

Cadence Design Systems' Convertible Debt Offering¹

In early December 2006, the CFO of Cadence Design Systems (Ticker: *CDNS*) was finalizing the details of the private placement of two convertible debt issues of \$250 million each. One would mature in five years ('2011 Notes'), and the other in seven years ('2013 Notes'). They were expected to raise an aggregate of \$487 million after transaction fees. The Notes would be issued at coupon rates of 1.375% and 1.500%, respectively, and convertible into 47.28 shares of the company's common stock for every \$1000 in principal amount.

The convertible debt issues would be accompanied by an additional set of transactions, including repurchasing equity, repurchasing a portion of previously issued convertible debt, and transactions to hedge the ownership dilution effects resulting from the potential conversion.

Cadence Design Systems

Cadence is a leading provider of electronic design automation software. The company's software is used to design and develop complex integrated circuits (IC), IC packages, printed circuit boards, and electronic systems for personal and commercial applications. In fiscal year 2006 in December, Cadence was expected to produce revenues of \$1,484 million. Between FY2002 and FY2006, its revenues grew at a compounded annual growth rate (CAGR) of less than 4%, below the typical rates of growth for peer companies in the application software business. FY2006 Operating income was expected to be about 15% of revenues, and net income, 10%. (See *Exhibit 1* for Cadence's recent financials). Although these numbers compare well to the average of roughly 16% and 11%, respectively, for a peer group of application software firms, the prior few years had witnessed considerable fluctuations in the company's net income. (See *Exhibit 2* for summary financials of application software companies in end-2006). The company does not pay any dividends.

Barring a major economic slowdown affecting demand for chips, analysts forecasted healthy revenue growth in the next few years as Cadence rolled out new products and pursued market opportunities outside the US. Analysts were also of the view that the company could keep its costs growing at a slower rate than revenues in the foreseeable future.

Cadence's stock was trading for slightly less than \$18 in early December 2006. Its stock price performance during the previous five years trailed both its industry and leading indices: \$100 invested in Cadence's stock at end-2001 would be worth \$80 at end-2006, compared to \$135 in the S&P500, \$137 in the Nasdaq Composite, and \$103 invested in an index of S&P Information Technology Companies. Unlike other software firms, Cadence was not shy about the use of leverage: While the average debt-to-book equity for peers was less than 5%, Cadence's ratio would approach 43% after the two convertible issues were implemented.

Convertible Bonds

A convertible bond is a type of debt that promises coupon payments for a fixed period, and allows the debtholder to convert the principal (or face value) into a certain number of shares in the company. Thus, it is similar to owning a regular, coupon-paying bond *plus* a long-dated

¹ This case was developed by Professor Anant K. Sundaram at the Tuck School of Business at Dartmouth College, as a basis for class discussion, from publicly available sources of information. Comments from Professors Jonathan Lewellen and Karin Thorburn are gratefully acknowledged. Any remaining errors in the case are those of the casewriter. © May 2007.

‘call’ option on the company’s shares. (A call is an option to buy shares in the company at a fixed ‘exercise’ price on or before a future ‘maturity’ date). However, unlike regular call options whose exercise does not affect the number of shares outstanding, call options embedded in convertible debt are ‘warrants,’ whose exercise does lead to an increase in the number of shares. Thus, a convertible bond is simply a “straight bond” plus a warrant, and is valued as a combination of the two:²

$$\text{Value (Convertible)} = \text{Value (Regular Coupon-Paying Bond)} + \text{Value (Warrants)}$$

Convertibles are often issued by smaller, higher-growth firms with bond ratings lower than those of investment-grade bond issuers. Convertibles are usually unsecured (i.e., not collateralized) and are subordinated (i.e., lower in seniority of claims to the company’s assets in financial distress). Riskier, younger firms with high growth prospects might prefer to issue convertibles because interest rates are lower than rates for straight debt issues with equivalent credit ratings. The reason for the lower interest rates is that, debtholders, betting on being able to benefit from converting to the higher valued stock at maturity (thereby gaining more than just the principal at the end) are willing to settle for reduced payoffs in earlier periods.

If conversion does occur, it causes ownership dilution to the firm’s existing shareholders. But issuers argue that it occurs when the firm can most afford it. In order to limit the amount of ownership that is given away, convertible bond issuers sometimes include a “callability” feature that enables forced conversion. When the bond is “called,” the holders have a fixed amount of time to choose between converting the bond to equity at the conversion ratio, or turning in the bond and receiving the call price in cash. Companies also engage in other strategies to hedge or mitigate the dilution effect. An increasingly common strategy is to use a part of the proceeds to buy call options at the warrant’s exercise price, and simultaneously sell call options at a higher exercise price to limit the give-away on the upside.

