

European Financial Reporting Advisory Group
Technical Expert Group

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Expensing Options under ED2

An evidence based approach to the measurement problem

Briefing by

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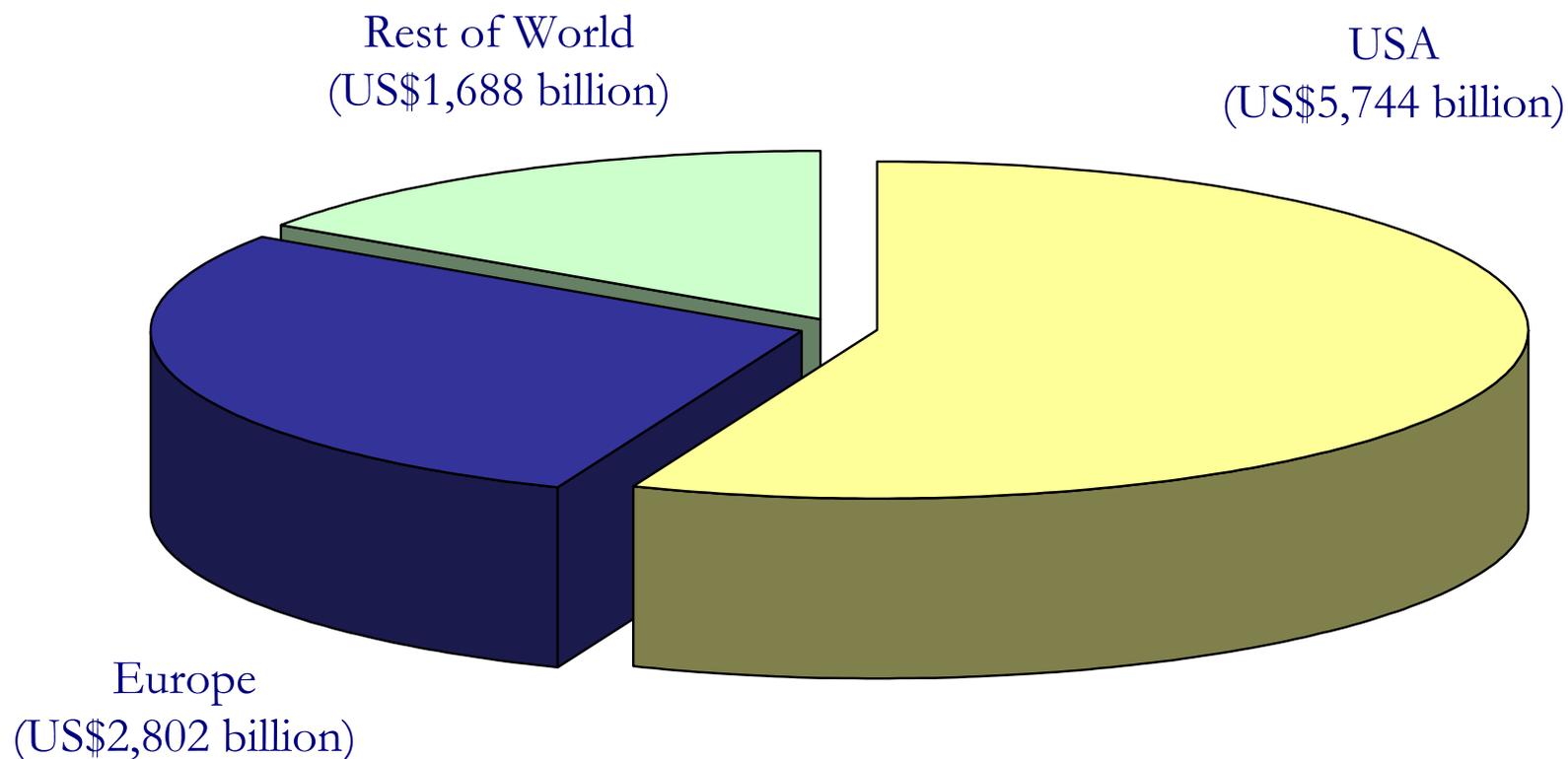
Measurement issues ~ the evidence

- The focus group
- The experience to date
 - ✓ Black-Scholes assumptions
 - ✓ Option values as reported
 - ✓ Causes & consequences of measurement error
- Empirical evaluation of alternative models
 - ✓ Black-Scholes
 - ✓ Zero volatility
 - ✓ Covariance
- The impact of expensing
 - ✓ Reported impact (US & European)
 - ✓ Modelling the impact for European companies
- The way forward

The Global 500

- The world's largest 500 Industrials by Market Value
- 375 firms in Europe & US (The focus group)
 - ✓ 146 European
 - ✓ 229 US
- 125 rest of world
- All of the 375 firms issue options to employees

Where is the Global 500's value?



Total Value = US\$10,234 billion

Europe more volatile?

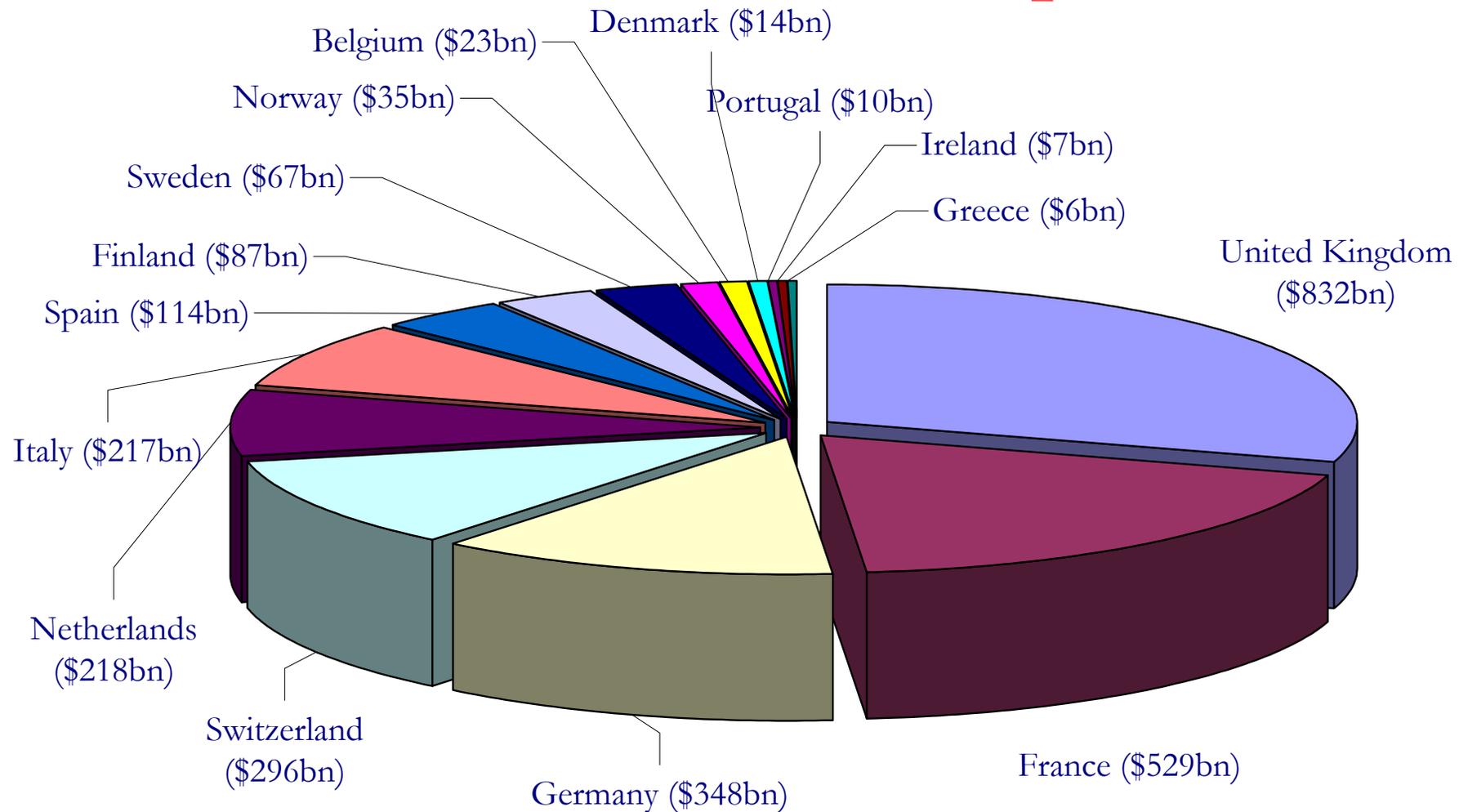


— G1000 - MARKET VALUE (~US\$)
HIGH 204 378 08.0 0 2 4/3/00, LOW 1 138 655 8.0 0 4/ 10/0 2, LAST 12 042 397

— G500 - MARKET VALUE (~US\$)
HIGH 203 884 80.0 0 2 4/3/00, LOW 1 163 024 7.0 0 4/ 10/0 2, LAST 12 186 104

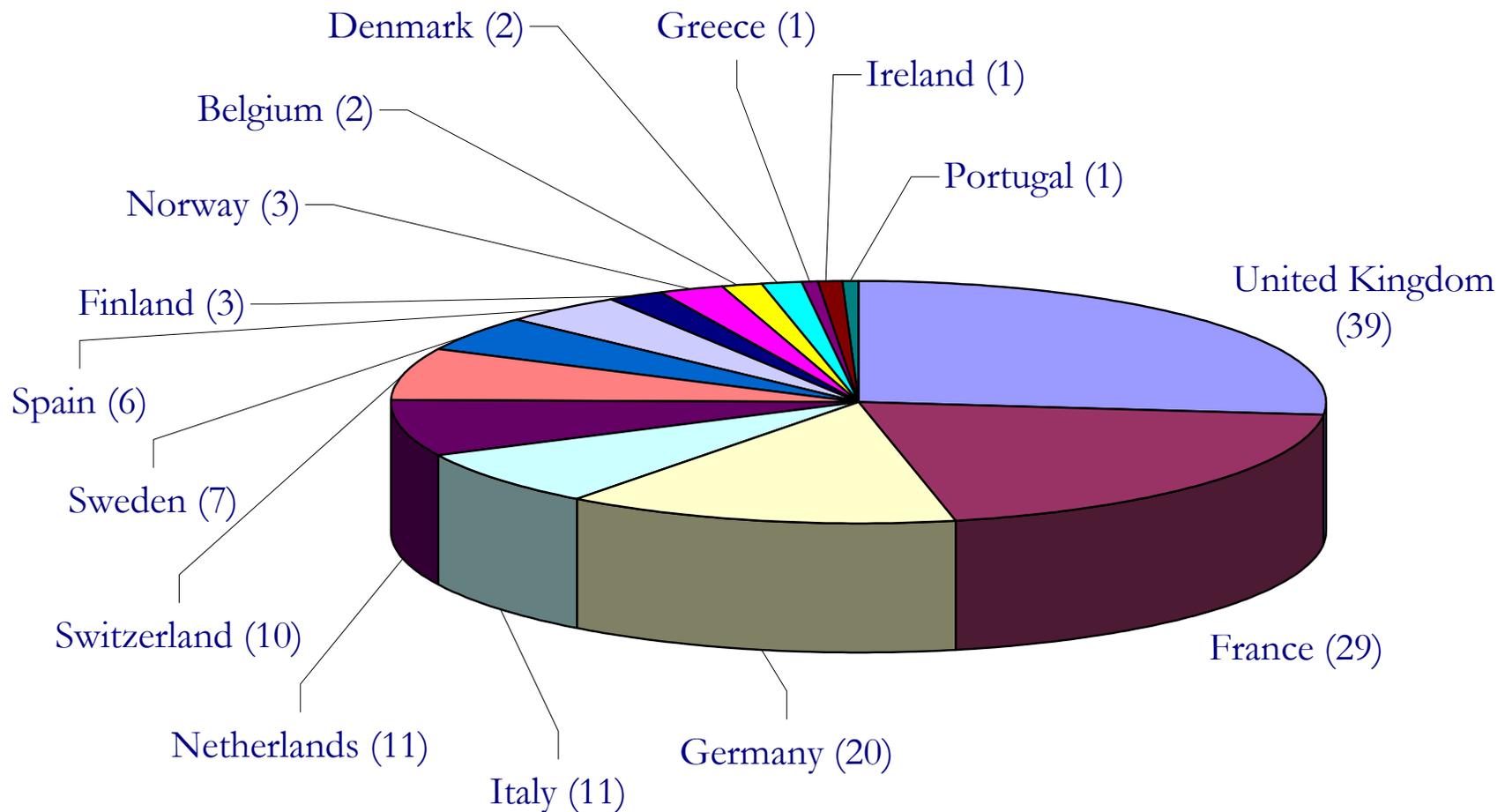
— OM350 - MARKET VALUE (~US\$)
HIGH 252 365 44.0 0 1 4/7/00, LOW 1 505 232 3.0 0 27 9/0 2, LAST 16 052 575

