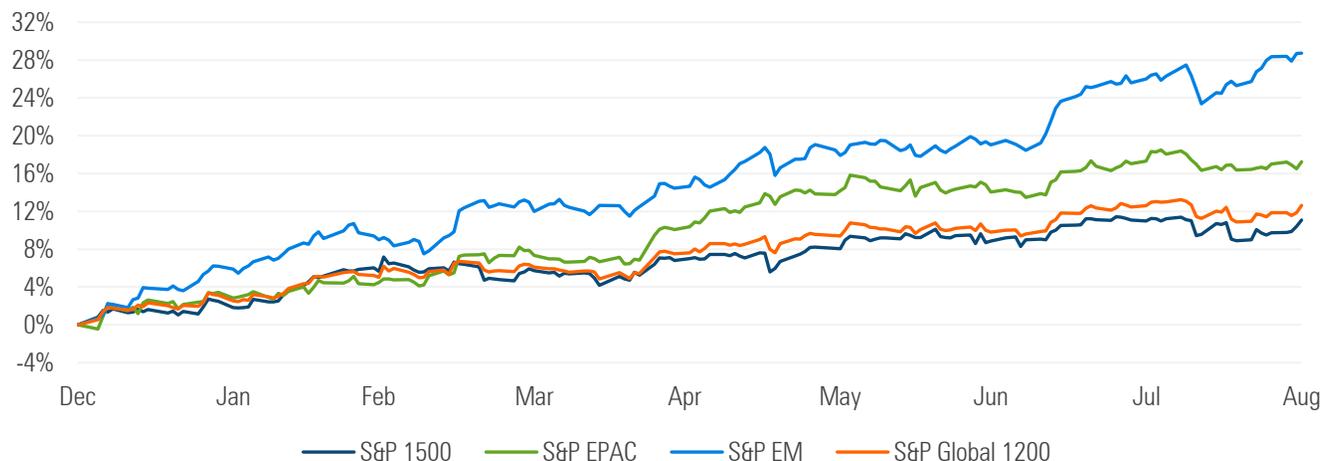


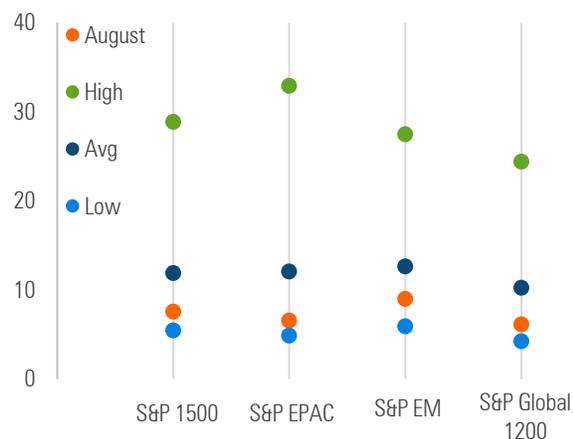
### EM EQUITIES PUSHED HIGHER IN AUGUST AS REST OF WORLD TOOK A BREATHER

- U.S. equity markets yawned as summer vacations wound down and kids headed back to school. Large cap stocks finished modestly higher while mid- and small-caps saw noteworthy pullbacks.
- Among global equities, EM stocks again led the way. After declining more than 3% during the second week, EM equities rallied more than 4% to finish the month 2.2% higher and are now up 28.7% YTD.
- Technology again led all sectors, finishing the month 3.2% higher; it now accounts for 46% of the S&P 500's YTD return and 23% of its market cap. Apple, Facebook, Microsoft and Google account for 59% of the sector's year-to-date return.
- Realized equity market volatility was low on average, but was itself volatile, and finished the month at its highest level since May.
- The correlation between stocks and bonds pushed higher in August, but remained negative. Bond prices rose as the yield curve flattened; the yield on the 10-year Treasury fell by 18 bps, its largest one-month decline since June 2016.