A few common concepts associated with convertibles include conversion *ratio*, conversion *price*, conversion *premium*, and conversion *value*. The conversion ratio is the number of shares received for each bond. The Cadence Notes have a conversion ratio of 47.28. The conversion price is the exercise price for each warrant. This is the price at which the company is effectively issuing the new shares to the convertible debtholders if converted. It is the face value of the bond divided by the conversion ratio. The face value of Cadence’s bonds is \$1000 (typical for US corporate bonds), thus making its conversion price equal to $1000 \div 47.28 = \$21.15$. The conversion premium is the percent difference between the conversion price and the current stock price. Given its current stock price of \$17.67 (see *Exhibit 1*), Cadence’s conversion premium is $(21.15 - 17.67) \div (17.67)$, or approximately 20%. Finally, the conversion value is what the bonds would be worth if exercised right away. The conversion value puts a floor on the market price of the bond. In Cadence’s case, its conversion value would be $47.28 \times 17.67 = \$835.44$.

In the past few years, convertible bond issues have become popular among technology companies both as a means of raising cash and as a means to make capital structure changes.

² Each warrant is valued as a regular call option (using, for example, a model such as the Black-Scholes-Merton model) after adjusting for dilution effects. If N is the current number of shares outstanding, N_w the number of new shares issued when the warrants are exercised, and C the price of each call option, then the value of the warrant is: $W = C \times [N \div (N + N_w)]$. The *total* warrant (or option) value associated with the convertible is this number W multiplied by the ‘conversion ratio’ (see later in this section for the definition of the conversion ratio).

Many CFOs believed that they could reduce their cost of capital by taking advantage of the lower initial interest rates and the favorable market conditions.

Details of the December 2006 Convertible Issue

Cadence would issue the 2011 Notes and the 2013 Notes at interest rates of 1.375% and 1.500%, respectively, to be paid semi-annually. Each issue would be for \$250 million, resulting in gross proceeds of \$500 million.³ After transaction fees of \$13 million, the net proceeds would be \$487 million. Conversion was allowed only at maturity, and the Notes were not callable.⁴

The proceeds would be used to redeem a portion of previously issued convertible debt, to repurchase shares, and to hedge the dilutive effect of the convertible. Specifically, \$228.5 million would be used to purchase 45% of the 20-year zero coupon convertible notes issued in August 2003, thereby taking out 12 million in dilutive shares resulting from that issue. Additionally, 5.6 million shares would be repurchased in the open market at the prevailing market price, and this was expected to cost \$100 million.

Concurrently, the company would enter into a transaction with a counterparty to *buy* call options for 23.6 million shares at an exercise price of \$21.15, for a total cost of \$120 million. Half of these would expire in December 2011 and the other half, in December 2013, matching the maturities of the Notes. In a final piece of the transaction, Cadence entered into an agreement with a counterparty to *sell* 23.6 million warrants on its common stock for an exercise price of \$31.50, to mature in February 2012 (for the 2011 Notes) and in February 2014 (for the 2013 Notes), resulting in cash proceeds of \$39.4 million.

Market Conditions in December 2006

Although financial markets were receptive to companies dipping into debt markets, the market's reaction to recent prior debt issues – both convertible and non-convertible – by software firms was mixed (see *Exhibit 3* for casewriter estimates of market reactions to announcements of software debt issues). A June 2006 convertible debt issue (combined with share repurchase) from software firm Symantec had elicited a positive reaction, but Cadence's own prior convertible issue (combined with share repurchase) in August 2003 had resulted in a substantial negative market reaction. In December 2006, US treasury yield curves were relatively flat, and interest rates were low by historical standards (see *Exhibit 4*). Given that financial markets were demanding about 5.5% in market yield on straight debt issues by firms with Cadence's credit rating, the interest rates on the Notes – 1.375% and 1.500%, respectively – seemed too attractive to pass up. Some market commentators were noting that financial markets – especially, debt markets – were flush with liquidity, perhaps partially explaining the dramatically increased use of leveraged financing that one was witnessing in the form of private equity buyouts and hedge fund activity, as well increased share repurchases by US corporations.

³ Given the conversion ratio of 47.28 per \$1000 principal and the gross proceeds raised (\$500 million), the potential new number of shares issued upon conversion of the 2011 and 2013 Notes would be $47.28 \times 500,000$ or, 23.64 million new shares.

⁴ The Notes included two additional features. If Cadence's stock price reaches \$27.50 per share during certain specified period of time, holders could convert early. In addition, if a change of control occurs prior to maturity, Cadence will, in certain cases, increase the conversion price by up to \$8.27 per share for the holder that elects to convert. Management considered the likelihood of these two events to be fairly low.

