



Shannon Pratt's **BUSINESS VALUATION**[®]

UPDATE

A Business Valuation Resources[®] publication

Timely news, analysis, and resources for defensible valuations

Excerpt from Vol. 11, No. 3, March 2005

Guest Article:

Derivatives and their impact on company value

By Susan M. Mangiero, Ph.D., AVA, CFA, FRM*

part 1 of 2

Many companies, including private companies, are using derivatives of various kinds these days. The most common of these are stock options, but there are many more derivatives in common use. Much has been written about valuation of derivatives themselves, but little attention has been paid to analyzing the impact of derivatives on the overall company value. The existence of derivatives can either increase or decrease the company's overall risk profile. This article addresses many issues to consider when assessing the impact of derivatives on total company value.—SP



Susan Mangiero

The purpose of this article is to introduce the topic of derivatives to appraisers who may be unaware of their importance when rendering an opinion about a company's worth. It is a broad topic, and interested readers are encouraged to learn more by taking advantage of the countless books and articles written about derivatives and the related process of risk management.

Valuing a derivative instrument is an altogether different exercise than valuing the equity of a company that uses derivative instruments.¹ For one thing, valuing a company requires assessing

impact of derivative instrument use, which in turn depends on a variety of factors, such as why and how a particular derivative instrument is used. Moreover, valuing a company encompasses a multitude of factors, such as industry growth, that are not considered when valuing an individual derivative position.

When a business uses derivatives to hedge, the goal is to reduce cash flow and earnings volatility. When derivatives are used for other reasons—return enhancement, transformation of cash flows, or synthesis of an other-

wise unavailable asset or liability class exposure—the impact on financial volatility is less clear. It may go up but not enough to offset the benefits of the derivatives-based strategy. Even hedge transactions merit scrutiny since there is no guarantee of significant risk minimization. (Complete risk elimination is more a theoretical construct and seldom attainable in practice.)² Regardless of the purpose and scope of derivatives use by a company, an appraiser cannot ignore the facts about derivatives, as shown in *Exhibit 1*.

Continued to next page...

EXHIBIT 1: FACTS ABOUT DERIVATIVES

- Many organizations use derivatives directly or indirectly.
- Public and private companies and financial institutions use derivatives.
- Small, mid-size, and large organizations use derivatives.
- U.S. and foreign derivative markets continue to grow in size and breadth.
- Derivative use directly impacts business operations.
- Derivative use affects financial performance and should be considered when assessing net cash flow projections provided by management.
- The expected economic impact of derivative use is not always accurately reflected in financial statements, if at all.
- Valuing a derivative instrument is not the same exercise as valuing the equity of a company that uses derivatives.*

* Certain risks exist when derivatives are used that are otherwise not a concern. These include the risk of counter party default, change in prevailing law, settlement or liquidity risk, and/or operational mishaps.

*Dr. Susan M. Mangiero is a managing member of BVA, LLC, a valuation and risk analysis company serving attorneys and their institutional investor and business owner clients. Her new book entitled *Risk Management for Pensions, Endowments, and Foundations* looks at the fiduciary and corporate governance aspects of financial risk measurement and control. (See page 12 for a review of this book.) Dr. Mangiero can be reached at 203-261-5519 or smm@bvalc.com.

¹ Refer to "Derivatives Valuation: One Size Does Not Fit All," reprinted in the December 2004 issue of *BVUpdate*, for an introductory discussion of the valuation of derivative instruments.

² Generalizing the impact of derivative use is difficult. For one thing, a company's hedge may be ineffective and thereby reduce the benefits of use. See "Correlation and Hedge Effectiveness" by Susan M. and George A. Mangiero, *Risk Review*, May 2001.