Global Equity Markets: 2017 YTD % Δ



30-Day Volatility: 5-Year Historical Range

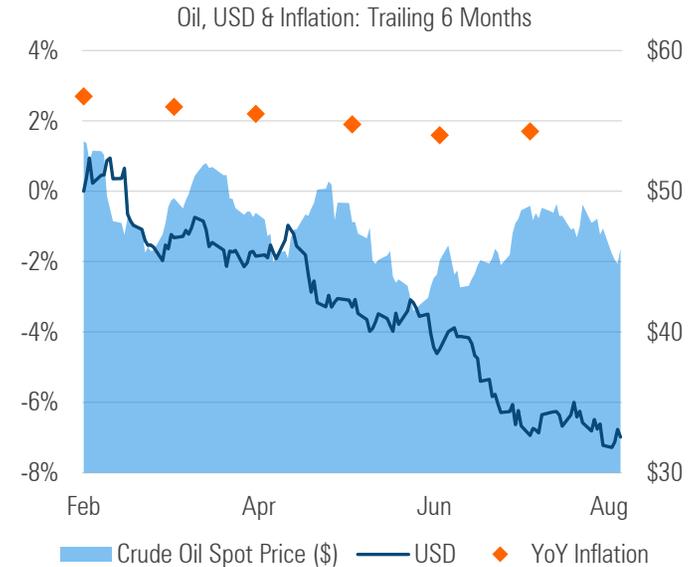
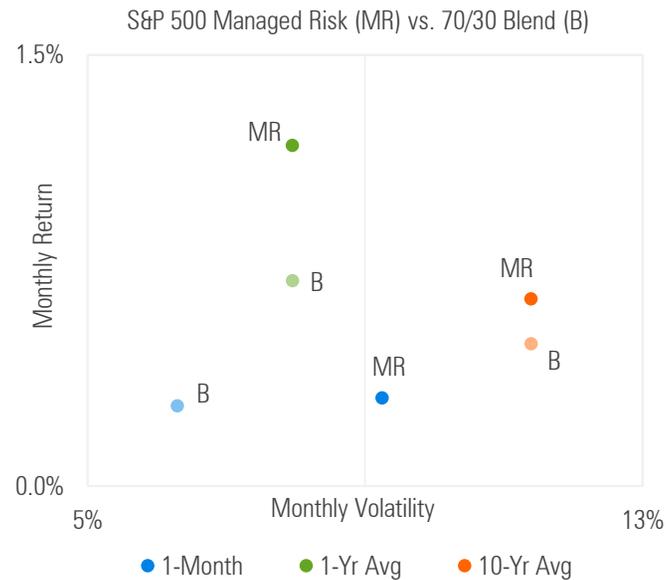


Rolling 3-Month Correlation to S&P 1500



- The dollar attempted to rally through the middle of the month, only to retreat and finish August marginally lower, notching its sixth consecutive monthly decline.
- After rising by nearly \$4 in July, the price of Midland crude oil fell three dollars in August.
- The dollar's decline notwithstanding, inflation remains low. The most recent year-over-year measure of 1.7% is one percentage point below where it was just six months ago, even though the dollar lost 7% of its value over the same period.
- After closing below 10 for 10 consecutive days in July, (something it had never come close to doing before), the VIX quickly climbed 60% to its 2017 high, before reverting lower and finishing the month where it began.
- The relatively higher volatility during the month was not high enough to cause the S&P 500 Managed Risk Index to reduce its 100% equity allocation. It matched the return of the S&P 500 and outperformed a 70/30 stock/bond\* blend by three bps.

\*As measured by the S&P 500 Index and the S&P US Aggregate Bond Index.



Total Returns as of August 31, 2017										
	S&P 500	S&P 500 MR	S&P 400	S&P 600	S&P EPAC	S&P EM	S&P Global 1200	S&P US AGG	Crude Oil	US Dollar
1 Month	0.3%	0.3%	-1.5%	-2.6%	-0.1%	2.2%	0.3%	0.8%	-6.2%	0.0%
3 Months	3.0%	3.0%	0.9%	1.3%	2.7%	9.2%	3.6%	1.1%	-4.0%	-3.8%
6 Months	5.7%	5.7%	0.9%	-0.1%	12.2%	18.1%	8.9%	2.5%	-14.2%	-7.0%
1 Year	16.2%	16.2%	12.4%	13.1%	18.0%	24.6%	17.6%	0.4%	3.0%	-2.9%



