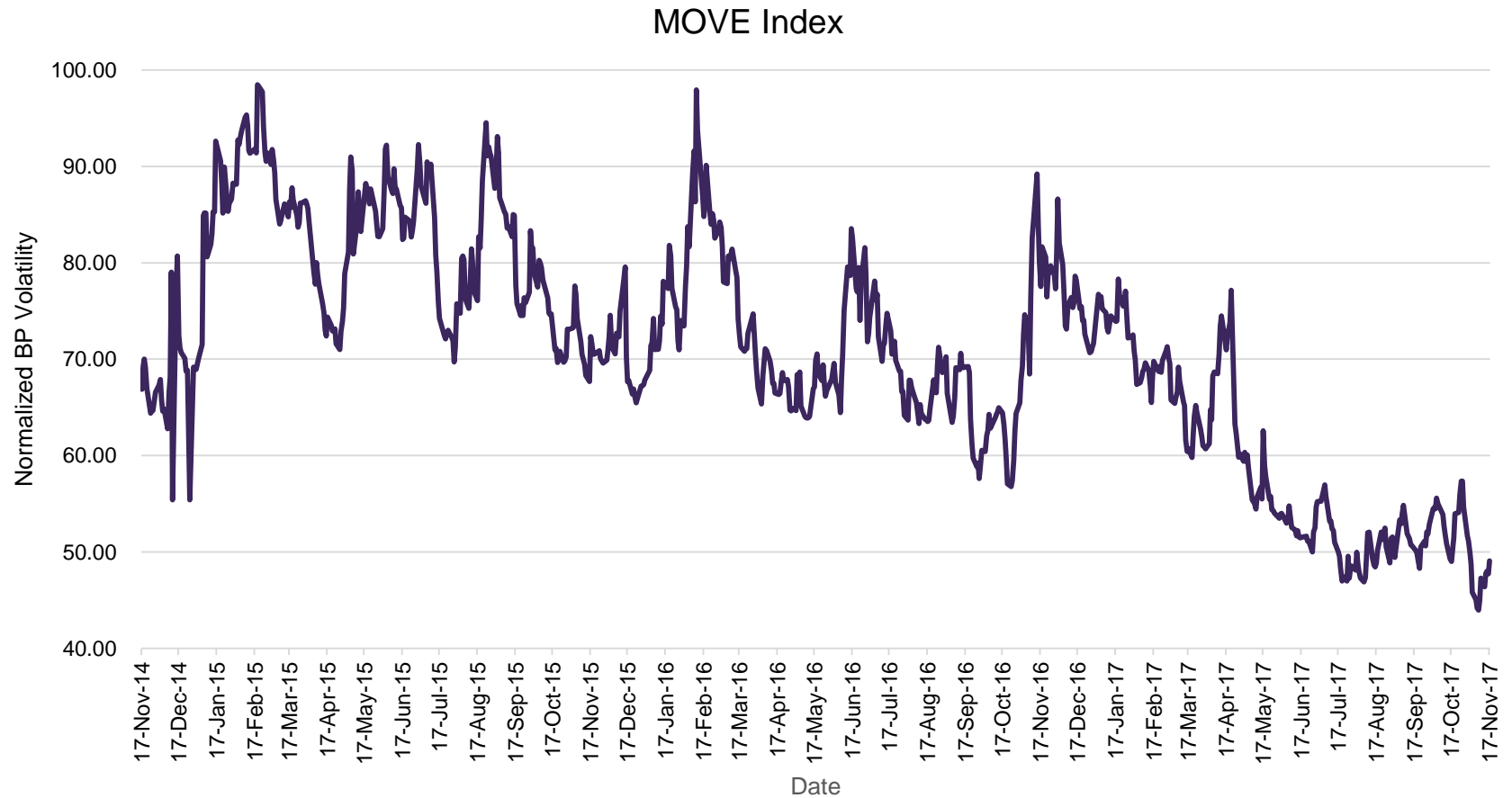
1. AFS= Available Stable Funding, RSF = Required Stable Funding

# Federal Reserve Balance Sheet



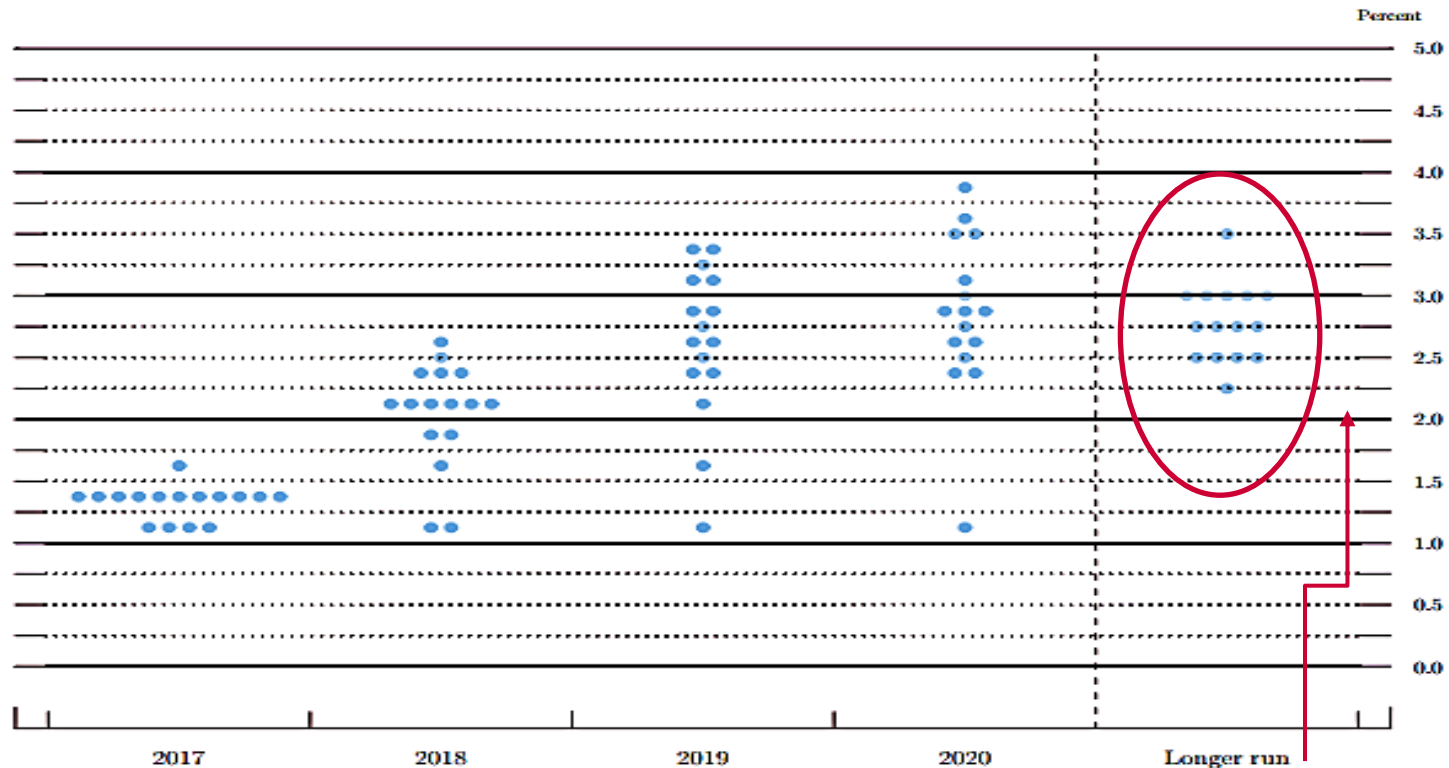
Source: FRED 2017

# Tracking U.S. Treasury Market Volatility



Source: Bloomberg 11/2017

# The Federal Reserve DOT Plot<sup>1</sup>



1. The dot plot, which is published after each Fed meeting, shows the projections of the 16 members of the Federal Open Market Committee. Each dot represents a member's view on where the fed funds rate should be at the end of the various calendar years shown, as well as the "long run" – the peak for the fed funds rate.

# BofA Merrill Lynch US Corporate 1-3 Year Effective Yield

**BAMLC1A0C13YEY**

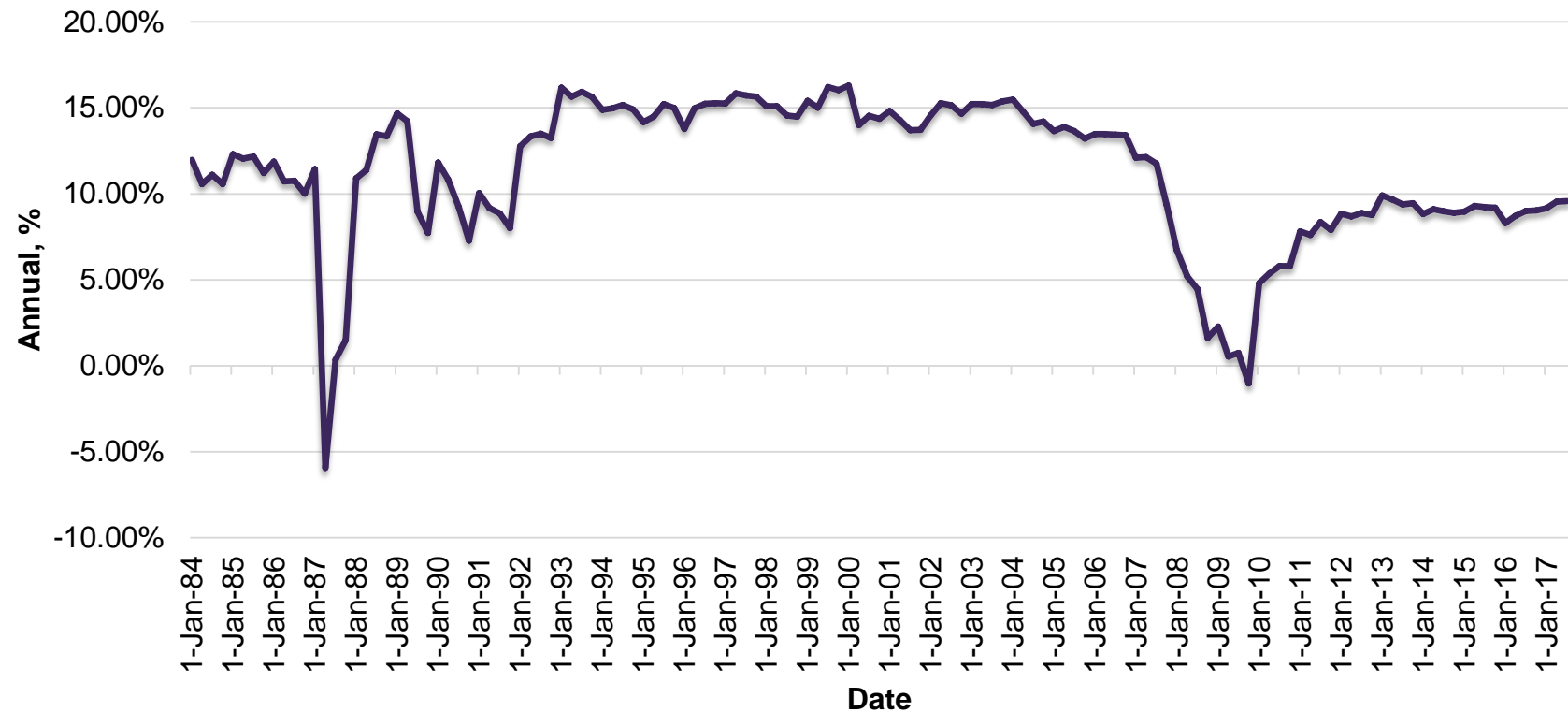
Risk Premium	0.09%
Credit Premium	0.50%
Inflation Premium	1.50%
Real Rate	0.10%
YTM	2.19%



