

Case 22-2c

Fair Value Hierarchy

Nice Color Bank (NCB), a publicly traded commercial bank located in Los Angeles, has a December 31 year-end. NCB invests in a variety of securities to enhance returns, and manages its investment portfolio so as to earn returns greater than interest paid on bank deposits and other liabilities. As of December 31, 20X1, NCB's investments primarily consist of (1) collateralized debt obligation (CDO) securities, (2) mortgage-backed securities (MBSs), (3) auction rate securities (ARSs), (4) equity securities of nonpublic companies, (5) "plain vanilla" interest rate swaps that NCB uses to hedge its exposure to variable interest rates on its corporate debt, and (6) a fixed-for-float fuel swap held for investment purposes. All cash payments made under these instruments are in U.S. dollars.

NCB accounts for its equity investments at fair value, with changes in fair value reflected in earnings and debt securities as either trading securities or available-for-sale securities (with changes in fair value recorded through net income or other comprehensive income (OCI), respectively). NCB has not elected the ASC 321 practical expedient for the investment in the nonpublic company. The company uses the interest rate swap in a cash flow hedge (and has adopted ASU 2017-12¹). The cash flow hedge is highly effective at achieving offsetting changes in cash flows attributable to the hedged risk. Thus, NCB records in OCI the entire change in the fair value of the designated hedging instrument that is included in the assessment of hedge effectiveness.

Facts related to specific securities and derivatives owned by NCB are described below.

Instrument 1 — Collateralized Debt Obligation

On June 1, 20X1, NCB invested in an S&P AA-rated tranche of a CDO. The underlying collateral for the CDO is a pool of U.S. Treasury and corporate bonds. Before September 30, 20X1, NCB was able to measure the fair value of the CDO by using a market-based valuation technique that relies on inputs such as quoted prices in active markets for similar CDO securities and requires only insignificant adjustments for differences between the CDO security held by NCB and similar CDO securities.

However, since September 30, 20X1, the market for CDO securities has experienced a significant decrease in the volume and level of activity. This was made apparent by the following two factors:

- Significant widening of the bid-ask spreads in the brokered markets in which the CDO securities trade; this widening continued throughout Q4 20X1.
- Progressively significant decrease in the volume of trades compared with historical levels in Q4. No recent transactions have taken place.

After evaluating the significance and relevance of the factors above, NCB determined that (1) there has been a significant decrease in the volume and level of activity, (2) the

¹ FASB Accounting Standards Update No. 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*.

CDO's market was not active, and (3) significant adjustments to observed market transactions of similar CDO securities are required to measure fair value as of the measurement date (December 31, 20X1) given the lack of recent and relevant transactions. NCB determined that any adjustments made to the observed market transactions would be based on management's assumptions regarding market values.

In addition, NCB determined that an income approach valuation technique (present value technique) that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs will be more representative of fair value than would the market approach valuation technique used on prior measurement dates (June 30 and September 30, 20X1). Specifically, NCB uses the discount rate adjustment technique discussed below to measure fair value.

On the basis of the following factors, NCB determined that the appropriate discount rate for the contractual cash flows of the CDO security is 21 percent:

- The implied rate of return on September 30, 20X1 (the last date on which NCB determined the market to be active for the CDO security), was 12 percent. Since September 30, NCB estimates that credit spreads have widened by approximately 300 basis points and liquidity risk premiums have increased during that period by approximately 500 basis points. Other risks (e.g., interest rate risk) have not changed. NCB has estimated that an indication of an appropriate rate of return for the CDO security is 19 percent. In making that determination, NCB considered all available market information (e.g., quoted prices that are not current for the same or similar CDO securities, analyst or rating agency reports, current level of interest rates, and information on performance of underlying collateral) that could be obtained without undue cost and effort.
- Two nonbinding indicative quotes for the CDO security from brokers implied rates of return of 23 percent and 25 percent. The indicative quotes are based on the brokers' proprietary models that use hypothetical assumptions instead of actual transactions.

NCB concluded that 21 percent is the point within the range of relevant inputs that is most representative of fair value given that there were multiple indications of the appropriate rate of return that market participants would consider relevant in estimating fair value. Accordingly, NCB determined that the risk-adjusted discount rate appropriately reflects the entity's estimate of the assumptions that market participants would use to estimate the selling price of the asset in an orderly transaction as of the measurement date under current market conditions. NCB also determined that the following inputs were significant to the measurement in its entirety: (1) implied rate of return, (2) credit adjustment, and (3) liquidity risk adjustment.

Instrument 2 — Mortgage-Backed Security

On September 1, 20X1, NCB invested in an S&P AA-rated tranche of a privately issued pass-through MBS (i.e., nonagency) with a stated maturity of 30 years. The underlying collateral for the MBS is subprime mortgages on residential properties.

