

Economic value of equity—the essentials

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With global capital flows seizing up and mortgage markets experiencing a liquidity crisis, bankers in the U.S. and Europe are relearning that value does matter. Crisis-laden headlines shout, “VALUE DECLINES BRING FINANCIAL CARNAGE TO...” Values can become illusive when seemingly routine market functions grind to a halt. Present-day complex accounting rules compromise confidence about values by allowing for their sometimes-fictional use in financial statements. Yet to what *value* are we referring?

The term *value* can take on many meanings—*book value, market value, fair value, liquidation value, model value, and economic value* to name a few. Today’s incomplete move to complex, full-fair-value accounting allows institutions considerable latitude in choosing the carrying value of their accounts. Depending on which rule set is chosen, financial performance and capital strength vary. Yet underlying all of the accounting complexity is the economics of what constitutes economic value.

Bankers who can look beyond short-term volatile price fluctuations must have a workable understanding of Economic Value of Equity (EVE) to compete effectively. Understanding this regulatory financial strength proxy provides significant insight into the trend of a bank’s earnings capacity and the risk-to-earnings caused by changes in market-derived factors, such as interest rates and credit spreads.

While EVE concepts have evolved considerably over the last two decades, their use by senior management in overall balance sheet strategy setting is still elusive. This elusiveness often stems from an inability to interpret what EVE means and how to apply its concepts to the management of the balance sheet. This is the first in a series of articles addressing EVE concepts, commenting on both what it tells, and what it does not tell, about earnings.

What is EVE?

EVE is a numeric proxy for the future earnings capacity residing in the financial positions existing in the balance sheet. Banking agencies have defined EVE simply as the net present value of the balance sheet’s cash flow. EVE is calculated by discounting anticipated principal and interest cash flows under the prevailing interest rate environment. In formula form:

$$\text{EVE} = \text{Economic Value of Assets} - \text{Economic Value of Liabilities}$$

EVE is analogous to the book value of equity, except that “economic value” utilizes discount rates that would be applicable if anticipated account cash flows were “priced” in prevailing markets. It is irrelevant whether the cash flow spawns from on-balance sheet positions or from derivatives contracts (e.g., FRAs, swaps, futures and option contracts), as all influence reported earnings.

Economic value is not necessary market, liquidation, or capitalized value. For EVE to be the balance sheet’s market value, every account position would need to be precisely tuned to prices observed in established and recognized markets. While fine in theory, many accounts have no observable market. Nevertheless, EVE is derived from market-derived factors, and is at best, an estimate of capital’s fair value¹.

Rather than viewed as capitalized value, EVE is best viewed as a proxy of the balance sheet’s earning-producing capacity. For simplicity and transparency, practitioners often choose to narrow EVE focus to net margin components, and disregard non-interest-related positions, such as cash, fixed assets, capital, and operating expenses, in the assessment of EVE.

How does EVE relate to earnings?

The linkage between EVE and future earnings is conceptually straightforward. This linkage is illustrated by the following series of equivalent formulas:

$$\begin{aligned} \text{EVE} &= \text{EV of Assets} - \text{EV of Liabilities} \\ &= \text{Present Value (Asset}_{\text{Cash Flows}}) - \text{Present Value (Liability}_{\text{Cash Flows}}) \\ &= \text{Present Value (Asset}_{\text{Cash Flows}} - \text{Liability}_{\text{Cash Flows}}) \\ &= \text{Present Value (Asset}_{\text{Principal Cash Flows}} - \text{Liability}_{\text{Principal Cash Flows}}) \\ &\quad + \text{Present Value (Asset}_{\text{Interest Cash Flows}} - \text{Liability}_{\text{Interest Cash Flows}}) \\ &= \text{Present Value of Carrying Equity} + \text{Present Value of Net Interest} \\ &\quad \text{Income} \end{aligned}$$

By definition, the difference in the economic values of the assets and liabilities is the residual value of future cash flows ultimately due shareholders. The larger the residual value, the more earnings can potentially be pulled from the balance sheet in future reporting periods.

Because cash flow has principal and interest components, EVE contains two ingredients that fuel the bank’s present financial condition and future margin reports. Payments of interest cash flows are recorded in the income statement, while a portion of principal cash flow payments may be recorded as a capital gain or loss.

The realization and recording of the account's cash flow through the income statement occurs according to established accounting rules and conventions. Excluding timing differences accorded accrual accounting, and regardless of how or when contracted, cash flows generally will not affect earnings until payments are received or, alternatively, there is a realization they will never be paid (the outcome of credit losses).

Will EVE estimate actual reported earnings?

A question often raised is whether EVE's point-in-time proxy of earnings capacity can be reconciled to subsequent periodic earnings reports. The answer is that it cannot for two reasons.

First, the balance sheet's cumulative future *anticipated* cash flow is included when calculating EVE, not just the cash flow that will be paid, realized, and recorded in the next accounting period. A portion of the cash flow may represent the return of principal, which would not be included in earnings. Anticipated cash flows occurring in subsequent accounting periods will not be recorded in earnings statements until realized.

