

## Deposit Betas and Interest Rate Risk Modeling

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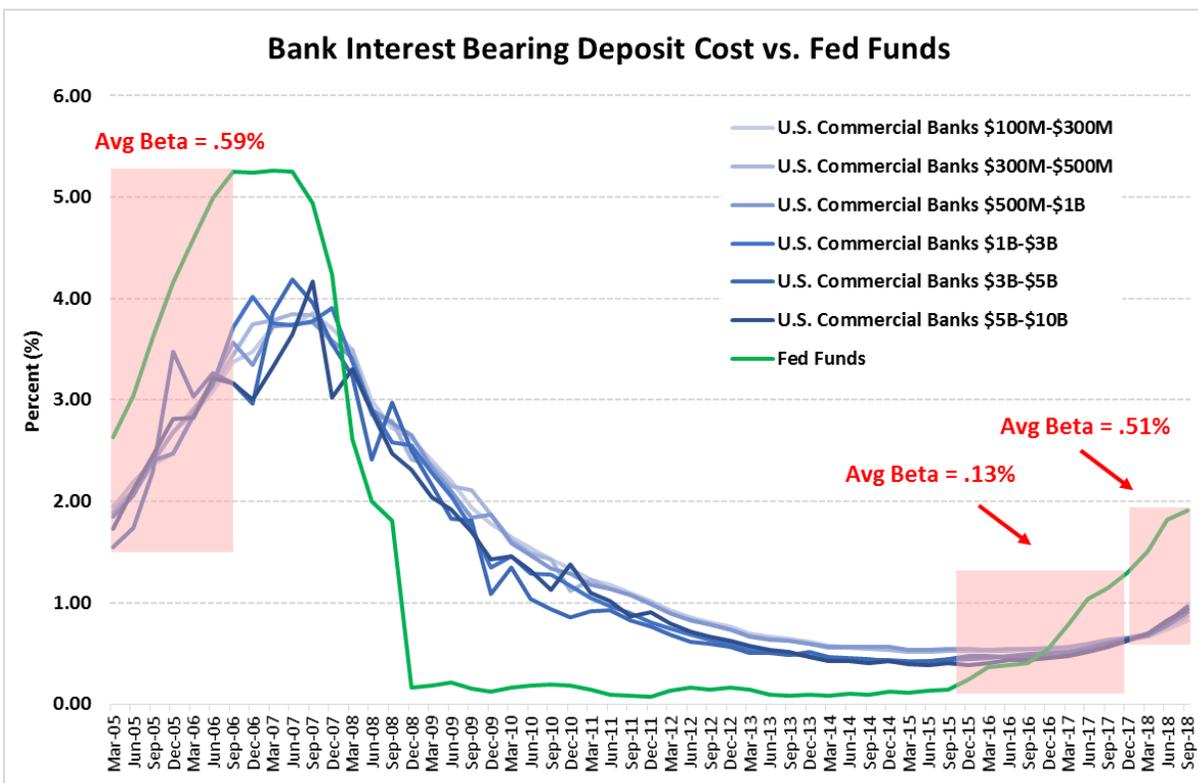
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Maintaining realistic behavioral assumptions in your interest rate risk model is critical in obtaining reliable earnings projections and economic value measures. Perhaps the most impactful - and challenging - assumptions to manage are deposit repricing “Betas”. Betas measure how much deposit rates reprice, up or down, given a defined change in market rates. Betas are not constant --- and have a way of lagging in the early stages of a rising rate cycle and “catch up” to historic norms later in the cycle. This may mean that realized Betas at the start of a rising rate cycle (when rates are relatively low) are often below an institution’s model assumptions. Later on (when rates are relatively high) actual Betas exceed model assumptions. This can wreak havoc on actual cost of funds, margin and earnings versus projections: Often, model forecasts overestimate cost of funds and underestimate earnings at the beginning of the cycle, while the reverse occurs late in the cycle.

An analysis of industry deposit Betas during the most recent rising rate cycle (2004 – 2006) versus the current rising rate cycle (Dec 2015 – Current) shows the tendency for Betas to lag market rate increases:



The blue lines in the chart above reflect average historical interest-bearing deposit costs for the indicated bank asset size groupings. The green line shows the historical, effective Fed Funds rate. During the second half of the previous tightening cycle (Mar 2005 – Sep 2006)<sup>1</sup>, the average Beta for all banks in the analysis was .59%. Comparing this average to the current rate cycle, shows that recent industry deposit Betas have been below the previous cycle (so far). **Another observation may be more relevant: Average industry deposit Betas accelerated significantly in 2018.** For the first 125 bps of Fed rate tightening (Dec 2015 to Dec 2017), the average industry deposit Beta was a mere .13%. By contrast, the most recent 75 bps of tightening (Dec 2017 to Sep 2018) resulted in a notable jump in the average industry Beta to .51%.

Despite the trends shown in the aggregated data, it is important to note that deposit Betas are highly subjective and vary broadly among depositories with different markets, balance sheets, and demand for funds. For instance, a deeper look into our data revealed that banks with loan-to-deposit ratios > 90% have a 2018 deposit Beta .20% above banks with a loan-to-deposit ratio < 90%. Betas also vary by asset size, with larger banks generally having higher measures of deposit rate sensitivity:

	Mar 05 - Sep 06		Dec 15 - Dec 17		Dec 17 - Sep 18	
	Correlation	Beta	Correlation	Beta	Correlation	Beta
U.S. Commercial Banks \$100M-\$300M	97.95%	.52	91.95%	.09	91.75%	.37
U.S. Commercial Banks \$300M-\$500M	99.12%	.54	89.01%	.10	93.41%	.45
U.S. Commercial Banks \$500M-\$1B	98.61%	.59	95.14%	.11	93.59%	.49
U.S. Commercial Banks \$1B-\$3B	95.87%	.63	96.70%	.17	91.97%	.53
U.S. Commercial Banks \$3B-\$5B	89.51%	.70	89.61%	.14	92.50%	.62
U.S. Commercial Banks \$5B-\$10B	98.16%	.54	96.98%	.19	97.17%	.58
Average (All)		.59		.13		.51

Data Source: S&P Global Market Intelligence

While some institutions have also been adding term CD funding to manage interest rate risk, others show an increased reliance on non-core funding to support growth. Each of these factors tends to increase the overall Beta on interest bearing deposits.

In any case, it is critical for institutions to understand their own deposit rate behavior. Recognize that Betas vary among deposit types and **may change throughout the rate cycle**. Follow these best practices and you will be doing all you can to reduce the inherent uncertainty around Beta assumptions:

- **Consider your own demand for funds:** Growth increases funding needs (and Betas), while excess deposits may keep a lid on deposit rates
- **Identify high sensitivity deposits:** Jumbo, institutional, term (CD), and brokered deposits usually have higher Betas
- **Don't set and forget:** Revisit your Beta assumptions often to adjust for lag factors
- **When in doubt, stress out:** Stress your Beta assumptions in the model to evaluate the earnings impact

<sup>1</sup> Aggregated data was unavailable for the early stages of the 2004 – 2006 rising rate cycle. Anecdotal data suggests a lower beta for the period Jun 2004 – Mar 2005.