Source: FRED 2017

# Bank Return on Equity

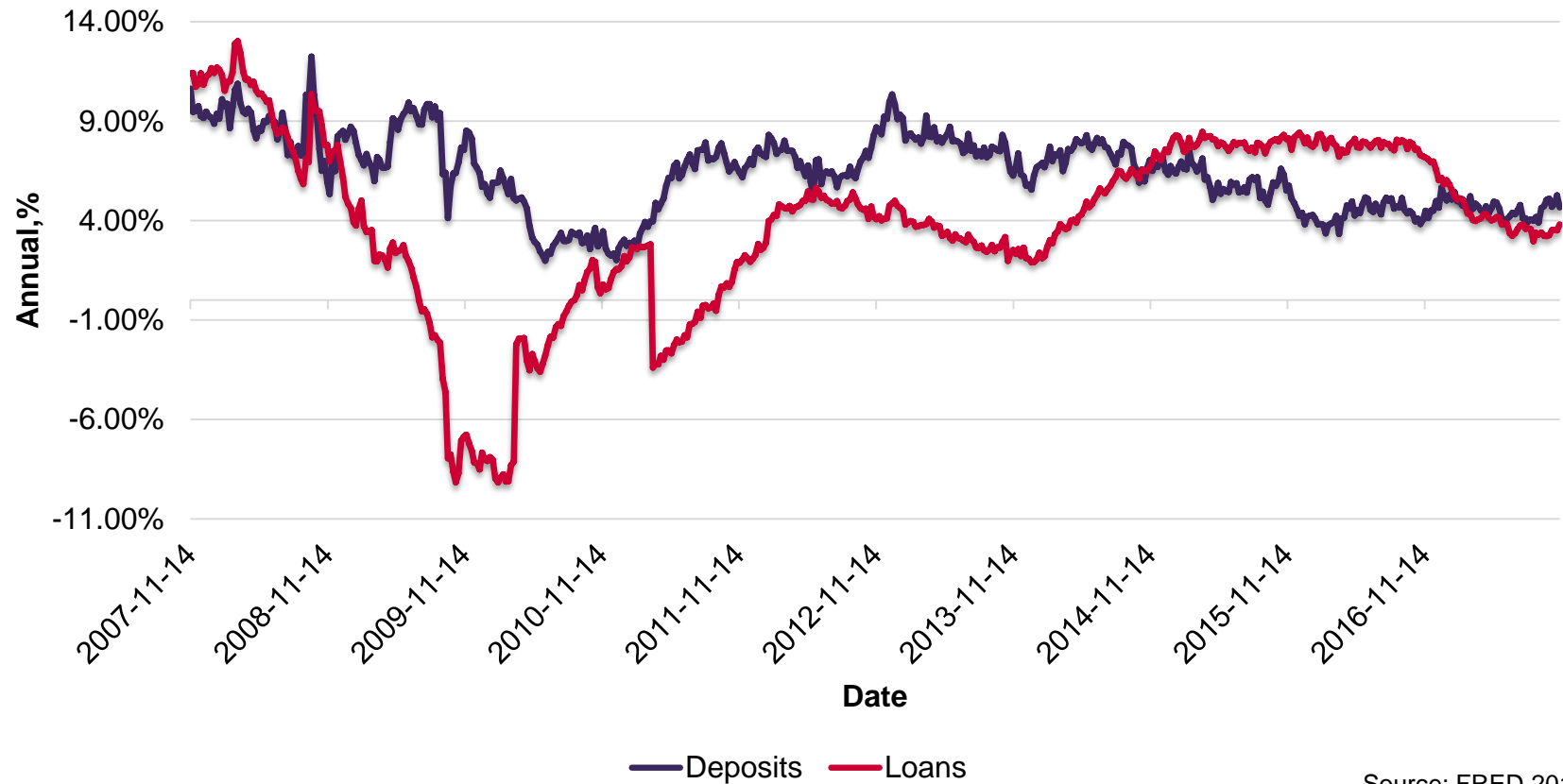
## USROE



Source: FRED 2017

# Deposits vs Loans

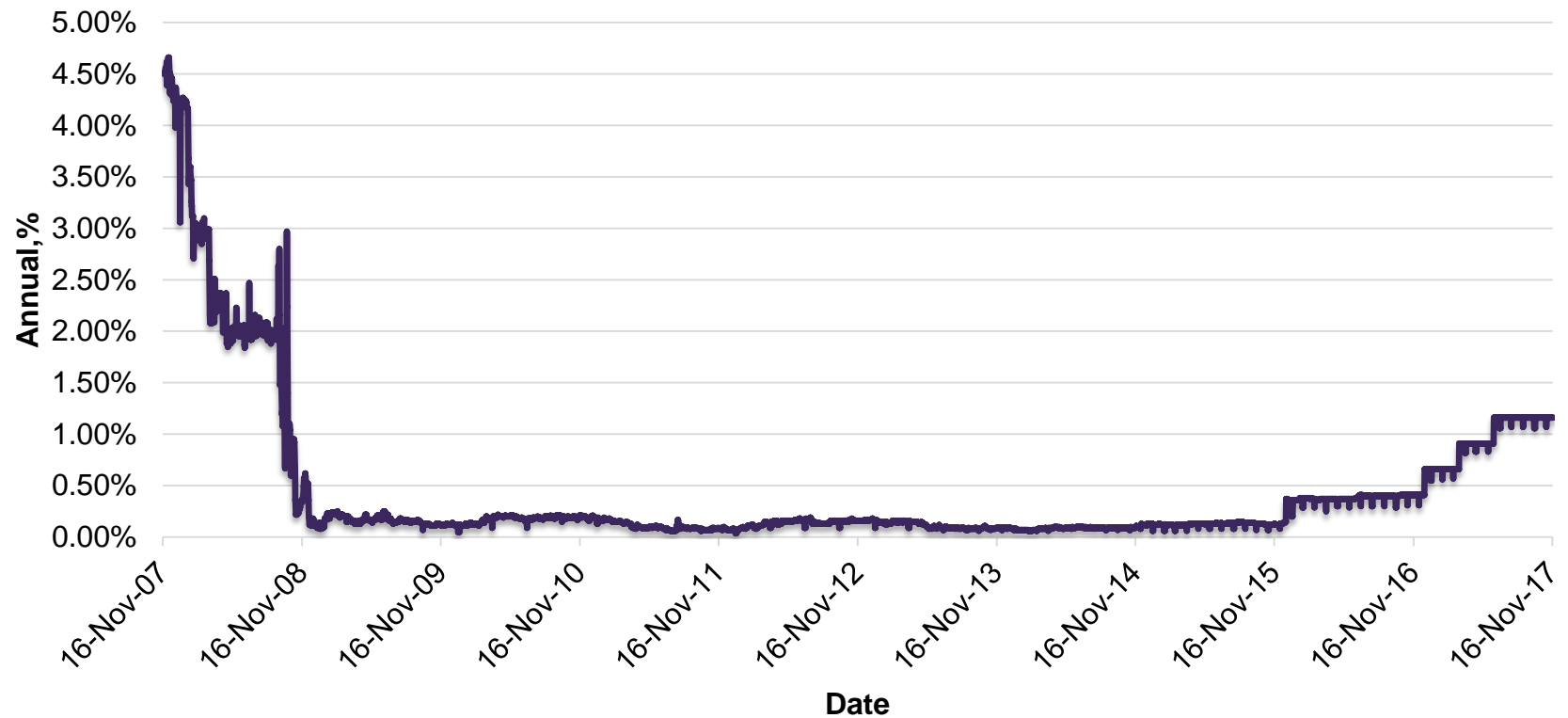
## Deposits vs. Loans



Source: FRED 2017

# Effective Fed Funds Rate

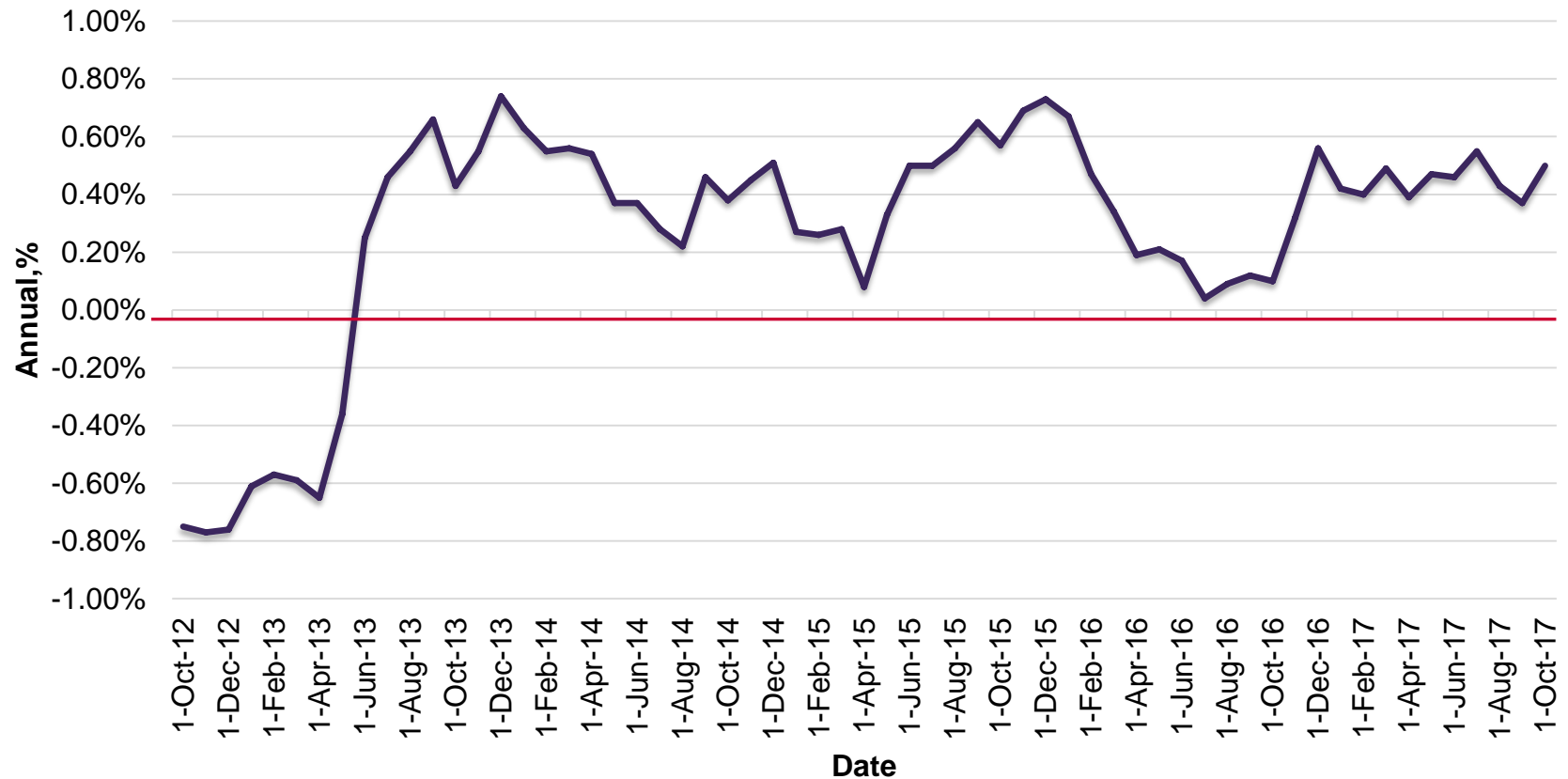
## Fed Funds Rate



Source: FRED 2017

# Real U.S. 10-Year Rates

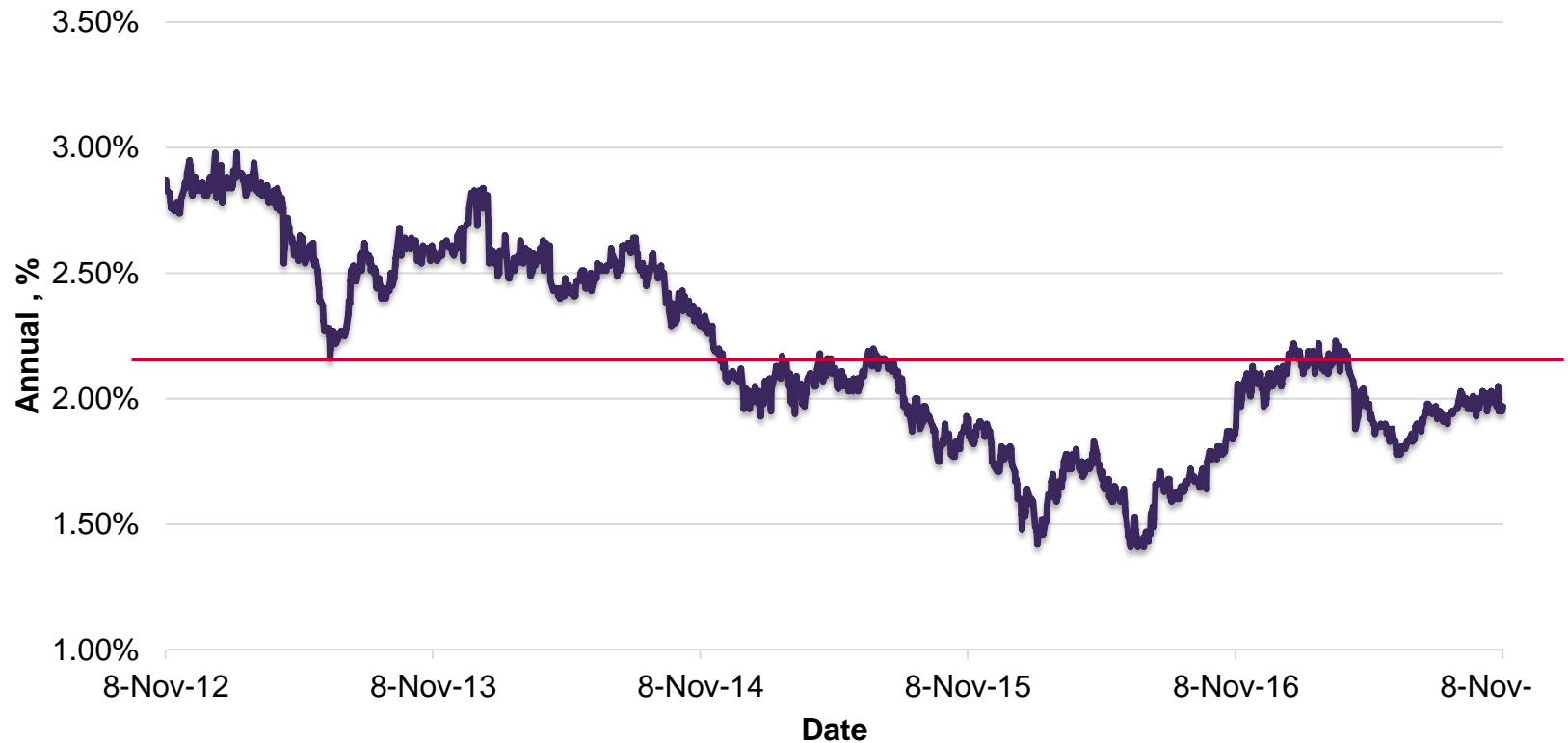
FII10



Source: FRED 2017

# Inflation Expectations

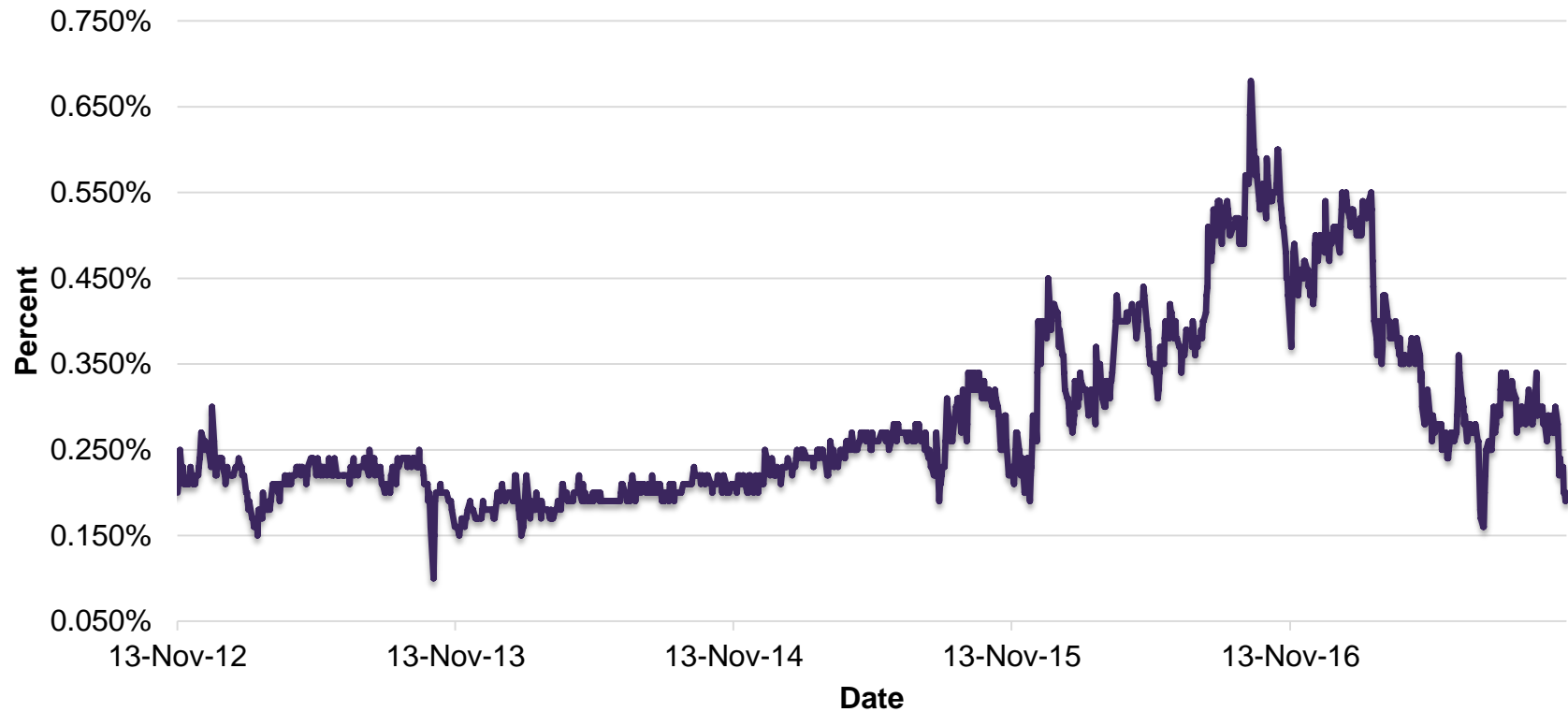
**T5YIFR**



Source: FRED 2017

# TED Spread

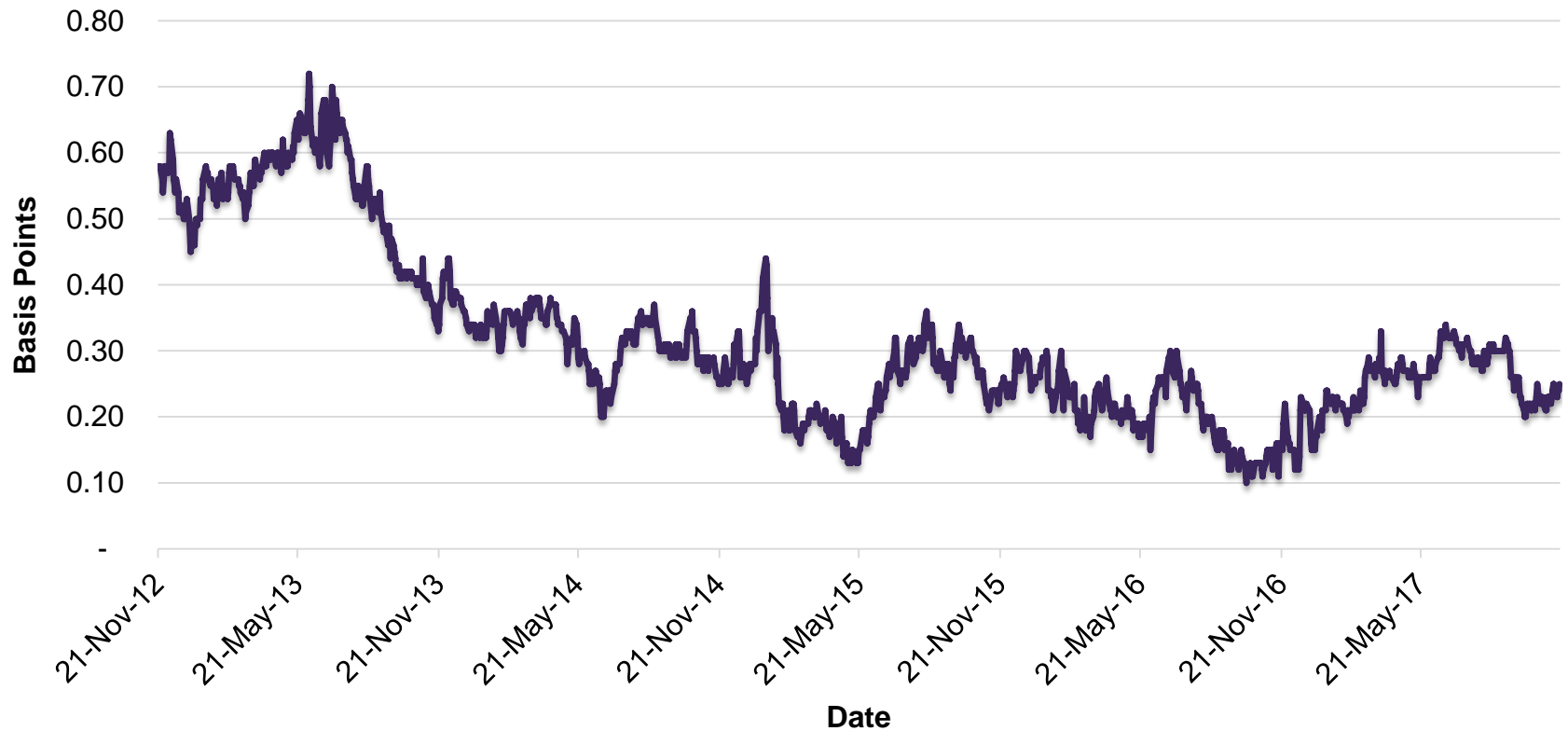
## Euros vs. T-Bills



Source: FRED 2017

# MBS OAS

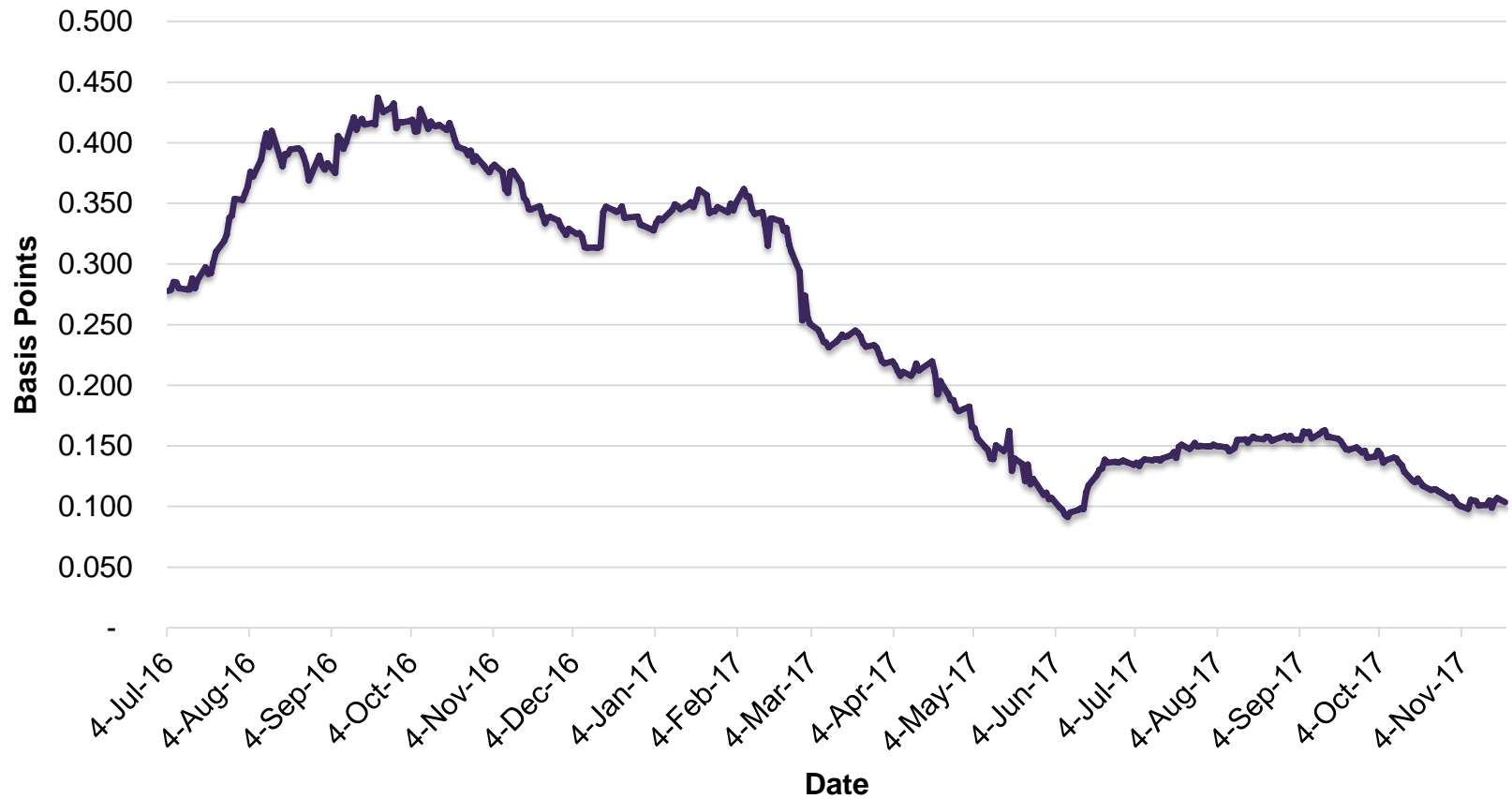
## MBS OAS



Source: Bloomberg 11/2017

# Libor vs OIS

## LOIS



Source: Bloomberg 11/2017

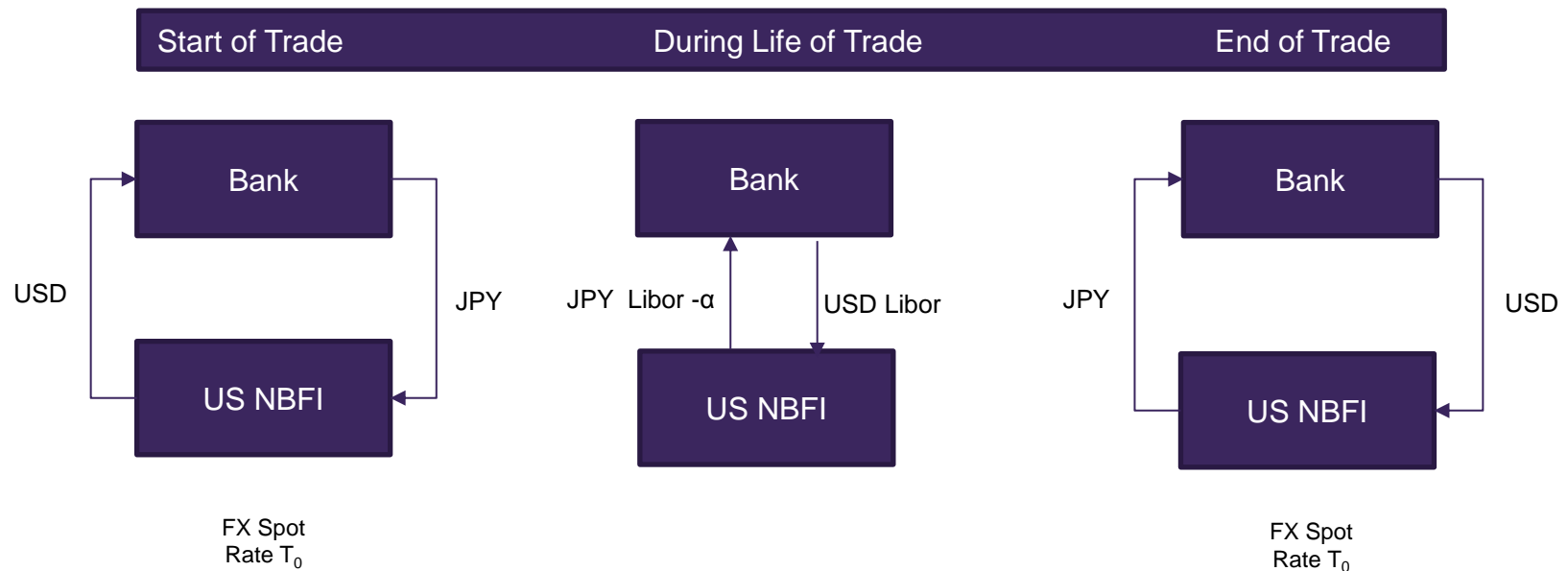
# Bank CDS



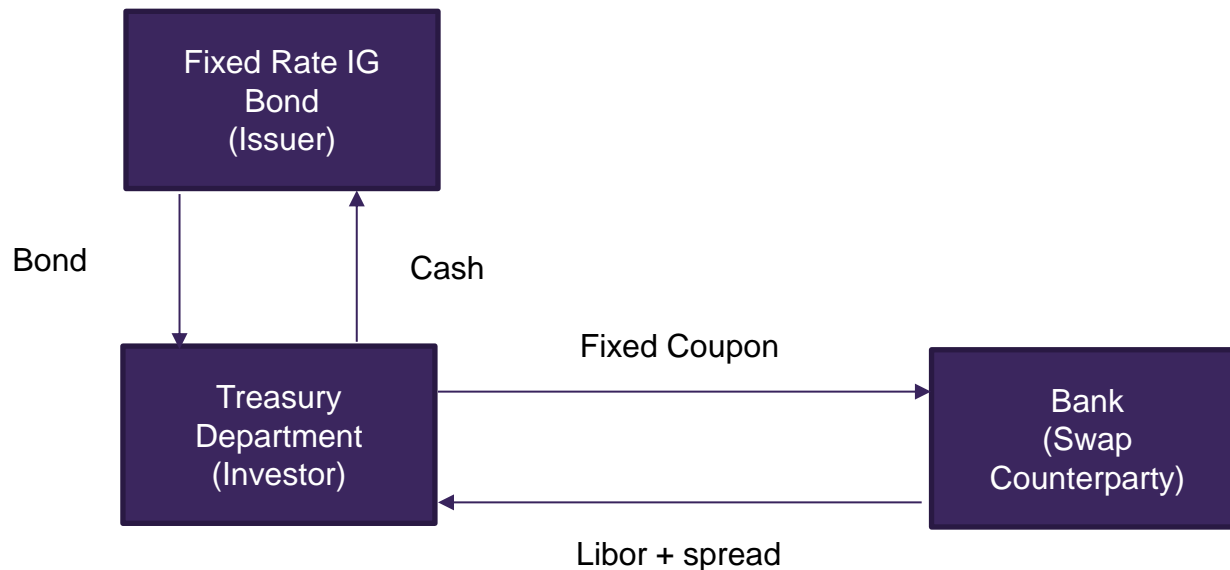
Source: Bloomberg 11/2017

# Cross Currency Basis

- A cross-currency basis swap agreement is a contract in which one party borrows one currency from another party and simultaneously lends the same value, at current spot rates, of a second