

AXIOMA INSIGHT™ WEBINAR

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# INSIGHTS FROM THE MULTI-ASSET CLASS RISK MONITOR

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AXIOMA

MAY 9, 2018



## OVERVIEW

- Review of 2018 risk environment and major asset class movements
- Global multi-asset class model portfolio composition and risk over time
- Portfolio risk contributions from pairwise risk factor covariances
- Multi-asset class risk type correlation matrices at specific points in time
- Portfolio volatility and risk decomposition
  - Dec. 15, 2017: healthy diversification from negative relationship of equity returns with FX and bonds
  - Feb. 9, 2018: surging equity volatility and positive interaction with bond and FX returns
  - April 6, 2018: trade war fears return multi-asset class correlations to “normal”
  - May 4, 2018: inflation concerns and rate hike expectations once again flip correlation signs
- Summary and outlook

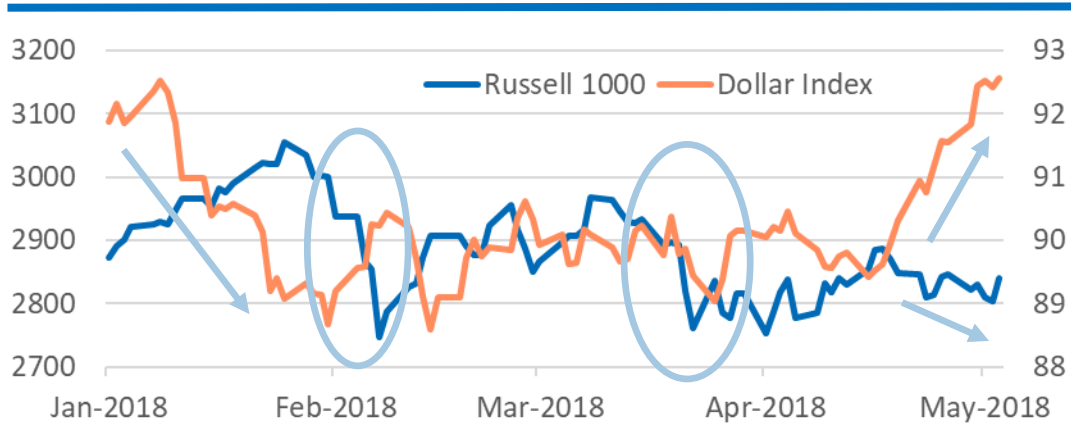
# 2018 RISK ENVIRONMENT REVIEW

## 2018 RISK ENVIRONMENT REVIEW

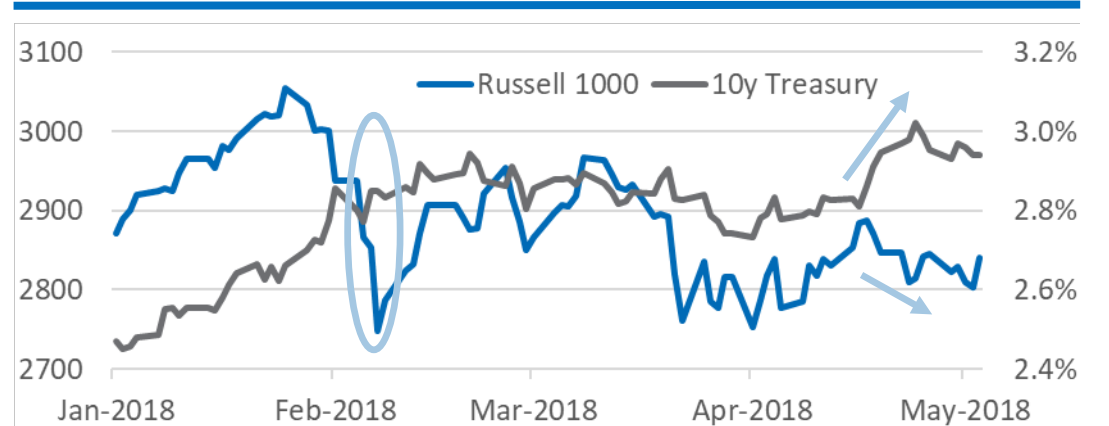
- 2018 so far characterized by dramatic shifts in multi-asset class correlations
- Year started with dollar weakness, while share prices continued to rise
- Stock market correction in February led to higher equity factor volatility and reversal of the so far inverse relationship between share and bond prices
- Inflation concerns led to simultaneous stock and bond sell-off
- Expectation of higher interest rates was seen as positive for the USD
- Depressed diversification and increased equity volatility led to big surge in portfolio risk
- Markets returned to “familiar” patterns and portfolio risk dropped, as concerns over trade war with China and escalating tensions in Syria put pressure on stocks, dollar and long-term rates
- Renewed focus on inflation and short-term rates reversed correlations once again