Value across Europe



Total Value = US\$2,802 billion

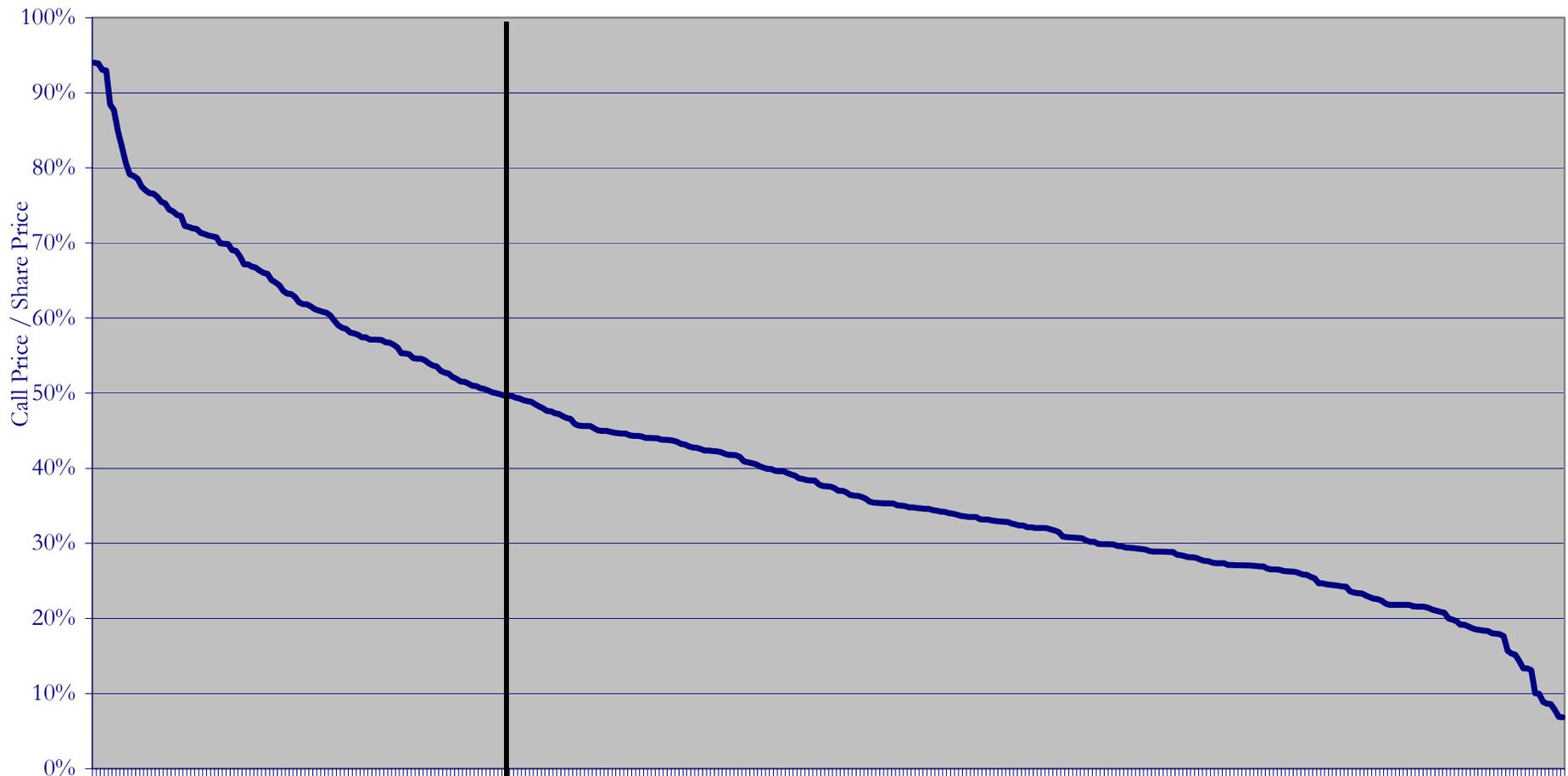
146 firms from 15 European countries



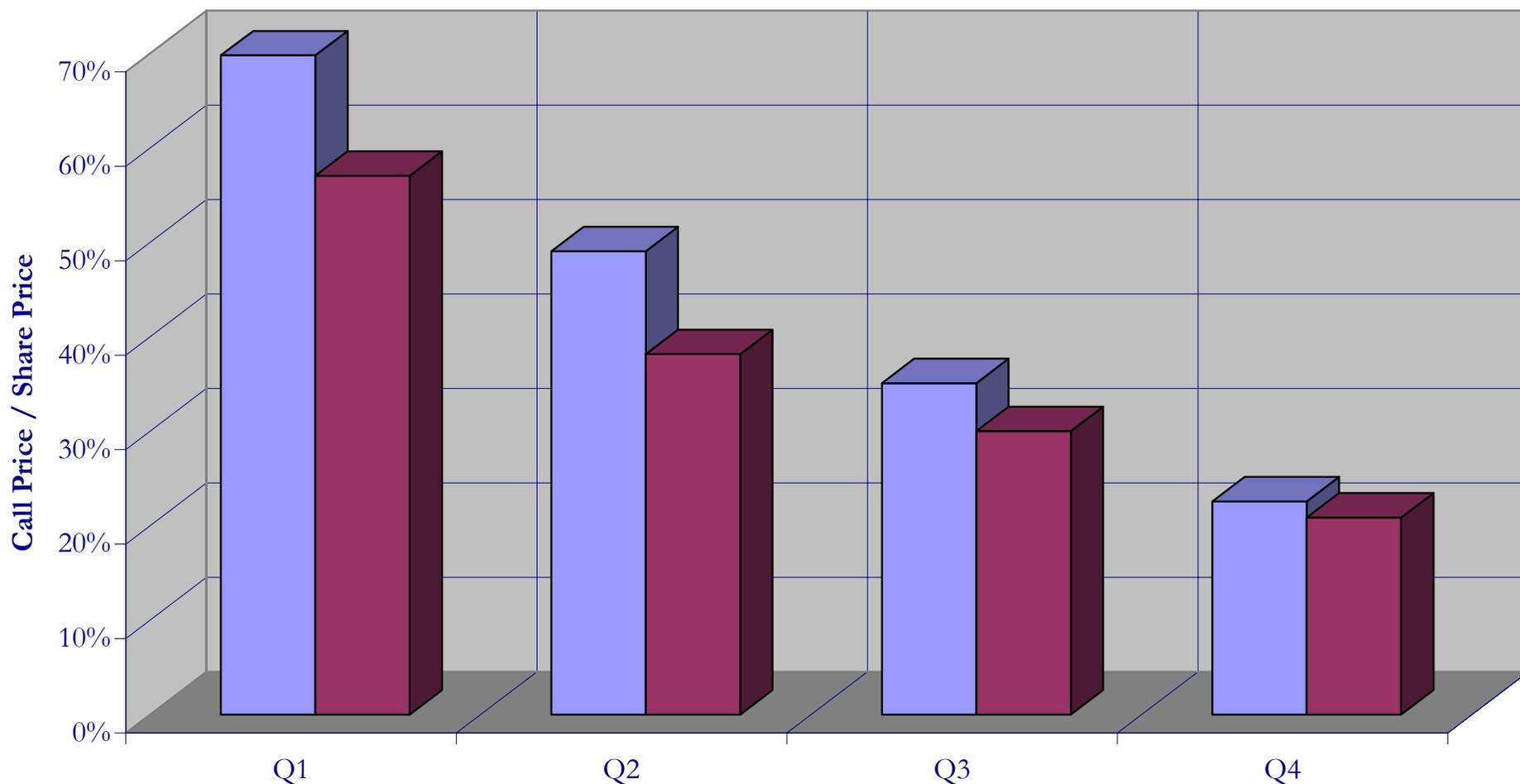
B-S values a long term option as the share¹

Company	Country	Share Price	Exercise Price	2001 Black-Scholes Assumptions				2001	
				Life	Volatility	DY	Risk-free	Call Price/Share Price	delta
Concord Communications	US	32.78	32.78	7	89.00%	0.00%	6.00%	80.7%	0.91
Wanadoo	FR	5.63	6.00	10	58.30%	0.00%	4.65%	71.0%	0.87
Lundbeck	DK	210.66	66.60	5	30.00%	1.00%	4.00%	69.9%	0.99
Luxottica	IT	18.43	9.67	5	53.58%	0.53%	5.74%	66.9%	0.91
eBay	US	66.90	46.24	3	81.00%	0.00%	3.60%	62.8%	0.85
STMicroelectronics	FR	36.05	32.22	5	57.40%	0.10%	4.50%	56.1%	0.82
LVMH	FR	45.70	47.00	8	51.93%	3.19%	4.65%	44.3%	0.79
Seat-Pagine Gialle	IT	0.91	1.20	3.5	62.13%	0.00%	5.74%	41.5%	0.70
Alcatel	FR	19.20	35.00	5	71.69%	4.06%	4.65%	37.4%	0.67

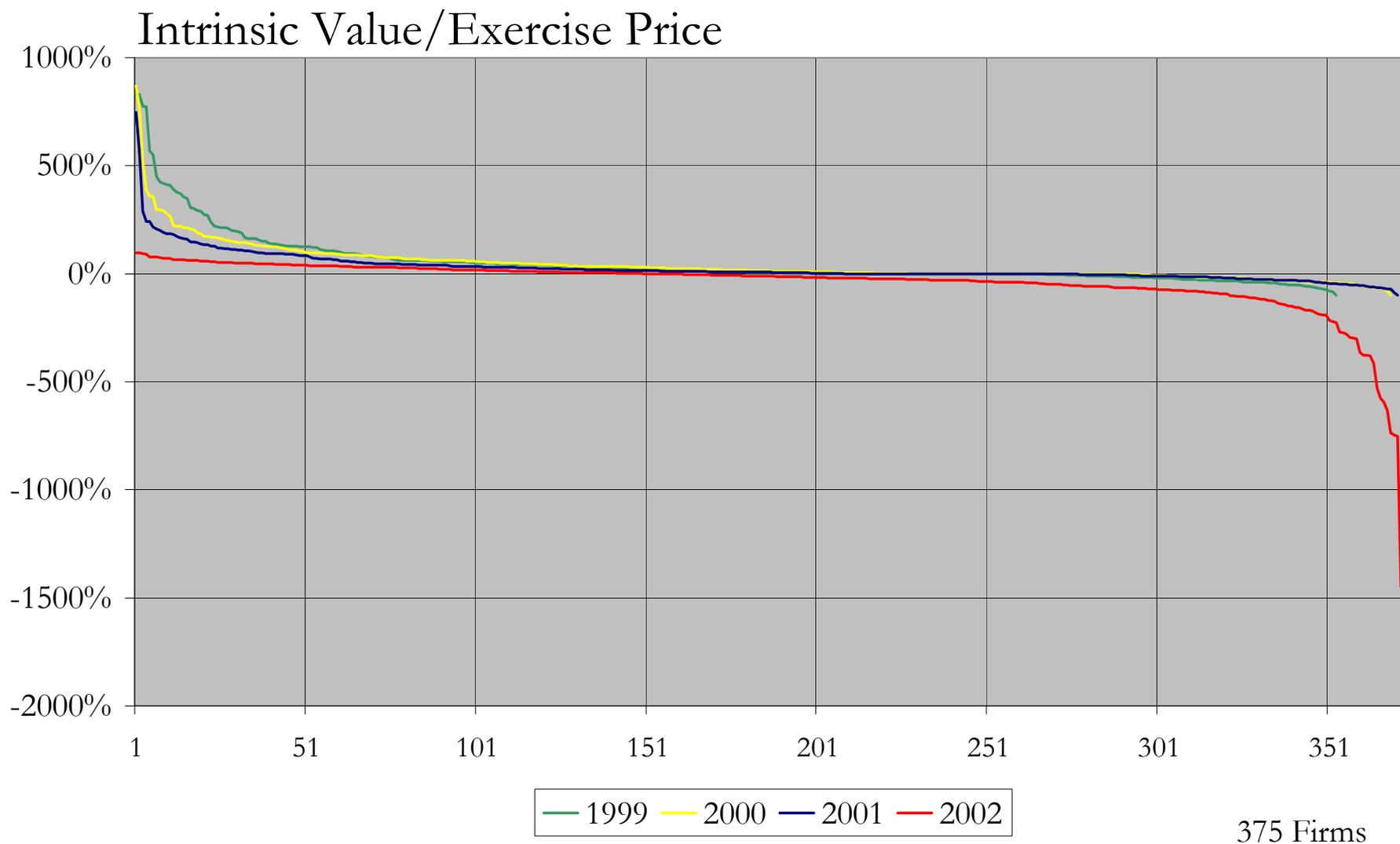
The option is valued at more than half the underlying share for more than 30% of the firms¹



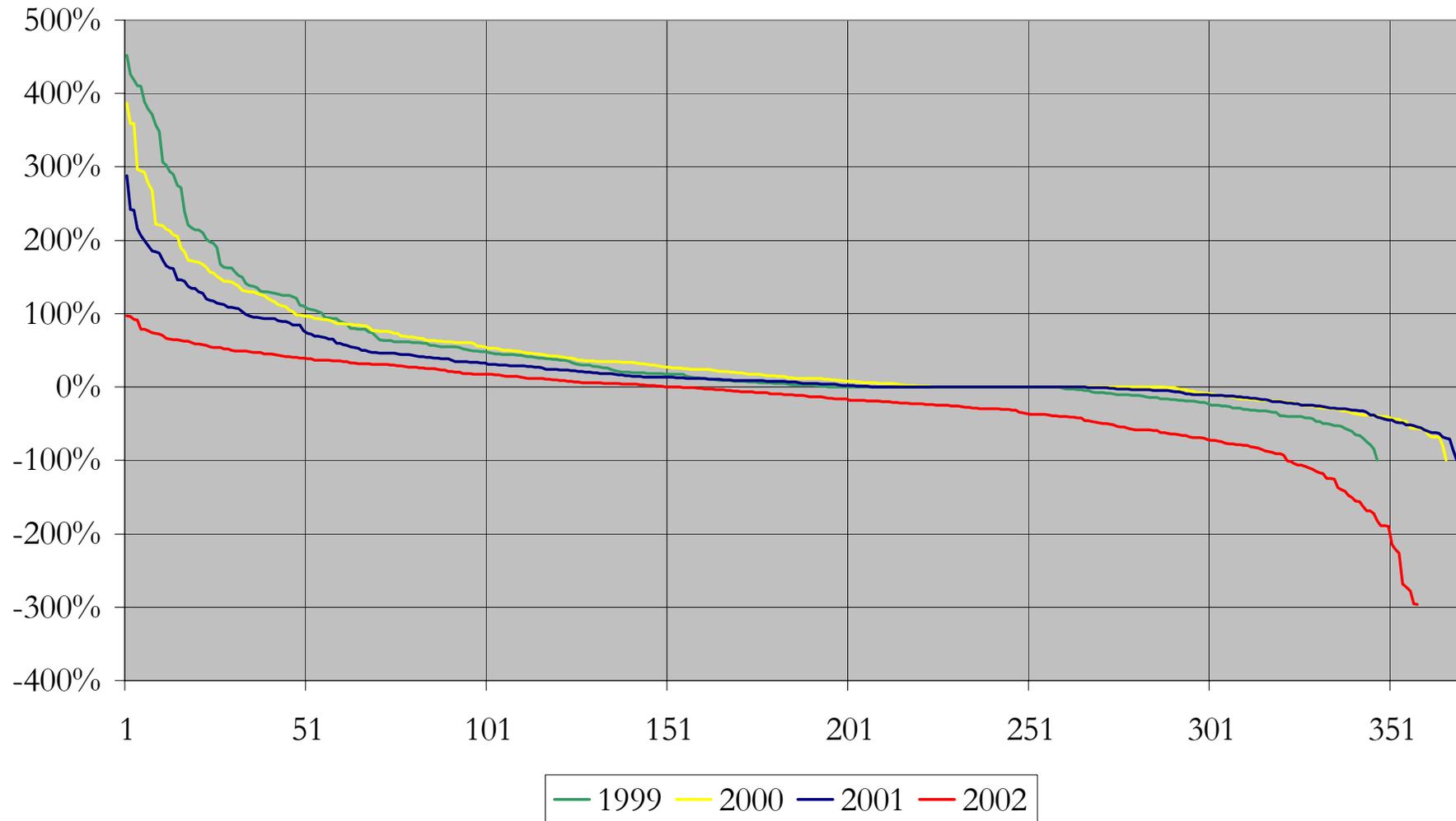
Similar pattern in Europe & the US



How far out-of-the-money?