currency to that party. The parties involved in basis swaps tend to be financial institutions, either acting on their own or as agents for non-financial corporations.



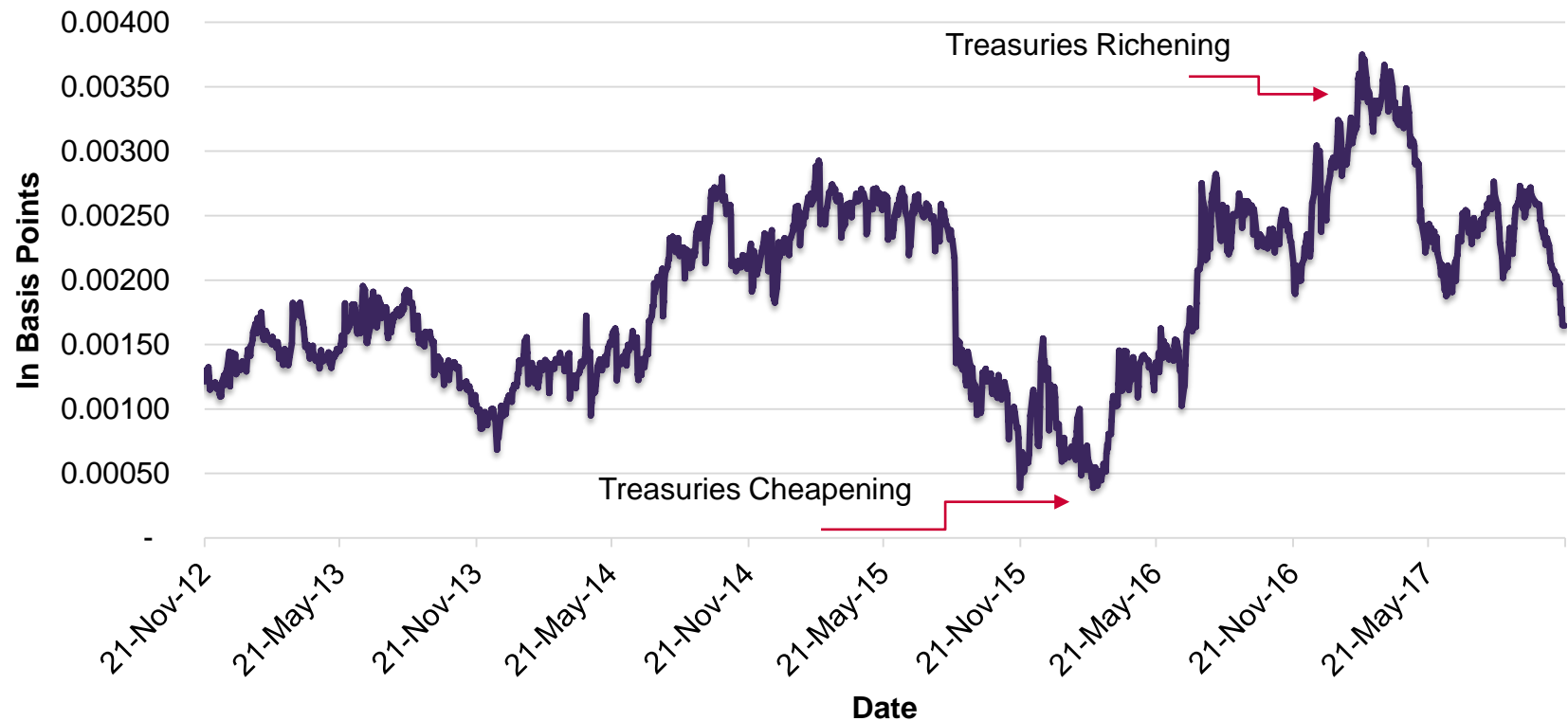
# Asset Swaps



- Investor retains credit risk, and is compensated for such.
- Investor has transformed a fixed rate investment into a floating rate asset
- Investor has created a pure spread bet by minimizing interest rate risk
- Investor has added counterparty risk, which is partially mitigated via trading cleared swaps

# 2-Year Swap Spreads

## USSP2



Source: Bloomberg 11/2017

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# Managing Cash Under Basel III

Banks are required to distinguish between two types of short-term deposits.

## Operational Deposits

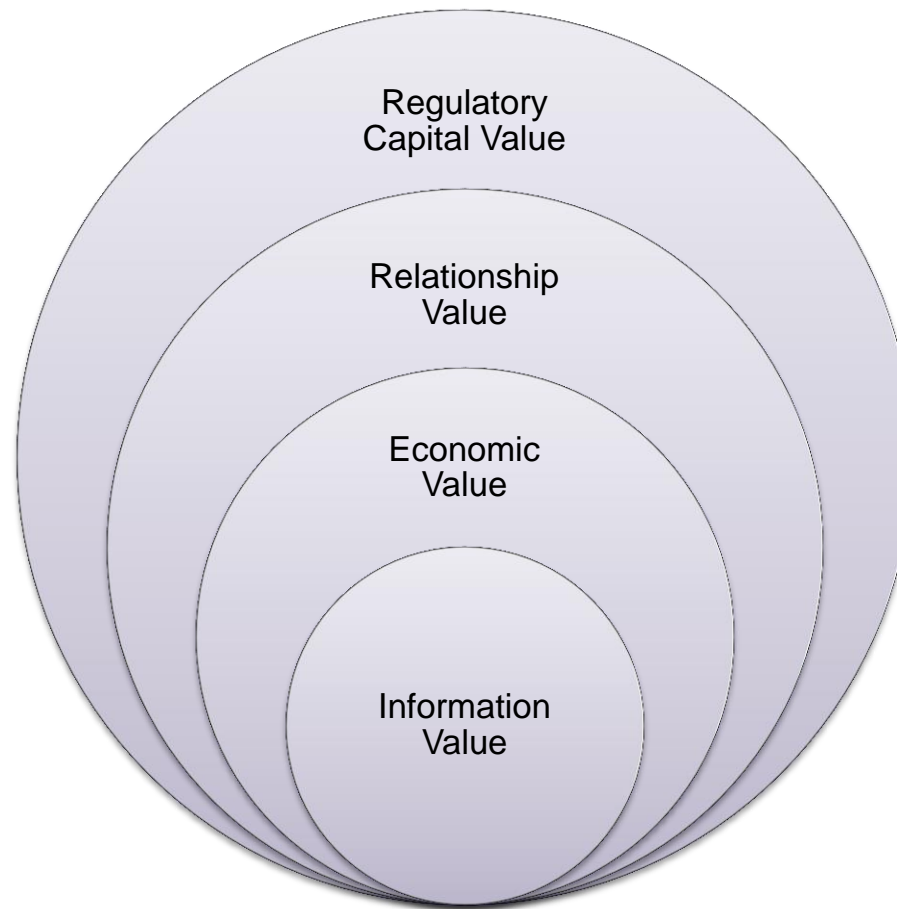
- Include general working capital and cash held by depositors for transactional purposes
- Basel III considers operational cash to be 'stickier' than non-operational cash, in the sense that companies are likely to maintain operational deposits with their primary transaction bank(s)
- Bank has to hold liquid assets equal to **25%** of operational deposits

## Non-Operational Deposits

- Include other cash balances not immediately required by the depositor's business
- More likely to be used to chase yield and to manage counterparty risk via the diversification of investment
- Susceptible to run, if credit rating of the bank taking the deposit deteriorates
- Bank has to hold liquid assets equal to **40%** of non-operational deposits

---

# Drivers of Deposit Value



---

# Conclusions

- Interest rates are low and are likely to stay low.
- The Fed's longer-term projection of a neutral Fed Funds rate is between 2.25% and 3.25%. (September 2017)
- Spreads are very tight, in fact, some spread products have negative risk premiums.
- Earning a positive after-tax real rate of return on a liquidity portfolio is extremely difficult.
- Adding risk to liquidity portfolios does not seem compelling right now. (December 2017)
- The benefits of maintaining excess liquidity (i.e. cash cushions) must be weighed by the implicit and explicit costs of holding such reserves.