Publisher & Editor-in-Chief: Shannon Pratt
Managing Editor: Alina Nicolita
Associate Editor: Noah Gordon
Legal and Court Case Editor: Travis Bryan
Proofreader: Melanie Walker
Production: Laurie Morrisey
Staff Writers: Paul Heidt
 Angelina Mckedy
 Adam Manson
Director of Marketing: Kyla Westfall
Customer Service: Doug Berger
 Pam Pittock

Editorial Advisory Board

RONALD D. AUCUTT, Esq.
McGuireWoods LLP—McLean, Va.
JOHN A. BOGDANSKI, JD
Lewis & Clark Law School—Portland, Ore.
HON. WILLIAM A. CHRISTIAN
N.C. 11th Judicial District Court—Sanford, N.C.
S. STACY EASTLAND, Esq.
The Goldman Sachs Group, Inc.—Houston, Texas
BARNES H. ELLIS, Esq.
Stoel Rives LLP—Portland, Ore.
OWEN G. FIORE, JD
Wealth Planning & Valuation Consultant—San Francisco, Calif.
JAY E. FISHMAN, ASA, CBA
Financial Research Associates—Philadelphia, Pa.
LARRY WELDON GIBBS, JD
Gibbs Professional Corporation—San Antonio, Texas
LYNNE Z. GOLD-BIKIN, Esq.
Wolf, Block, Schorr & Solis-Cohen, LLP—Norristown, Pa.
LANCE S. HALL
FMV Opinions, Inc.—Irvine, Calif.
JAMES R. HITCHNER, CPA/ABV, ASA
The Financial Valuation Group—Atlanta, Ga.
JARED KAPLAN, Esq.
McDermott, Will & Emery—Chicago, Ill.
MAURICE KUTNER, Esq.
Maurice Jay Kutner & Associates, P.A.—Miami, Fla.
GILBERT E. MATTHEWS, CFA
Sutter Securities Incorporated—San Francisco, Calif.
JOHN W. PORTER
Baker & Botts, LLP—Houston, Texas
JAMES S. RIGBY, ASA, CPA/ABV
Financial Valuation Group—Los Angeles, Calif.
ARTHUR D. SEDERBAUM, Esq.
Patterson, Belknap, Webb & Tyler—New York, N.Y.
DONALD S. SHANNON, Ph.D., CPA
School of Accountancy, DePaul University—Chicago, Ill.
BRUCE SILVERSTEIN, Esq.
Young, Conaway, Stargatt & Taylor, LLP—Wilmington, Del.
GEORGE S. STERN, Esq.
Stern & Edlin—Atlanta, Ga.

Derivatives and their impact on company value

...continued from front page

Derivatives are everywhere

According to the International Swaps and Derivatives Association, Inc. (ISDA), interest rate and currency derivative outstanding amounts exceeded \$164 trillion as of the first half of 2004.³ This is nearly *sixteen* times the reported U.S. Gross Domestic Product of \$10.4 trillion at year end 2003.⁴ The relative ease of deal execution is one reason for their popularity. Other factors include flexible terms, low transaction costs, and standardized documentation.

Derivatives are a financial mainstay for companies and banks of all sizes, with a majority of organizations indicating they use derivatives to hedge or transform cash flows. According to the Association for Financial Professionals, 63 percent of 1999 survey respondents indicated use of derivatives, with 78 percent use cited by large businesses. More recently, the ISDA found that more than 90 percent of businesses around the world, representing many industries, use derivatives to manage risk.⁵

A derivative trade is frequently linked to a related transaction rather than being done on a stand-alone basis. Some lenders require borrowers to use derivatives in conjunction with working capital financing or acquisition-related bridge loans. (The Small Business Administration (SBA) has allowed banks to combine an interest rate swap with variable rate loans to reduce the risk of default in the event of escalating interest rates.)⁶ Some organizations raise long-term capital in the public or private markets and then use derivatives to alter the net liability structure. The varia-

tions are endless.

Derivative product types

Derivatives are financial instruments that take their value from an underlying asset such as a stock or bond. Most people agree that derivatives can be classified as belonging to one of three major product areas—futures, options, or swaps. They are similar to each other in that each type of instrument represents an agreement made today for later action.⁷ For example, a 90-day European foreign exchange call option entitles the holder to buy a specified currency, three months from trade date, but at the initial and mutually agreed-upon price.⁸

Despite this similarity, derivative instruments differ widely with respect to things such as settlement procedures, credit risk, legal treatment, tax consequences, liquidity, and fees. A futures contract is traded on an exchange where the clearinghouse stands in the middle between a buyer and seller. In contrast, interest rate and currency swaps are mainly traded in the over-the-counter (OTC) market. They offer greater flexibility to end-users but typically cost more than a standardized exchange-traded product.⁹ In the case of options, some products are bought and sold on an exchange. Others are negotiated in the OTC market.