Second, earnings are measured over time, yet EVE is calculated at a point in time from a static balance sheet. As time passes, new account positions—providing new earnings opportunities—will be entered into, and existing accounts could have their cash flow pattern altered. Market rates do change, as will the discount rates used in present-valuing the cash flows. Customers and/or the bank may, in their best interest, exercise inherent rights to alter the payment terms of their accounts, thereby changing their anticipated cash flow pattern. Eventually accounts are paid off, eliminating any further earnings opportunities.

What does EVE really reveal about future earnings?

While EVE does not immediately translate into earnings, it can be thought of as a reservoir from which future earnings flow. EVE is initially created when accounts are originated at positive interest spreads. The wider the spread or the longer the duration to receipt, the more the reservoir grows.

A portion of the reservoir flows into the income statement each accounting period, thereby depleting the reservoir over time. However, for a variety of reasons, not all of the reservoir will be realized, as portions may evaporate or, for other reasons, not make it “through the valve” to be recorded as earnings. Nevertheless, the larger the EVE reservoir, the greater the holding tank from which potential future earnings are derived. As the reservoir is converted into earnings, it must be replenished with new earnings opportunities.

Can EVE be managed?

EVE measures potential profit prospects and can be managed. Management can proactively manage EVE profit prospects in any of four distinct ways:

1. Increasing the size of the reservoir by leveraging into new positions at positive earnings spreads
2. Hastening the realization of future cash flows into earnings, thereby capturing EVE's latent profit potential earlier as a capital gain
3. Taking action to avoid possible dissipation of EVE caused by balance sheet mismatch conditions through hedging
4. Issuing new equity with the proceeds invested in additional earning assets

Management of the EVE future earnings reservoir and its associated risks can be addressed through understanding and managing the components that create EVE. To understand and manage EVE, management must start with a review of the attributes of its balance sheet accounts. Within each account contract is an embedded cash flow description that implies how the account will, over its life, impact earnings. Sometimes contractual terms, and their associated cash flows, are well defined and easily understood, while in others, terms are fluid, changing with the holders' rights to alter the account's anticipated cash flow as circumstances warrant.

Contractual terms most likely to be fluid are those relating to changes in coupon rates (adjustable or variable rates), or the right to make payments at times and in amounts different from those scheduled (prepayment options). Additionally, low quality assets may have deteriorated to a point where anticipating their cash flows becomes problematic. It is the relationship of the account's stated terms and associated anticipated cash flow pattern compared to similar positions prevailing in the market that creates the difference between carrying value and market-derived estimations of economic value. Recent sub-prime market disruptions are an example as to how market prices plummet with lack of liquidity.

Accounts with earnings rates below prevailing market rates are "valued" less than their carrying value. Accounts with coupon or yield rates above prevailing market rates have economic values exceeding their carrying value. For assets with economic value that exceeds their carrying value, earnings potential is elevated. These assets contribute an earnings spread *greater* than those available on similar new business opportunities. Likewise, assets with economic value less than their carrying value provide an earnings level *less* than what would be available if the assets were acquired at today's prevailing rates. Therefore, these underwater assets are a drag on earnings.

The interpretation of the economic value of liabilities is similar to assets, although it must be remembered that the bank's liabilities are the fund providers' assets. A decline in the economic value of liabilities, relative to their carrying value, means that earnings are elevated—a result of rising funding at rates below prevailing funding alternatives. This translates into below-market-rate deposits being included in EVE at a discount, reflecting their favorable pricing.

While interest cash flows affect margin, future principal cash flows can also affect earnings. The discounted value of expected principal cash flows often differs from their carrying value recorded in the balance sheet, hereby indicating immediate earnings enhancement and the potential for recording either a capital gain or loss. EVE's gain or loss relative to book equity is recorded in the income statement as realized.

Any difference between the principal's economic and carrying value diminishes as time passes because a small portion of the differential flows into income each accounting period. With the exception of defaulted assets that are not written down to their realizable value, the economic value of the account's principal cash flow converges over time with its carrying value, eventually equaling the outstanding principal balance at maturity.

Can EVE be used to alter future earnings?

The normal flow of EVE's potential earnings into the income statement can sometimes be accelerated through management action. If management chooses to alter the normal flow of EVE into earnings, accounts with economic value gains/losses can be sold or otherwise liquidated prior to maturity. This action has the impact of capturing the economic value of the account in the income statement ahead of its anticipated payment, thereby eliminating any future profit contributing from the account. This allows management the ability to transfer EVE gains (or losses) immediately into the income statement.

Marketable securities or high-yielding loan portfolios with market values that exceed their carrying values are prime examples of contracts that could be sold, thereby capturing their economic gain. On the liability side, callable, high-cost funding could be retired ahead of schedule, thereby reducing future interest expenses. All these actions result in accelerating the earnings affect of the anticipated cash flows into earnings prior to the account's actual payment.