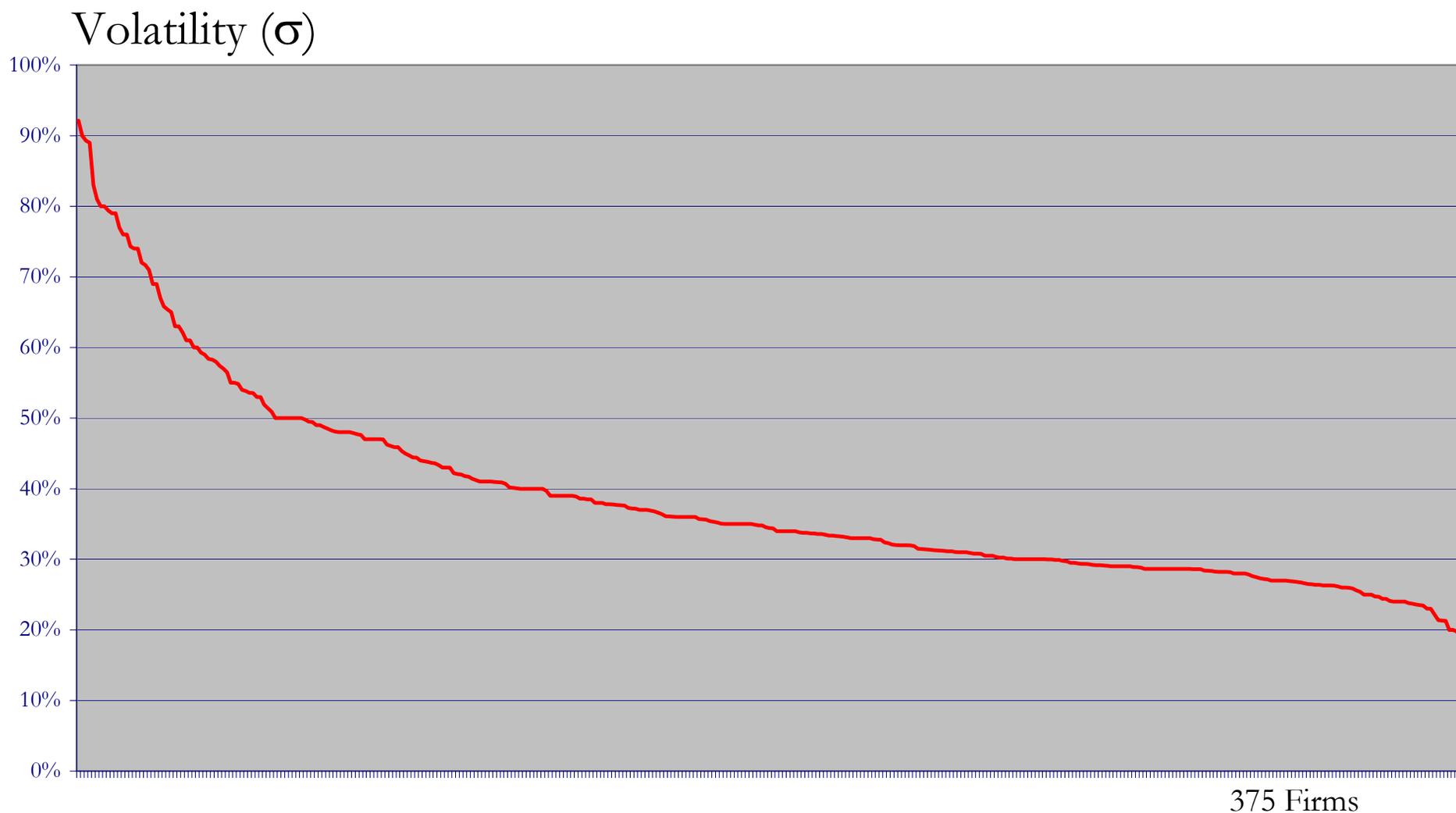
How far out-of-the-money?



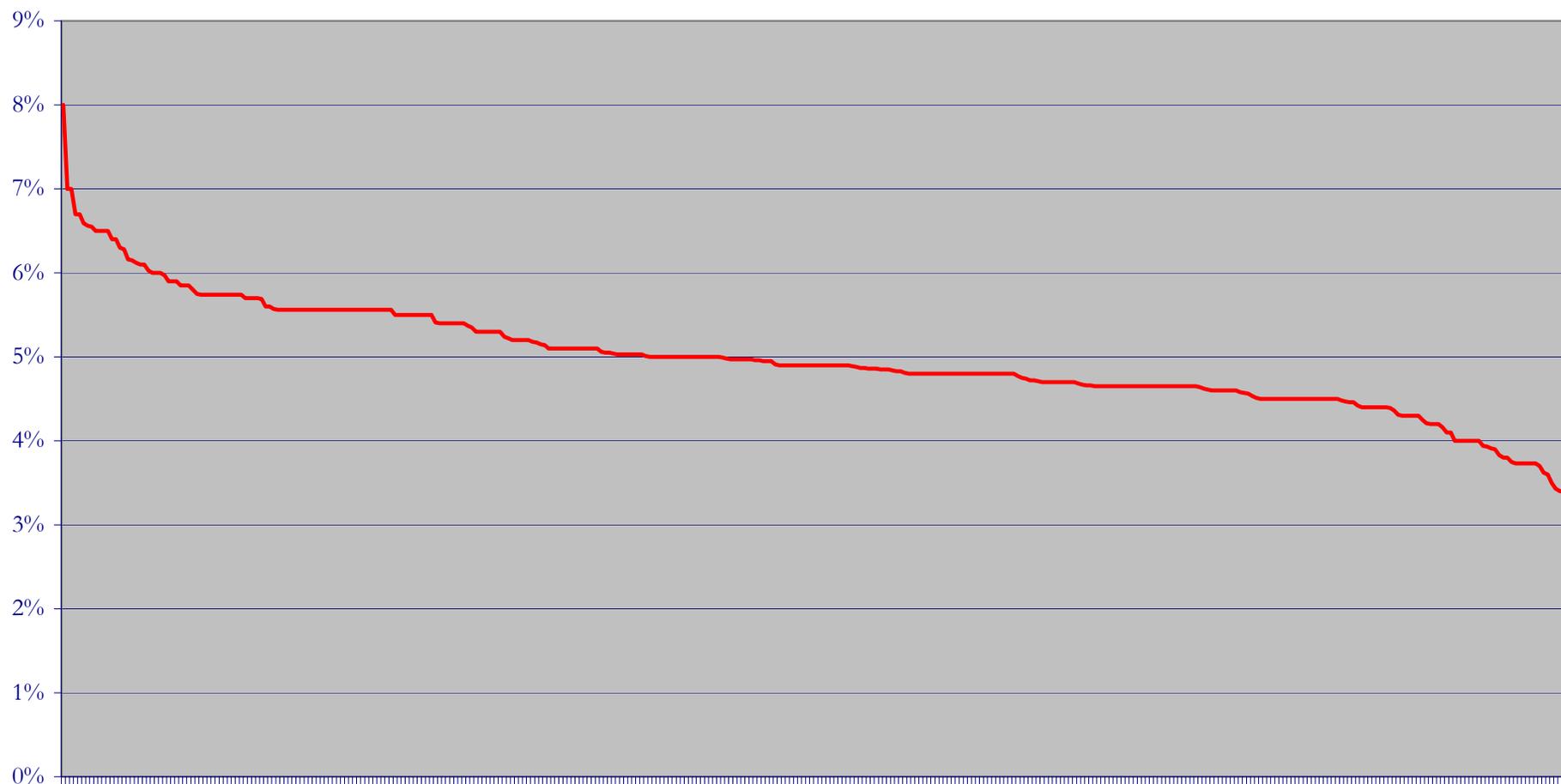
A wide array of reporting choice¹

2001	Black-Scholes Assumptions			
	Life	Volatility	DY	Risk-free
Minimum	0.33	6.00%	0.00%	1.70%
Mean	5.72	38.51%	1.82%	4.96%
Maximum	10	92.13%	8.00%	8.00%

A wide range of volatility is the driver¹

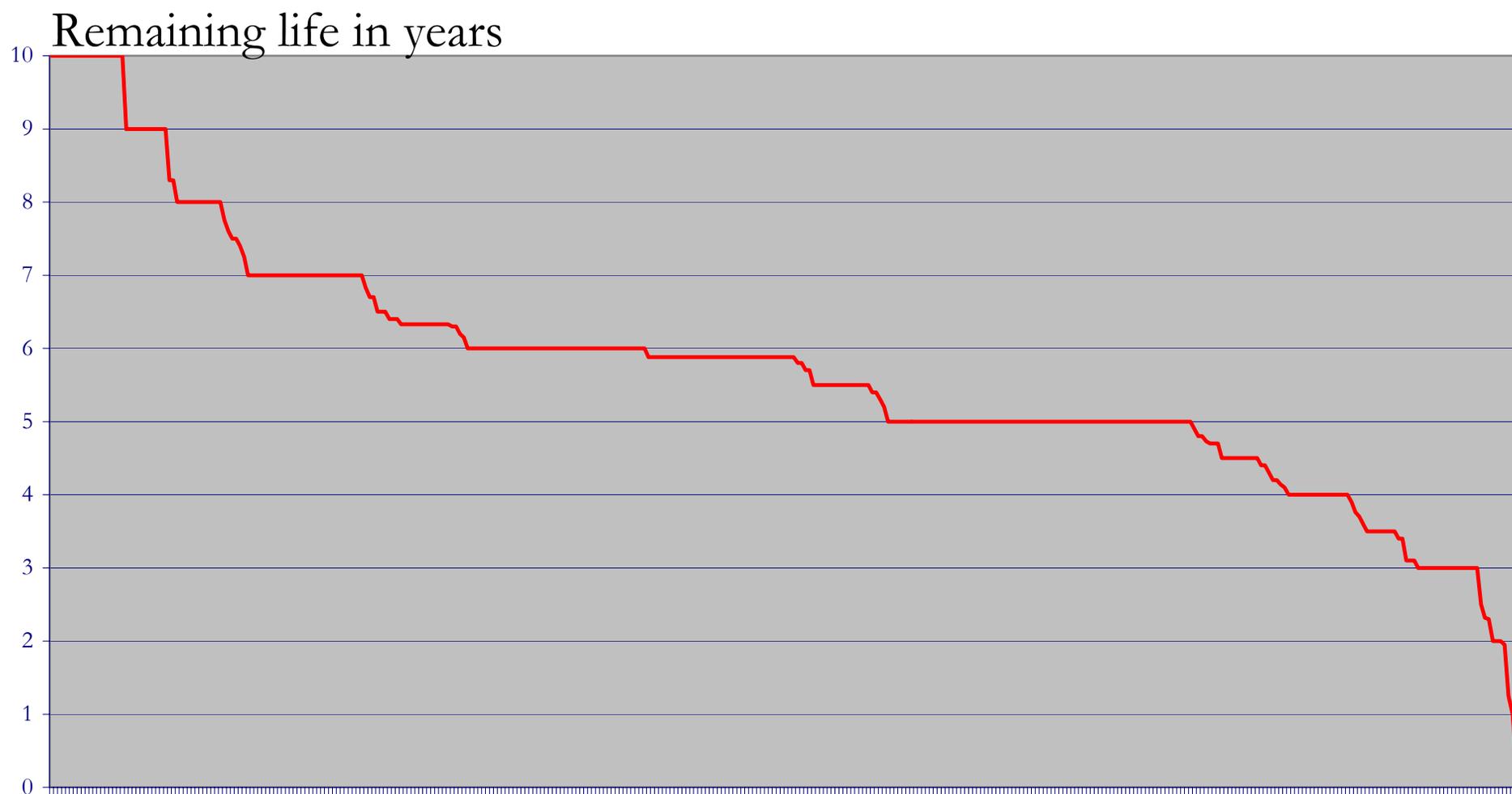


The range of risk-free interest rates wider than term structure¹



375 Firms

More than 70% are for 5 years & more



Why is Black-Scholes inappropriate for value to recipient at grant date?

