



August 30, 2015

## **EVE Growth Attribution: Recursive Back Testing Analysis**

Dear Clients

OCC considers **recursive back testing analysis** useful to manage model risk. “Recursive analysis refers to back-testing using actual assumptions. For example, if a client wanted to test the reliability of a model, they could take an income shock from a prior period and substitute “actual” assumptions, ( interest rates, prepayment speeds, decay rates, etc).”

Regulators also consider Economic Value of Equity (EVE) or Net Economic Value (NEV) an important measure of bank’s performance, and for good reasons. EVE is the estimated balance sheet value, a value that we seek to increase, resulting in positive EVE growth rate.

Monitoring the EVE growth rate is important for market and credit risk management because EVE is more sensitive to market environment changes than NII and it is isolated from the effect of your growth plan.

Combining these three considerations (regulatory guidance, performance benchmark and risk management) the recursive back-testing analysis is important for ALM and for both regulatory and Board oversight.

### **Challenge**

There are multiple factors affecting the change of EVE. Earnings is only one of them. We need to consider other value drivers, such as balance sheet duration that seeks higher yielding assets, but exposed to higher yield curve risk and adjustments to the balance sheet.

- How to implement a Recursive Back Testing Analysis (or EVE Growth Attribution)?
- How can I use the EVE Growth Attribution to enhance my balance sheet performance?

### **Solutions**

Analogous to Performance Attribution, which is widely used in capital markets, EVE Growth Attribution provides a breakdown of the reported monthly change of EVE, enabling us to identify the value drivers and their related risks over a historical period. As a result, ALCO can better monitor, understand and manage the balance sheet.

EVE growth attribution completes the feedback loop of any ALM process.

- Monitor the model risk continually in implementing a balance sheet strategy, detecting any model defects, if any, before the errors cumulate.

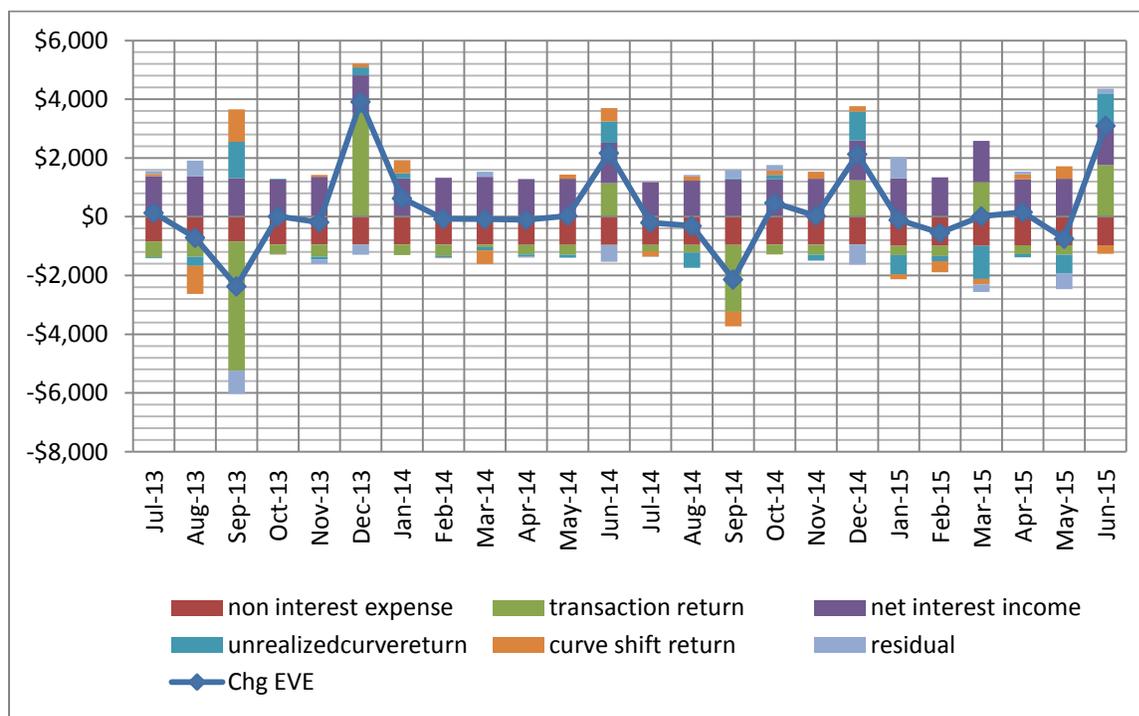


- Identify the most important drivers of value for the bank under the current strategic plan.
- Provides timely feed back to the management on any effectiveness of the balance sheet strategies.

### Numerical Example

The EVE Growth Attribution chart of a hypothetical bank is presented below for illustration.

- Transaction returns (green): identify the impact of the change of balance sheet composition during the period affecting the EVE value. For example, the bank added significant value in Q4 2013
- Net interest income (purple) exceeded the Expenses (brown) in nearly all months suggests that the bank is operating profitability.
- The unrealized curve return (dark blue) and the curve shift return (orange) depicts the interest rate risks. If these components are significant, then the balance sheet is exposed to significant interest rate risk. The chart shows that the interest rate risks are low relative to the NII or non-interest expense



These results suggest that the bank should not be concerned with their interest rate risk. The strategic plan is effective since most of the changes in the balance sheet result in increase in EVE. The structural balance sheet is also sound because the bank remains profitable even without reallocation of the balance sheet sectors.



## Conclusion

Performance Attribution is an integral part of an investment process, providing managers timely feedbacks to their actions. Likewise, EVE Growth Attribution should also be part of our ALM process by identifying the drivers of value and risk as we implement a strategic plan.

*Please do not hesitate to contact THC staff if you have any questions on the EVE growth attribution ( aka Recursive Backtesting Analysis)*

Regards

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