# MAJOR ASSET CLASS MOVEMENTS

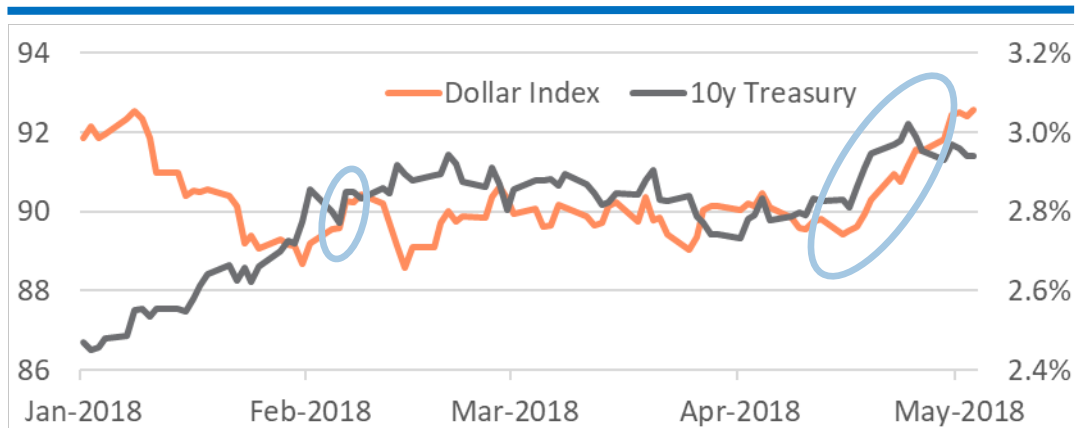
## Equity vs FX



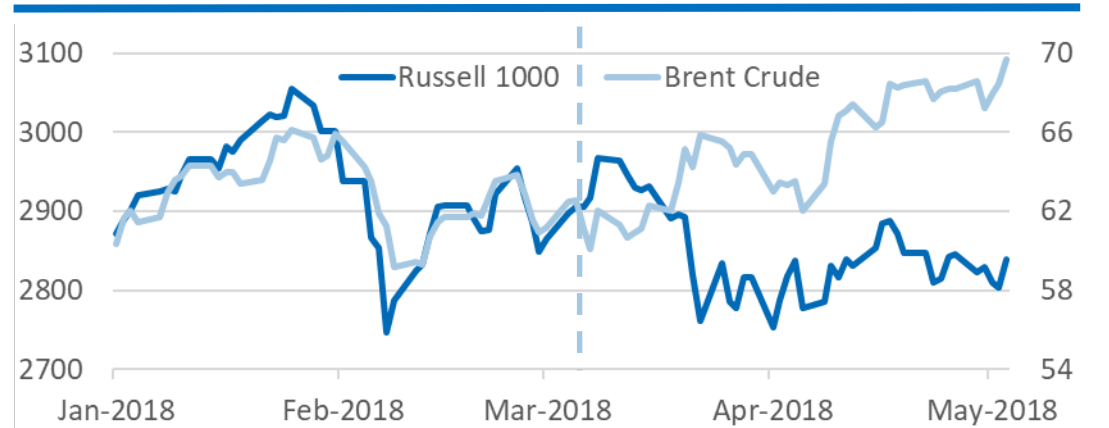
## Equity vs interest rate



## FX vs interest rate



## Equity vs commodity



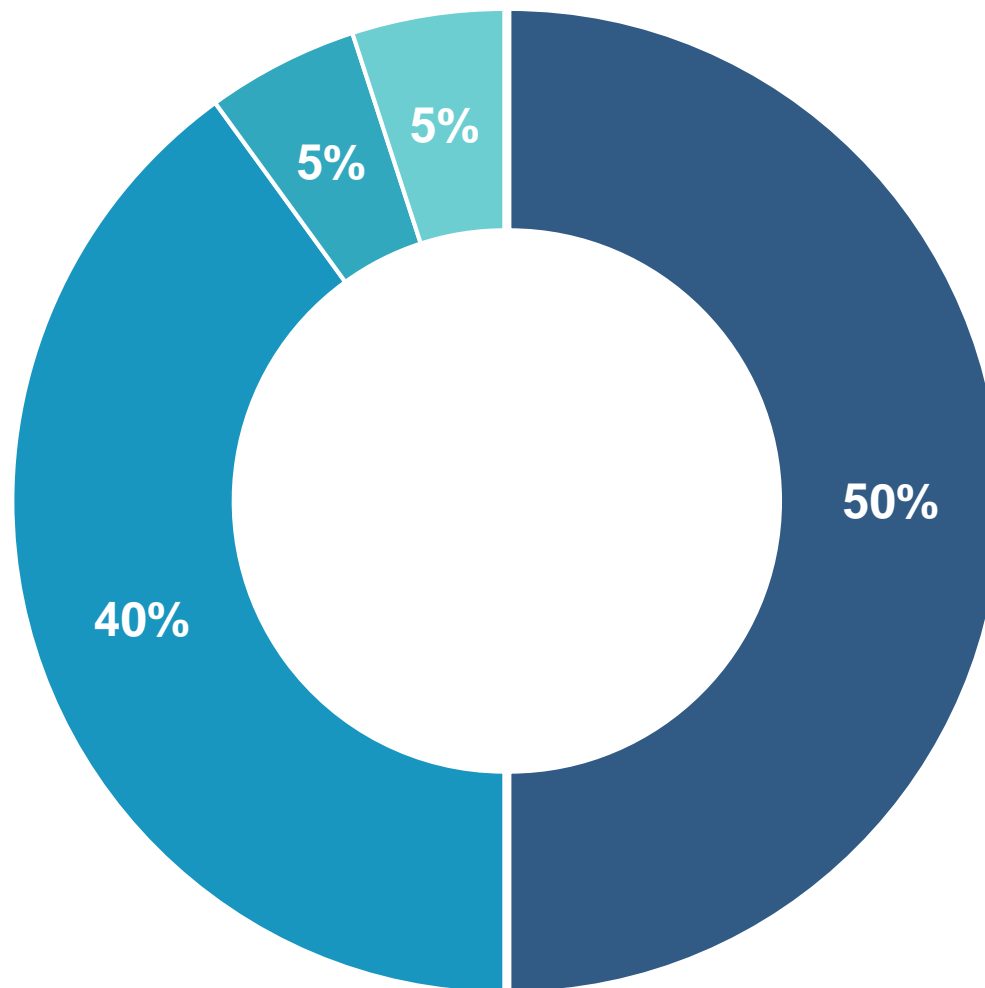
# AXIOMA'S GLOBAL MULTI-ASSET CLASS MODEL PORTFOLIO

## AXIOMA'S GLOBAL MULTI-ASSET CLASS MODEL PORTFOLIO

**Commodity**  
3% Gold futures + cash  
2% Oil futures + cash

**Currency**  
2% EUR Cash  
2% GBP Cash  
1% JPY Cash

**Fixed Income**  
5% US Treasury  
10% International Treasury  
8% US Corporate IG  
8% International Corp IG  
4% Global High Yield  
5% Global Inflation-Linked