---

# Looking Ahead

- Be prepared for negative deposit rates<sup>1</sup> – it may happen here!
- Unwinding the FED's balance sheet is a potentially highly disruptive.
- The U.S. Treasury will increase the share of shorter-term debt issuance and reduce the share of longer debt issuance, ending a years-long trend that favored long-term debt issuance.
- Credit spreads are historically tight, so is credit market volatility. Both are likely to move higher as the cycle matures.
- The pace of technological disruption (e.g. in the payments space) will increase. Blockchain is for real.
- Your suppliers i.e. the banks, will intensely focused on Share of Wallet (SOW) and client profitability metrics

1. Moreover, because a negative interest rate on reserves reduces bank profits, the total effect on aggregate output can be contractionary.



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Nashville



## 36<sup>th</sup> Annual Winter Seminar

Offices of Waller Law – 511 Union Street, Suite 2700  
December 14<sup>th</sup>, 2017

Presented by:

# J.P.Morgan

### Agenda:

- 7:45 – 8:30      Registration and Breakfast**
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J.P.Morgan











**First Data®**

**2017 Payments  
Industry Year  
in Review  
Top 10**

FDC Corporate Strategy

# Recap: FDC's Predictions for 2017

## An evolutionary year

					
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Investments in <b>digital payments will accelerate</b> as both merchants and banks <b>fight for their share of the consumer wallet</b>	Banks are seeing a <b>strong macro environment</b> and favorable industry tailwinds	<b>Collaboration will continue</b> for Banks + FinTechs	<b>Faster payments will take hold in 2017</b> ; blockchain will be a longer journey	<b>eCommerce</b> continues its path to <b>ubiquity</b> , but so does <b>fraud</b>	<b>Amazon's</b> ambitions will <b>continue to challenge retailers</b> online and in-person, but it also <b>creates opportunities</b>

# 2017 Payments Industry Review

## Top 10

### FDC's Top 10 Trends of 2017

1

Amazon Goes Offline

6

Monetizing Big Data

2

The Fast Food in the Digital Age

7

Accelerating Payments M&A

3

Evolution of Retail Shopping

8

India Demonetization

4

Consumer Brands Go Direct

9

Continued Cybersecurity Threats

5

Rise of the Voice Activated Machine

10

P2P Battle Royale

# 1 Amazon Goes Offline

On June 16th, Amazon purchased Whole Foods for \$13.7B



Source: "The Impact of the Amazon – Whole Foods Deal Will Go Far Beyond Food," June, 2017, Forbes.

## 2 Fast Food in the Digital Age

Mobile Payments Sector is Estimated to Have Grown **75%** in 2017



Digital channels averaged over **60%** of its sales in the US, with **~70%** from mobile



**Domino's**

Over **60%** of US Sales via Digital



Mobile payments are **30%** of US transactions, and mobile ordering is **9%**



Nearly **7M** *Perks* loyalty members, accounting for **10%+** of US sales



Online orders grew **50%+** and its planning a wholesale rewrite of its mobile app



Bringing mobile order and pay to **20K** global locations by the end of **2017**

### 3 Evolution of Retail Shopping

## Retail Has Changed Forever

**+9,000**  
Retail Stores  
Closing



Stores  
Reinventing  
Shopping



**KOHL'S**



Growth in  
Value + Mass  
Retailer  
Sectors



**7-ELEVEN®**

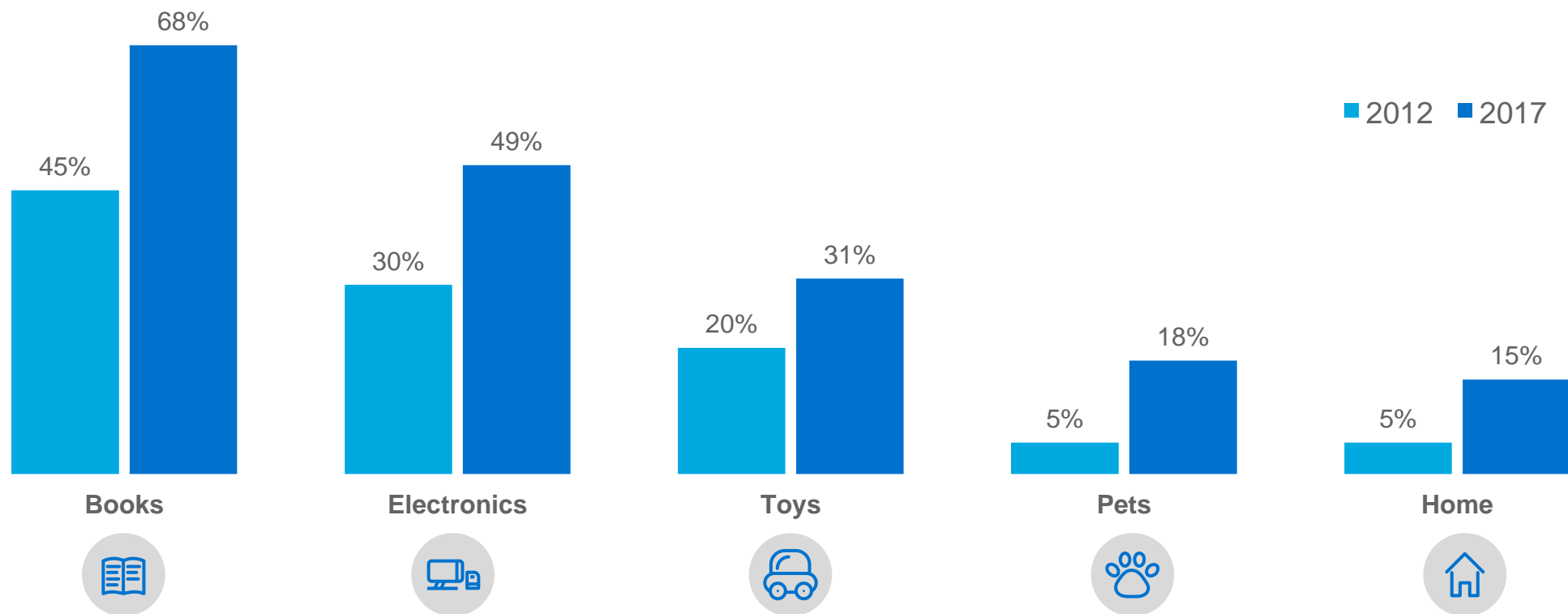


Source: Credit Suisse estimates

### 3 Evolution of Retail Shopping

## Consumer Segments Shift Online

*eCommerce Penetration by Consumer Segment*



Source: Walmart analysis

## 4 Manufacturers and Brands Going Direct-to-Consumer

Declining retail outlets and new channels are shifting the distribution game

### Shrinking Retail Footprints

- ⊗ Reduced distribution points
- ⊗ Fewer customers in stores

### IoT and Voice-Activated Devices

- ✓ Commerce everywhere
- ✓ First-movers will win the race to “be the button”

### Fast-Growing Marketplaces

- ✓ The new shopping mall?
- ✓ Unprecedented access to customer data and targeting

amazon

ebay™

Alibaba.com™

overstock

## 4 Manufacturers and Brands Going Direct-to-Consumer

Manufacturers are selling directly to consumers...

P&G

PHILIPS  
NORELCO

Levi's

NIKE

L'ORÉAL®

Kimberly-Clark

...however, it's not all smooth sailing



Retail **channel conflict**



Order fulfillment processes **optimized for large orders from retailers**



Limited **CRM experience**



**Some SKUs may not be suitable for shipping direct to consumers**



No experience with **SEM and SEO**



Puts **consumer brand loyalty** to the test



**Difficult to introduce new products**  
without a retail shelf

## 5 Rise of Voice-Activated Assistant Devices

**Machine learning**  
aids in natural  
language processing

**Skills** range from controlling  
home devices to shopping to  
banking to meditation

**Amazon and Google**  
have **90%** market share

**New entrants**  
increasing



amazon



Google



harman/kardon®  
Microsoft



Lenovo



Alibaba Group

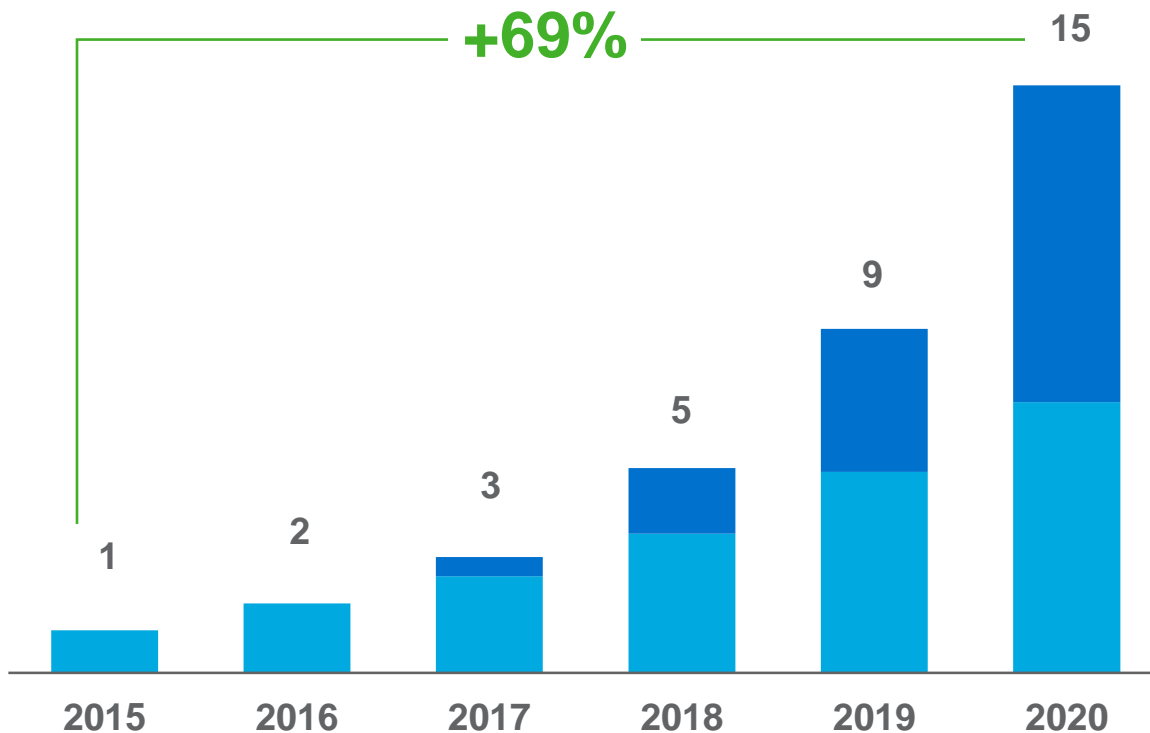
Sources: (1) "Amazon Echo's Holiday Sales Hint at Huge Market to Come," December, 2016, eMarketer; (2) Statista; (3) Strategy Analytics; (4) Company websites

## 5 Rise of Voice-Activated Assistant Devices

### Voice-activated Assistant Device Shipments Growing Rapidly Worldwide

Millions

■ U.S. ■ Non-U.S.