No perfect derivative solution exists for any particular situation. Instead, what and how derivatives are used depends on items such as a company's risk tolerance level, internal policies, industry regulation, liquidity, staff size, and prod-

Continued to next page...

Shannon Pratt's Business Valuation Update[®] (ISSN 1088-4882) is published monthly by Business Valuation Resources, L.L.C., for \$249 a year. Please call or write for multiple-subscription rates.

Periodicals postage paid at Portland, Oregon. POSTMASTER: Send address changes to Business Valuation Resources, L.L.C., 7412 S.W. Beaverton-Hillsdale Hwy., Suite 106, Portland, OR 97225, phone (503) 291-7963 or (888) 287-8258, fax (503) 291-7955, e-mail: CustomerService@BVResources.com. Web page: www.BVResources.com. Editorial office and subscription requests should go to the above address.

Please note that by submitting material to Shannon Pratt's Business Valuation Update[®], you are granting permission for the newsletter to republish your material in electronic form.

Although the information in this newsletter has been obtained from sources that Business Valuation Resources believes to be reliable, we do not guarantee its accuracy, and such information may be condensed or incomplete. This newsletter is intended for information purposes only, and it is not intended as financial, investment, legal, or consulting advice.

Copyright 2005, Business Valuation Resources, L.L.C. (BVR). All rights reserved. No part of this newsletter may be reproduced without express written consent from BVR.

³ See www.isda.org.

⁴ See www.economist.com, "Country Briefing"—United States, November 12, 2003.

⁵ See www.afponline.org and www.isda.org for more information.

⁶ See www.sba.gov/banking/notices/pol5000-708-1-1-2002.doc/.

⁷ Swaps and futures require performance by both the buyer and seller. In contrast, options are described as contingent claims since only the seller is obliged to take action. A buyer pays the fee and can choose to exercise or let the option expire.

⁸ A European option can only be exercised at a specified point in time. In contrast, an American option can be exercised at any time during a pre-specified period of time, though early exercise is not always optimal.

⁹ The Chicago Board of Exchange introduced futures on interest rate swaps several years ago.

Derivatives and their impact on company value

...continued

uct familiarity. For example, a company with limited available cash may forego purchasing an option that requires a large upfront payment, and use a swap instead. A business with a small staff might favor an OTC forward in lieu of an exchange-traded futures contract that requires daily settlement. Far from exhaustive, *Exhibit 2* generalizes some of the differences for several types of derivatives.

For the end-user, choosing the right derivative instrument is not easy. It requires an understanding of the risk-return tradeoff that characterizes the derivative itself, as well as the likely legal, accounting, and financial impact on an organization's cash flow and reported earnings.

For the appraiser, the job is no less daunting and requires a breakdown by product type and purpose before rendering an opinion about their impact on

value. To illustrate, think about two banks, each serving the same clientele. Suppose one bank uses futures to hedge the market risk of its loan portfolio, whereas the second bank uses the same futures contracts but for speculative reasons. The risks and benefits of using futures will be completely dissimilar for each bank. Complicating things is the fact that regulation of derivatives varies by industry, country, and product type. This can affect capital reserves, financial statement format, staffing and system requirements, mark-to-market frequency, and earnings volatility.

Derivatives come in many flavors

There are myriad types of derivatives, representing asset categories such as commodity, credit, currency, equity, and fixed income. Moreover, derivatives are used in many different ways, as shown in *Exhibit 3*. Sometimes the rationale

for their use is straightforward, as in the case of an American exporter that enters into forward contracts to hedge against the possibility of a stronger U.S. dollar.¹⁰ In other situations, the use of derivatives goes undetected unless someone knows where to look.