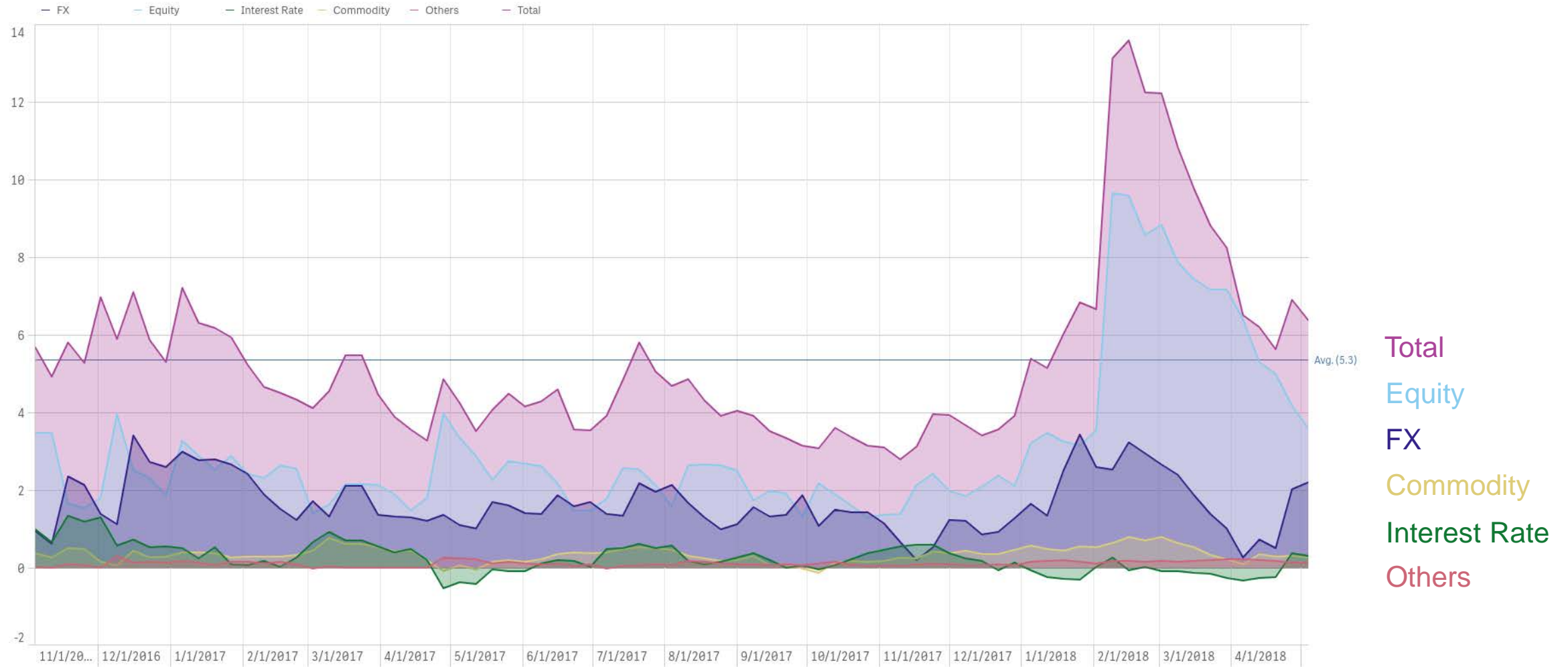
**Equity**  
30% US Equity  
15% Developed Global Equity  
5% Emerging Market Equity

**PORTFOLIO RISK**

- Risk analysis based on multi-asset class portfolio in Axioma Risk™
- Denominated in USD