Sources: (1) "Amazon Echo's Holiday Sales Hint at Huge Market to Come," December, 2016, eMarketer; (2) Statista

### Top Consumer Use Cases

Sports scores  
Order Food  
Connected home  
Read books  
Alarm  
Read messages  
Traffic  
Call a car  
Games  
Weather  
Appointment reminders  
Search results  
Shop

## In May, Google Announced the Launch of its Attribution Marketing Service



- “Holy Grail” of marketing = match campaign to real consumer spending
- Aggregating consumer spending drives new economic value from payments data
- Growing trend among large retailers to better leverage the internal data
- **Has Google created the benchmark platform for big data monetization?**

## 7 Accelerating Payments M&A

Global FinTech M&A could exceed **\$90B** in 2017

### Strategics

First Data®

cardconnect  
BluePay

globalpayments

ACTIVE  
network

MISYS

D+H

### Cross Borders

vantiv®

worldpay

ingenico  
GROUP

bambora

蚂蚁金服  
ANT FINANCIAL

MoneyGram

### Private Equity

HELLMAN &  
FRIEDMAN  
STRATEGIC PARTNER

nets

Advent International  
GLOBAL PRIVATE EQUITY  
BainCapital

ConCardis

Blackstone

Paysafe

## Regulated Demonetization Compressed Years of Evolution into Months



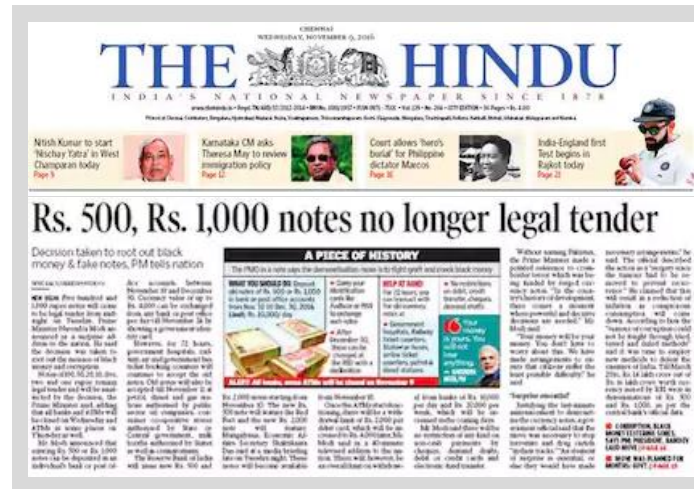
**1.3B**  
People



**740M**  
Cards



**90%+**  
of transactions are cash



**1M+**  
terminals shipped in less than a year



Visa, Mastercard, and RuPay  
launched a new QR code standard



Google launched a new payments  
app on faster payment rails and  
has **7.5M users in 5 weeks**

### Hackers Compromised Millions, If Not Billions, of Accounts in 2017



Sources: Identify Theft Resource Center, Fortune, Reuters, ZDNet, company announcements and public filings

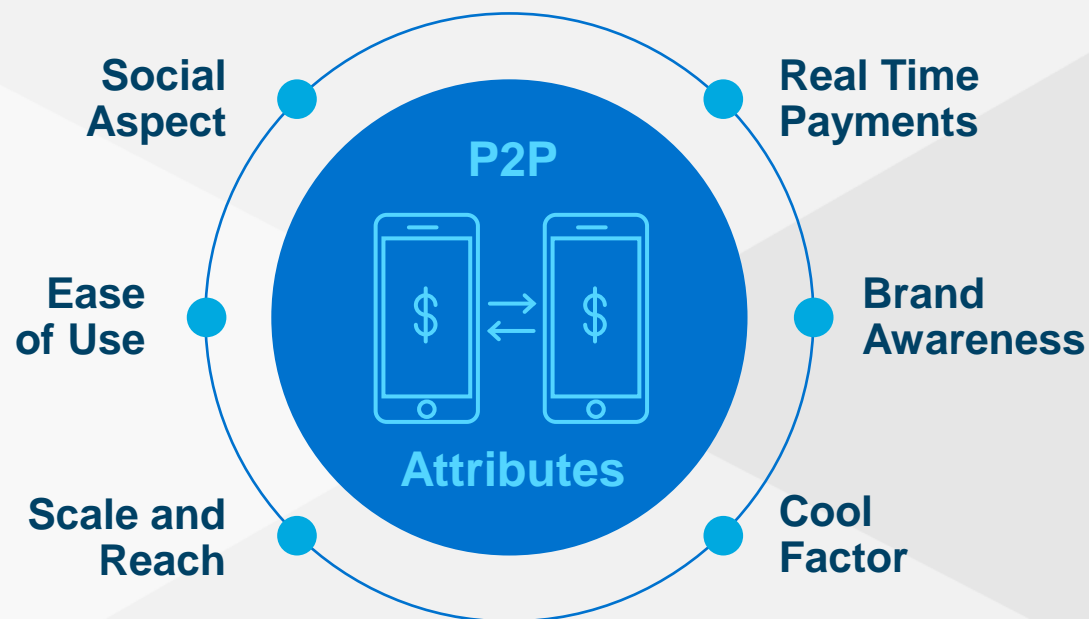
## 10 / P2P Battle Royale

**2,000,000**  
MERCHANT LOCATIONS

**venmo**

**zelle**

**60,000,000**  
P2P PAYMENTS SENT IN Q3



### Other Players in the Mix



Sources: Company press releases and web sites

# Other Headlines From the Year

THE BATTLE FOR CONSUMERS:  
CARD REWARDS



NEW FINTECH BANK CHARTERS



**BANKING APIS**



ALTERNATIVE  
LENDING BONANZA

FASTER PAYMENTS CONTINUES  
TO EVOLVE (NACHA SAME DAY  
DEBIT, FED TASK FORCE)



CONNECTED HOME  
INTERNET OF THINGS

MORE AND MORE AND MORE  
WALLETS



ALIBABA CONQUERS THE WORLD

**PSD2 PREPARATION**

REGULATORY  
GRIDLOCK/  
STALEMATE IN  
CONGRESS



BLOCKCHAIN  
UPS/DOWNS



**BITCOIN ICOS**

PREPAID POWERS YOUR P2P



CREDIT CYCLE REVERTS –  
**RISING LOSSES**

CFPB  
PULLBACK  
ON PREPAID



# First Data – A Busy 2017



The image features the First Data logo in white text, centered against a dark blue background. The background is composed of a complex, repeating geometric pattern of interconnected lines forming various polygons, creating a textured, crystalline effect. The logo itself is in a clean, sans-serif font, with a registered trademark symbol (®) at the end.

First Data®



ASSOCIATION FOR  
FINANCIAL  
PROFESSIONALS  
Nashville



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- 4:15 – 6:30 Happy Hour – Oak Bar, Hermitage Hotel



A wide-angle photograph of the Nashville skyline at dusk. The sky is a mix of deep blue and orange from the setting sun. The city lights are beginning to glow, with the most prominent being the two towers of the AT&T Building, which are illuminated in blue and white. Other buildings in the background are lit up with various colors, and the city streets below are visible with some traffic lights and streetlights.

# **ECONOMIC UPDATE**

## **DECEMBER 2017**

---

**NASHVILLE AREA CHAMBER OF COMMERCE**

---



**Nashville 1890**



Nashville 1915



**Nashville 1931**



# Nashville 1957



Nashville 1959



# Nashville 1970



Nashville 1979





# NASHVILLE ECONOMIC REGION

---





# PARTNERSHIP 2020 OVERVIEW

---

First plan **developed in 1990** by business leaders, led by Chamber

A **regional strategy** for economic development (a national model)

Since 1990:

- **880+ new companies** relocated
- **425,000+ new jobs** created
- **150% increase** in per capita income
- Population growth of **more than 185%**



# P2020 STRATEGIC DRIVERS

---





# NASHVILLE ECONOMIC SNAPSHOT

---

**95.5** cost of living index (100 = U.S. average)

**980,000+** labor force

**1.83 million** population (2% annual growth)

**\$50,635** per capita income

**2.3%** unemployment rate (Sept 2017)



# ECONOMIC ENGINE OF THE STATE

---

Nashville accounted for **57.5%** of state's job growth. (Jun. 2016-Jun. 2017)

- |                |                     |
|----------------|---------------------|
| 1. Nashville   | 57.5% (34,100 jobs) |
| 2. Memphis     | 22.6% (13,400 jobs) |
| 3. Chattanooga | 14.3% (8,500 jobs)  |

Nashville accounted for **64%** of the state's population growth. (July 2015 – July 2016)

- |                |                       |
|----------------|-----------------------|
| 1. Nashville   | 64.7% (36,337 people) |
| 2. Knoxville   | 13.1% (7,377)         |
| 3. Chattanooga | 8.2% (4,625)          |
| 4. Memphis     | 0.1% (888)            |



# JOB GROWTH

---

Since recession (2009), Nashville ranks second in U.S. for job growth

Austin	24.8%
<b>Nashville</b>	<b>20.6%</b>
San Jose	19.7%
Houston	16.8%
Dallas	16.4%
Denver	16.3%
San Antonio	16.1%
Orlando	15.9%
Charlotte	15.4%
San Francisco	15.3%



# JOB GROWTH

12-month percent change (Sept 2016 – Sept 2017)

1.	Nashville	3.1%
2.	Raleigh	2.9%
3.	Dallas	2.7%
4.	Atlanta	2.5%
5.	Riverside	2.5%
6.	Columbus	2.4%
7.	Las Vegas	2.4%
8.	Portland	2.4%
9.	Austin	2.3%
10.	Cincinnati	2.3%

**74** of last **75** months  
**3%+** year over year job growth

Only city in U.S. to rank in top 5  
for both white collar and blue  
collar job growth since 2010.



