

Best Practices and Trends in FAS123 (R) Assumption Development and Valuation



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Agenda

- Valuation Models
- Critical Assumptions
- Aggregated Data
- Valuation of Market Conditions

Equity Based Compensation Valuation Models

- **Three broad classes of models**
 - **Black-Scholes Model**
 - **Lattice Models**
 - **Simulation Models**

Which model is appropriate?

- **Black-Scholes**

- Plain vanilla options
- Absence of meaningful data for estimating a detailed behavioral model
- Little expectation of large variability in volatility, dividend policy, and interest rates over the life of the option
- Easy to execute and audit

Alternative: Multiple-Point Black-Scholes Improves Accuracy

- The fundamental inaccuracy of traditional Black-Scholes is the use of a single-point expected life
 - Collapses all expected exercise activity to one date
 - Paragraph A30 – “estimating the fair value of an option based on a single expected term that effectively averages the differing exercise and post-vesting employment termination behaviors of identifiable groups of employees will potentially misstate the value of the entire award”
- A multiple-point approach overcomes this problem
 - Utilizes actual historical exercise option data by individual
 - Can incorporate historical unexercised option data
- A distribution of exercise activity is created
 - Each option is valued as a European option at its actual or assumed exercise date
 - Creates weighting of results based on number of shares
 - Results are summed and averaged
- Fair value will **always** be lower than traditional (i.e. single-point) Black-Scholes, as the marginal value of the option gets smaller with time

Examples: Multiple-Point Black-Scholes

Company	Fixed Point Black-Scholes	Aon Multiple-Point Black-Scholes	Error Term	Expected Life	Contractual Term	Volatility	Dividend Yield	Standard Deviation	Kurtosis
Company A	13.28%	12.26%	-7.65%	4.29	10.00	16.11%	3.36%	2.3590	(0.3778)
Company B	36.33%	35.14%	-3.28%	5.84	10.00	35.04%	1.00%	2.3883	(0.9050)
Company C	44.89%	43.29%	-3.57%	4.89	10.00	46.46%	0.00%	2.2066	(1.0080)
Company D	20.30%	19.19%	-5.50%	4.77	10.00	25.11%	3.23%	2.4140	(1.0919)
Company E	55.82%	54.28%	-2.76%	5.05	10.00	61.06%	0.00%	1.8318	0.0940
Company F	31.02%	30.30%	-2.33%	6.19	10.00	22.98%	0.59%	1.8428	(0.5975)
Company G	42.39%	40.53%	-4.38%	4.07	10.00	47.19%	0.00%	2.1376	(0.6557)
Company H	59.50%	56.28%	-5.40%	5.26	10.00	64.71%	0.00%	2.4881	2.0704
Company I	55.99%	53.77%	-3.95%	4.74	10.00	63.45%	0.00%	2.0822	2.4096
Company J	37.19%	36.80%	-1.04%	3.61	5.00	43.00%	0.00%	1.0037	7.2713
Company K	49.44%	48.02%	-2.87%	3.91	7.00	60.78%	0.00%	1.5042	3.0813
Company L	62.34%	59.27%	-4.92%	5.11	10.00	70.77%	0.00%	2.1348	2.7479
Company M	56.73%	54.31%	-4.26%	5.81	10.00	56.44%	0.00%	1.9833	2.3470
Company N	48.78%	44.90%	-7.96%	3.81	10.00	59.95%	0.00%	2.4418	1.5674
Company O	29.83%	29.38%	-1.50%	4.93	6.00	29.38%	1.20%	0.8175	5.7420
Company P	54.23%	52.06%	-4.00%	5.30	10.00	57.30%	0.00%	2.2993	2.2516
Company Q	43.17%	42.31%	-1.99%	5.69	10.00	38.55%	0.00%	1.9894	2.6006
Company R	67.55%	64.43%	-4.61%	5.17	10.00	79.74%	0.00%	2.1908	2.6212
Company S	17.02%	16.37%	-3.87%	4.23	10.00	21.34%	3.20%	1.8860	2.5333
Company T	28.65%	27.88%	-2.67%	5.31	10.00	28.56%	1.65%	1.9172	2.3716
Average	42.72%	41.04%	-3.93%	4.90	9.40	46.40%	0.71%	1.9959	1.7537

Results: Multiple-Point Black-Scholes

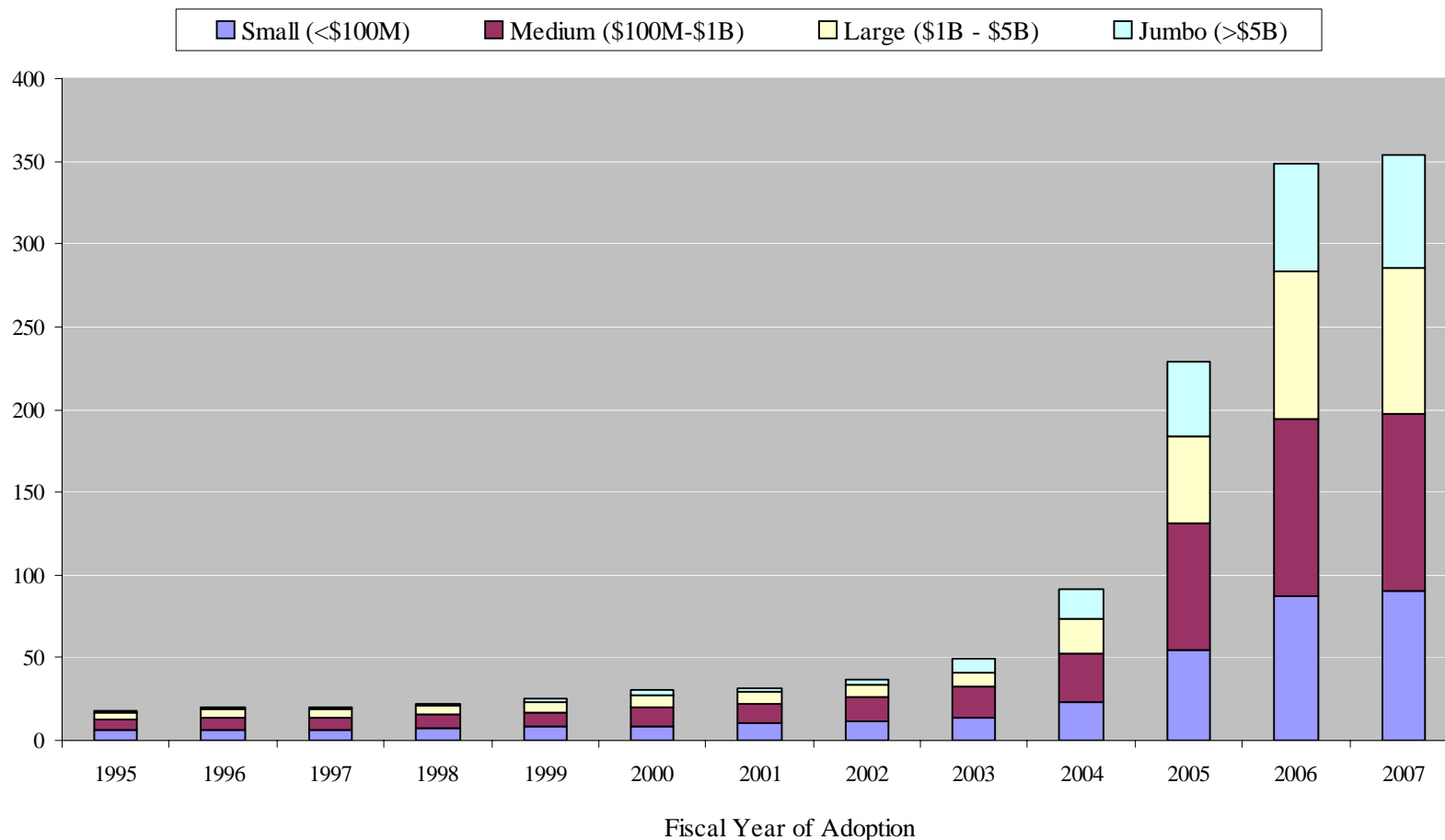
- Of the 20 companies observed, the fixed point Black-Scholes had an approximate 4% error term
- Aon has observed that a fixed point Black-Scholes model creates the greatest error for companies that have the following characteristics:
 - High Dividend Yields
 - Short Historical Average Lives
 - Large Standard Deviations of Exercise Behavior
 - Small or Negative Kurtosis