On September 30, 20X1, NCB measured the fair value of the MBS using a market approach valuation technique that was based on inputs that did not require a significant adjustment. These inputs included quoted prices in active markets for similar MBSs with insignificant adjustments for differences between the MBS held by NCB and similar securities.

In Q4 20X1, the market for the MBS became increasingly volatile, with periods of declining activity. The volatility was evidenced through fluctuating bid-ask spreads. However, NCB concluded that (1) there were observable transactions for the MBS or similar MBSs and (2) the prices for those transactions were current and therefore did not reduce their relevance to the fair value measurement. On the basis of the evidence, NCB determined that the observed transactions were orderly and that the adjustments to the observed transactions required to measure fair value for its MBS are insignificant on the measurement date.

As an alternative, NCB considered using a theoretical income approach pricing model. Such a pricing model takes into account the relationship between interest rates and loan prepayment speeds. Mortgage prepayments are usually made because either a home is sold or the homeowner is refinancing to a new mortgage, presumably with a lower interest rate. Since these two sources of risk (interest rate and prepayment) are linked, this relationship must be factored into the model. NCB recognized that there would be substantial complexity in using an appropriate mathematical model for valuing its MBS.

NCB measured the fair value for its MBS by using only the observed market transactions referenced above because the alternative pricing model was inherently complex and would require significant assumptions.

Instrument 3 — Auction Rate Security

During 20X0, NCB acquired ARSs, whose underlying assets are student loans that have a term of 15 years, with the interest rate reset on the basis of “Dutch auctions”² that generally occur every 28 days. The ARSs were initially marketed to NCB as cash equivalents because the rate-setting mechanism of ARSs is designed primarily to provide liquidity and economic characteristics similar to those of short-term investments. Although ARSs are designed to exhibit behavior similar to that of short-term investments, when demand for ARSs decreases and there is insufficient interest in the Dutch auction, a failed auction occurs, and investors are unable to liquidate their positions through the auction process.

During Q4 20X1, demand for ARSs (with student loans as underlying assets) significantly decreased as investor confidence in these investment products and the performance of the underlying loans diminished. The lack of demand resulted in numerous auction failures and a limited secondary market for these securities. As a result of the failed auctions in Q4, NCB received the maximum interest rate on its ARSs. (The maximum interest rate is predefined in the ARS agreement and is higher than the rate

² The interest rate on an ARS is determined through a “Dutch” auction process. Refer to Section 9, “Auction Rate Security,” of the case appendix, “Pricing and Valuation of Securities: Introduction to Common Types of Securities,” for additional details on the Dutch auction process.

NCB would have otherwise received if sufficient demand for the ARSs existed during the auctions.) NCB expects that the failed auctions may persist and the company's investment in ARSs will continue to pay the maximum interest rate. The auctions continue to be conducted as scheduled.

In prior periods, NCB used a market approach that was based on observable market transactions to fair value its ARS holdings, which had resulted in a fair value approximating the securities' par value. However, because of the continued deterioration in liquidity for the segment of the ARS market backed by student loans, NCB did not observe any market transactions during Q4 20X1. As a result, as of December 31, 20X1, NCB used a discounted cash flow model (i.e., an income approach) to value its ARS holdings. NCB believes that the discounted cash flow model is a widely accepted method for measuring the fair value of ARS investments in the current environment. Certain inputs to the valuation model that are significant to the overall valuation are not market based, including estimates of future coupon rates if auction failures continue, prepayment speed assumptions, credit risk assumptions (including performance of underlying collateral), and illiquidity discounts.

Instrument 4 — Equity Investment in a Nonpublic Company

In 20X1, NCB invested in the common stock of Very Fun Dot (VFD), a privately held technology company that develops learning modules for preschoolers. Quoted prices are not available for VFD's stock.³ Most of VFD's competitors are either privately held or subsidiaries of larger publicly traded technology companies. VFD is similar to two other organizations whose shares are thinly traded in an observable market.

In determining an appropriate approach for measuring the fair value of its equity investment in VFD, NCB considered the following factors to establish whether a single or multiple valuation techniques should be adopted:

- *Availability and reliability of data* — NCB had sufficient data to support both the income and market approaches.
- *Comparative levels of the alternative approaches in the fair value hierarchy* — When using a market approach to measure the fair value of its investment in VFD, NCB would need to make significant entity-specific adjustments to observable market transactions (i.e., risk adjustments for illiquidity, uncertainty of VFD's future financial performance in relation to its comparables, and other

³ Note that the security does not have a readily determinable fair value.