Any decision to alter the normal flow of EVE into earnings should be predicated on management's intentions, including:

1. Its desire to increase short-term earnings, possibly to the detriment of longer-term earnings

2. Its belief that favorable market conditions will become unfavorable, causing the dissipation of EVE
3. Its desire to cut loss positions to eliminate further earnings deterioration
4. Its desire to reduce overall balance sheet risk

How can EVE be managed if portfolios are not marketable?

Many community bank accounts, especially liabilities, are often not in a form that can be readily liquidated prior to maturity. Additionally, depositors are not willing to accept a discounted amount for the premature return of their below-market-rate deposits. This precludes management from taking action to capture any excess economic value over carrying value during a specific accounting period. However, while management may not be able to liquidate entire portfolios for a variety of reasons, they may be able to protect the account's contribution to the EVE reservoir from adverse market conditions. Through hedging, management can insulate the effects of market forces depleting EVE prematurely.

Minimizing the risk that EVE will dissipate prior to being recognized in the income statement requires determining where EVE's sensitivity resides. Once this assessment is made, action can be taken to insulate value-sensitive components from the effects of future changes in market conditions.

What causes EVE sensitivity?

Risk requires rewards. Any increase in perceived risk causes the market to demand a risk premium, while a reduction in perceived risk reduces the premium. Because risk can be decomposed into distinct elements, discount rates can be disaggregated into their individual risk/reward premiums. When economic value exceeds carrying value, it is because market conditions have changed, causing the differential between the account's coupon and yield to widen relative to prevailing risk premiums. In determining value, this widening differential translates into lower discount rates used to determine the economic value of the account's anticipated remaining cash flow.

Various reasons explain a widening differential between EVE and book equity. Spreads could have widened due to a drop in the general level of market interest rates relative to account rates. Asset credit quality could have improved, reducing the credit risk premium, or alternatively, premiums required for similar credit quality could have shrunk. The position's marketability could have improved, thus reducing the premium demanded in the market relative to those required on illiquid positions. Prepayment options could have moved further away from the possibility of being exercised, or the level of rate volatility could have declined, decreasing the premium required for assuming option risk.

The process of determining EVE's sensitivity requires disaggregating the rates used to discount the balance sheet's anticipated cash flows into its respective premiums and the assessment of the premium's direction and volatility. Once a balance sheet's individual risks are quantified, each of the risk's corresponding premiums can be used to determine how much of EVE's reservoir is exposed to each risk element. The sum of the individual risk element premiums should equal the cumulative discount rate. Assuming proper valuation, the discount rates employed contain the prevailing premiums required for assuming the risks associated with held positions.

Can risk to EVE sensitivity be hedged?

Constantly changing market premiums for assuming risk creates EVE volatility. Volatility of each of the underlying risk premiums causes the economic value of each balance sheet account to change. If directional movement or volatility of one of the underlying risk elements is determined to be potentially adverse, management can decide to hedge that risk element.

A properly constructed symmetric hedge would inversely replicate the value sensitivity of the underlying risk element. This type of hedge insulates EVE from dissipating due to changes in market-required premium for the underlying risk element, while EVE flows into the income statement.

An example of a *symmetrical* hedge is callable funding financing callable mortgages. The Seattle (Federal Home Loan) Bank's Symmetrical Prepayment Advance (SPA) is callable funding—a rarity as compared to ordinary deposits. The SPA provides such an ability to offset asset value losses through the ability to receive a gain by prepaying the advance.

Alternatively, management could buy into an *asymmetric* hedge that would protect EVE from adverse market conditions, while permitting improving market conditions to continue increasing EVE. However, no type of hedge will completely insulate EVE from changing market conditions.

Risks are dynamic and often interrelated. The movement in the market premium for one risk element can influence the profile and premium of other risk elements. Changes in one risk premium may partially offset changes in the premiums of other risks. For example, during periods of high levels of default, credit spreads widen on assets, while funding rates also tend to widen. Therefore, hedging one underlying risk element does not completely eliminate EVE volatility.

The diversification of the underlying risks requires management to monitor the dynamic correlation between the underlying premium sensitivity of the identified risk elements. Because of the interrelationship of risk elements, simulation of dynamic balance sheet cash flows is required to determine and hedge overall

EVE sensitivity. Future articles in this series will cover creating EVE opportunities in core deposits and the EVE rate shock misconceptions.

Summary

EVE is the present value of the balance sheet's future cash flows. It measures the aggregate earnings potential of today's anticipated cash flows, given the prevailing rate environment. Discounting the anticipated interest cash flows becomes the capitalized value of the future net interest income flow. As interest cash flows are made, they are recorded in the income statement. Discounting anticipated principal cash flows identifies potential capital gain or loss opportunities.

Through proactive management, EVE's profit potential may be able to realize capital gains or losses in income prior to the normal course of payment of the cash flows. Proper hedging can alter potential dissipation of EVE from adverse market conditions prior to being realized in the income statement.

¹ *Besides EVE, market capitalization models would include factors for franchise value and subtract factors for the value of future net operating expenses when modeling a bank's market capitalization.*

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