### THE FED, THE TREASURY AND THE FATE OF INTEREST RATES

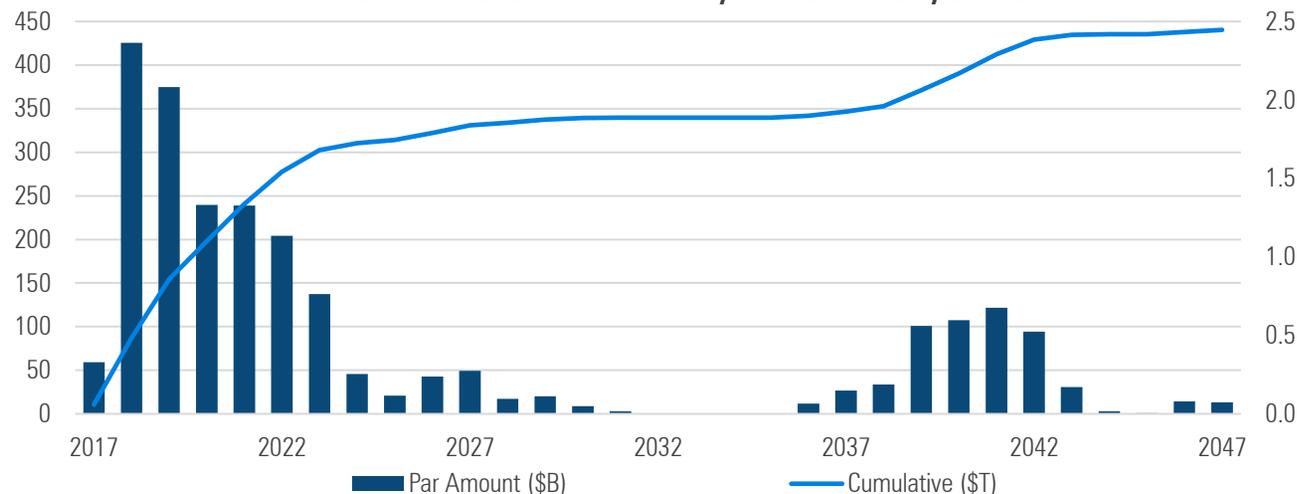
- Thinking about rates through a lens of supply and demand is of course nothing new. The current, post-crisis circumstances, however, present a new context in which to conduct such an examination.
- Heading into 2018 a confluence of circumstances have the potential to simultaneously affect both the supply of and demand for government bonds.

#### DEMAND

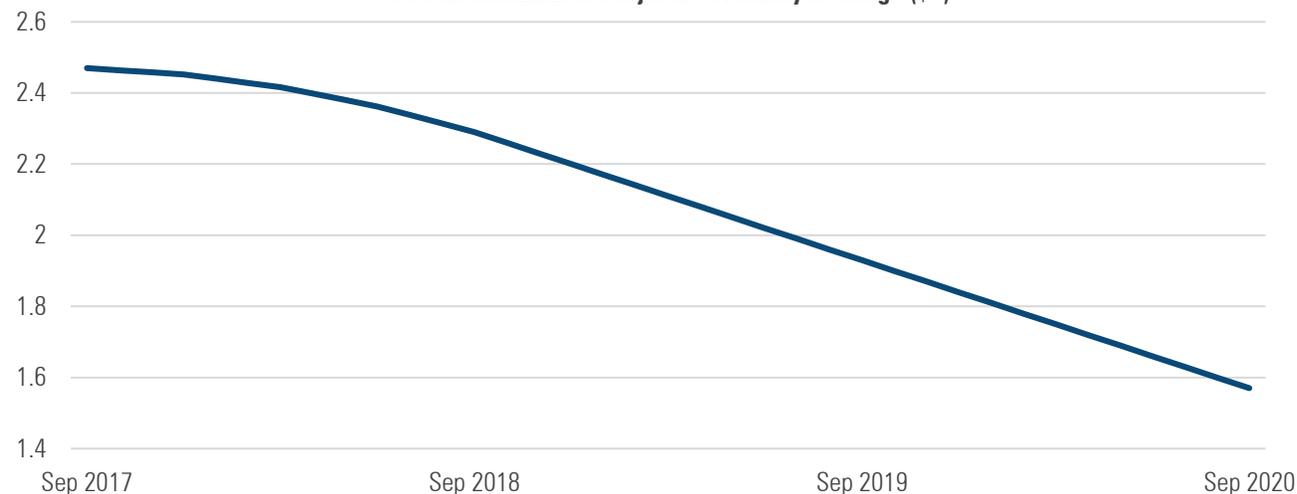
- Coming out of its end-of-July FOMC meeting, the Fed’s official statement noted that, “*The committee expects to begin implementing its balance sheet normalization program relatively soon, provided that the economy evolves broadly as anticipated.*”
- In its [Addendum to the Policy Normalization Principles and Plans](#) released in June 2017, the Fed outlined a path for reducing the monthly amount of principal reinvestment.
- A reduction in the Fed’s steady, inelastic demand for Treasuries will generate upward pressure on rates. This, however, is just a first order effect.