# BUSINESS ACTIVITY

---

FY 16-17

**112** business  
relocations and  
expansions

**10,942** announced  
new jobs

**\$2.478B** capital  
investment

**9.968M** square feet  
occupied

**BRIDGESTONE**



**Schneider**  
Electric

**smile**  
DIRECT CLUB

**LOWE'S**



**GAP**



**FORRESTER**



**WARNER MUSIC GROUP**

# BUSINESS ACTIVITY

---

JULY 2017 - PRESENT

**14** business  
relocations and  
expansions

**1,689** announced new  
jobs

**\$89.9M** capital  
investment

**1.05M** square feet  
occupied



**PHILIPS**



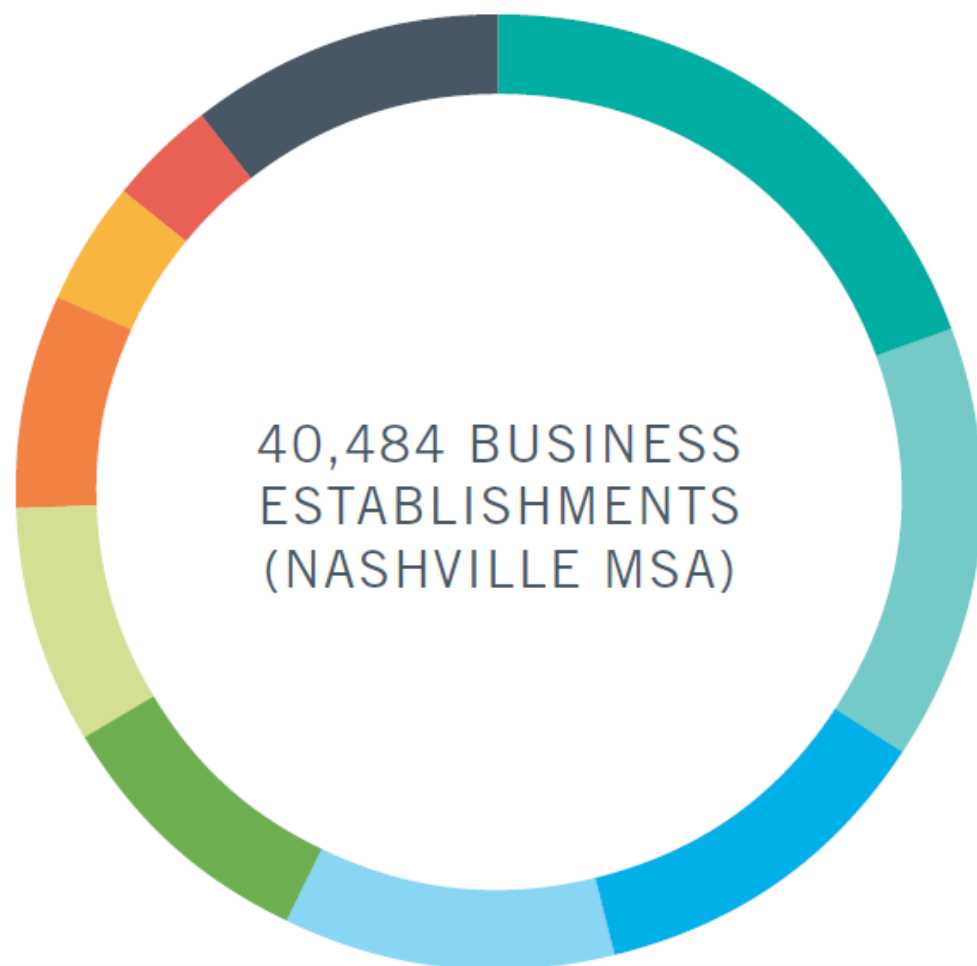
**TSUBAKI**



**GATEWAY<sup>®</sup>**  
PACKAGING COMPANY

# DIVERSE ECONOMY

---

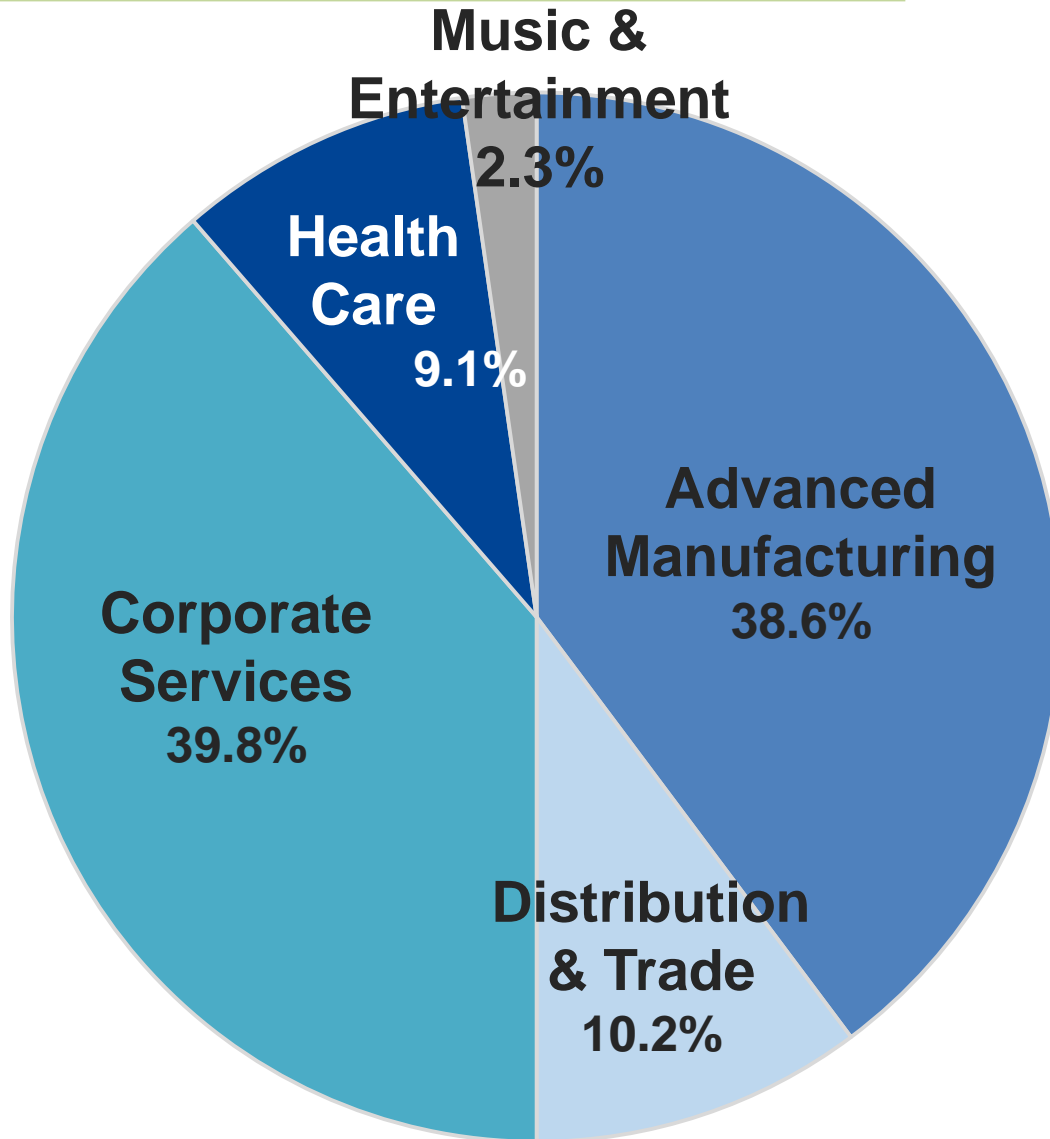


- Management, information, administration, professional and technical services (7,875)
- Retail trade (5,991)
- Finance, insurance and real estate (4,869)
- Health care and social assistance (4,445)
- Accommodation and food services (3,753)
- Transportation, warehousing and wholesale trade (3,211)
- Construction (2,966)
- Education, arts, ent. and rec. (1,695)
- Manufacturing (1,440)
- Miscellaneous services (4,239)



# PROJECT PIPELINE

---

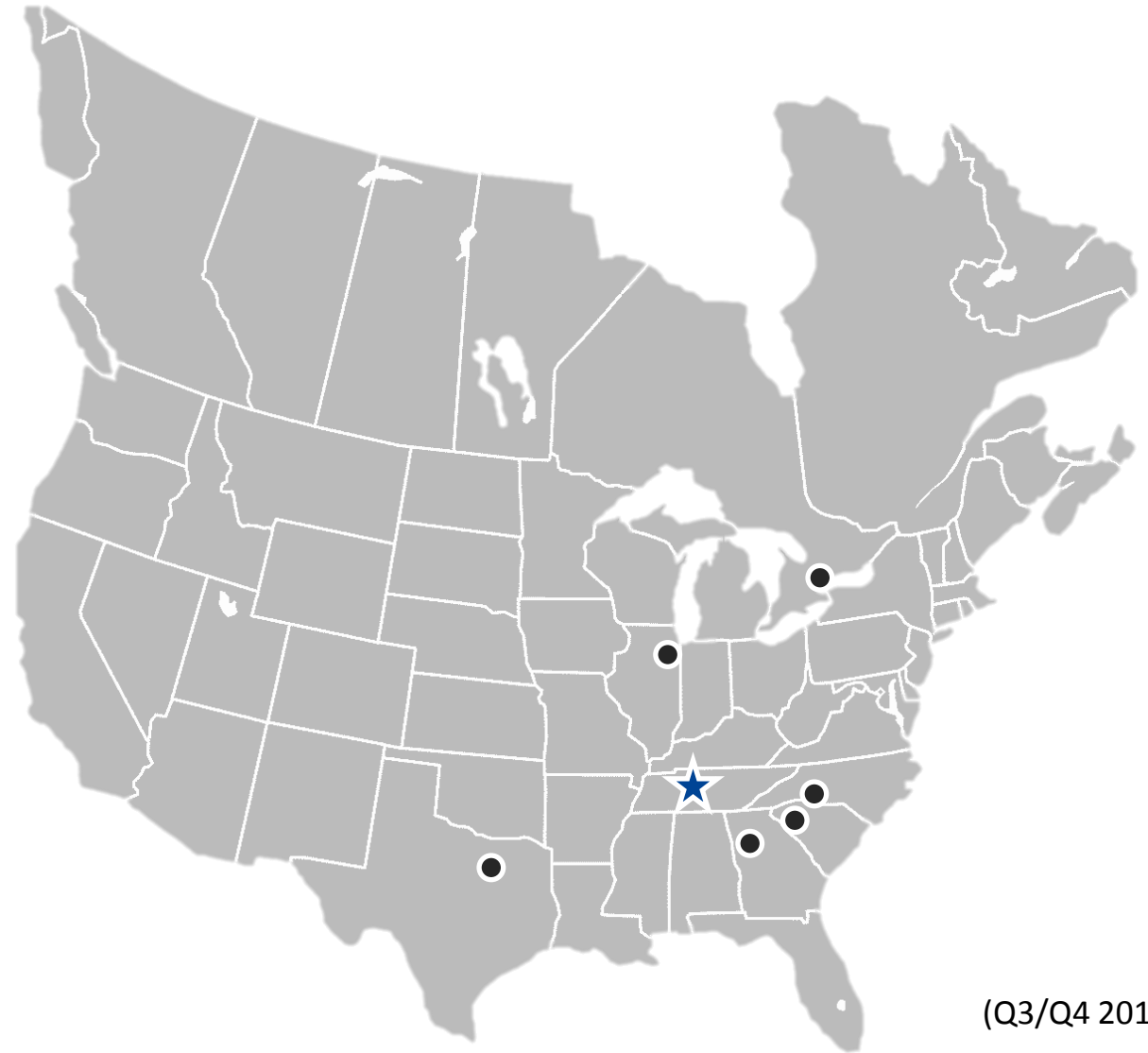


**88 TOTAL  
PROJECTS  
REPRESENTING  
25,369 JOBS IN THE  
REGION**

# 2017 MARKETING TRIPS (Q3/Q4 2017)

---

**Atlanta**  
**Charlotte**  
**Chicago**  
**Dallas**  
**Greenville**  
**Toronto**



(Q3/Q4 2017)

# POPULATION GROWTH

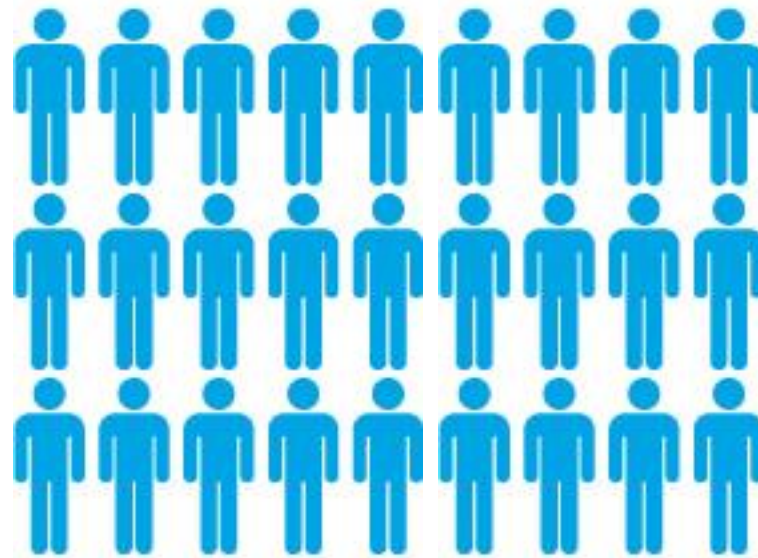
Nashville MSA ranked **11th for population growth** in 2016.

**1.99%** annual growth

**36,337** new residents

**25,358** net migration into  
Nashville

**70** people net new people per  
day on average



1,865,298 population

**2016**

Austin	2.92%
Raleigh	2.48%
Orlando	2.48%
Las Vegas	2.20%
Jacksonville	2.09%
Tampa	2.06%
Phoenix	2.05%
Charlotte	2.05%
Dallas	2.02%
San Antonio	2.01%
<b>Nashville</b>	<b>1.99%</b>