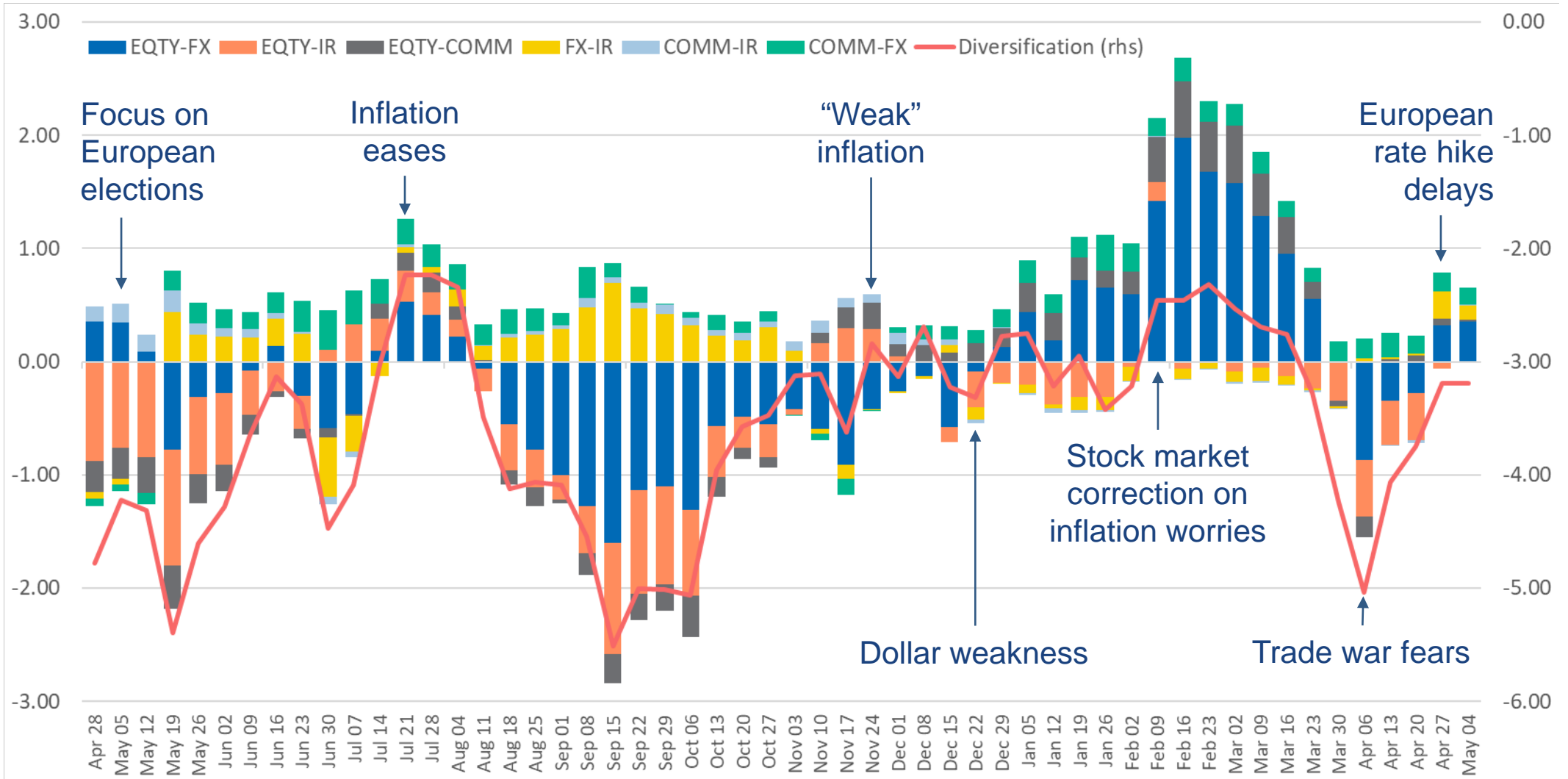
# RISK CONTRIBUTIONS BY RISK TYPE

Risk Contribution by Risk Types as of: May 04 2018





# PORTFOLIO RISK CONTRIBUTIONS FROM PAIRWISE RISK FACTOR COVARIANCES



# POINT-IN-TIME ANALYSIS

# MULTI-ASSET CLASS RISK TYPE RETURN CORRELATIONS

Dec. 15, 2017

Risk Type	FX	Equity	Inflation	Interest Rate	Issuer Credit	Vega	Comdty
FX	1.00	-0.32	-0.25	0.14	-0.24	-0.27	0.39
Equity	-0.32	1.00	-0.31	-0.19	0.63	0.40	0.18
Inflation	-0.25	-0.31	1.00	-0.42	-0.25	0.21	-0.32
Interest Rate	0.14	-0.19	-0.42	1.00	-0.18	-0.79	0.35
Issuer Credit	-0.24	0.63	-0.25	-0.18	1.00	0.18	0.13
Vega	-0.27	0.40	0.21	-0.79	0.18	1.00	-0.35
Commodity	0.39	0.18	-0.32	0.35	0.13	-0.35	1.00

Feb. 9, 2018

Risk Type	FX	Equity	Inflation	Interest Rate	Issuer Credit	Vega	Comdty
FX	1.00	0.55	-0.13	-0.04	0.47	-0.23	0.79
Equity	0.55	1.00	0.02	0.20	0.64	-0.17	0.67
Inflation	-0.13	0.02	1.00	-0.60	0.28	0.36	-0.02
Interest Rate	-0.04	0.20	-0.60	1.00	-0.49	-0.43	0.12
Issuer Credit	0.47	0.64	0.28	-0.49	1.00	0.07	0.45
Vega	-0.23	-0.17	0.36	-0.43	0.07	1.00	-0.31
Commodity	0.79	0.67	-0.02	0.12	0.45	-0.31	1.00

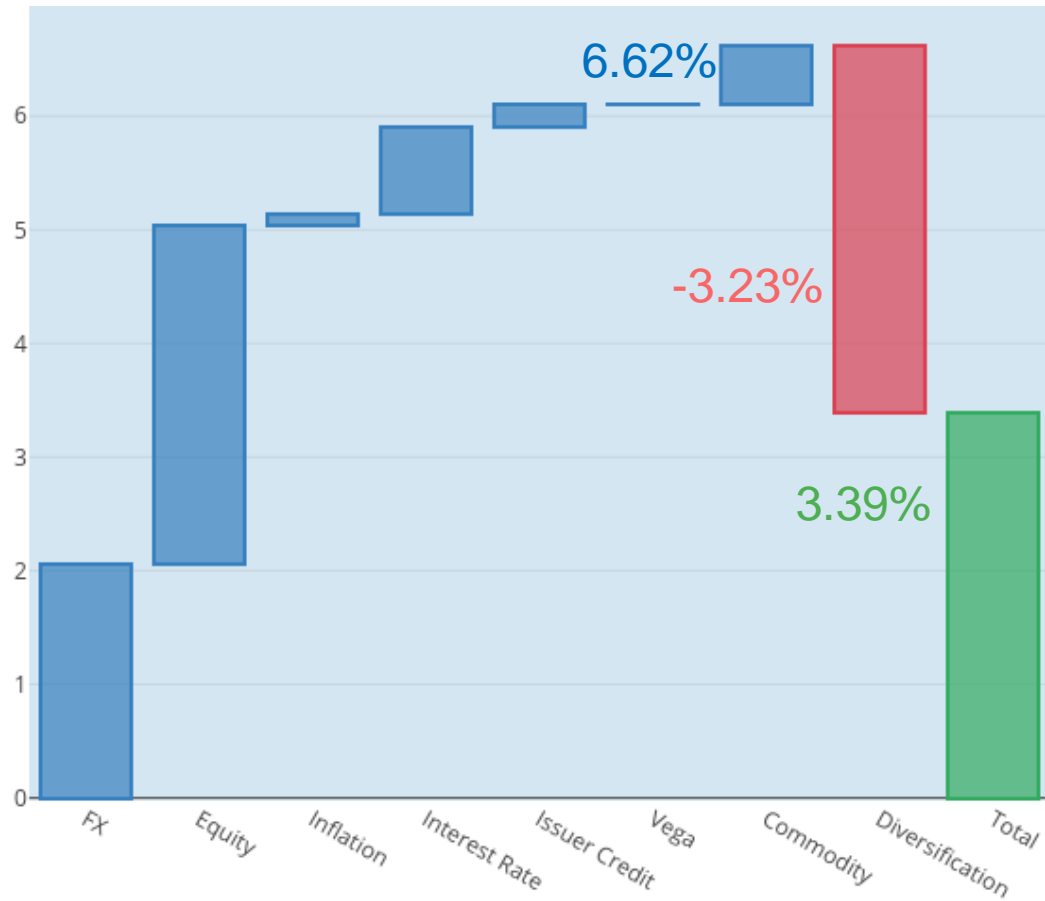
April 6, 2018

Risk Type	FX	Equity	Inflation	Interest Rate	Issuer Credit	Vega	Comdty
FX	1.00	-0.32	-0.05	0.08	-0.41	-0.05	0.72
Equity	-0.32	1.00	0.34	-0.47	0.74	0.34	-0.26
Inflation	-0.05	0.34	1.00	-0.54	0.49	0.44	0.13
Interest Rate	0.08	-0.47	-0.54	1.00	-0.56	-0.87	0.01
Issuer Credit	-0.41	0.74	0.49	-0.56	1.00	0.50	-0.40
Vega	-0.05	0.34	0.44	-0.87	0.50	1.00	0.07
Commodity	0.72	-0.26	0.13	0.01	-0.40	0.07	1.00