\* Source: Federal Reserve

Federal Reserve Balance Sheet Treasury Securities Maturity Schedule\*



Fed Normalization: Projected Treasury Holdings (\$T)\*



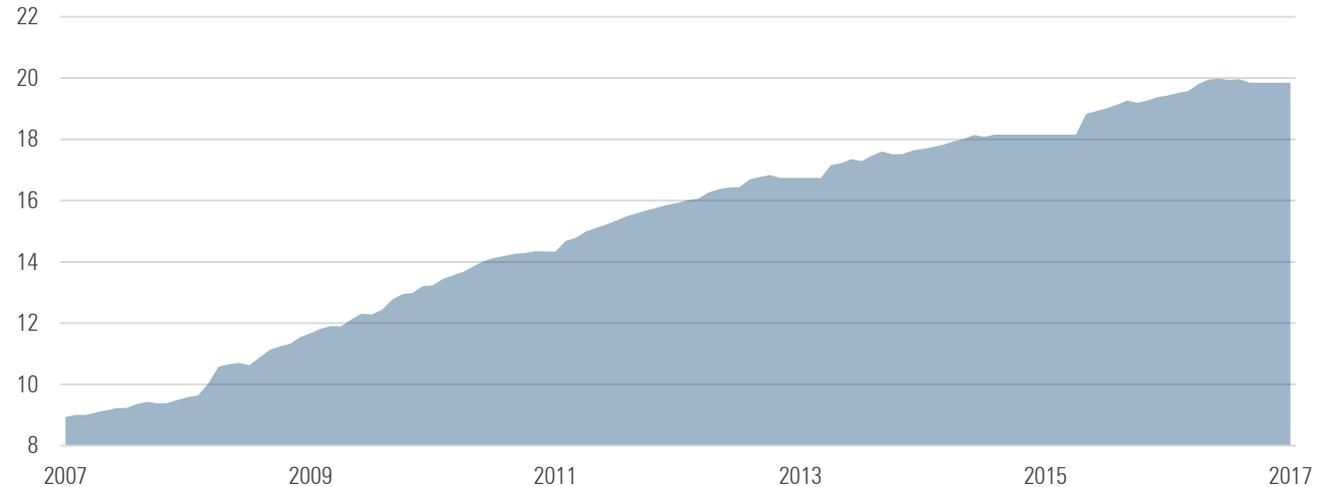
**SUPPLY**

- As the Fed begins normalization, the national debt continues to grow. Up \$750 billion in the last 12 months, the debt now sits at \$20 trillion.
- The Fed remits all its profits to the US Treasury, which has amounted to hundreds of \$billions post-crisis. As the Fed reduces its holdings (while also paying higher interest rates on excess reserves) it will earn less income and have less profit to remit to the Treasury:

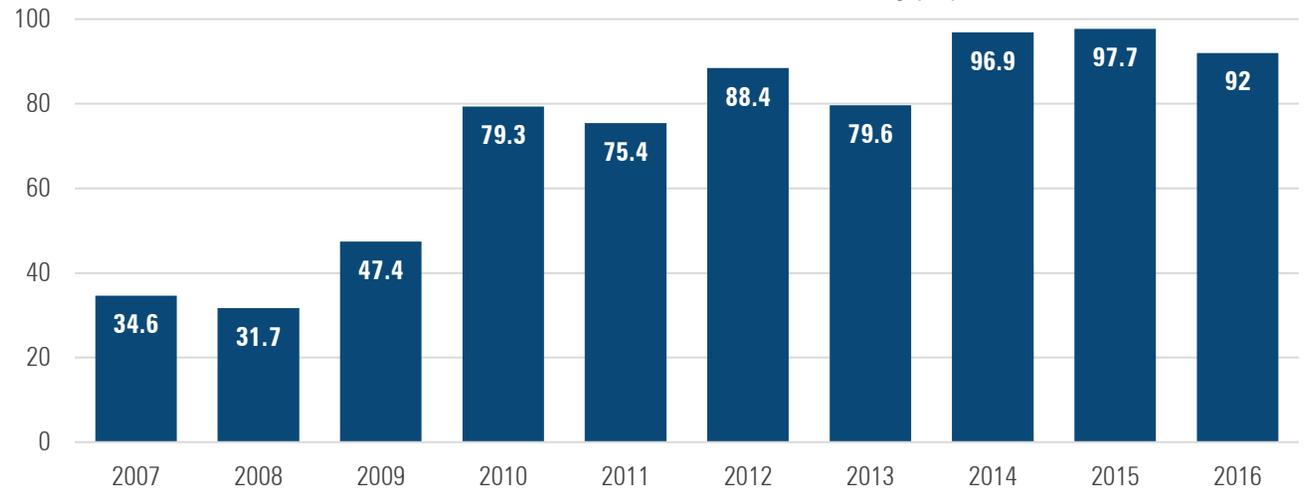
↓ Revenues + ↑ Expenses = ↓ Fed Profit

- All else equal, smaller Fed remittances will induce the Treasury to issue more bonds at precisely the same time the Fed is putting upward pressure on rates via reduction of its own demand.
- This would increase the government’s interest expense as a function of both a larger debt load and potentially higher coupon payments, which in turn could trigger a need to issue more debt.
- Absent fiscal austerity, it’s not difficult to envision a feedback loop that could begin to push rates quickly higher.

**US Total Debt Outstanding (\$T)**



**Federal Reserve Remittances to U.S. Treasury (\$B)\***

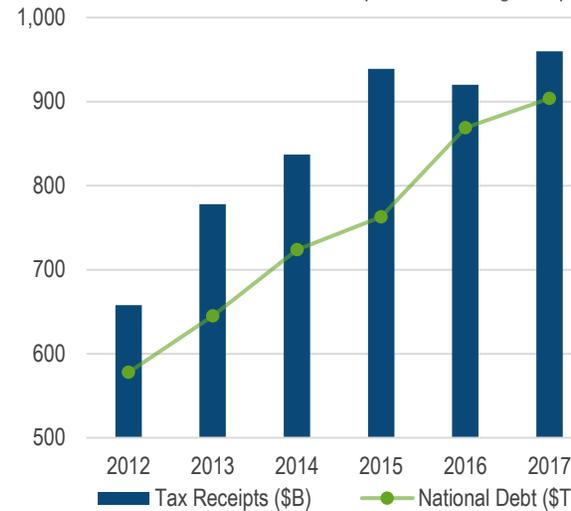


**MITTIGATING FACTORS**

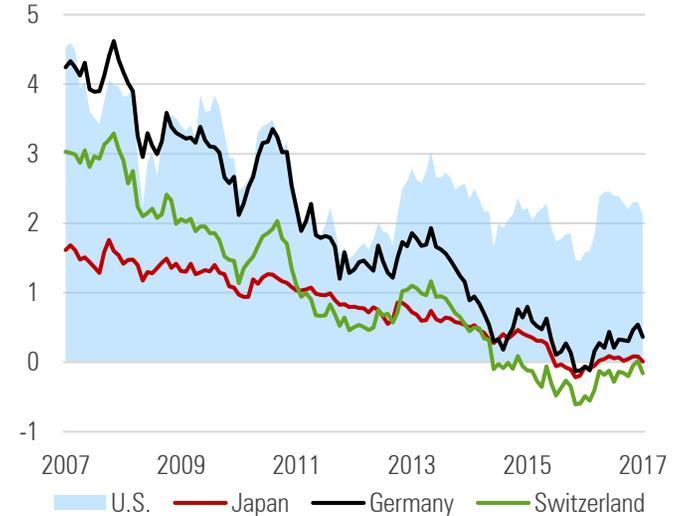
- If Congress were to rein in spending and move to budget surpluses, the supply of debt would level off and begin to diminish, generating downward pressure on rates, offsetting upward pressure from the reduction of Fed demand.
- Ultra-low rates elsewhere in the developed world such as Europe and Japan continue to anchor US rates. Foreign demand for US Treasuries is down from its 2015 peak, but still well above its level immediately preceding the crisis.
- To the extent that foreign yields remain low, they act as a counterweight to US yields that would otherwise be prone to drift higher.
- The Fed's shrinking demand for bonds will be a gradual process. If normalization were to begin in January, the Fed would remain a buyer of bonds, with nearly \$400 billion that will mature in 2018 and 2019, and have to be reinvested.

