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## Estimating bank earnings sensitivity to the Federal Funds rate

Banking is a spread business. Banks can earn a good spread between return on assets and the cost of liabilities in a variety of interest rate conditions whether low/high, real vs. nominal, or positive/negative, provided such interest rates are expected and stable or if assets and liabilities can quickly adjust in tandem. However, the most conducive interest rate environment for banks is generally a stable and upward sloping yield curve with a y-intercept or overnight rate that is positive by a few hundred basis points.

This is because decently positive overnight rates attracts deposits and helps banks to collect a decent margin in nominal basis points for their basic banking services to depositors (checking, ATMs, security, etc.) and for their intermediary services between depositors and borrowers which transforms savings into productive capital. Decently positive interest rates induce households to deposit their cash savings. Positive real interest rates reward savers for deposits, whereas the inflation component of interest rates penalizes savers for not depositing their cash savings. It's equally important that interest rates are not too high, so that credit demand remains healthy and debtors can service existing debt. Real interest rates tend to drive borrower motives, but shifts in inflation can act as a wealth transfer between creditors and debtors. Shifts in real or nominal interest rates are duration risk that banks must manage. Interest rate and other macro economic shocks are part of the many credit risks banks must manage as well.

With a few basic concepts from above in mind, how should higher overnight interest rates affect bank profits?

One could argue that any change in interest rates doesn't matter because the spread between asset returns and liability costs would likely stay the same. This is a helpful conceptual starting point. Provided one keeps in mind that there will be a period of time until both asset returns and liability costs fully reset, depending on the duration of each, which will either temporarily help or harm the spread earned. The steady spread between assets and liabilities concept is helpful, but banks also fund their assets with equity. Thus, a change in interest rates should change ROE in a consistent fashion under a steady asset to liability spread assumption. If a bank earns an ROE of 8% and general interest rates rise 25bp then the ROE would rise to 8.25% and profits up 3%.

The average ROE for S&P Banks was 8% in 2015. If ROE climbs in line with the Fed Funds rate then it should boost earnings by about 3%. This is an overly simplistic assumption, but a good starting point before delving into more complex considerations.

We estimate that every 25bp climb in the annual average FF rate boosts S&P Banks EPS by 3-5% or nearly \$0.50 of S&P EPS. Crucially, this assumes that credit costs do not exceed normal levels upon such higher overnight rates. But it also assumes that the climb in the Fed Funds rate doesn't entirely follow through to the rate paid on deposits, but does follow through on variable rate loans and other very short-term assets.

We believe banks have been subsidizing savers (they probably don't see it that way), by paying positive interest rates on demand and short-term timed deposits when the Fed Funds rate was near 0% from 2009 through 2015. We think a 1 for 1 relationship in overnight and deposit rates is unlikely until the Fed Funds rate exceeds at least 1%.

S&P Banks hold \$6 trillion of deposits. If the average deposit rate were to rise 15bp for every 25bp increase in the FF rate, and same increase in return on assets, this would boost S&P Banks post tax profits by \$4bn or 4%. This would be in addition to the 3%