May 4, 2018

Risk Type	FX	Equity	Inflation	Interest Rate	Issuer Credit	Vega	Comdty
FX	1.00	0.16	-0.40	0.25	0.32	-0.14	0.56
Equity	0.16	1.00	-0.12	-0.02	0.66	0.28	0.04
Inflation	-0.40	-0.12	1.00	-0.72	0.03	0.53	0.00
Interest Rate	0.25	-0.02	-0.72	1.00	-0.29	-0.78	0.06
Issuer Credit	0.32	0.66	0.03	-0.29	1.00	0.37	-0.06
Vega	-0.14	0.28	0.53	-0.78	0.37	1.00	0.09
Commodity	0.56	0.04	0.00	0.06	-0.06	0.09	1.00

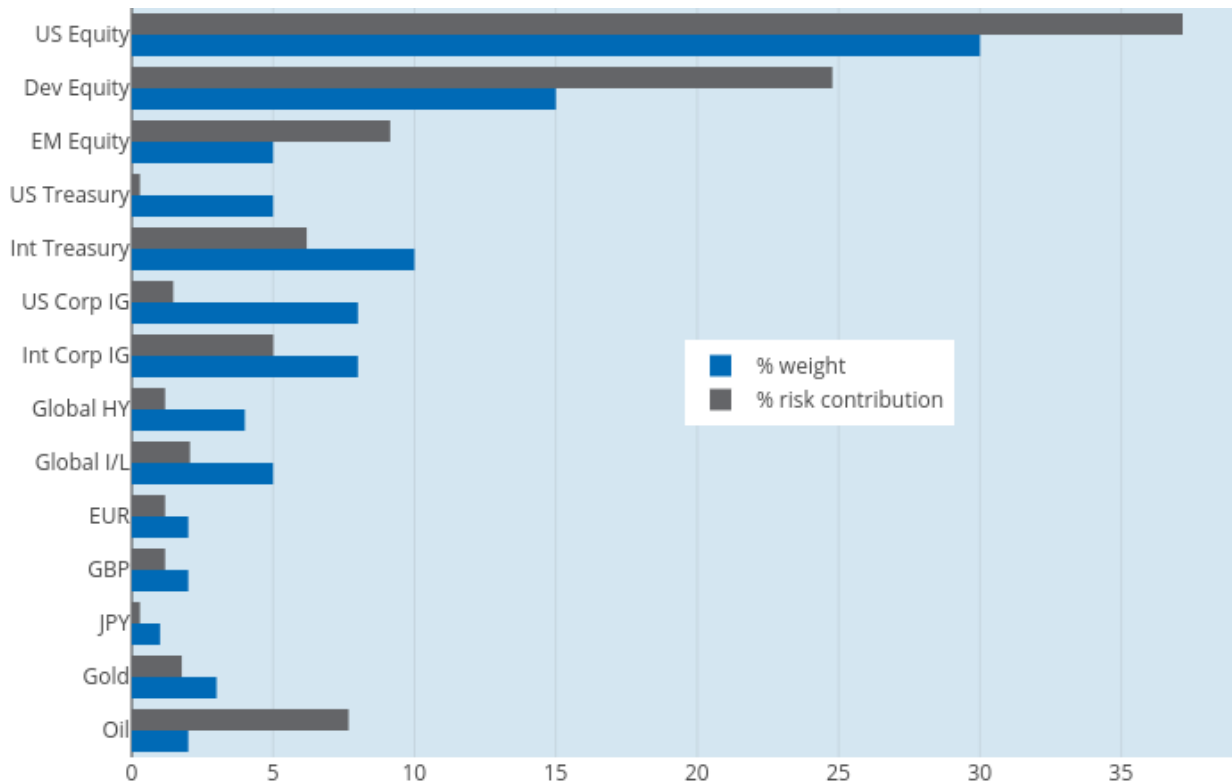
## VOLATILITY CONTRIBUTIONS BY RISK TYPE – DEC. 15, 2017



- Negative correlation between equity returns and exchange rate movements, combined with inverse stock/bond price relationship results in healthy diversification benefit

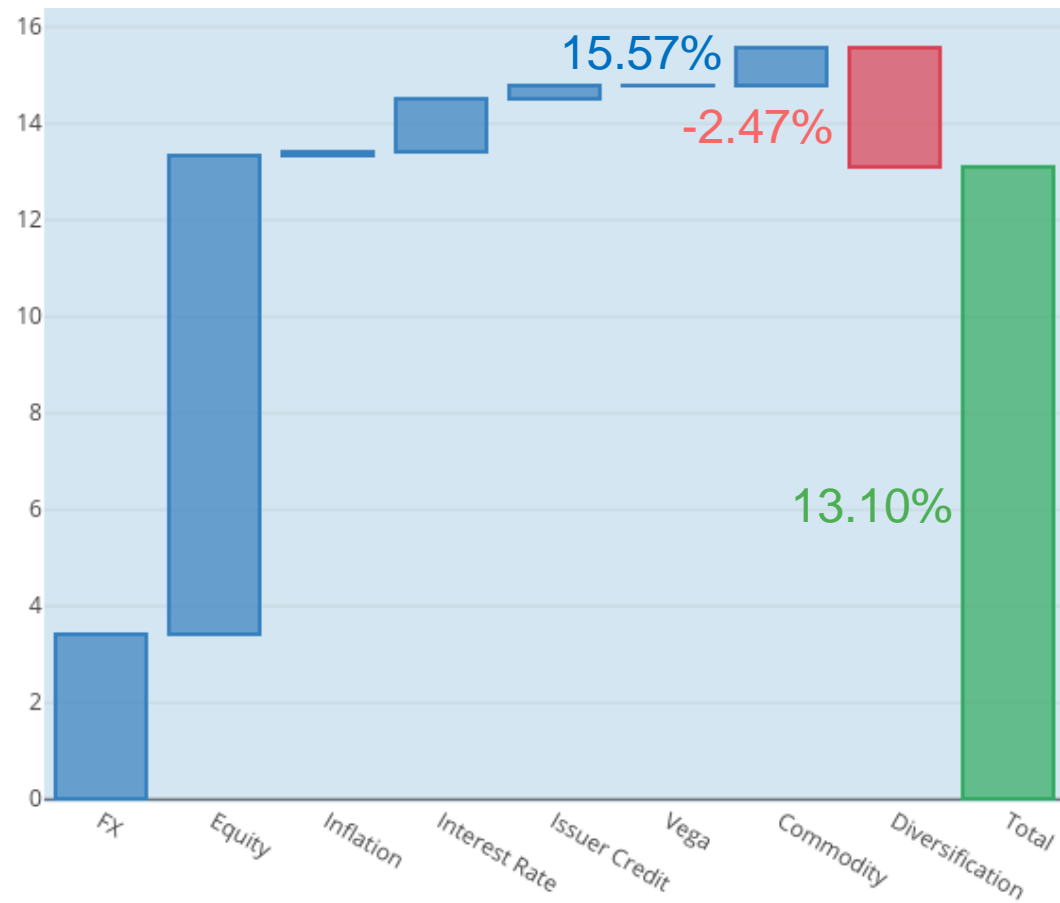
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## VOLATILITY CONTRIBUTIONS BY ASSET CLASS – DEC. 15, 2017