# ECONOMIC DRIVERS

---



## Health care

---

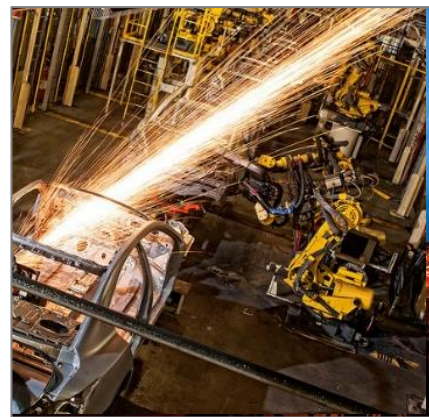
250,000 jobs  
\$39B economic impact



## Leisure & Hospitality

---

103,400 jobs  
\$5.7B economic impact



## Manufacturing

---

84,300 jobs  
\$9.5B economic impact



## Music & Entertainment

---

60,000 jobs  
\$10B economic impact

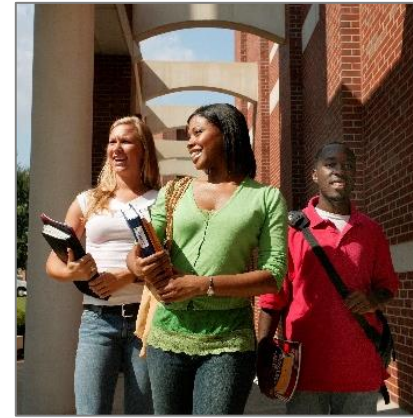
# WORKFORCE

---

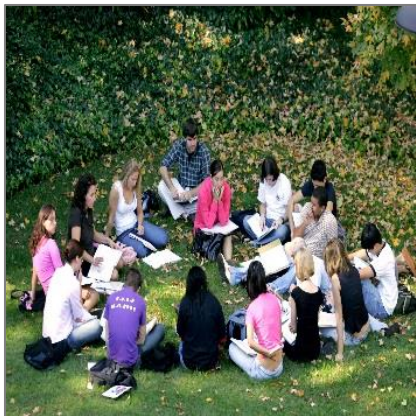
available and educated



**13 four-year colleges and universities in the region**



**117,000 enrolled students and 17,000 annual graduates with 60% remaining in the region**



**5 community and technical colleges in the region**



**131,000+ with graduate or professional degrees**



# LIVABILITY

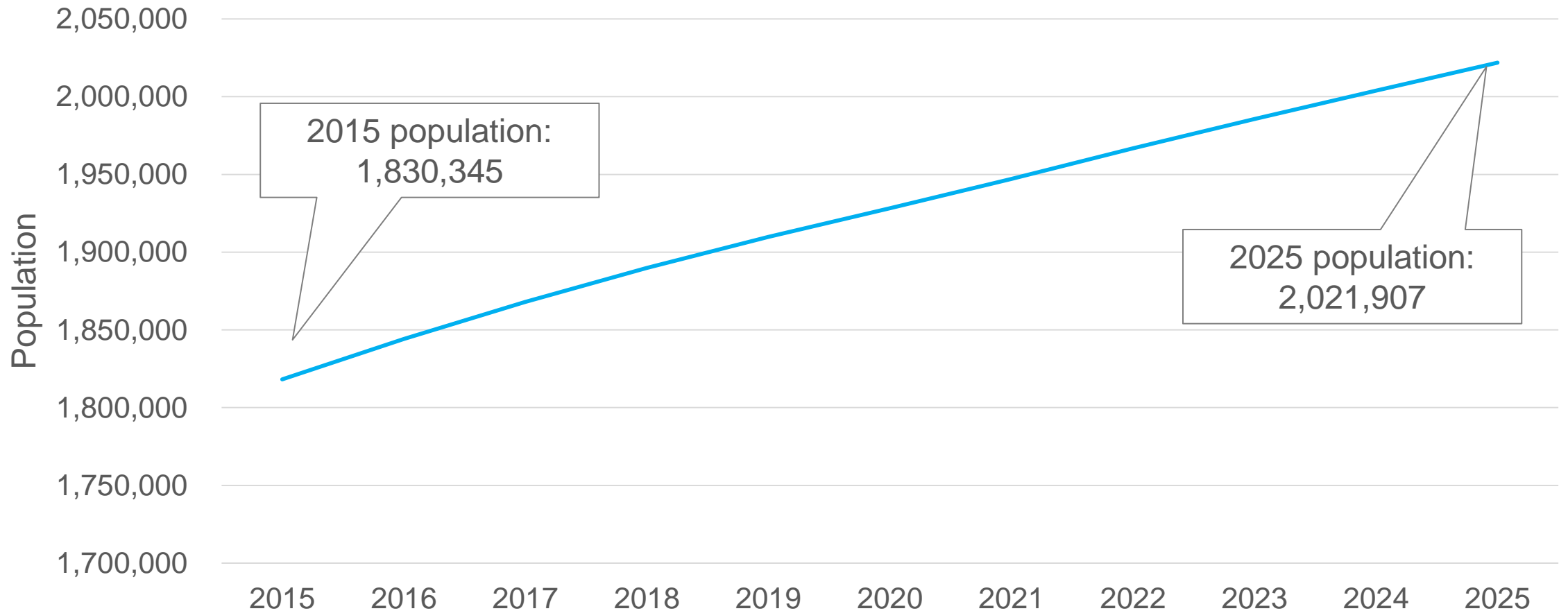
Cost of living **4.8% below** the national average

	Composite Index	Grocery Items	Housing	Utilities	Transportation	Health Care	Misc. Goods and Services
<b>Nashville</b>	<b>95.2</b>	<b>95.7</b>	<b>82.1</b>	<b>97.5</b>	<b>98.1</b>	<b>86.6</b>	<b>105.7</b>
Austin	96.0	84.2	90.3	101.5	97.7	103.5	102.2
Atlanta	99.9	103.7	97.4	93.5	105.0	101.4	100.5
Chicago	116.2	116.7	135.7	104.2	114.5	99.1	106.0
Los Angeles	140.3	106.3	213.3	115.6	132.7	109.3	106.1
Boston	144.3	105.0	193.7	151.7	110.0	130.4	129.2
San Francisco	176.4	127.9	319.4	108.2	132.0	118.1	118.3
NYC	227.4	128.2	457.7	130.5	131.3	116.2	148.7



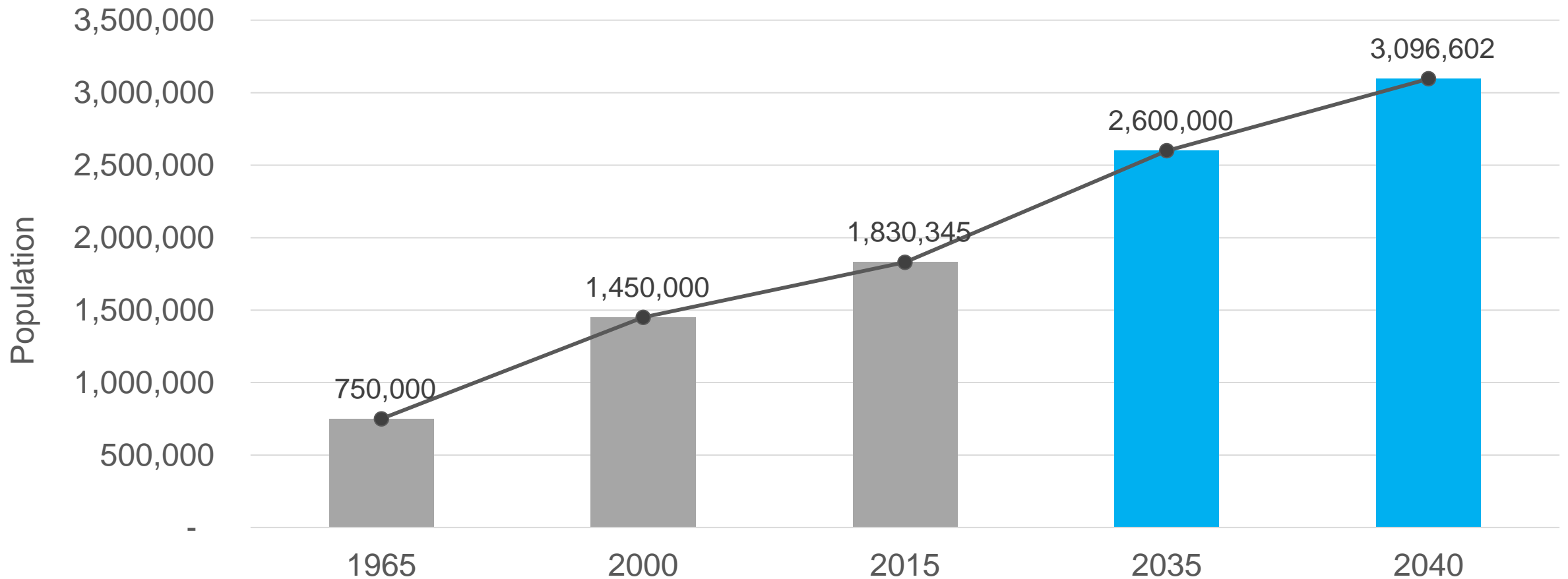
# PROJECTED POPULATION 2025

## Nashville MSA Population Projections



# PROJECTED POPULATION 2040

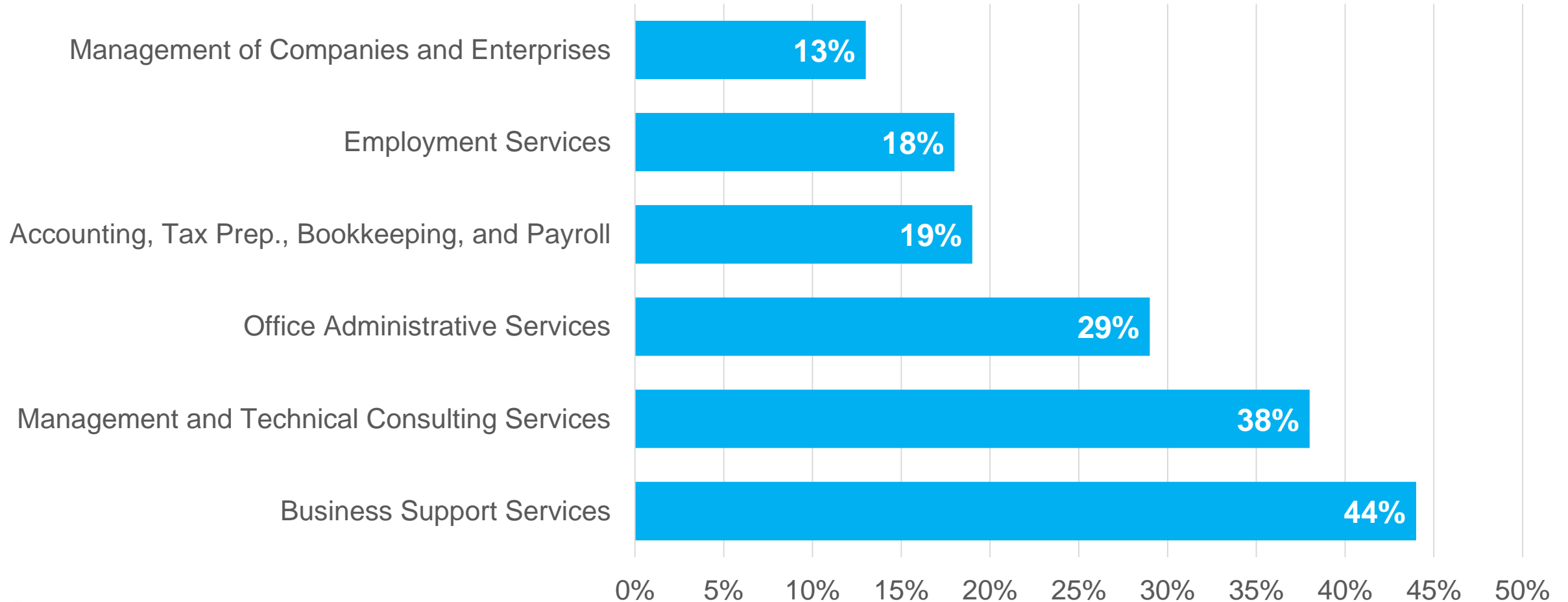
More than **1 million** more residents in the Nashville region by 2040.



# PROJECTED INDUSTRY GROWTH 2025

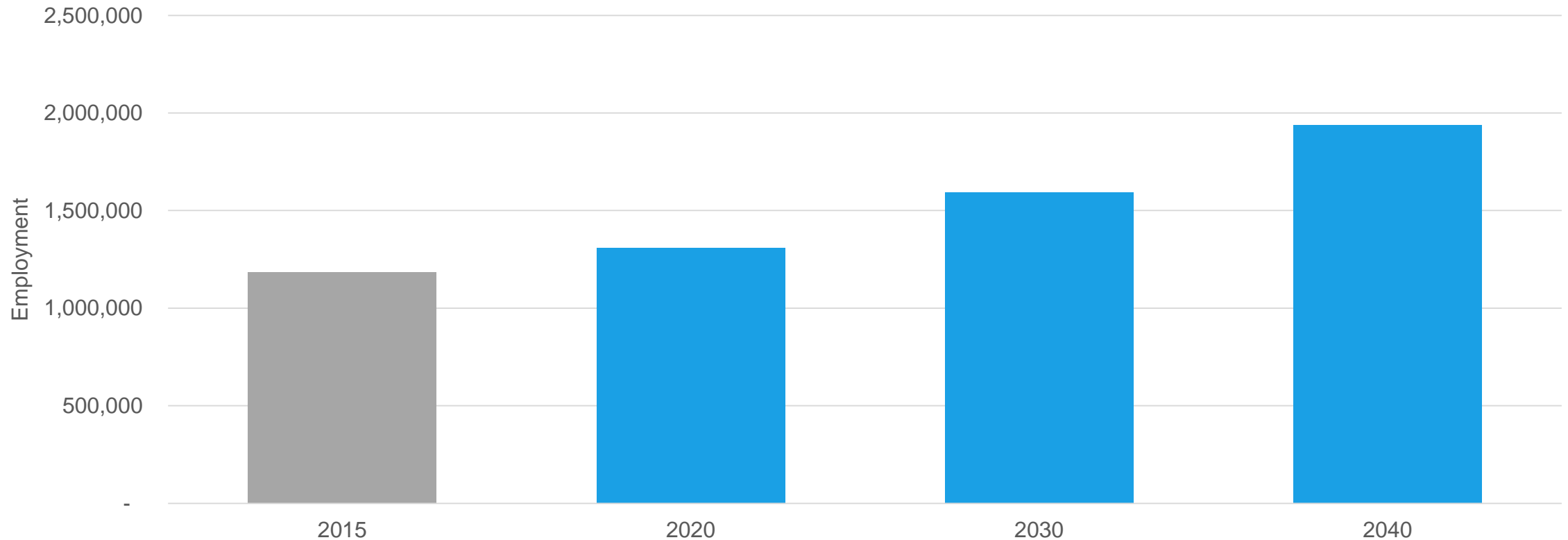
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## Nashville MSA 2015-2025



# PROJECTED EMPLOYMENT GROWTH

**65% projected employment growth** in the Nashville region by 2040.





# OUR FOCUS

---

- Talent
- Transit
- Education
- Affordability
- Real Estate

An aerial photograph of the Nashville skyline at dusk. The sky is a mix of orange, yellow, and blue. The city lights are visible, and the prominent AT&T Building is on the right. The word "QUESTIONS" is written in large white letters across the middle of the image, flanked by two horizontal white lines.

# QUESTIONS



An aerial photograph of the Nashville skyline at sunset. The sky is filled with soft, orange and purple clouds. In the center, a tall skyscraper is under construction, with a crane visible at the top. To the right, the AT&T Building is prominent. Other buildings with logos like Sheraton, Regions, and SunTrust are visible. The city streets and lower buildings are visible in the foreground and background.

# GINA BROWN

VICE PRESIDENT, ECONOMIC DEVELOPMENT

---

NASHVILLE AREA CHAMBER OF COMMERCE

---





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PROFESSIONALS  
Nashville



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