U.S. GAAP requires entities to measure all investments in equity securities, including other ownership interests such as partnerships, unincorporated joint ventures, and limited liability companies, at fair value through net income. This requirement does not apply to investments that qualify for the equity method of accounting or to those that result in consolidation of the investee or for which the entity has elected the practicability exception to fair value measurement. An entity is permitted to elect a practicability exception to fair value measurement, under which the investment will be measured at cost, less impairment, plus or minus observable price changes (in orderly transactions) of an identical or similar investment of the same issuer. As noted in the background to the case, the practical expedient was not elected for this investment.

adjustments to reflect business model differences between VFD and its comparables). Similarly, when measuring fair value using an income approach (on the basis of discounted cash flows), NCB would be required to use significant entity-specific assumptions in forecasting VFD's future cash flows.

- *Views of market participants on the relevance of valuation techniques* — Through discussions with valuation specialists, NCB believes that market participants use multiple techniques (income and market approaches) to determine bid prices for similar investments. NCB also used both approaches in 20X0 when pricing its investment in VFD.

On the basis of this information, in 20X0 NCB determined that it would use both market and income approaches (weighted equally) to measure the fair value of its investment in VFD. NCB has applied a consistent approach during 20X1.

Instrument 5 — Interest Rate Swap

In January 20X0, NCB executed a plain-vanilla over-the-counter (OTC) fixed-for-float interest rate (IR) swap as an economic hedge of its cash flow variability to changes in the London Interbank Offered Rate (LIBOR) on its seven-year variable-rate term note. The terms of the IR swap require NCB to pay a fixed rate and receive a floating rate (three-month LIBOR). The IR swap net cash settles on a quarterly basis. If the fixed rate exceeds the floating rate, NCB makes a net payment to the counterparty, and if the floating rate exceeds the fixed rate, NCB receives a net payment from the counterparty. As of the measurement date (December 31, 20X1), the remaining life of the IR swap was six years.

NCB uses an income approach (i.e., a discounted cash flow model), which is widely accepted for valuing IR swaps. Key inputs into the valuation model are the LIBOR yield curve and an adjustment, if any, for nonperformance risk, which is the risk that a party to the contract will not satisfy its obligation (also known as a credit valuation adjustment (CVA)). NCB obtained a quoted LIBOR yield curve for the entire term of the IR swap. In addition, NCB concluded that no CVA was necessary on the basis of (1) the creditworthiness of both NCB and the IR swap counterparty and (2) credit enhancements related to the IR swap by virtue of the International Swap Dealers Association agreement between NCB and the IR swap counterparty.

An active OTC market exists for IR swaps having the same underlying (three-month LIBOR) and tenor (seven years) as NCB's IR swap.

Instrument 6 — Fuel Swap — Gasoline

In January 20X1, NCB entered into a four-year fixed-for-float OTC fuel swap. The terms of the fuel swap require NCB to pay a fixed price and receive a floating price from the counterparty according to the monthly average of a U.S. unleaded gasoline price published on the last day of the month by an independent source. The fuel swap settles annually on the last business day of each calendar year. If the fixed price exceeds the floating price (i.e., the 12-month average of the immediately preceding 12 months' (January through December) published unleaded gasoline prices), NCB makes a net

payment to the counterparty; if the floating price exceeds the fixed price, NCB receives a net payment from the counterparty. As of the measurement date (December 31, 20X1), the remaining life of the fuel swap was three years.

NCB uses an income approach (i.e., a discounted cash flow model), which is widely accepted for valuing fuel swaps. Key inputs into the valuation model are the forward U.S. unleaded gasoline price curve and a CVA, if any.

An inactive OTC market exists for fuel swaps having the same underlying (U.S. unleaded gasoline) and tenor (three years) as NCB's fuel swap. NCB was able to obtain an independently quoted U.S. unleaded gasoline forward price curve for one of the three years remaining under the swap. For the last two years of the swap, NCB used a forward curve obtained from a third-party pricing service. The third-party pricing service constructs the forward curve by using a proprietary model that incorporates fundamental economic factors such as physical constraints (e.g., capacity of current and future refining plants) and projected global supply and demand. As of the measurement date, the third party has not observed U.S. unleaded gasoline swap transactions with tenors beyond one year. In addition, NCB has calculated a CVA by using unobservable inputs (and the counterparty was recently downgraded by S&P).

Required:

Determine the appropriate classification in the fair value hierarchy for each of the instruments referenced in the case as of December 31, 20X1. Provide support from appropriate authoritative guidance. Consider the following:

- NCB's determination of whether the respective markets for the instruments were active or inactive and whether there was a significant decrease in the volume and level of activity for the instruments.
- The valuation techniques (market approach, income approach, or both) used by NCB. Note that the techniques and inputs used by NCB are assumed to be appropriate in the circumstances. The information is provided to form a conclusion about where a measurement should be classified within the fair value hierarchy.
- The classification in the fair value hierarchy for each input into the fair value measurement and how those classifications affect classification in the fair value hierarchy of the entire instrument.