- Equities account for 71% of portfolio risk
- Bond returns negatively interrelated with stocks, but benefits offset by strong correlation across regions, amplified by exchange rate movements
- Strong co-movement of oil and share prices results in 8% contribution

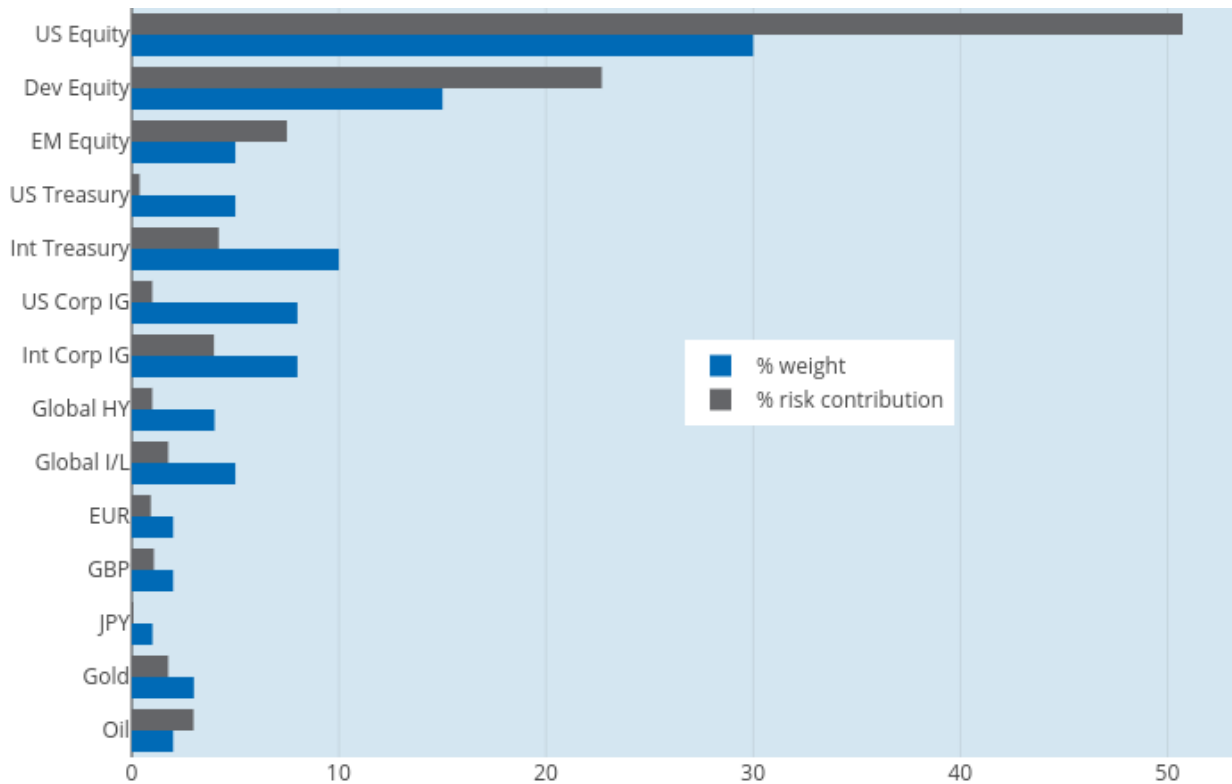
## VOLATILITY CONTRIBUTIONS BY RISK TYPE – FEB. 9, 2018



- Risk dominated by stock market volatility of 20%
- Inflation concerns led to negative returns for both stocks and bonds, resulting in positive correlation
- Positive interaction between FX and equity returns increased risk and reduced diversification

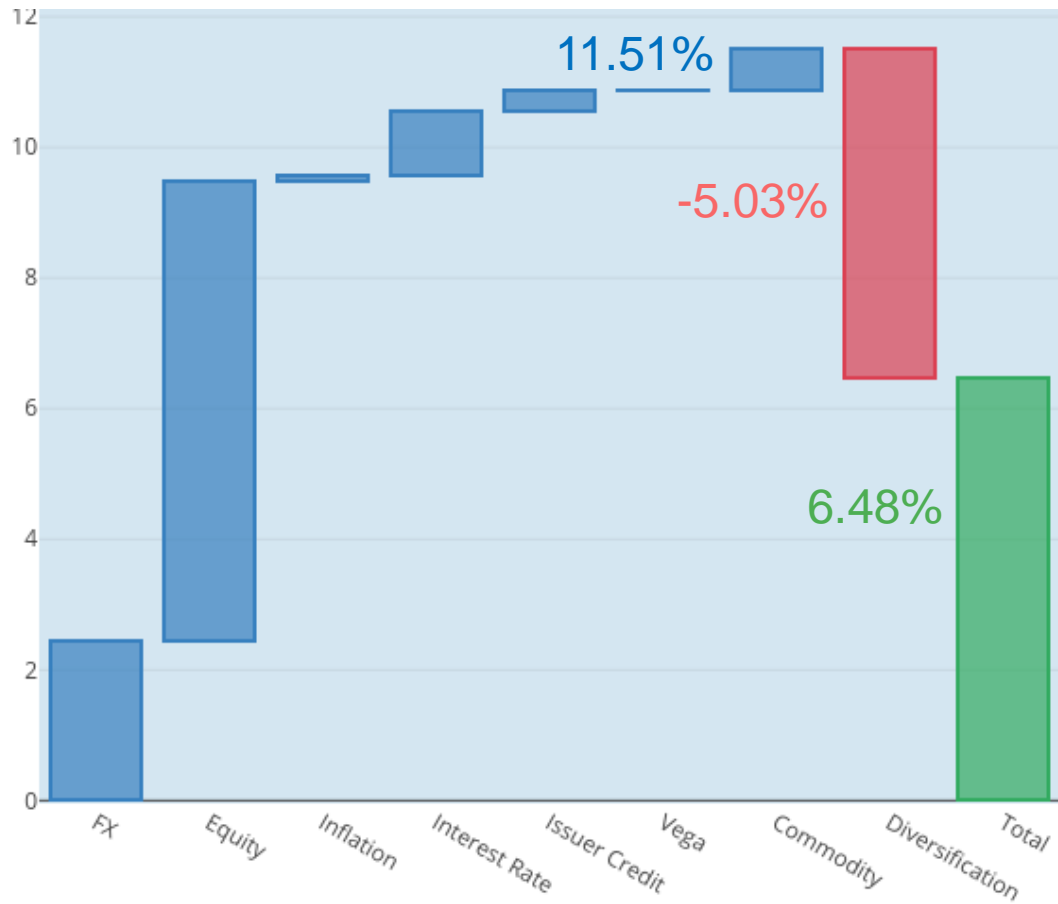
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Commodity	0.79	0.67	-0.02	0.12	0.45	-0.31	1.00