Which model is appropriate?

- **Lattice**

- **Allows more detailed specification of early exercise and departure behavior**
- **Allows explicit consideration of changes in contractual term and vesting requirements**
- **Allows specification of term structure of expected volatility, interest rates, and dividends**

FAS 123(R) Valuation: Binomial Adoption



Which model is appropriate?

- **Monte Carlo Simulation**

- **Flexible framework for modeling exotic features**
- **Allows for path dependent stock price conditions**
- **Allows for relative stock price conditions**
- **Has all the advantages of a lattice model**

Option Pricing Assumptions

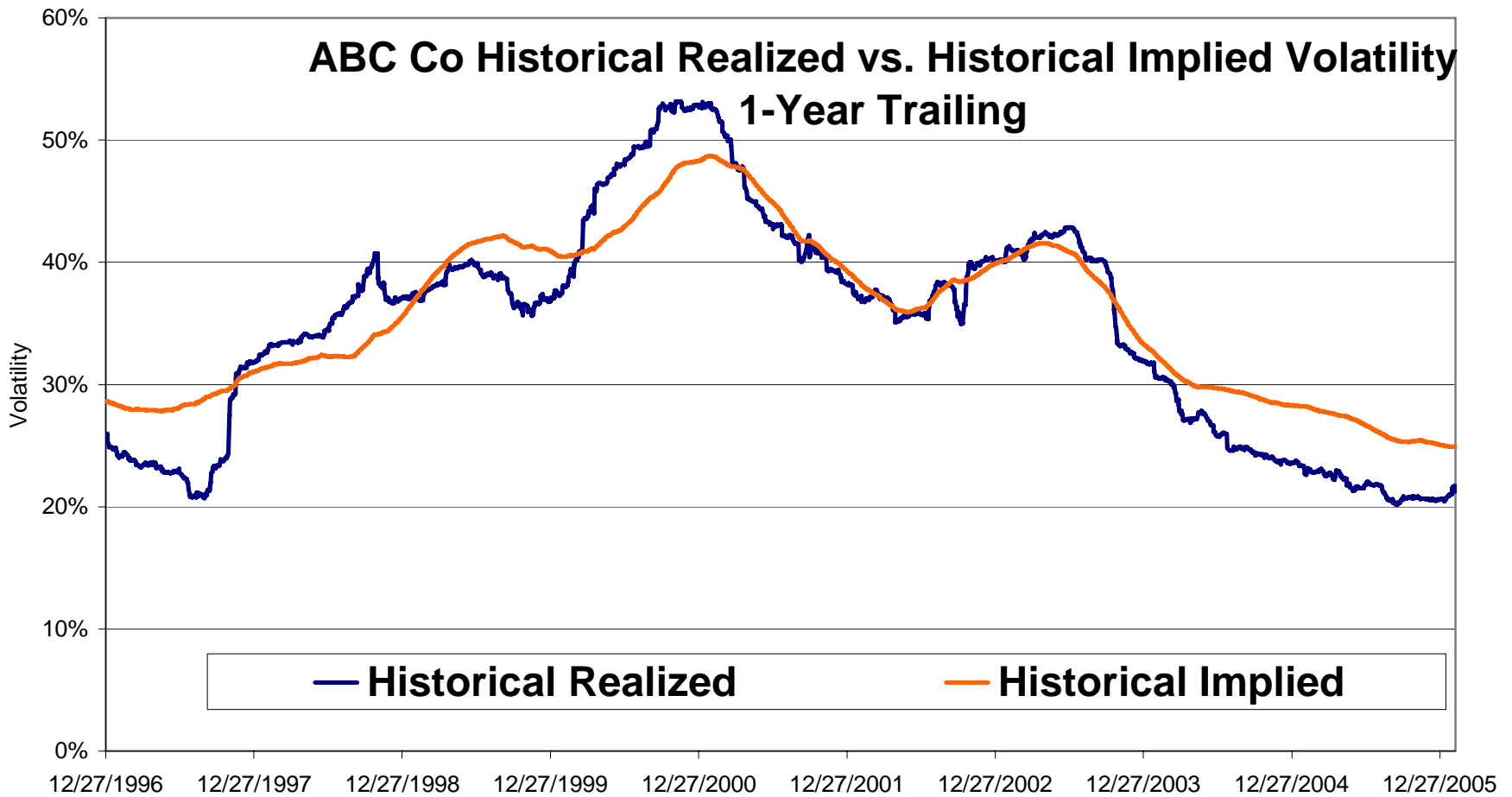
Paragraph A18 of FAS 123(R) states that any valuation technique or model must take into account, at a minimum:

- The exercise price of the option;
- The expected term of the option, taking into account both the contractual term of the option and the effects of employees' expected exercise and post-vesting employee termination behavior;
- The current price of the underlying share;
- The expected volatility of the underlying share of the expected term of the option;
- The expected dividends of the underlying share of the expected term of the option; and
- The risk-free interest rate(s) for the expected term of the option