- B-S model is the instantaneous value of the right to acquire the stock in the future with the following essential features:
 - ✓ Realisable instantaneously
 - ✓ Replicable continuously
- In short the volatility is not tradable, ergo, value is ephemeral
- The valuation at grant date espoused in ED2 necessitates the use of the B-S genre at their most vulnerable:
 - ✓ Options are usually granted on or near the money
 - ✓ δ is usually around 0.5 to 0.6
 - ✓ This represents a moment where the model is most sensitive to Δ variables
 - ✓ Since it is at the start of a long life estimation, errors are compounded for longer
 - ✓ Thus B-S seriously overvalues long-term options

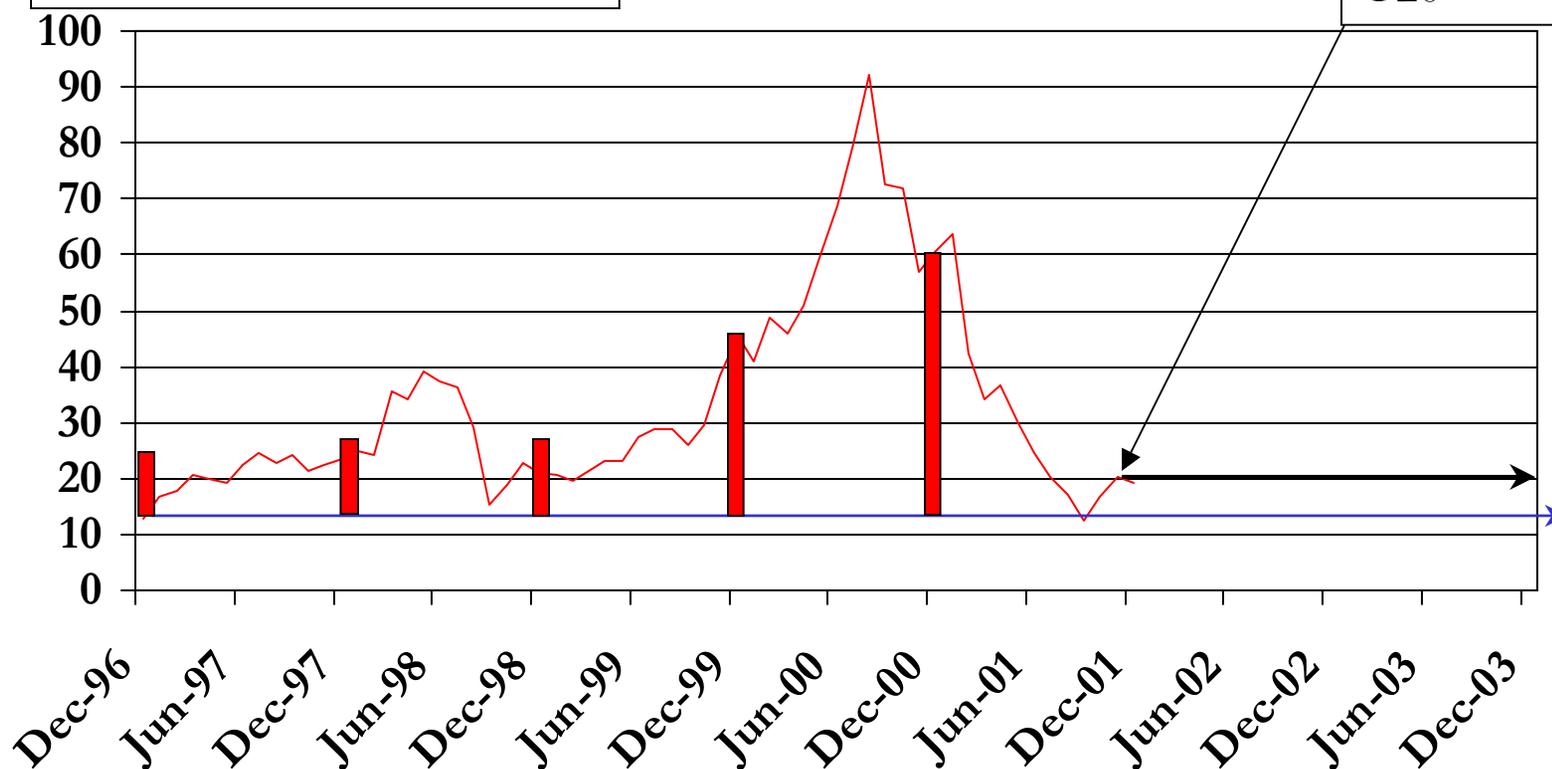
ED2 would exacerbate the valuation problems

- Vesting requirements
 - ✓ Bayesian adjustment to B-S
 - ✓ Instrument inputs for likelihood of vesting
- Forfeiture
 - ✓ Again this valuation issue flows directly from grant date
 - ✓ ED2 forces the issue into valuation rather than accounting adjustment
- Non transferability
 - ✓ Reducing expected life is arbitrary
- Early exercise likely
 - ✓ The above three & bear markets are dramatically changing exercise behaviour
 - ✓ This must be expectations based and is another source of error.
- Many of these problems could be resolved with proper truing up of cost.

Early exercise at Alcatel

December 1996 Alcatel A
 Exercise Price € 13.42
 Option window 1998 to 2003
 Option life 7 years
 Vesting period 1 year

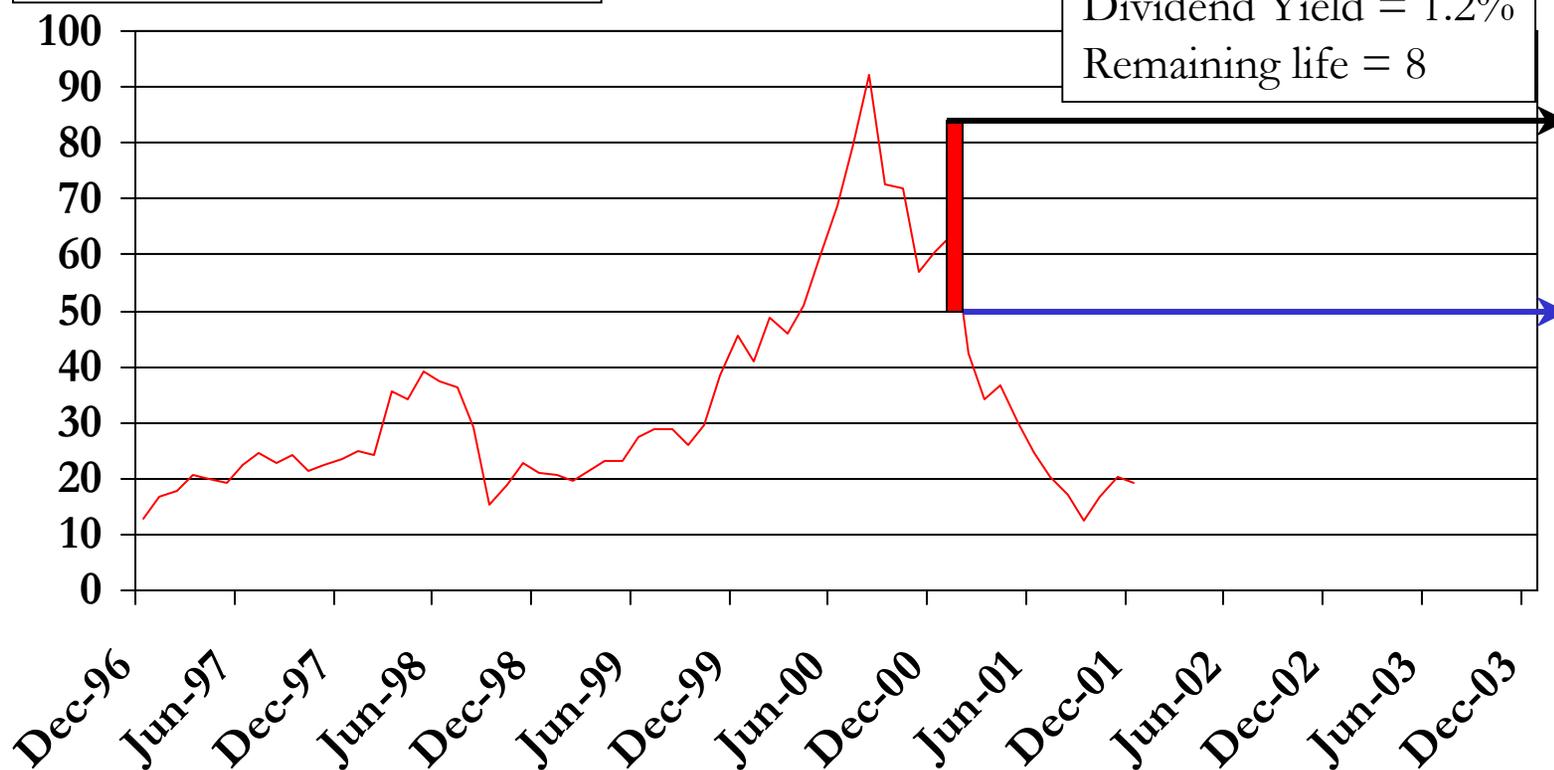
Significant
 number of
 Options were
 exercised at
 €20



January 2001 Alcatel A
Exercise Price € 50
Option window 2005 to 2009
Option life 8 years
Vesting period 2 year

Value at Grant Date
B-S Outputs
Option value € 33
 $\delta = 89\%$
Call/Stock = 70%

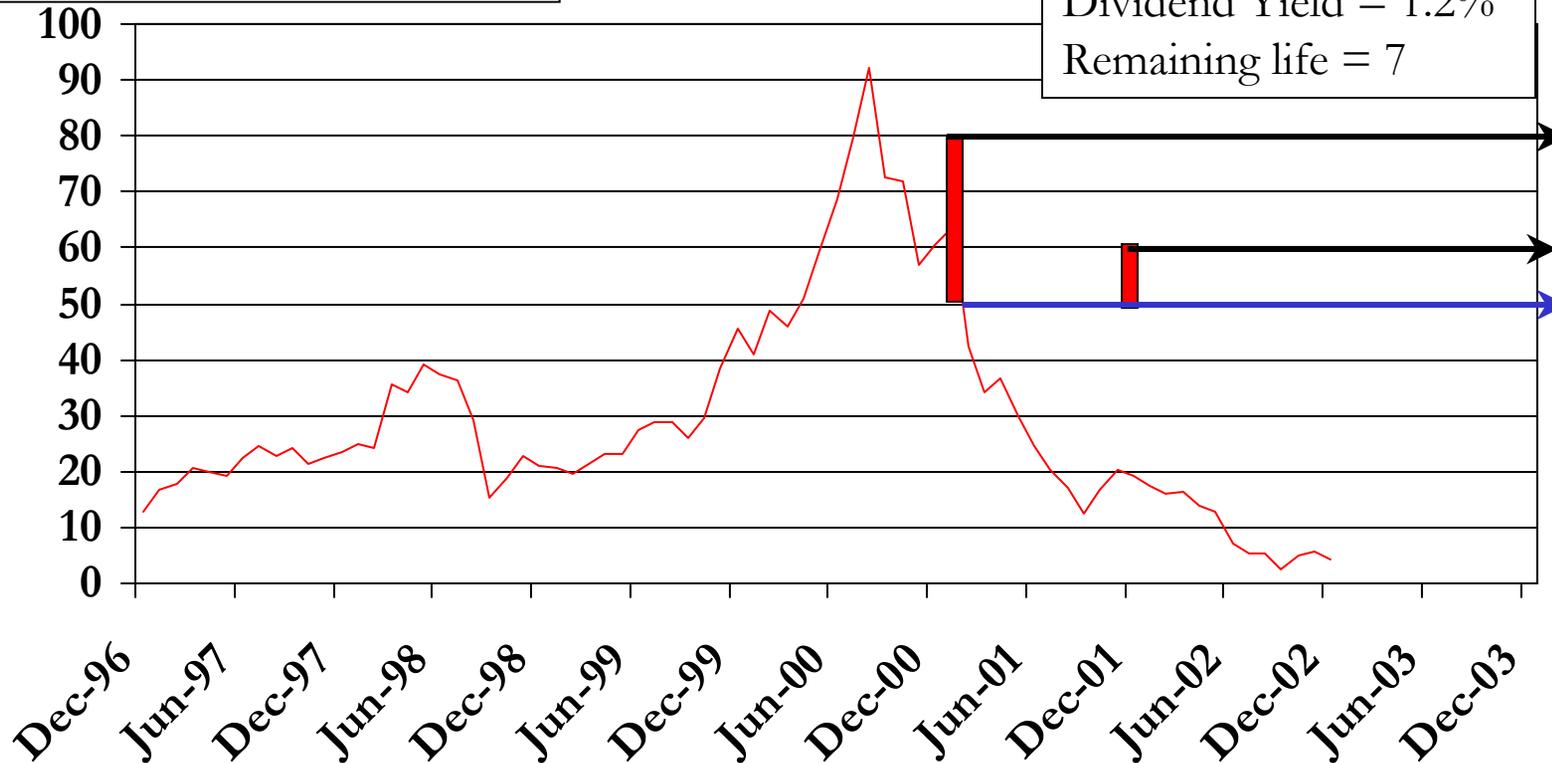
Value at Grant Date
B-S Inputs
Stock Price € 47.3
 $\sigma = 76\%$
 $R_f = 5.4\%$
Dividend Yield = 1.2%
Remaining life = 8



January 2001 Alcatel A
Exercise Price € 50
Option window 2005 to 2009
Option life 8 years
Vesting period 2 year

Value at Grant year end
B-S Outputs
Option value € 10
 $\delta = 74\%$
Call/Stock = 53%

Value at Grant Year end
B-S Inputs
Stock Price € 19
 $\sigma = 76\%$
 $R_f = 5.4\%$
Dividend Yield = 1.2%
Remaining life = 7



Criteria for option valuation models underlying mandatory expensing

- Comparable across firms
- Consistent over time
- Transparent
- Accurate
- Simple
- Replicable
- Understandable
- Informative

Three models compared

Models	Black-Scholes	Zero Volatility	Covariance
Volatility	σ	$\sigma = 0$	$\beta_i \sigma_m$
Problem	Estimates very noisy	Ignores the issue (unlisted co?)	Uses long-term driver of returns
Useful	Short-term noisy markets	Where costs are not trued up	Long-term based on more stable market σ
Advantage	Short-term continuous trading	Acknowledges lack of transferability. Time value only	Conceptual base for LT asset prices

Zero volatility model

- $S-PV(E)$
- The pure interest rate effect of time
- A function only of option life & interest rate
- An arbitrage bound to the B-S model
- If the option expense were defined as cost to the business this model would be a good candidate
- Characterises the long-term ESO as an interest-free loan...cost to the company based on interest rates. This could be adjusted upward for the effect of the spread between the risk-free rate and the corporate borrowing rate
- Although misapplied to unlisted companies