Consider *embedded derivatives*. An integral part of a security or financing, an embedded derivative cannot be stripped out and sold as a stand-alone item. A convertible bond is an example of a fixed income instrument with an embedded derivative, namely the call option, which gives the buyer the right to buy either preferred or common stock at pre-specified terms. A callable bond is another type of fixed income security with an embedded derivative. A purchase or sales contract that allows for some type of monetary participa-

Continued to next page...

EXHIBIT 2: DERIVATIVES RISK OVERVIEW

Risk Type	Futures	Over-the-Counter Options	Swaps
Credit Risk	Typically lower because of clearinghouse and daily settlement	Typically higher because of direct contracting with counterparty	Typically higher because of direct contracting with counterparty
Economic Risk	Depends since standardized terms make it harder to hedge exact underlying exposure but easier to value derivative instrument	Depends since customized terms make it easier to hedge exact underlying exposure but harder to value derivative instrument	Depends since customized terms make it easier to hedge exact underlying exposure but harder to value derivative instrument
Legal Risk	Typically lower due to margin and settlement regulations	Typically higher due to evolving case law	Typically higher due to evolving case law
Liquidity Risk	Typically lower for most contracts because of standardized terms	Typically higher for exotic structures	Depends on structure and whether settlements are net or gross
Operational Risk	Depends on quality of staff and technology systems in place to track and make daily settlement-related cash flow transfers	Depends on quality of staff and technology systems in place to re-value options and determine optimal exercise	Depends on quality of staff and technology systems to track and make intervening settlement-related cash flow transfers

Note: This table is a generalization only.

¹⁰ A U.S. exporter that does not invoice in U.S. dollars faces the risk that expected foreign currency receipts will be worth less later on.

Derivatives and their impact on company value

...continued from previous page

tion in the event that currency or commodity prices change over time is yet another illustration of an embedded derivative structure.

Embedded derivatives are not the only source of “hidden use.” Consider the following situations. A company hires an outside money manager that employs futures to “equitize” excess corporate cash as a way to enhance returns. A family trust allocates monies to hedge funds that employ derivatives as part of their stated strategy. A large bank hires several money managers, each of which use different types of derivatives to invest pension assets.¹¹ The possibilities for both direct and indirect use of derivatives are endless, especially with financial innovators always on the move to combine traditional investment products with some type of bell or whistle.

Understanding a company’s risk management posture is just as important as evaluating individual trades. Does a company use derivatives to address portfolio risk or only for specific exposures? Does a company update the size of its positions frequently to reflect changes in market conditions? What triggers a rebalance? Has there been—or is there expected to be—an accounting expense or cash outlay associated with unwinding any of the derivative positions later on? Who values the derivative instruments and how often? What analytics does a company use to measure risk? Arguably, the import of these questions depends on firm size, frequency of use and deal complexity.

BVU

Editor’s note: Part 2 of this article will address the relationship between firm value and derivatives use and will provide a detailed example of derivatives use in practice.

EXHIBIT 3: EXAMPLES OF DERIVATIVE INSTRUMENT USE

- A U.S. manufacturing company buys parts from France and uses forward contracts to hedge the currency risk.
- The CEO of a food wholesaler that issues stock options to its executives is getting a divorce.
- A construction company obtains variable-rate financing to buy a competitor and is required to enter into a five-year interest rate swap.
- A family foundation buys convertible and mortgage-backed bonds that include embedded options.
- A trucking company uses energy futures to stabilize profit margins.
- A hospital issues commercial paper at the same that it enters into an interest rate swap to lower its fixed rate cost of funds.
- A technology company enters into revenue sharing contracts with vendors that are tied to fluctuations in currency movements.
- A telecommunications company uses real options to quantify the costs and benefits associated with the development of a new technology.
- A venture capitalist takes an equity stake in a start-up with an option to buy additional shares in the company prior to going public several years later.
- An insurance company packages fixed income derivatives with variable rate certificates of deposit to synthesize higher yielding assets for its institutional investors.

¹¹ The topic of derivative use by multiple money managers is complex and relates in part to how each manager reports performance information to the investor.