▪ VOLATILITY

FAS123(R) Valuation: Expected Volatility Considerations

- Factors to consider include:
 - Historical Volatility
 - Period of measurement (short term vs. mid-term vs. theory of mean reversion)
 - Removal of data?
 - Implied Volatility
 - Liquidity – Open Contract vs. Trading Volume
 - Historical implied volatilities
 - Peer Companies - especially for companies with very little or no history
 - Blended Volatilities – developing supportable weights



Historical Implied Volatility

- **Closely tracks historical realized volatility**
- **Incorporates market expectations over varying market and company specific environments**
- **Provides a rich source of data for estimating a term structure of volatility**

Expected Volatility – Emerging Best Practice

- Courtesy of FAS123R Data in SEC Filings as Provided by *Salary.com*

	Current Year			Prior Year		
	<u>Total Companies</u>	<u>Standard Deviation</u>	<u>Average</u>	<u>Total Companies</u>	<u>Standard Deviation</u>	<u>Average</u>
Consumer Discretionary	411	17.74%	43.54%	466	20.21%	47.42%
Consumer Staples	77	18.33%	37.78%	89	20.83%	39.81%
Energy	110	16.51%	43.64%	128	19.75%	45.51%
Financials	632	12.10%	27.47%	671	14.05%	28.32%
Health Care	345	23.25%	56.53%	393	26.52%	61.64%
Industrials	273	23.23%	43.10%	322	32.10%	46.15%
Information Technology	462	21.66%	60.83%	518	26.76%	71.25%
Materials	93	15.26%	37.76%	103	15.73%	39.42%
Telecommunication Services	38	32.26%	57.50%	44	33.90%	62.33%
Utilities	44	16.84%	27.81%	68	16.37%	30.69%
Total	2,485	22.67%	43.61%	2,802	27.53%	47.80%

- *Note: We believe the reduction in volatility is due to current market conditions and a refinement of assumption selection*

Expected Volatility – Emerging Best Practice

Of Non-Blended Volatility Selections	
Type of Volatility	Count
Forward Looking Volatility - Implied Volatility	1
Short Term Historical (less than Expected Life)	0
Mid Term Historical (commensurate with Expected Life)	5
Long-Term Historical (longer than Expected Life)	5
Peers	2
Total Surveyed Companies	13

- Only a handful of companies surveyed, 13 out of 122, rely on one volatility estimate
- The most common of the non-blended techniques include reliance on historical volatility for periods greater than or equal to the expected life

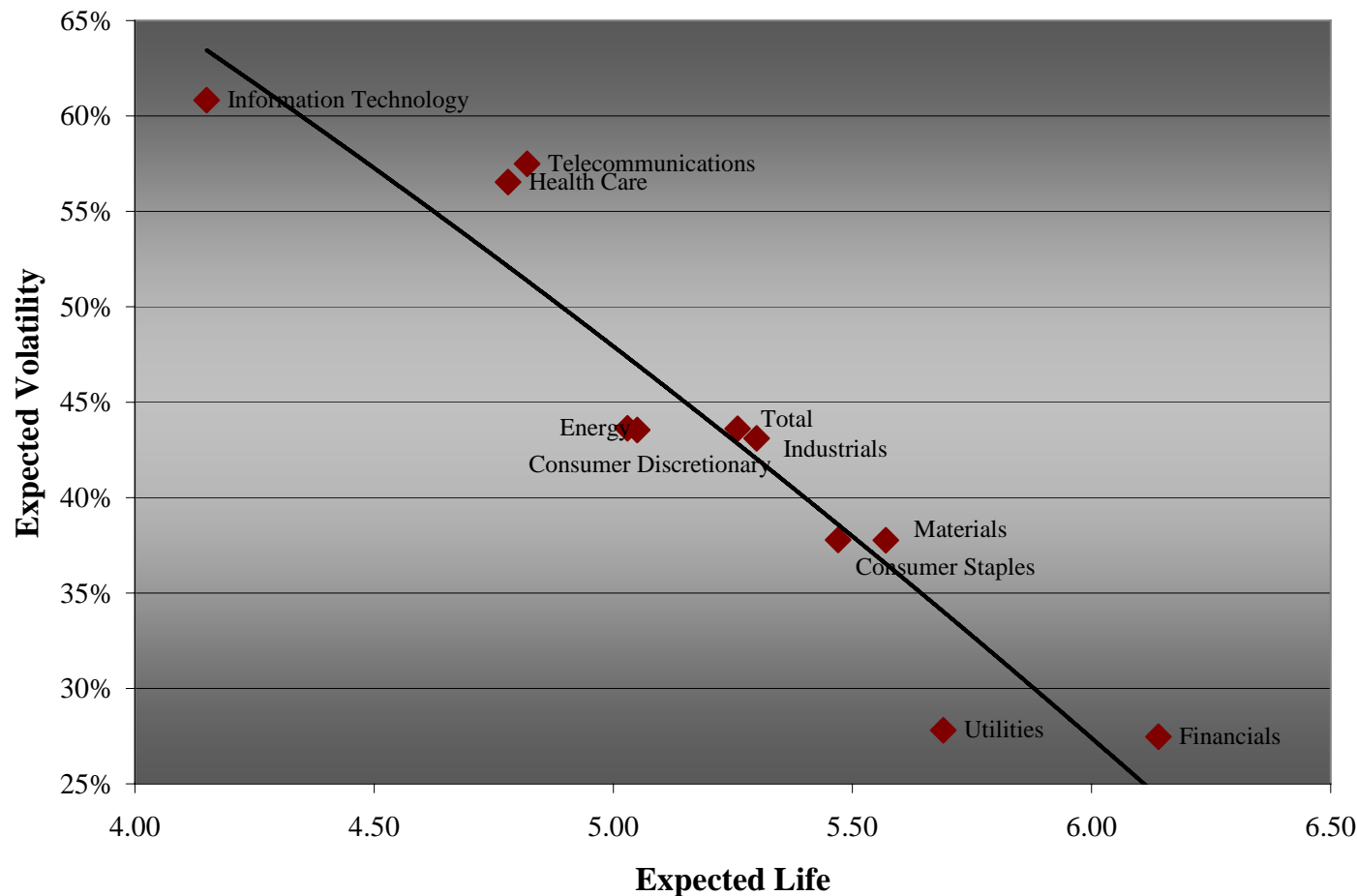
Expected Volatility – Emerging Best Practice

Blended Selections	Count	% of Blended	Of those applying a weight			
			25%	Average	Median	75%
Forward Looking Volatility - Implied Volatility	84	77%	11.98%	33.23%	33.33%	50.00%
Short Term Historical (less than Expected Life)	35	32%	18.10%	23.02%	20.16%	25.00%
Mid Term Historical (commensurate with Expected Life)	56	51%	36.42%	52.41%	50.00%	50.00%
Long-Term Historical (longer than Expected Life)	80	73%	36.95%	55.35%	50.00%	72.25%
Peers (Either Implied or Historical in some way)	21	19%	33.33%	61.68%	52.57%	100.00%