Covariance (β) Model

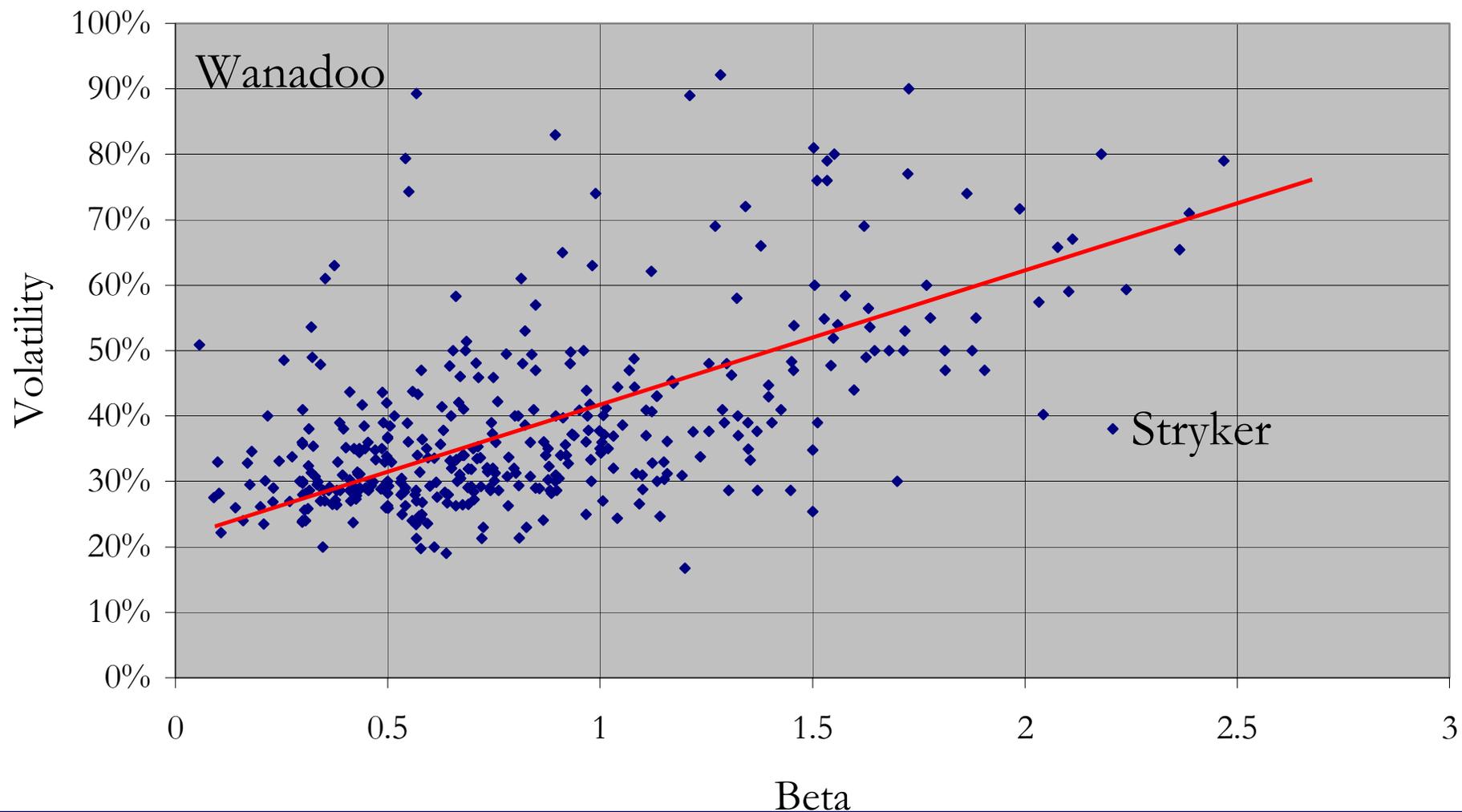
- Deals with the excessive noise of σ
- Volatility in share returns decomposed into
 - ✓ Residual risk (noise) usually diversifiable
 - ✓ Systematic risk market related not diversifiable
 - ✓ Driven by market volatility (σ_m)
 - ✓ Correlation of share with the market (ρ_{im})
- Under B-S, σ is not stable
- σ_m is demonstrably more stable
- The covariance structure is more robust
- Relative risk more reliable for the long term
- The covariance model uses $\beta_i \sigma_m$ in the B-S model

The empirical effect of the models

(Grant date valuation estimates 2001¹)

Company	Share Price	2001 Black-Scholes Assumptions				Beta	Black-Scholes	Zero Volatility	Covariance
		Life	Volatility	DY	Risk-free				
Concord Communications	32.78	7	89.00%	0.00%	6.00%	1.21	81%	33%	37%
KPN	5.71	5	92.13%	0.00%	5.03%	1.28	73%	22%	28%
Wanadoo	5.63	10	58.30%	0.00%	4.65%	0.66	72%	37%	37%
Veritas Software	44.83	5	90.00%	0.00%	4.56%	1.73	72%	20%	31%
Immunex	41.81	6	79.00%	0.00%	5.30%	1.53	72%	27%	34%
KLA-Tencor	49.56	5.4	80.00%	0.00%	5.50%	2.18	70%	25%	39%
Agilent Technologies	28.51	5.5	77.00%	0.00%	4.25%	1.72	67%	20%	32%
WPP Group	760.00	10	53.56%	0.58%	5.56%	1.64	67%	37%	45%
Forest Laboratories	40.97	10	43.59%	0.00%	6.50%	0.49	66%	47%	47%
MedImmune	46.35	6	69.00%	0.00%	4.72%	1.27	66%	24%	30%

β vs. σ



Alternative models

2001	Valuation Model		
GICS Classification	Black Scholes	Zero Volatility	Covariance
Consumer/Discretionary	36%	14%	19%
Consumer/Staples	36%	13%	18%
Energy	36%	16%	21%
Technology Financials	33%	12%	15%
Health Care	39%	17%	20%
Industrials	36%	15%	20%
Information Technology	35%	17%	19%
Materials	39%	17%	21%
Telecommunications Services	36%	14%	19%
Utilities	38%	15%	19%

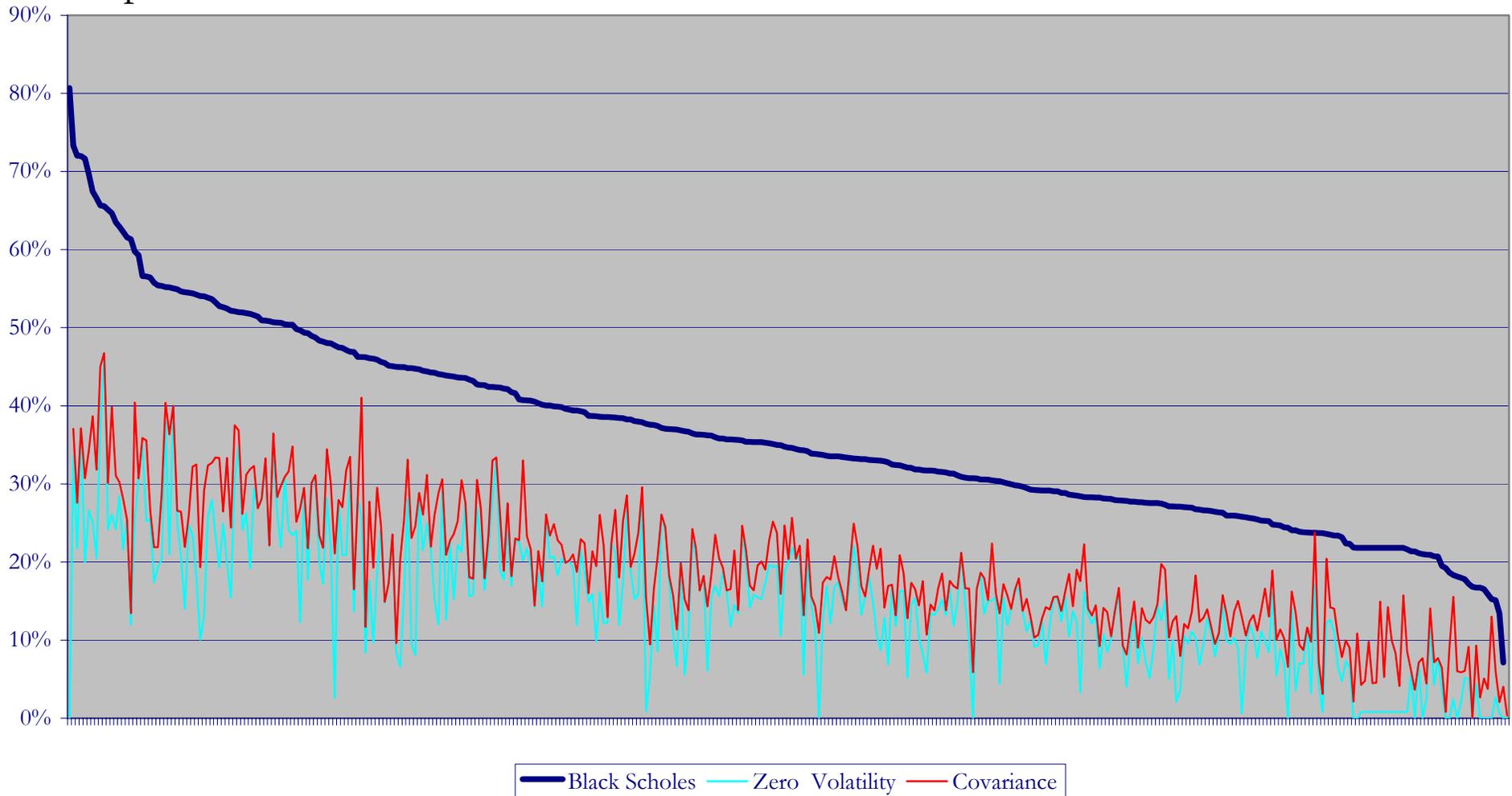
2001	Valuation Model		
Company Origin	Black Scholes	Zero Volatility	Covariance
Europe	38%	16%	21%
US	36%	14%	18%

Covariance reduces bias

	Black Scholes	Zero Volatility	Covariance
Minimum	7%	0%	0%
Mean	37%	15%	19%
Maximum	81%	47%	47%

Covariance reduces bias

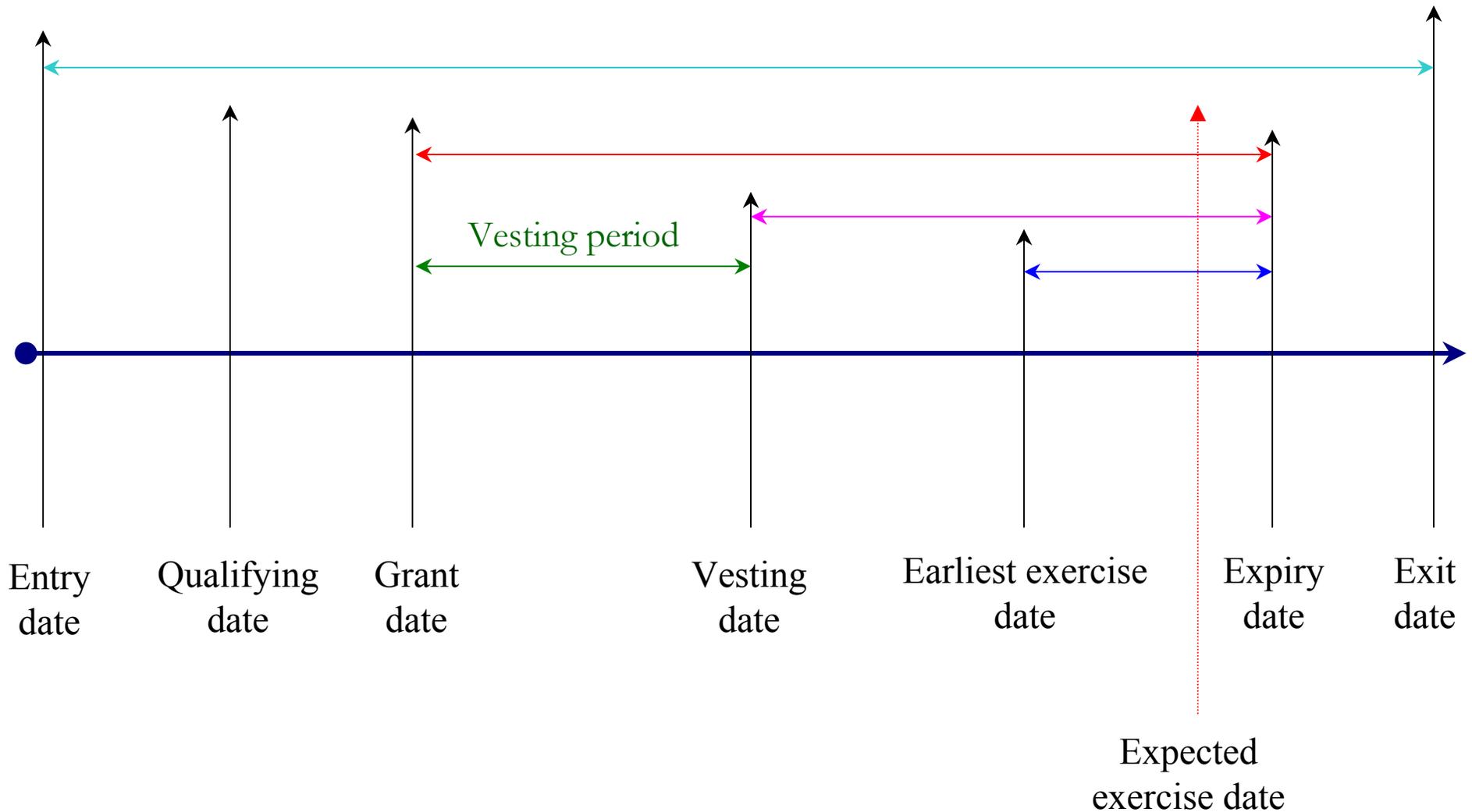
Option value as % Share Price



Accounting model & measurement model choices are not independent

Models	Grant date	Service date	Vesting date
Black Scholes	Invalid in concept & practice	Hybrid	Unconditional right, shorter life
Zero volatility	Hybrid	Recognises finance cost	Hybrid
Covariance	Reduces estimation error	Hybrid	Less valid for shorter term