The unprecedented nature of these circumstances leaves investors much to be wary of. How markets react is anyone's guess. Diligent risk management will remain important for investors as monetary and fiscal policy unfold in the coming months and years.

Individual Income Tax Receipts: YTD through July



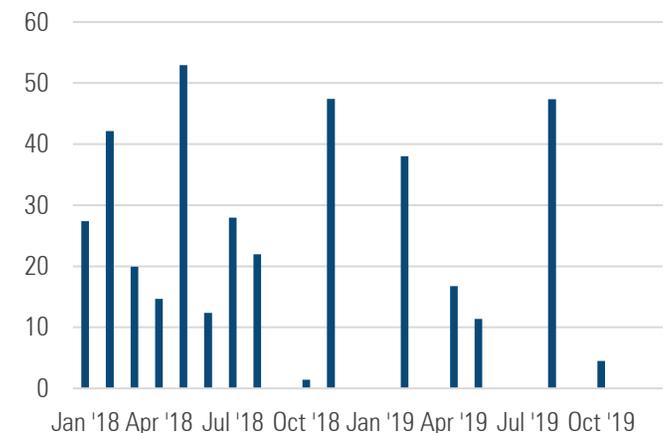
10-Year Government Bond Yield (%)



% of Federal Debt Held by Foreign Investors



Monthly Treasury Reinvestment Amount Net of Normalization Caps (\$B)\*



## Creating transformational improvement in the retirement savings industry.

Milliman Financial Risk Management LLC is a global leader in financial risk management to the retirement savings industry. Milliman FRM provides investment advisory, hedging, and consulting services on over \$152 billion in global assets (as of June 30, 2017).

Established in 1998, the practice includes professionals operating from three trading platforms around the world (Chicago, London, and Sydney).

Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in healthcare, property & casualty insurance, life insurance and financial services, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[MILLIMAN.COM/FRM](http://MILLIMAN.COM/FRM)

### Chicago

71 South Wacker Drive  
Chicago, IL 60606  
+1 855 645 5462

### London

11 Old Jewry Road  
London  
EC2R 8DU  
UK  
+44 0 20 7847 1557

### Sydney

32 Walker Street  
North Sydney, NSW 2060  
Australia  
+610 2 8090 9100

Recipients must make their own independent decisions regarding any strategies or securities or financial instruments mentioned herein.

The products or services described or referenced herein may not be suitable or appropriate for the recipient. Many of the products and services described or referenced herein involve significant risks, and the recipient should not make any decision or enter into any transaction unless the recipient has fully understood all such risks and has independently determined that such decisions or transactions are appropriate for the recipient.

Past performance is not indicative of future results. Index performance information is for illustrative purposes only, does not represent the performance of any actual investment or portfolio, and should not be viewed as a recommendation to buy/sell. It is not possible to invest directly in an index. Any hypothetical, backtested data illustrated herein is for illustrative purposes only, and is not representative of any investment or product.

Any discussion of risks contained herein with respect to any product or service should not be considered a disclosure of all risks or a complete discussion of the risks involved.

The recipient should not construe any of the material contained herein as investment, hedging, trading, legal, regulatory, tax, accounting or other advice. The recipient should not act on any information in this document without consulting its investment, hedging, trading, legal, regulatory, tax, accounting and other advisors.

The materials in this document represent the opinion of the authors and are not representative of the views of Milliman, Inc. Milliman does not certify the information, nor does it guarantee the accuracy and completeness of such information. Use of such information is voluntary and should not be relied upon unless an independent review of its accuracy and completeness has been performed. Materials may not be reproduced without the express consent of Milliman.

MIL\_COM\_1 8/17\_8/18 © 2017 Milliman Financial Risk Management LLC