- The majority of companies, 109 out of 122, blend multiple volatility estimates
- The most popular blend combines mid to long-term historical with forward looking implied volatilities
- Weighted blends offer the best balance

Setting Assumptions: The Efficient Frontier

- Courtesy of FAS123R Data in SEC Filings as Provided by *Salary.com*



- **BEHAVIORAL**

Lattice or Simulation Model Early Exercise Behavior

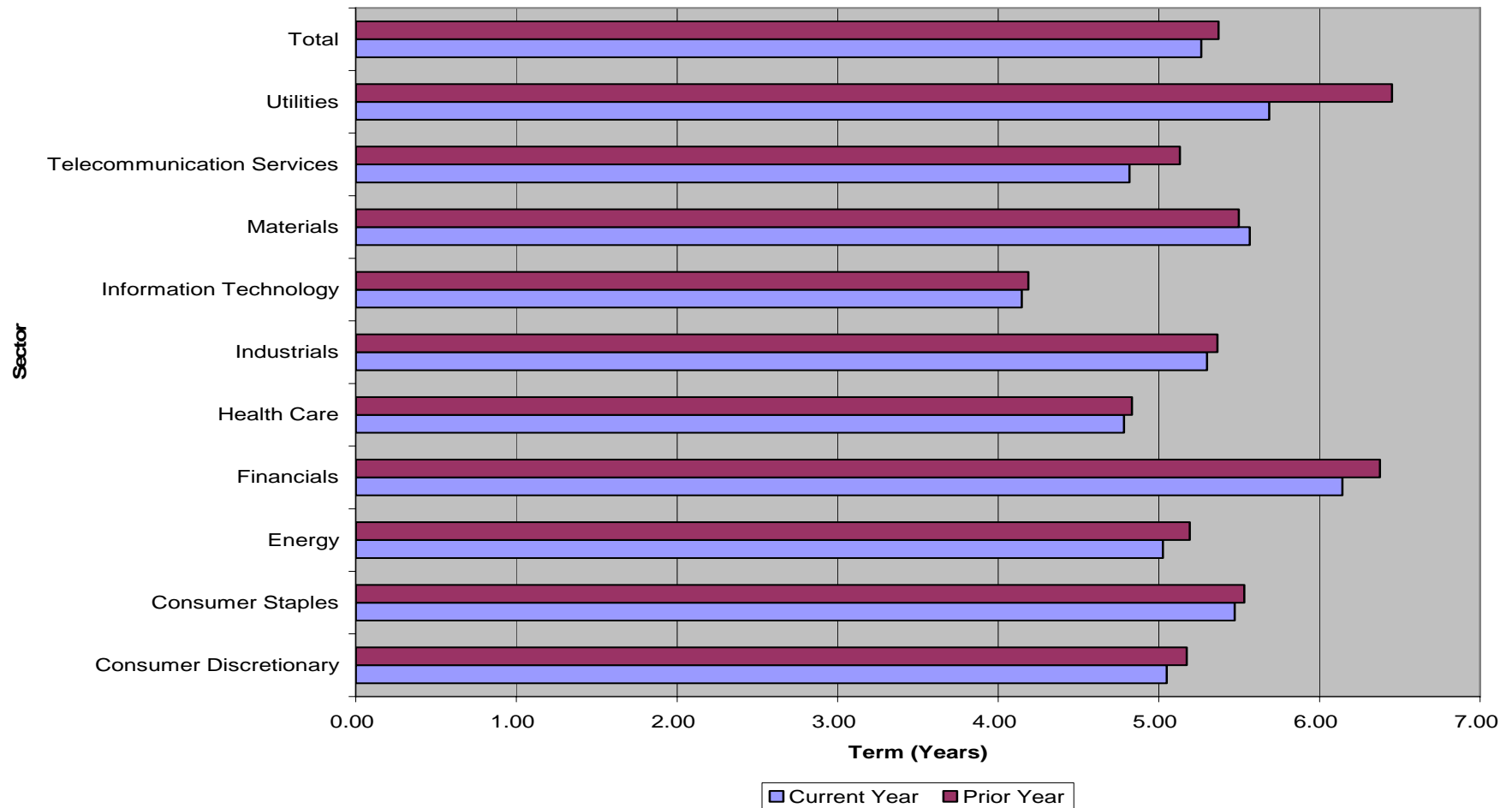
- **Regression based model to estimate the relationship between early exercise and**
 - **Stock price to strike price ratio**
 - **Recent stock price returns**
 - **Time since grant**
 - **Post vesting month**

FAS123(R) Valuation: Expected Life Considerations

- Factors to consider include:
 - Simplified Approach from SAB 107
 - Vesting period and contractual term
 - Historical patterns of exercise and post-vesting termination
 - Changes in option characteristics (i.e. vesting or term)
 - Expected volatility
 - Optionee demographics
 - Age/Gender/Country/Job Level
 - Stratification
 - Peer companies
 - Censored data and assumptions about outstanding options
 - Minimum at Vesting
 - Maximum at Term
 - Most likely may be the midpoint of future remaining term
 - Alternative: standard tables?