The option timeline



Criteria for option valuation models underlying mandatory expensing

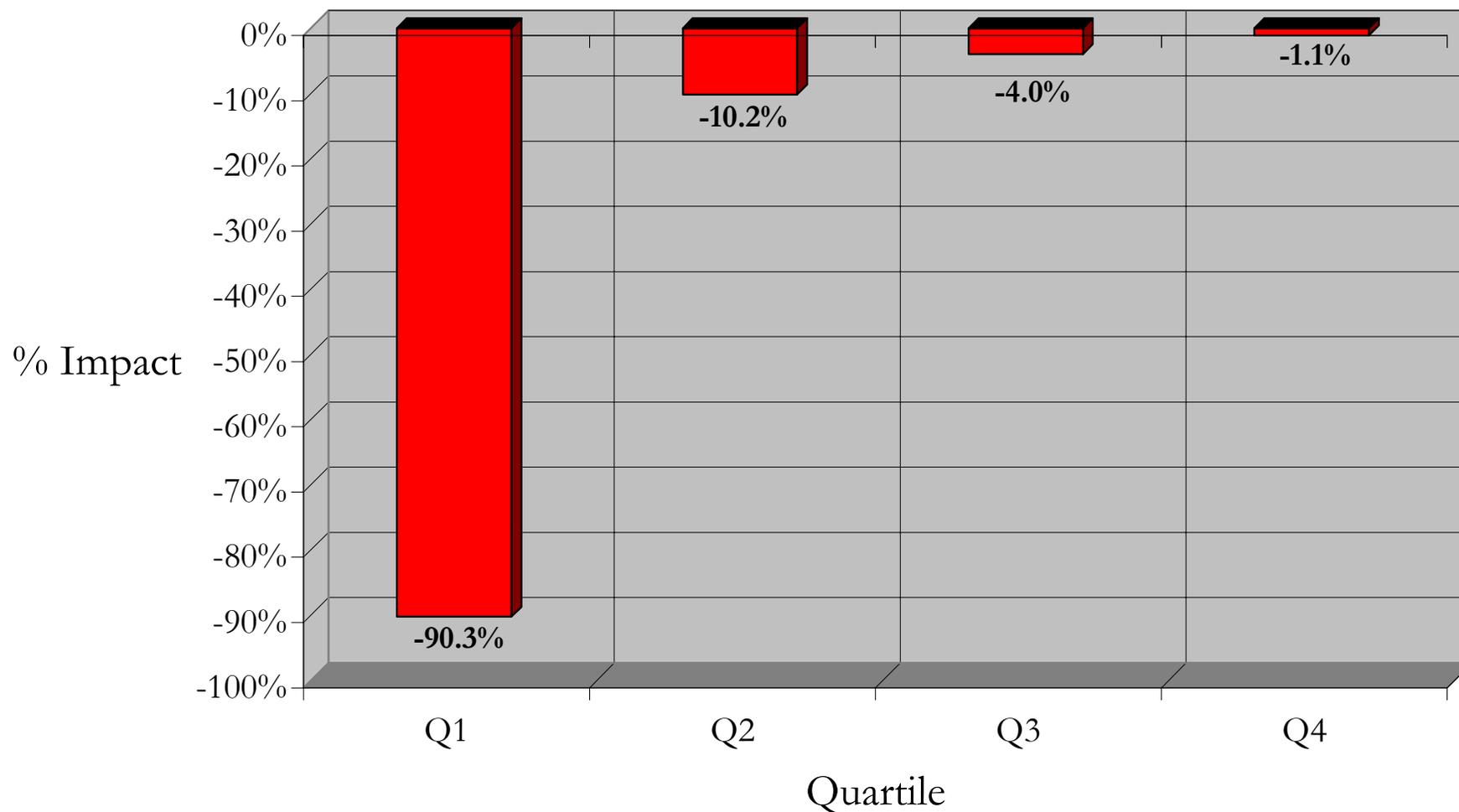
Models	Black Scholes	Zero volatility	Covariance
Accurate	3	3	1
Consistent	3	1	2
Transparent	3	1	2
Simple	3	1	2
Replicable	3	1	1
Understandable	3	1	2
Informative	2	3	1

The economic consequences of ED2 need to be investigated

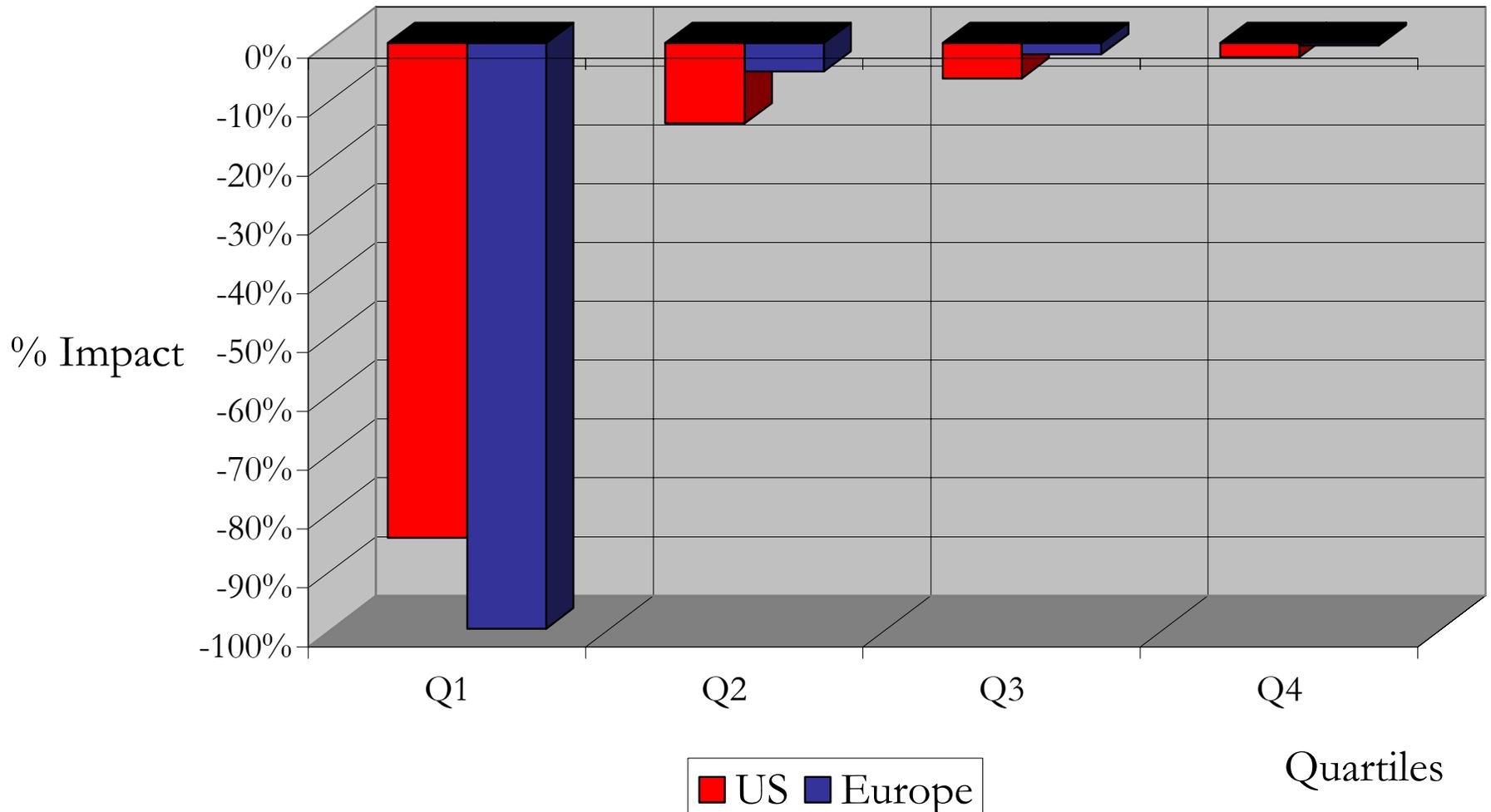
- What are the likely first-order effects?
 - ✓ Reported earnings impact across firms is asymmetrical
 - ✓ New firms
 - ✓ Small firms
 - ✓ Technology firms
 - ✓ Dividend distributions
- What are the likely second-order effects?
 - ✓ Slow down in the adoption of the schemes by business?
 - ✓ Cost borne by workers
- What are the likely third-order effects
 - ✓ Protects larger mature firms from new competitors
 - ✓ Inhibition of innovation
- Many of these effects may not be in the public interest

Impact on earnings of expensing options

(2001 earnings full universe¹)

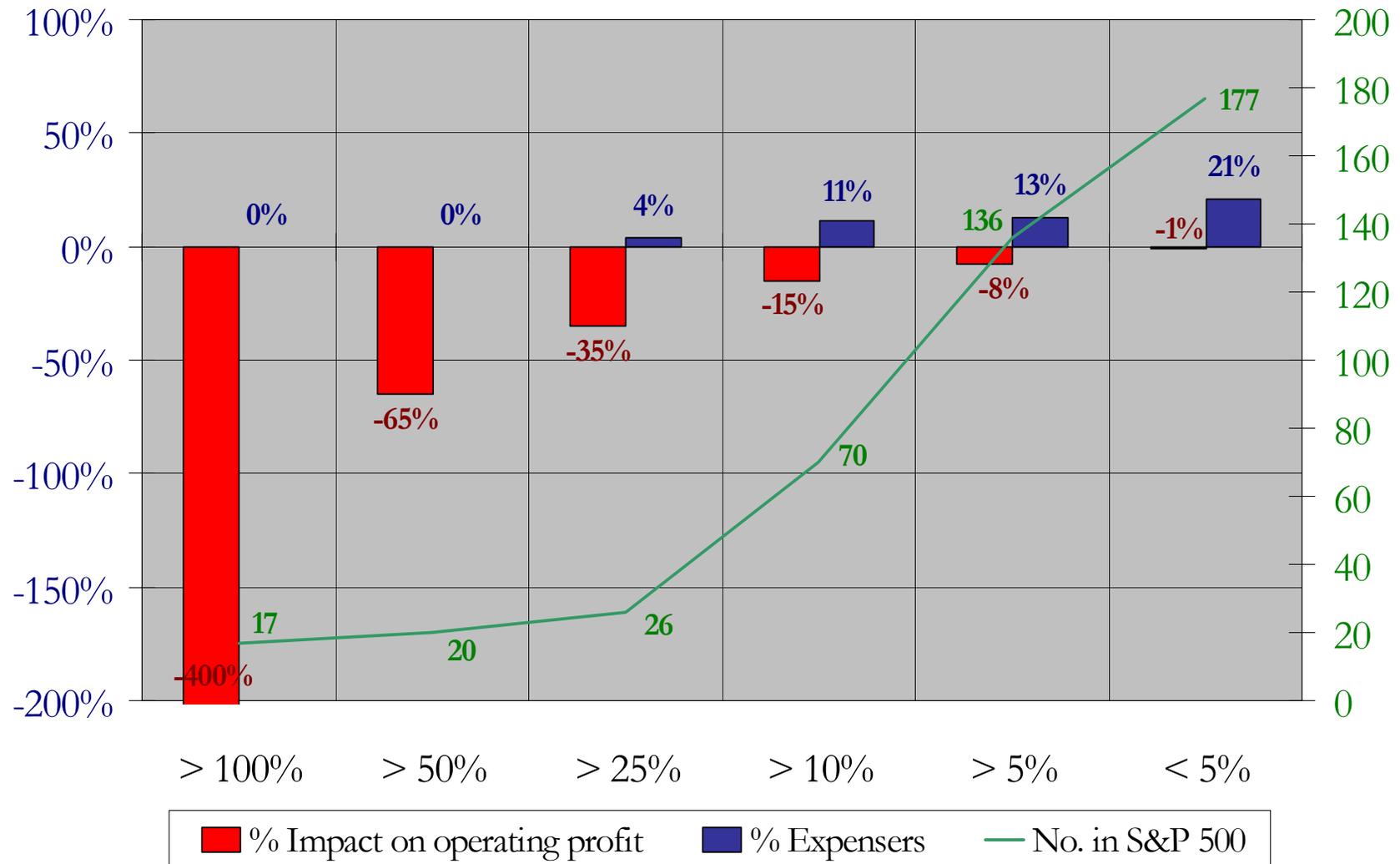


A wider divergence of effect in Europe

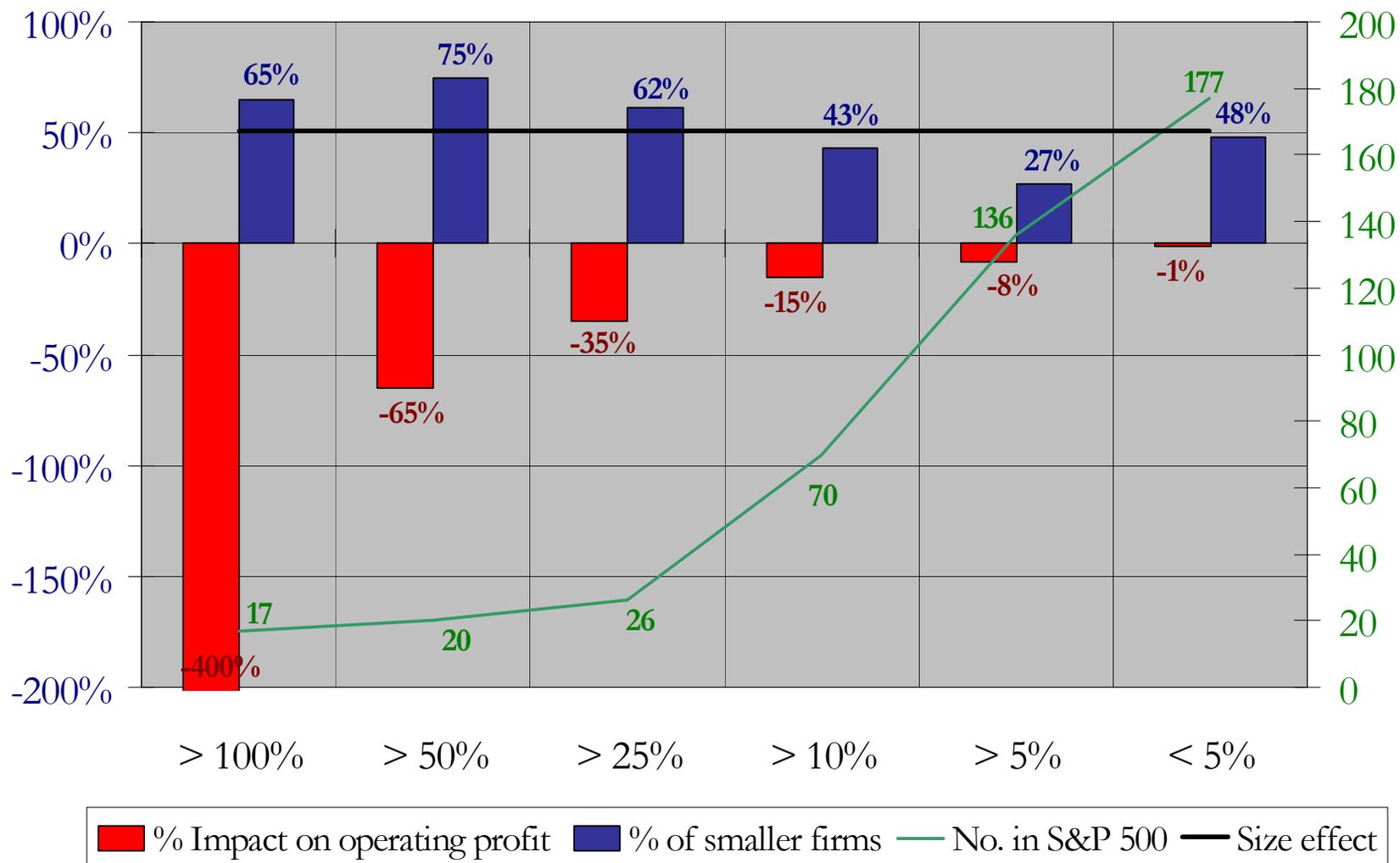


The US experience:

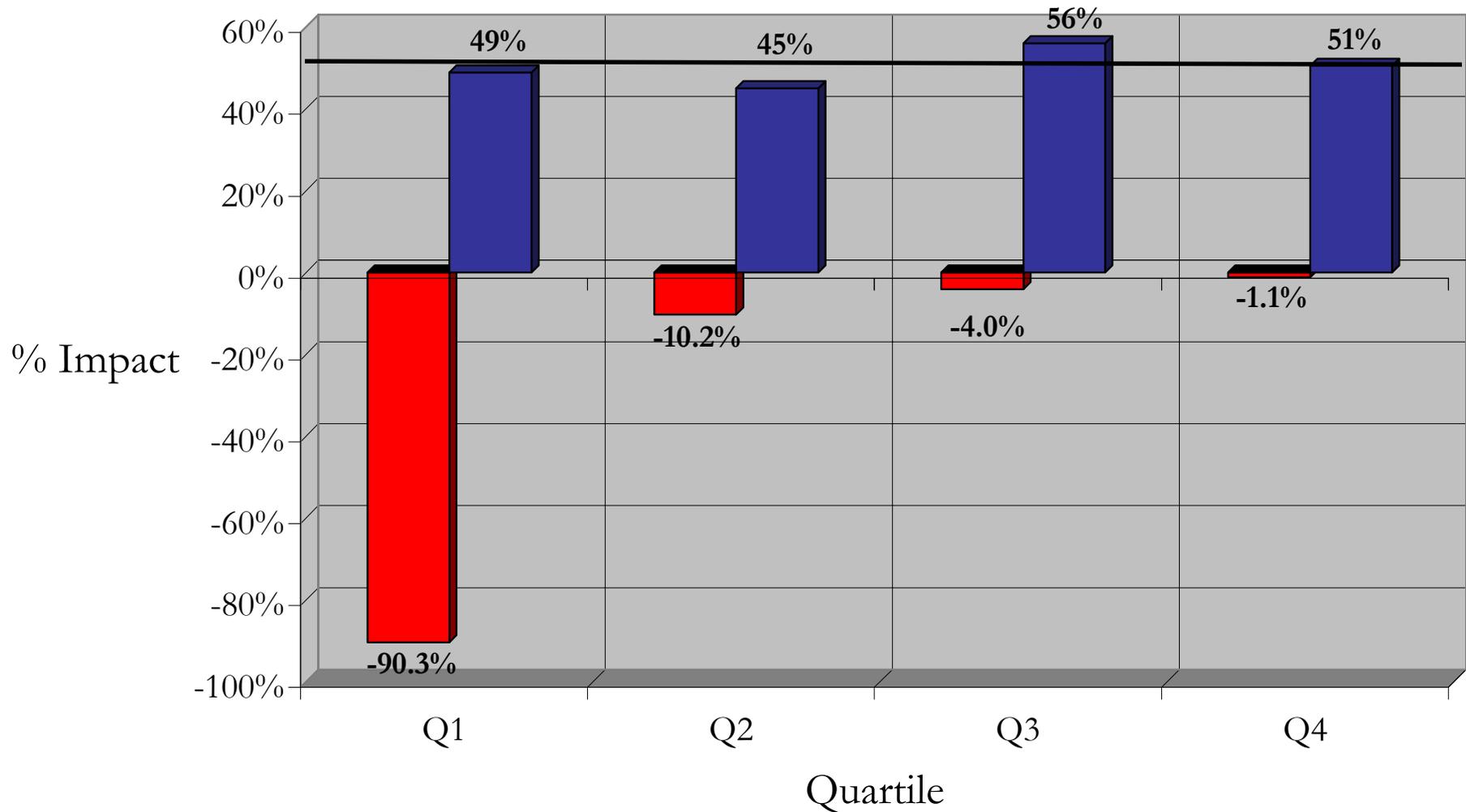
Large firms with low impact have opted to expense



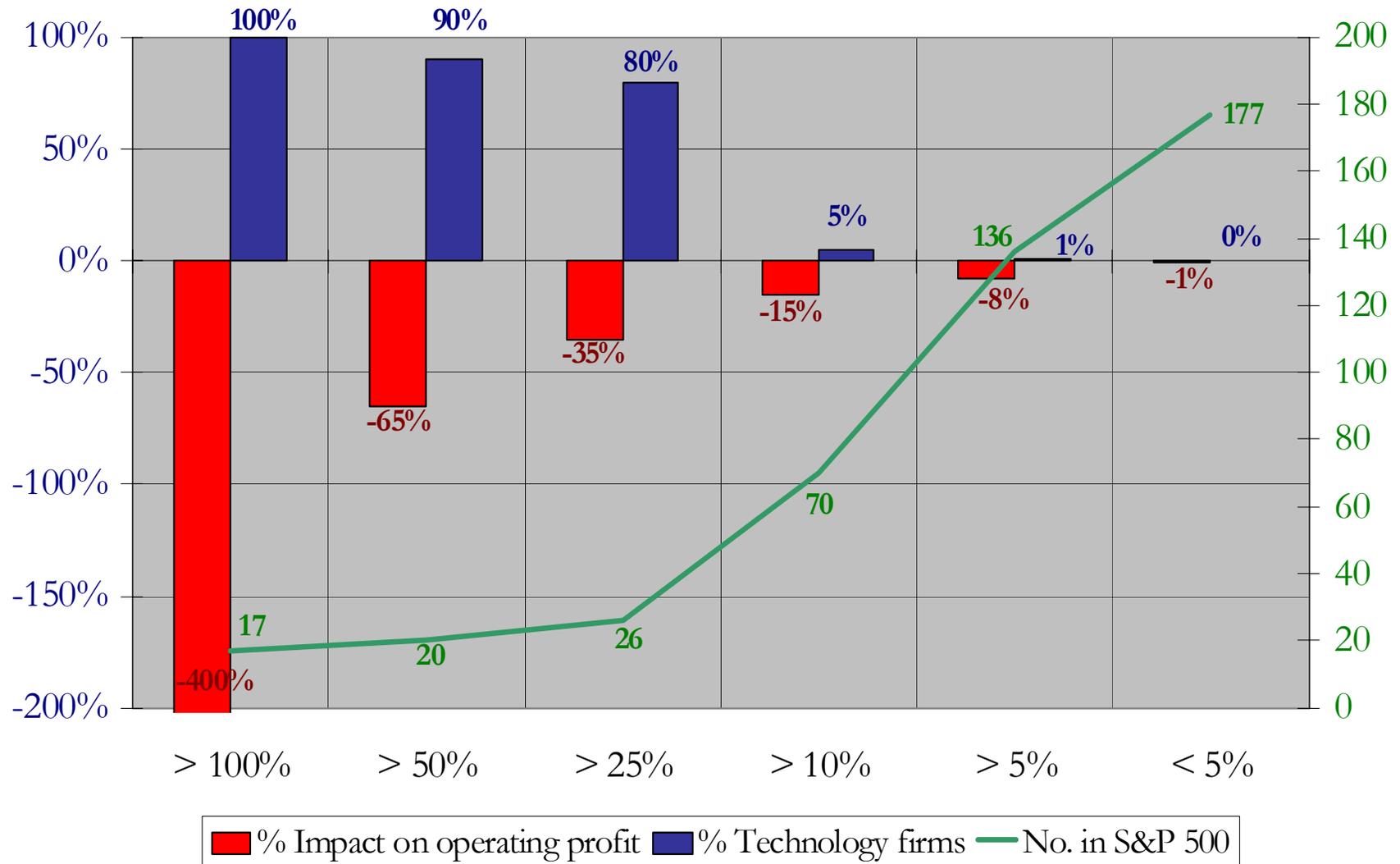
The US experience: Smaller firms have larger impact (2001 S&P 500¹)



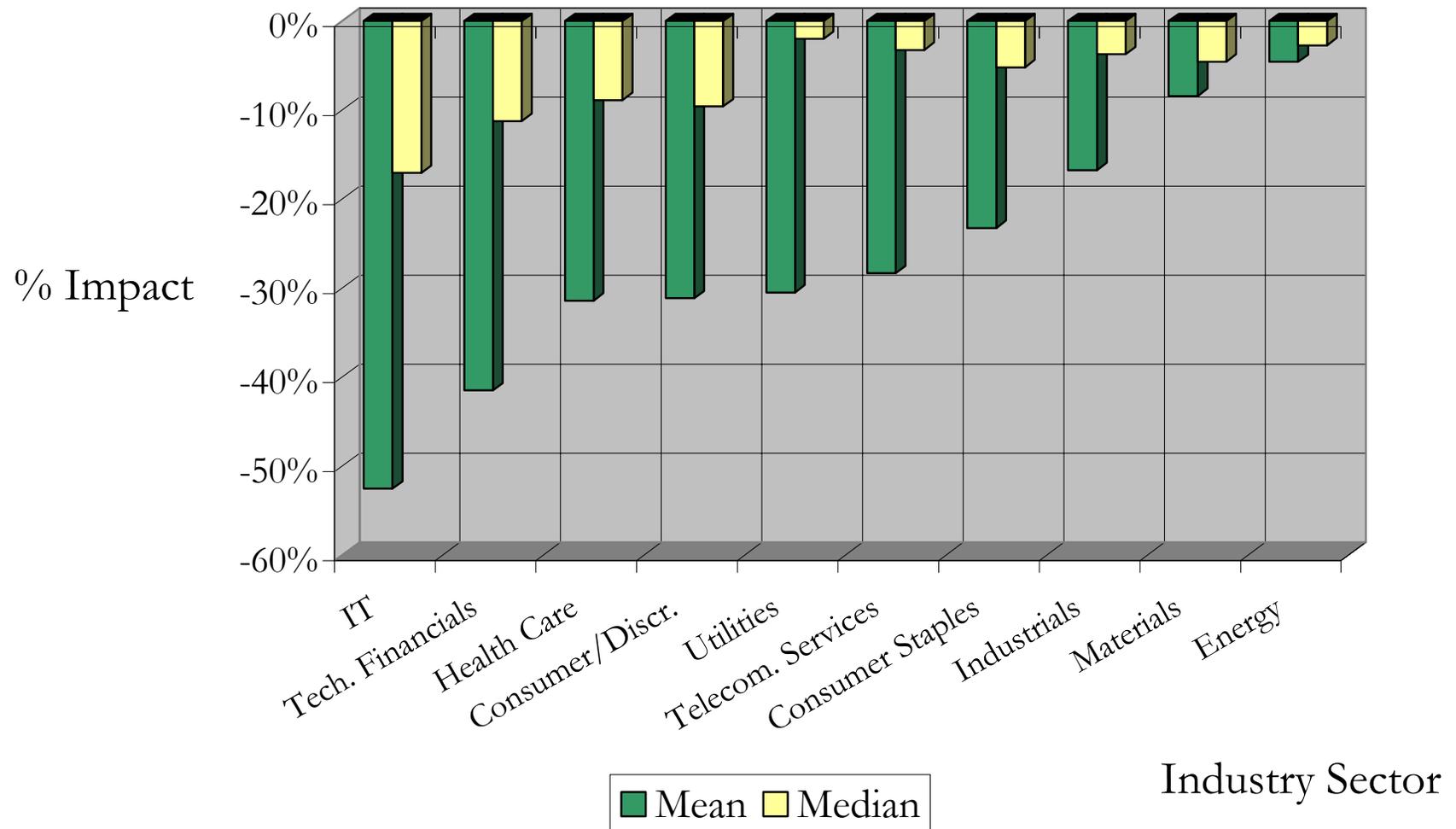
No real size effect in Europe



The US experience: Tech. firms have extreme impact



A definite asymmetry across sectors



The unrecorded transaction

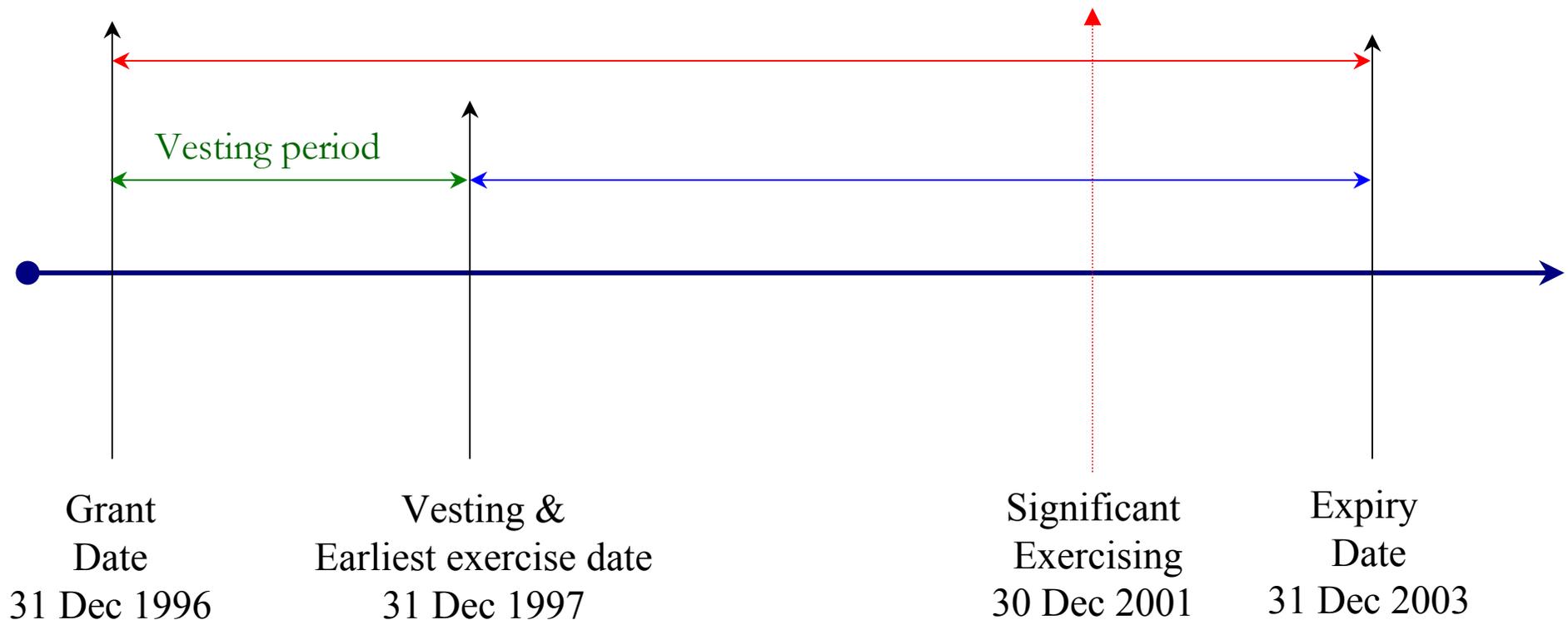
Model	Grant date	Service date
Valuation date	Date of granting	Service consumed
Option life start	Grant date	Date of service
Option life end	Maturity date	Maturity date
Write off period	Immediate	Over period of service
Value to recipient	No value at this date	Value once vested