Exhibit 1: Cadence Design Systems Financials

(All data in US\$ millions unless otherwise noted)

	<i>FY2004</i>	<i>FY2005</i>	<i>FY2006*</i>
Total Net Revenues	1,197	1,329	1,484
EBIT	104	119	225
Interest Expense	6	5	12
Other Income (Expense)	(12)	15	29
Income Before Taxes	86	129	242
Taxes	12	79	100
Net Income	74	50	142
Cash and Mkt Securities	449	861	934
Other Current Assets	621	415	378
Total Current Assets	1,070	1,276	1,312
Total Assets	2,990	3,401	3,443
Current Liabilities**	549	606	548
Long-term Debt	420	548	730
Other Long Term Liabilities	321	402	466
Equity	1,700	1,845	1,699
Total Liabilities + Equity	2,990	3,401	3,443
Capital Expenditure***	181	372	142
Depreciation	179	185	147
Stock Price (\$)	13.28	17.26	17.67****
No. Shares Outstanding (Million)	271	279	279
Market Cap	3,599	4,815	4,930
Market-to-Book Ratio	2.12	2.61	2.90
Price-to-Earnings Ratio	48.64	96.30	34.72
Beta			2.20

** Forecasted; ** Includes short term debt (incl. current portion of long term debt) of \$32 million in 2005, and \$28 million in 2006 (none in 2004); *** Includes net cash paid for acquisitions; **** Stock price on December 7, 2006.*

Exhibit 2: Summary Financials for Application Software Companies for End-2006
(Trailing twelve months; Revenue, Equity Market Cap, and Profit data in US\$ millions)

	<i>Adobe Systems</i>	<i>ANSYS Inc.</i>	<i>Autodesk Inc.</i>	<i>Dassault Systemes</i>	<i>Parametric Technologies</i>	<i>Synopsys Inc.</i>
Revenue	2,575	264	1,840	1,157	855	1,096
Equity Market Capitalization	22,852	1,944	10,231	6,288	2,200	3,880
Profit	546	14	379	180	66	45
P/E Ratio	41.9	137.1	27.0	35.0	33.2	86.6
Price-to-Sales	8.9	7.4	5.6	5.4	2.6	3.5
Profit Margin	21.2%	5.4%	20.6%	15.5%	7.8%	4.1%
EBIT Margin	22.1%	13.7%	25.4%	21.2%	9.2%	4.2%
EBITDA Margin	33.9%	23.8%	28.3%	24.6%	13.2%	14.8%
Return on Assets	9.3%	2.4%	20.7%	11.0%	8.2%	2.1%
Debt-to-Equity Mkt Capitalization	0.0%	6.3%	0.0%	4.4%	0.0%	0.0%
Employees	6,082	1,400	4,800	5,779	4,309	5,130
Beta	1.75	1.35	1.75	2.81	2.61	1.93

Data from various company filings and publicly available sources.

Exhibit 3: Debt Issues by Software Firms – Characteristics and Market Reactions
(Equity Market Value and Issue Size are in US\$ billions)

<i>Company</i>	<i>Date</i>	<i>Equity Market Value</i>	<i>Issue Size</i>	<i>Type</i>	<i>Purpose*</i>	<i>3-Day Excess Return**</i>
Amdocs	03/02/04	7.40	0.45	Convertible	Acq	+2.21%
Cadence						
Design	08/12/03	4.90	0.42	Convertible	Rep	-3.12%
Cisco	02/14/06	109.00	6.50	Bond	Acq	+0.10%
Computer						
Associates	12/02/04	11.50	1.00	Credit Line	Acq	+2.26%
Mentor						
Graphics	02/27/06	1.00	0.20	Convertible	Acq	-4.68%
Novell	06/28/04	2.00	0.60	Convertible	Acq	-5.17%
Oracle	01/10/06	78.00	5.70	Bond	Acq	-2.48%
Parametric						
Technologies	02/21/06	1.40	0.23	Credit Line	Gen	-1.97%
Symantec	06/12/06	15.90	2.00	Convertible	Rep	+1.64%
Synopsys	04/27/04	2.50	0.25	Credit Line	Acq	-3.01%

* 'Acq' = Acquisition, 'Rep' = Share repurchase, 'Gen' = General purpose use; ** The '3-day excess return' is calculated as the sum of raw returns during the three days surrounding the announcement date minus the sum of returns to the S&P500 during those three days.

Exhibit 4: Capital Markets Conditions in End-2006

Change in CDNS Stock Price*	
• 1-year Change	2.4%
• 2-year Change	33.1%
Change in Value of S&P500 Index*	
• 1-year Change	14.7%
• 2-year Change	22.1%

Calculated Volatility**	
• Using 1 month of Daily Data	19.9%
• Using 3 months of Daily Data	18.4%
Implied Volatility from At-the-Money Calls***	
• Using Calls Maturing in 1 Year	22.7%
• Using Calls Maturing in 2 Years	19.8%

Estimate of US Market Risk Premium	5.0%
CDNS Beta	2.20
CDNS Bond Rating	A-
Risk-premium over 5-year Treasuries for A- Corporates	100 bp

US Treasury Bond Yields*	
• 2-year	4.57%
• 3-year	4.52%
• 5-year	4.52%
• 10-year	4.63%

*As of December 7, 2006; ** Calculated based on daily data, with the resulting standard deviation multiplied by $\sqrt{250}$ to annualize; *** Using Black-Scholes-Merton model <http://www.numa.com/derivs/ref/calculat/option/calc-opa.htm>