Expected Life – Emerging Best Practice

- Courtesy of FAS123R Data in SEC Filings as Provided by *Salary.com*

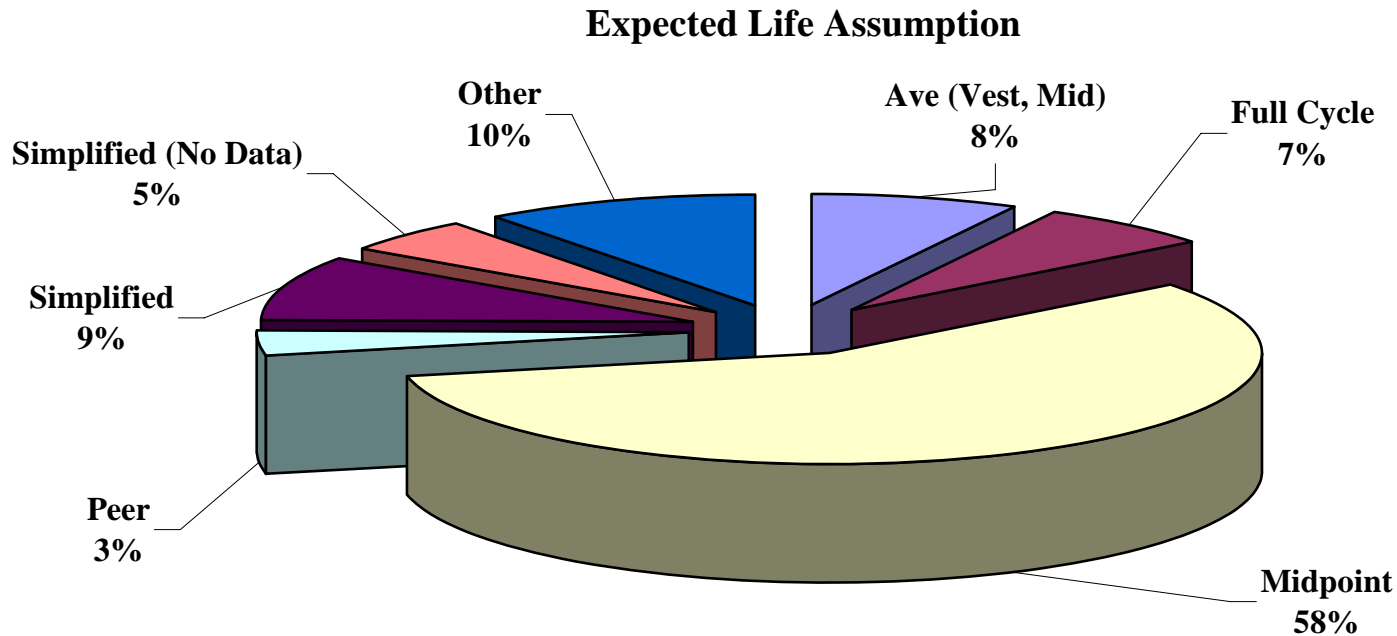


Expected Life – Emerging Best Practice

- Courtesy of FAS123R Data in SEC Filings as Provided by *Salary.com*

<u>Sector</u>	<u>Current Year</u>			<u>Prior Year</u>		
	<u>Total Companies</u>	<u>Standard Deviation</u>	<u>Average</u>	<u>Total Companies</u>	<u>Standard Deviation</u>	<u>Average</u>
Consumer Discretionary	411	1.59	5.05	466	1.72	5.17
Consumer Staples	77	1.88	5.47	89	1.99	5.53
Energy	110	1.99	5.03	128	2.11	5.19
Financials	632	2.17	6.14	671	2.23	6.38
Health Care	345	1.71	4.78	393	1.73	4.83
Industrials	273	1.70	5.30	322	1.77	5.36
Information Technology	462	1.58	4.15	518	1.66	4.19
Materials	93	2.12	5.57	103	2.10	5.50
Telecommunication Services	38	1.92	4.82	44	1.80	5.13
Utilities	44	2.26	5.69	68	2.21	6.45
Total	2,485	2.00	5.26	2,802	2.07	5.37

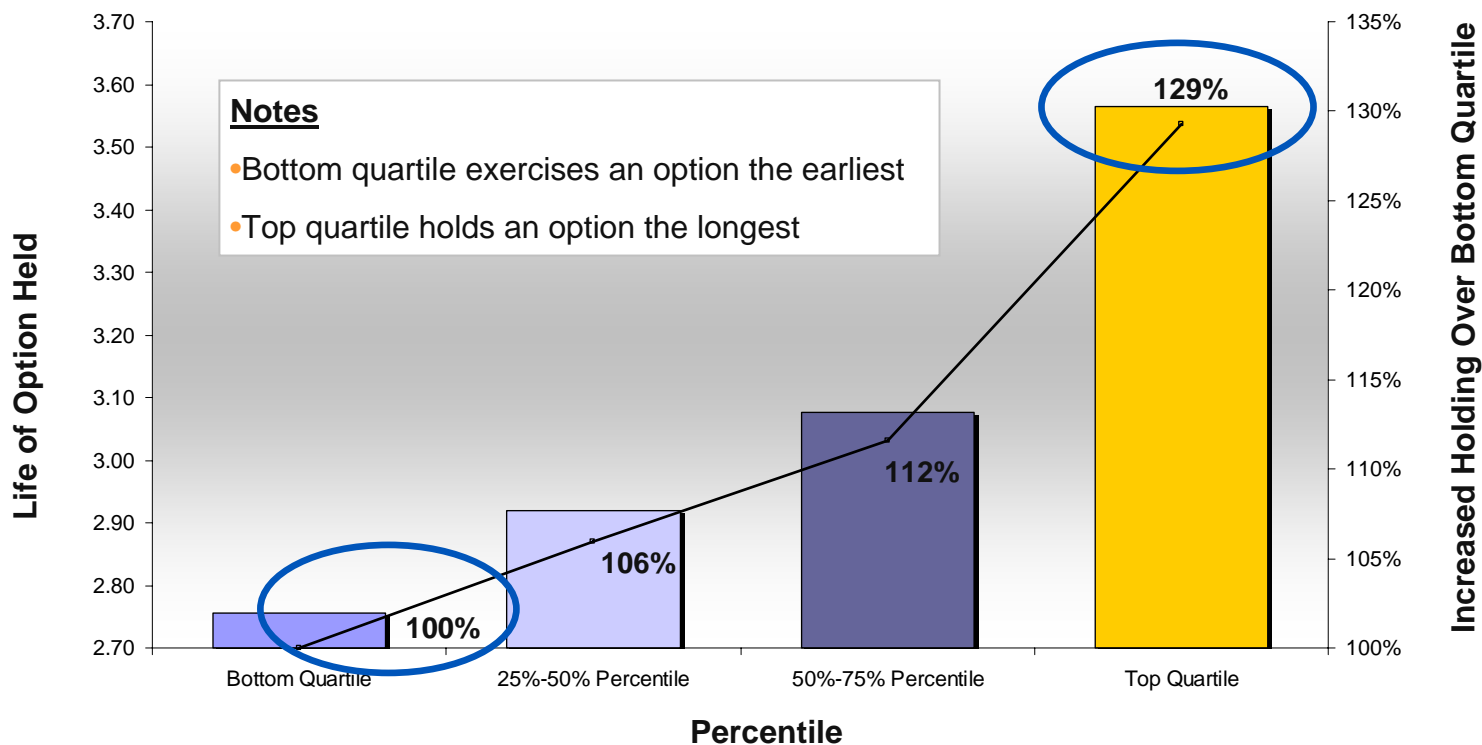
Expected Life – Emerging Best Practice



- The most common approach (67/117) is to assume currently outstanding options will be exercised at the midpoint of the future remaining term.
- The “Simplified Approach” as outlined in SAB #107 is also popular. It can be calculated from historical data or, in the absence of historical data, can be calculated using the vesting schedule and the full contractual term.