## VOLATILITY CONTRIBUTIONS BY ASSET CLASS – FEB. 9, 2018



- Equities account for over 80% of total risk due to higher volatility and cross-regional correlation
- US Treasuries add to risk, as stock and bond prices exhibit positive relationship, but contribution dwarfed by equities
- Non-US government bond returns partly offset by negative FX/interest rate interaction

## VOLATILITY CONTRIBUTIONS BY RISK TYPE – APRIL 6, 2018

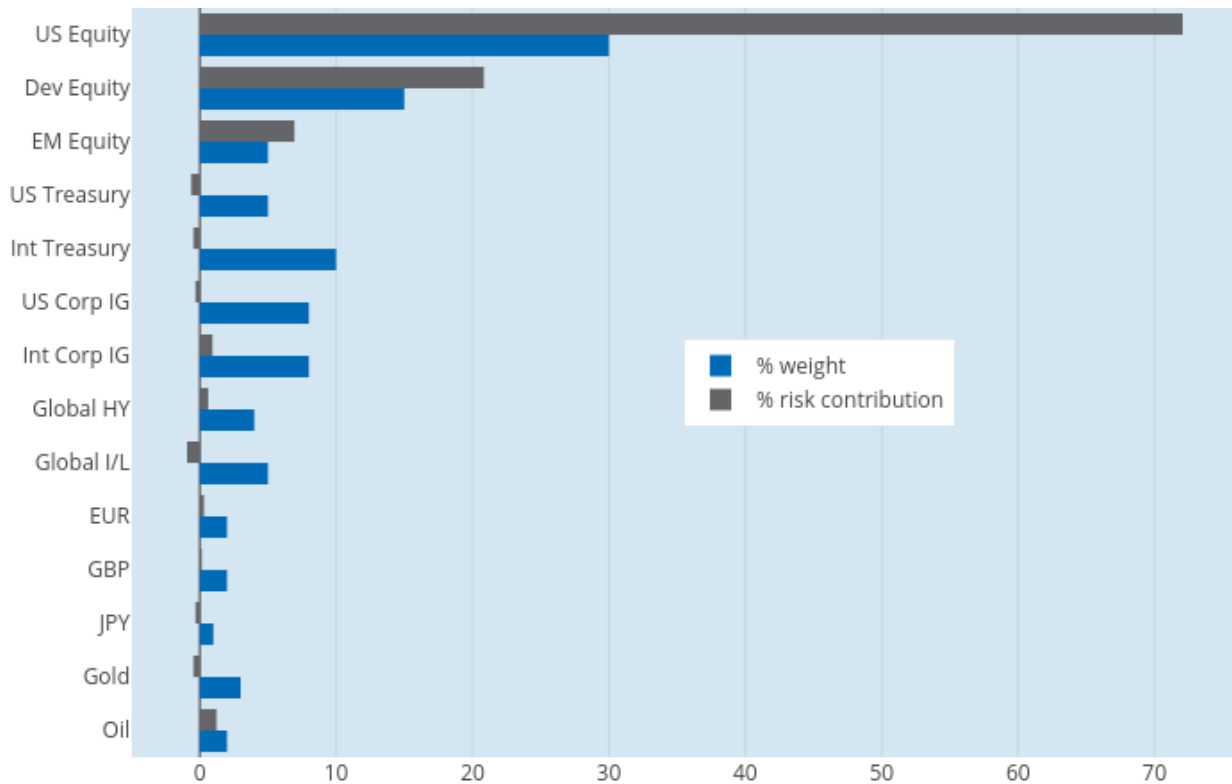


- Reversal of FX/equity relationship to negative significantly increased diversification
- Equity risk still biggest contributor