Study of Exercise Behavior - Example

- Grant and exercise practices for 20 companies were aggregated - involving more than 700 million option exercises
- Employees were categorized by the percent of the annual grant received and put into quartiles



Aggregated Data

- Benefits of Aggregated Data
 - Valuing options not “at-the-money”
 - Purchase accounting valuations
 - Award modifications
 - For companies with very little or no historical data, or that have made significant changes in their option terms
 - Better comparability of financial statements
 - Ease and simplicity

Aggregated Data

- Aon has developed the tables shown on the following pages via the use of hazard rate and Monte-Carlo modeling.
- Hazard Rate modeling is commonly used to quantify probabilities of “Death” based upon data that has many right censored observations. Specifically Aon uses the Nelson-Aalen cumulative hazard rate model. The model is calibrated based upon historical exercise behavior using time after grant and S/K ratios as the primary drivers of exercise.
- Monte-Carlo modeling is used to project future stock price paths based upon the expected return and volatility of the underlying company stock using Geometric Brownian motion. We use the Capital Asset Pricing Model to determine the expected return and volatility of the underlying stock since a risk-neutral stock price model is inappropriate to use for expected life calculations.
- Within the Monte-Carlo modeling framework, the hazard rate model is used to determine the expected number of exercises for each simulated price path. The final output of the model is a table of expected remaining lives.
- The tables on the following pages were created by aggregating the simulation results of 5 companies for each volatility level. In practice, more companies will have to be aggregated to produce tables that are reliable for use in option expensing exercises. Each company has 4 year graded vesting with a 10 year contractual term.

Aggregated Data

Sum of Simulated Remaining Lives - Volatility Less Than 50%										
S/K Ratio										
	.01-1.00	1.01-2.00	2.01 - 3.00	3.01 - 4.00	4.01 - 5.00	5.01 - 6.00	6.01 - 7.00	7.01 - 8.00	8.01 - 9.00	9.01 - 10.00
500% -999.99%							1.14	0.68	0.32	0.08
480% -499.99%							1.15	0.70	0.33	0.09
460% -479.99%							1.15	0.75	0.34	0.09
440% -459.99%							1.16	0.75	0.35	0.09
420% -439.99%							1.20	0.75	0.36	0.10
400% -419.99%					1.74		1.24	0.77	0.37	0.10
380% -399.99%					1.75		1.25	0.78	0.39	0.10
360% -379.99%				2.39	1.76		1.26	0.80	0.40	0.11
340% -359.99%				2.38	1.80		1.27	0.80	0.40	0.11
320% -239.99%			3.09	2.42	1.80		1.29	0.82	0.42	0.12
300% -319.99%			3.08	2.44	1.82		1.31	0.84	0.43	0.12
280% -299.99%		3.92	3.17	2.46	1.85		1.32	0.85	0.44	0.12
260% - 279.99%		3.97	3.22	2.48	1.88		1.34	0.87	0.45	0.13
240% - 259.99%		3.96	3.21	2.51	1.90		1.36	0.88	0.47	0.13
220% - 239.99%		3.98	3.23	2.54	1.92		1.38	0.90	0.48	0.14
200% - 219.99%			4.04	3.27	2.57		1.40	0.92	0.49	0.14
180% - 199.99%		4.91	4.13	3.35	2.62		1.43	0.94	0.51	0.15
160% - 179.99%	5.77	5.01	4.21	3.41	2.67		1.46	0.97	0.53	0.15
140% - 159.99%	5.86	5.12	4.28	3.45	2.70		1.48	0.98	0.54	0.16
120% - 139.99%	6.00	5.25	4.35	3.50	2.73		1.50	1.00	0.55	0.16
100% - 119.99%	6.31	5.37	4.43	3.55	2.78		1.53	1.02	0.57	0.17
80% - 99.99%	6.40	5.46	4.56	3.72	2.96		1.68	1.14	0.66	0.23
60% - 79.99%	6.26	5.57	4.78	4.02	3.32		2.01	1.40	0.83	0.29
40% - 59.99%		5.63	5.00	4.20	3.55		2.16	1.50	0.88	0.30
20% - 39.99%										

Aggregated Data

Sum of Simulated Remaining Lives - Volatility Greater Than 50%										
S/K Ratio										
	.01-1.00	1.01-2.00	2.01 - 3.00	3.01 - 4.00	4.01 - 5.00	5.01 - 6.00	6.01 - 7.00	7.01 - 8.00	8.01 - 9.00	9.01 - 10.00
500% -999.99%						0.86	0.60	0.37	0.20	0.06
480% -499.99%						0.89	0.63	0.40	0.21	0.06
460% -479.99%						0.91	0.64	0.41	0.23	0.06
440% -459.99%						0.93	0.66	0.43	0.24	0.06
420% -439.99%						0.96	0.68	0.45	0.25	0.07
400% -419.99%				1.29		0.99	0.70	0.47	0.26	0.07
380% -399.99%				1.33		1.03	0.73	0.49	0.28	0.07
360% -379.99%				1.40		1.07	0.76	0.51	0.29	0.08
340% -359.99%				1.46		1.10	0.79	0.53	0.30	0.08
320% -239.99%			1.97		1.51	1.15	0.83	0.56	0.32	0.08
300% -319.99%			2.07		1.58	1.20	0.86	0.59	0.33	0.08
280% -299.99%		2.59	2.13	1.64	1.24	0.90	0.61	0.35	0.09	
260% - 279.99%		2.82	2.20	1.70	1.29	0.94	0.64	0.36	0.09	
240% - 259.99%		2.88	2.28	1.78	1.35	0.98	0.67	0.38	0.09	
220% - 239.99%		3.51	3.00	2.39	1.86	1.41	1.03	0.70	0.39	0.10
200% - 219.99%		3.76	3.11	2.49	1.94	1.47	1.07	0.73	0.40	0.10
180% - 199.99%		4.04	3.36	2.69	2.09	1.58	1.14	0.77	0.42	0.11
160% - 179.99%	4.90	4.26	3.55	2.85	2.22	1.67	1.21	0.81	0.44	0.11
140% - 159.99%	5.15	4.48	3.72	2.98	2.31	1.74	1.25	0.83	0.45	0.11
120% - 139.99%	5.44	4.73	3.89	3.11	2.41	1.80	1.29	0.85	0.46	0.12
100% - 119.99%	5.87	4.97	4.08	3.25	2.51	1.86	1.32	0.87	0.47	0.12
80% - 99.99%	6.06	5.20	4.33	3.51	2.76	2.08	1.49	1.00	0.57	0.20
60% - 79.99%	6.08	5.42	4.63	3.89	3.19	2.54	1.92	1.34	0.79	0.28
40% - 59.99%		5.66	4.94	4.18	3.49	2.81	2.14	1.49	0.88	0.30
20% - 39.99%						2.82	2.12	1.52	0.84	0.31

Common Types of Performance Plans with Market Conditions

- Absolute Performance Plans
 - Contingent vesting
 - At the service period, if market condition is achieved at or before the service period
 - At the later of achieving the market condition and a specified service period
 - At the earlier of achieving the market condition and a specified service period
- Relative Performance Plans
 - Relative vesting (based on percentile rank of Index)
 - Indexed exercise price

Sample Valuations of Absolute Performance with Contingent Vesting

- The following charts depict the reduction in fair value of a hypothetical restricted share grant that contains a market condition. The market condition stipulates that the share price must be greater than the grant price on the fourth anniversary of the grant in order for the shares to vest. In the event of terminations prior to the fourth anniversary, the shares would be considered forfeited and the FAS123(R) expense would be reversed. A 5% risk-free rate was assumed.

30% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-26.34%
1.00%	-31.40%
2.00%	-36.18%
3.00%	-40.61%
4.00%	-44.91%

40% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-26.28%
1.00%	-30.04%
2.00%	-34.42%
3.00%	-38.46%
4.00%	-42.20%

50% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-24.30%
1.00%	-28.15%
2.00%	-32.55%
3.00%	-36.26%
4.00%	-39.67%

60% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-21.68%
1.00%	-25.95%
2.00%	-29.25%
3.00%	-33.58%
4.00%	-36.13%

70% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-19.61%
1.00%	-22.96%
2.00%	-26.97%
3.00%	-30.61%
4.00%	-34.05%

80% Volatility	
Dividend Yield	Reduction in Fair Value
0.00%	-18.64%
1.00%	-21.33%
2.00%	-24.57%
3.00%	-28.17%
4.00%	-31.43%

Going Forward – Valuation Issues

- Expensing impact on financial statements will take on more importance
- Industry- and/or company size-based FAS 123(R) assumptions will become the norm
- Performance-based cash compensation strategies will also be evaluated for their impact on earnings
- Study of data in understanding drivers of exercise behavior will become more important in designing plans

Appendix A: Binomial Companies

For Filings Through
November 16, 2006

1995 Fiscal Year

BNL Financial Corp.
[Boeing Corp.](#)
[Cincinnati Financial Corp.](#)
Covanta Energy Corp.
CRT Properties Inc.
Enterprise Bancorp Inc.
First Keystone Corp.
Harsco Corp.
Hawaiian Electric Co. Inc.
Mocon Inc.
MultiColor Corp.
Pulitzer Inc.
Reptron Electronics Inc.
Sandy Spring Bancorp Inc.
SRI Surgical Express Inc.
Trans Lux Corp.
[Vornado Realty Trust](#)
Weider Nutrition International Inc.

1996 Fiscal Year

Applica Inc.
Ferrellgas Partners LLP

1998 Fiscal Year

Brightstar Information Technology Group
Harbor Florida Bancshares

1999 Fiscal Year

Bank of Commerce Holdings
ISPAT Inland Inc.
[Washington Mutual, Inc.](#)

2000 Fiscal Year

Cedar Fair LP
Diamond Offshore Drilling
Idacorp Inc.
[MeadwestVaco Corp.](#)
Sonoco Products

2001 Fiscal Year

Dreams Inc.
Mexco Energy Corp.

2002 Fiscal Year

First Keystone Financial Inc.
Harris Preferred Capital
Newcastle Investment Corp.
Pacific Capital Bancorp
UIL Holdings Corp

2003 Fiscal Year

[American International Group Inc.](#)
[Anheuser-Busch Companies Inc.](#)
Brooke Corp
[Citigroup, Inc](#)
Global Preferred Holdings
IMAX Corp
Maguire Properties Inc.
Marlin Business Services
[Prudential Financial Inc.](#)
[UnitedHealth Group](#)
WestCorp
Worldspan L P

2004 Fiscal Year

1st Centennial Bancorp
Acadia Realty Trust
Alliance Data Systems
American Home Mortgage Investment Corp.
[Becton Dickinson and Co.](#)
Bucyrus International Corp.
[Caterpillar Inc.](#)
[Charles Schwab Corp](#)
Cheesecake Factory Incorporated
Choicepoint Inc.
CitiCorp
DeVry, Inc.
Digene Corp.
[E W Scripps](#)
Fedders Corp
[Fiserv Inc.](#)
General Growth Properties
[Hartford Financial Services Group, Inc.](#)
Hartford Life Inc.
Hartford Life Insurance Co.
Hillenbrand Industries
[Illinois Tool Works Inc.](#)
Integra Lifesciences Holdings
ITT Corporation
[Kellogg Co.](#)
[McCormick & Co. Inc.](#)
Metro-Goldwyn-Mayer Inc.
[MGIC Investment Corp.](#)
New York Mortgage Trust Inc.
Origen Financial Inc.
Private Bancorp Inc.
Rainier Pacific Financial Group, Inc.

2004 Fiscal Year (cont.)

[Rockwell Collins Inc.](#)
Scotts Miracle Grow
SFBC International, Inc.
Specialty Underwriters Alliance, Inc.
Sun Communities Inc.
Telesource International Inc.
[Travelers Insurance Co.](#)
United Bankshares
Viskase Companies Inc.
Western Digital Corp

2005 Fiscal Year

Abington Community Bancorp
Actuant Corp
Advanced Cell Technology, Inc.
Aethlon Medical Inc.
[Alcoa Inc.](#)
[Allstate Corp](#)
[Ameren Corporation](#)
American Physician Capital Inc.
[Amerisourcebergen Corp](#)
Atlantic Tele Network Inc.
Atlas America Inc.
[Automatic Data Processing Inc.](#)
[Avaya Inc.](#)
Bancwest Corp
[Bank of New York Co., Inc.](#)
Battle Mountain Gold Exploration Corp.
Bioanalytical Systems Inc.
Biosite Inc.
[BJ Services Co.](#)
Brand Intermediate Holdings, Inc.

Note: Companies in blue font are in the S&P 500

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Appendix A: Binomial Companies

For Filings Through
November 16, 2006

2005 Fiscal Year (cont.)

Brown Shoe Co.
Calavo Growers Inc.
[Cardinal Health Inc.](#)
Cardiogenesis Corp.
Catcher Holdings, Inc.
CBeyond Communication Inc.
CBOT Holdings Inc.
CBRL Group Inc.
CDW Corp
Central Illinois Light Co.
Central Illinois Public Service Co.
Central Vermont Public Service Corp.
Chordiant Software Inc.
CilCorp Inc.
Coast Distribution System Inc.
Cognos Inc.
[Comerica Inc.](#)
Commercial Federal Group
Cooper Companies Inc.
Crescent Real Estate Equities Co.
Crown Media Holdings Inc.
Cytec Industries
Dana Corp
Danka Business Systems
Datascension Inc.
Doral Financial Corp
[Dow Chemical Co.](#)
[Ecolab Inc.](#)
Energy Exploration Technologies Inc.
[EOG Resources Inc.](#)
[Equifax Inc.](#)
Equity One Inc.

2005 Fiscal Year (cont.)

Factset Research Systems
Genesis Healthcare Corp
[Goldman Sachs Group Inc.](#)
Guitar Center Inc.
Hampton Roads Bancshares
Hawaiian Electric Industries Inc.
Healthextras Inc.
Healthways, Inc.
Hercules Offshore, Inc.
Hiland Partners LP
Hologic Inc.
Idaho Power Co.
Illinois Power Co.
International Securities Exchange
Intersil Corp.
Ivillage Inc.
Jack in the Box, Inc.
[JC Penney Co. Inc.](#)
Keynote Systems Inc.
[Keyspan Corp.](#)
Knoll Inc.
Laclede Group Inc.
Liberty Global Inc.
[Lilly Eli & Co.](#)
[Liz Claiborne Inc.](#)
LTX Corp
[Marriott International Inc.](#)
Matthews International Corp
[McGraw-Hill Companies Inc.](#)
[Medimmune Inc.](#)
[Metlife Inc.](#)
Middleby Group

2005 Fiscal Year (cont.)

Myers Industries
National Fuel Gas Co
National Medical Health Card Systems
National Retail Properties Inc.
Nationwide Health Properties Inc.
[NVIDIA Corp.](#)
Oakley Inc
ON Semiconductor Corp.
Orbit International Corp
Pemco Aviation Group Inc.
Pinnacle Foods Group Inc
[PMC Sierra Inc.](#)
Precision Auto Care Inc.
[Procter & Gamble Co.](#)
ProxyMed Inc.
[QualComm Inc.](#)
RCN Corp
[Sabre Holdings Corp.](#)
SafeTek International Inc
Schiff Nutrition International, Inc.
Scientigo, Inc.
Searchlight Minerals Corp
SGS International, Inc.
Siricomm Inc.
Sivault Systems, Inc.
[Smith International Inc.](#)
Socket Communications Inc.
Spark Network PLC
[Staples Inc.](#)
[Starwood Hotel & Resorts Worldwide Inc.](#)
SVB Financial Group
Sybron Dental Specialties Inc.

2005 Fiscal Year (cont.)

Systems Evolution, Inc
Teledyne Technologies
[Tenet Healthcare Corp.](#)
Tidelands Bancshares Inc.
Toll Brothers Inc.
Transatlantic Holdings Inc.
Trimble Navigation Ltd.
[Tyson Foods Inc.](#)
U S Physical Therapy Inc.
Union Electric Co.
[United Technologies Corp](#)
Valley National Bancorp
Valmont Industries Inc.
Warner Music Group
WCI Communities Inc
[WellPoint Inc.](#)
Westbank Corp
Westfield Financial Inc
Williams Scotsman International Inc.
Wisconsin Energy Corp
WMG Acquisition Corp
Zebra Technologies

2006 Fiscal Year

Acunetx, Inc.
[Advanced Micro Devices Inc.](#)
ADVO Inc.
Alcan Inc.
Alliance Fiber Optic Products Inc.
[Aon Corporation](#)
Applebee's International, Inc
Argon St, Inc.

Appendix A: Binomial Companies

For Filings Through
November 16, 2006

2006 Fiscal Year (cont.)

Autobytel, Inc.
[Bank of America Corp.](#)
[Best Buy Co Inc.](#)
[Big Lots Inc.](#)
Boston Beer Co. Inc.
Bovie Medical Corp
Brand Energy & Infrastructure Services, Inc.
[Bristol-Myers Squibb Company](#)
Business Objects S.A.
Cabot Oil & Gas Corp.
CapitalSource, Inc.
Cerner Corp.
Chattem Inc.
Cognex Corp.
Colony Resorts Acquisitions
[Corning Inc.](#)
Corporate Executive Board Co.
Covance Inc.
[CR Bard Inc.](#)
CRC Health Corp
Crystal River Capital, Inc.
Curis Inc.
D&E Communications Inc.
Davey Tree Expert Co.
[Deere & Co.](#)
Deltic Timber Corp.
Digital Music Group, Inc.
DSP Group Inc.
Federal Mogul Corp.
First Advantage Corp.
First American Corp.
Gabriel Technologies Corporation

2006 Fiscal Year (cont.)

Glenborough Realty Trust Inc.
[Grainger W W Inc.](#)
Graphon Corp.
GTECH Holdings Corp.
Harland John H Co
Harleysville Savings Financial Corp.
HealthMarkets, Inc.
Hiland Holdings GP, LP
HSBC Finance Corp.
HSBC USA Inc.
ICAD Inc
IDEX Corp.
Imperial Sugar Co
Indymac Bancorp Inc.
Innova Holdings
[International Flavors & Fragrances Inc.](#)
[Intuit Inc](#)
ITT Educations Services
[Jabil Circuit Inc.](#)
JetBlue Airways Corp.
Kerr McGee Corp.
Kforce Inc
Kitty Hawk Inc.
Kyphon Inc.
Legend International Holdings Inc
Lifepoint Hospitals, Inc.
[LSI Logic Corp.](#)
Makemusic Inc.
Mannatech Inc.
[Marshall & Ilsley Corp.](#)
Martin Marietta Materials Inc.
McAfee, Inc.

2006 Fiscal Year (cont.)

MCF Corp.
Media General Inc.
Medialink Worldwide Inc.
[Monsanto Co.](#)
Municipal Mortgage & Equity LLC
Nashua Corp.
National Mercantile Bancorp
Navteq Corp.
Net 1 UEPS Technologies Inc.
New Century Financial Corp.
Newpage Corp.
[Nordstrom Inc](#)
Northwest Natural Gas Co.
[Novell Inc.](#)
OmniComm Systems Inc.
Opinion Research Corp.
Payless Shoesource Inc
Petsmart Inc
Playboy Enterprises Inc.
Possis Medical Inc.
Precis Inc.
[Raytheon Company](#)
Regis Corp.
Rent-A-Center Inc.
Replidyne Inc
Republic Services Inc.
Serologicals Corp
Shoe Pavilion Inc
Smurfit Stone Container Corp.
Sonic Foundry Inc.
Standard Drilling, Inc.
Standard Pacific Corp

2006 Fiscal Year (cont.)

Stein Mart Inc
Tech Data Corp
Thomas Group Inc.
Toys R US Inc
U S Gold Corp
[V F Corp.](#)
Vyteris Holdings (Nevada), Inc.
VYYO Inc.
Wabash National Corp
[Walt Disney Co.](#)
Wausau Paper Corp.
W-H Energy Services Inc.
Wisconsin Electric Power Co
Wisconsin Public Service Corp.
WPS Resources Corp.
[XTO Energy Inc.](#)

2007 Fiscal Year

CarMax, Inc.
Firearms Training Systems Inc.
First Investors Financial Services Group, Inc.
Kelly Services Inc.
Techprecision Corp

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