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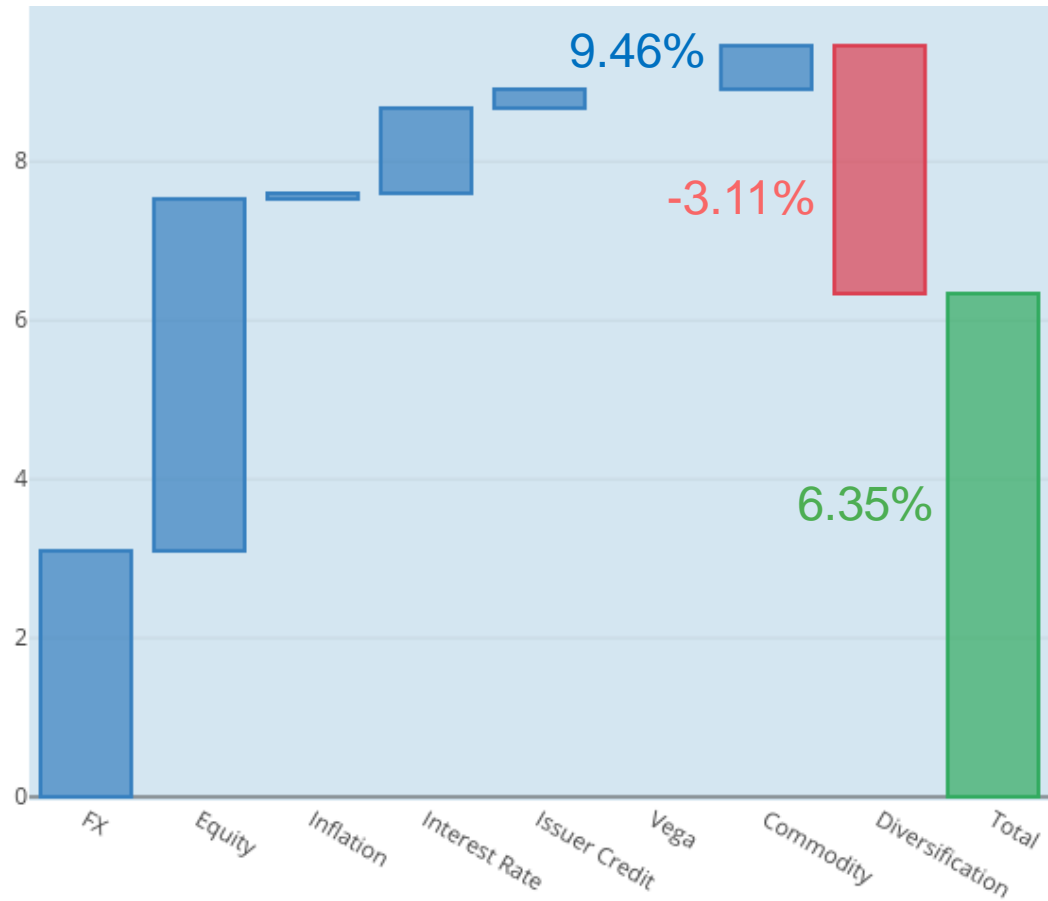


## VOLATILITY CONTRIBUTIONS BY ASSET CLASS – APRIL 6, 2018



- US equities alone account for over 70% of total risk (99.8% all stock holdings)
- Exchange rate volatility no longer dominates risk
- All safe-haven assets actively diversify risk
- Low contribution from oil holding due to negative correlation with stock market

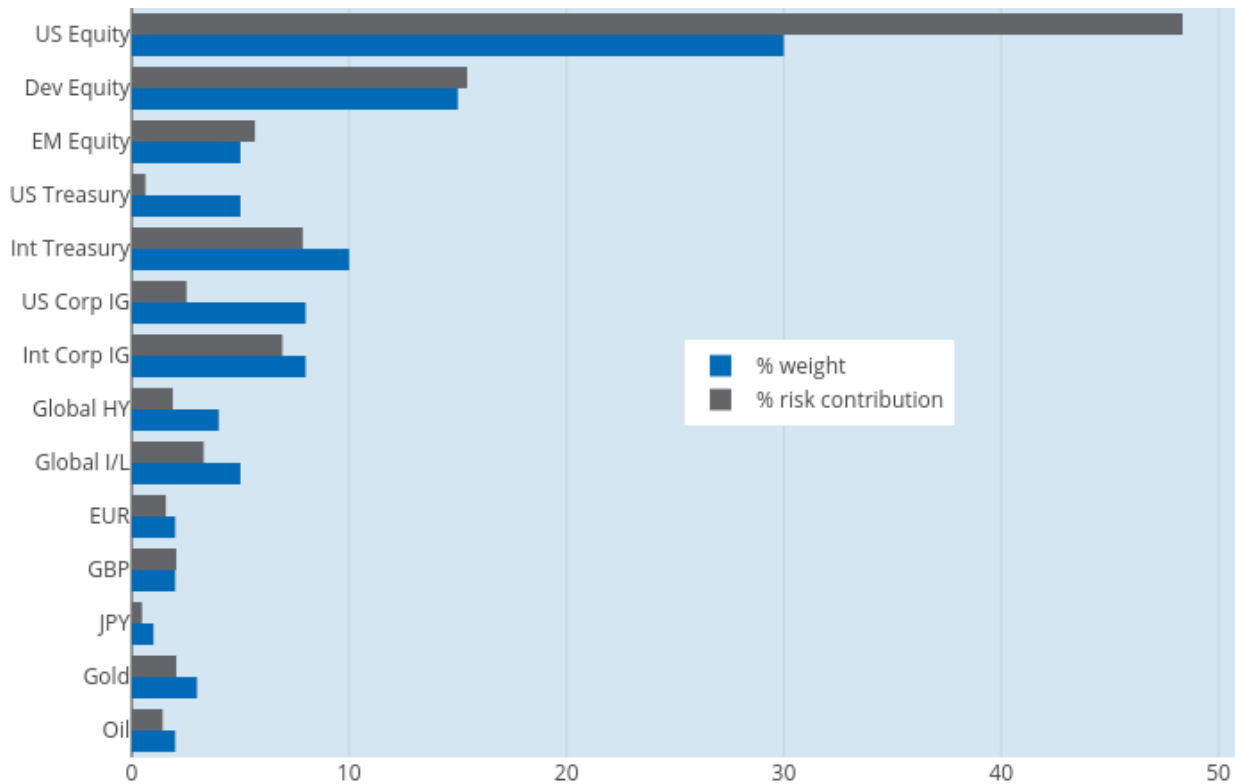
## VOLATILITY CONTRIBUTIONS BY RISK TYPE – MAY 4, 2018



- FX/equity relationship once more flips signs on inflation concerns and rate hike expectations
- FX volatility rises, as dollar strengthens
- European currencies hit by rate rise delays
- Diversification squeezed further by lessening in negative stock/bond interaction

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## VOLATILITY CONTRIBUTIONS BY ASSET CLASS – MAY 4, 2018



- Total equity contribution down to 69% due to lower volatility
- Oil contribution only 1.6% due to zero-correlation with equities
- Non-USD government, corporate and inflation-linked bonds saw biggest increase in risk contributions due to positive interaction between FX and interest rate returns

## SUMMARY AND OUTLOOK

- Consumer price growth is major driver of recent market movements and asset-class correlations
- Inflation concerns make stock and bond prices move in unison (both ways)
- Speculation on short-term rates driving force for GBP and EUR
- JPY and CHF determined by risk appetite and safe-haven buying
- Trade war fears and conflict in Syria temporarily reverted correlations into “familiar” patterns
- Dollar keeps appreciating on prospect of higher interest rates, but vulnerable to political risk
- Renewed focus on inflation and rate hikes flips correlations once again
- Exchange rate effects regain importance

# QUESTIONS?

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