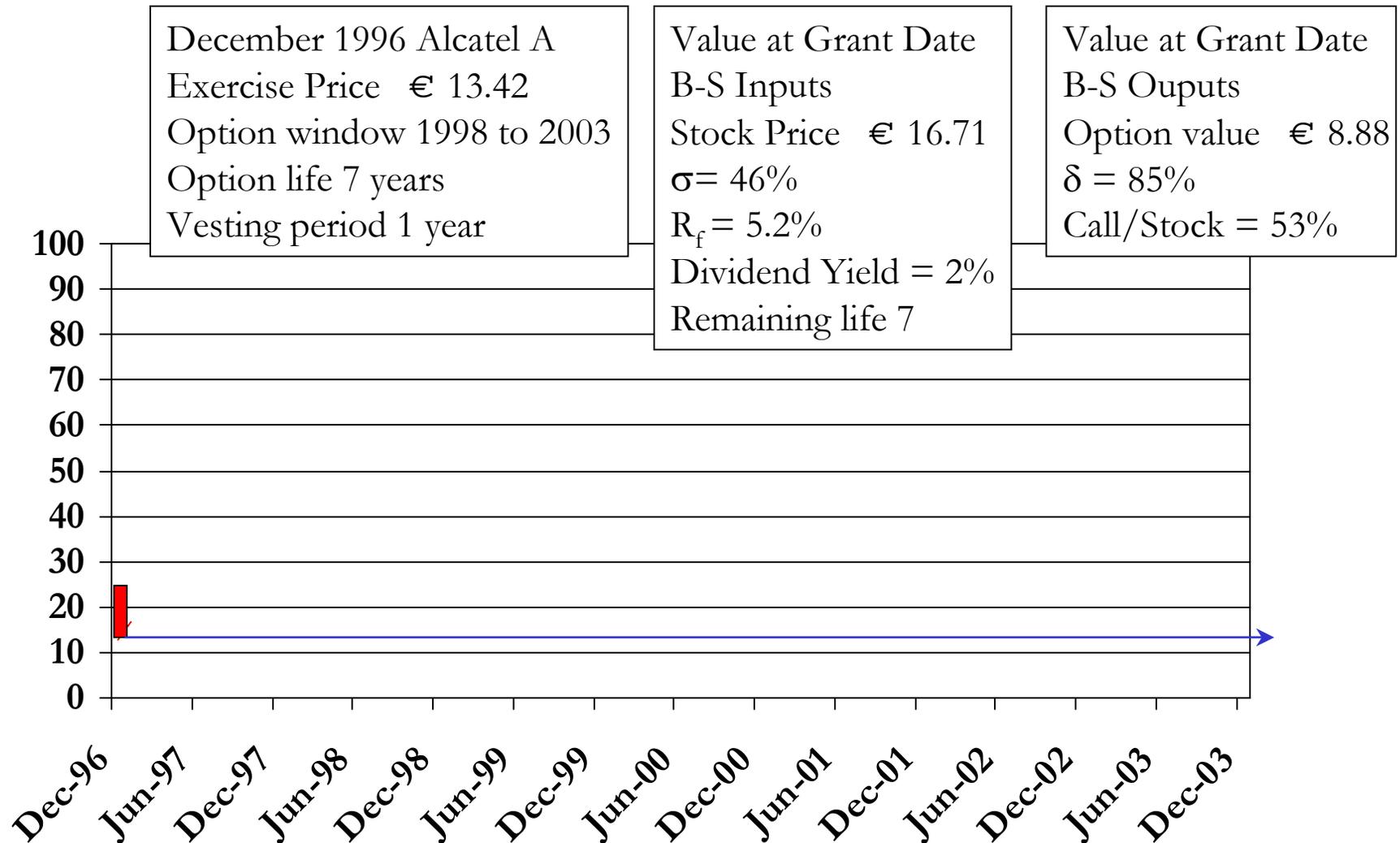
ED 2 A mongrel

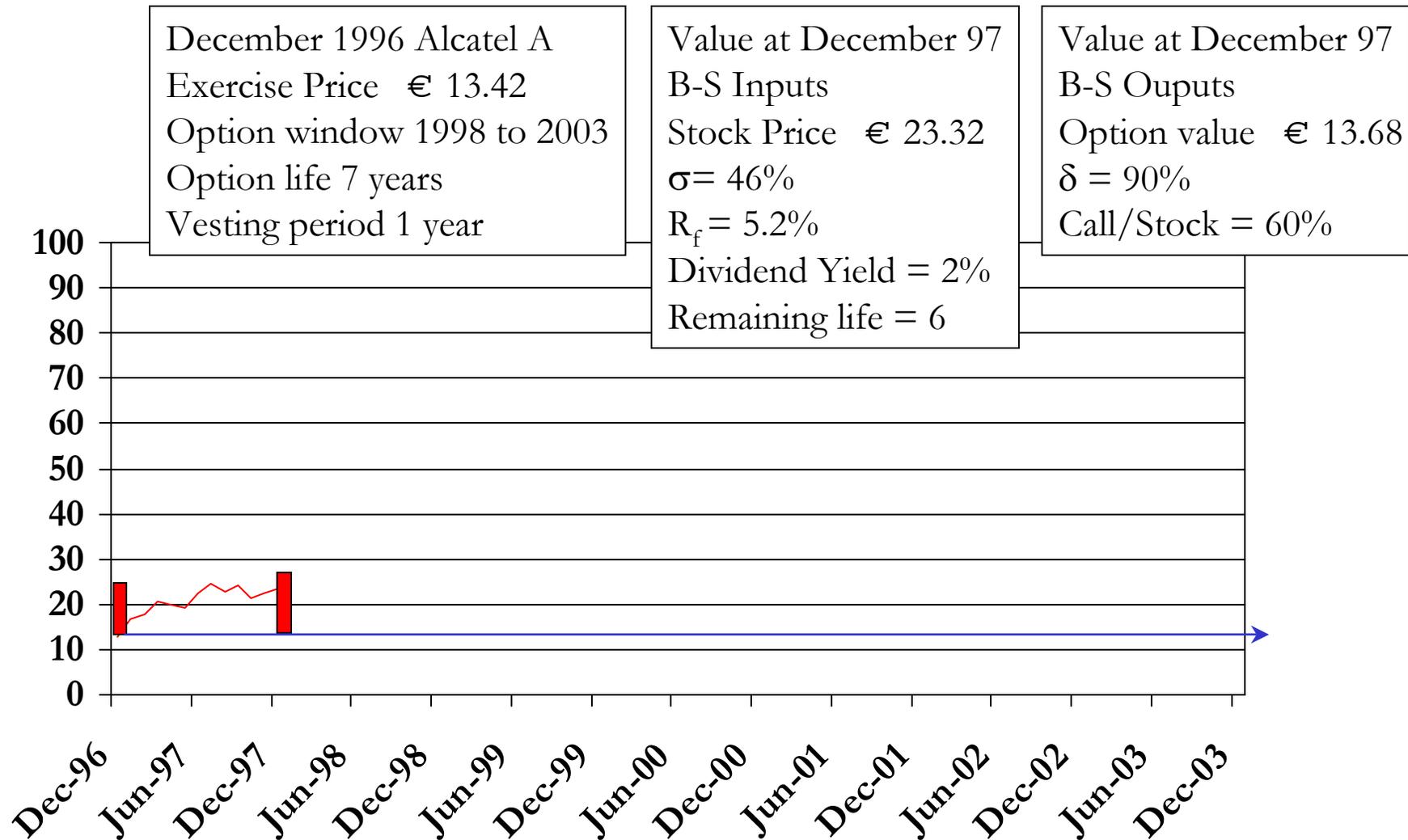
Model	Grant Date	Service date	Vesting date
Value to recipient (surrogate)	B-S invalid. Not realisable.	BS invalid Becomes valuable at vesting date. Value over option life. Misses service period	B-S invalid. Value over option life. However there is a right No overlap with service (vesting period)
Cost to company (direct)	Take expected opportunity cost. Book at Grant date once-off	Take expected Opportunity cost. Book over service (vesting) period.	Take expected Opportunity cost. Book over option life.
ED 2	Use to set justify date	Use to justify write off period as vesting	Use to justify Model with adjustments, for expected life, forfeitures, vesting likelihood etc

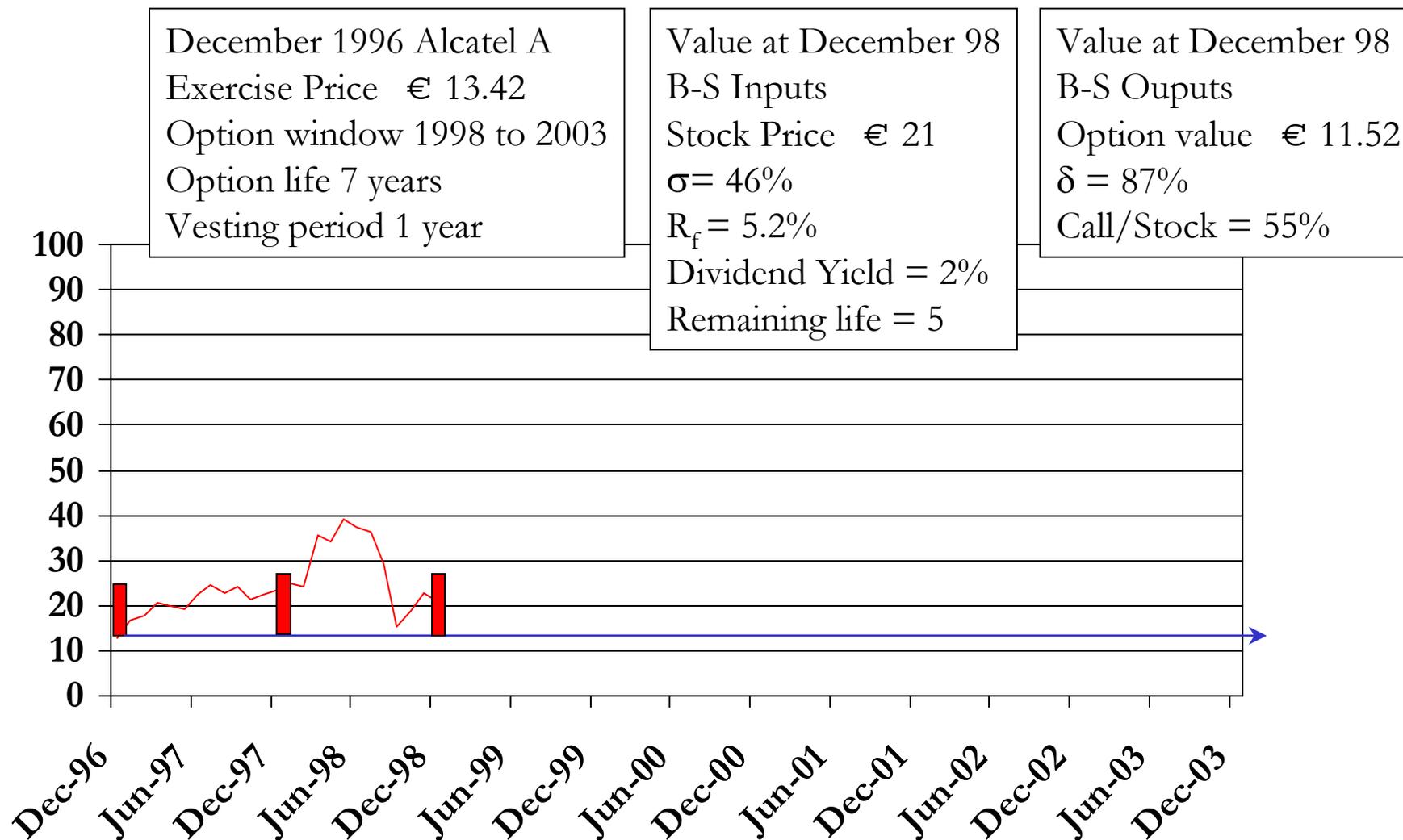
	Service package	Financial Instrument
Company Perspective	Resources consumed over a period for future settlement	Cost to company of resources consumed?
Employee Perspective	Services rendered over a period for future participation	Benefit to recipient of instrument received?

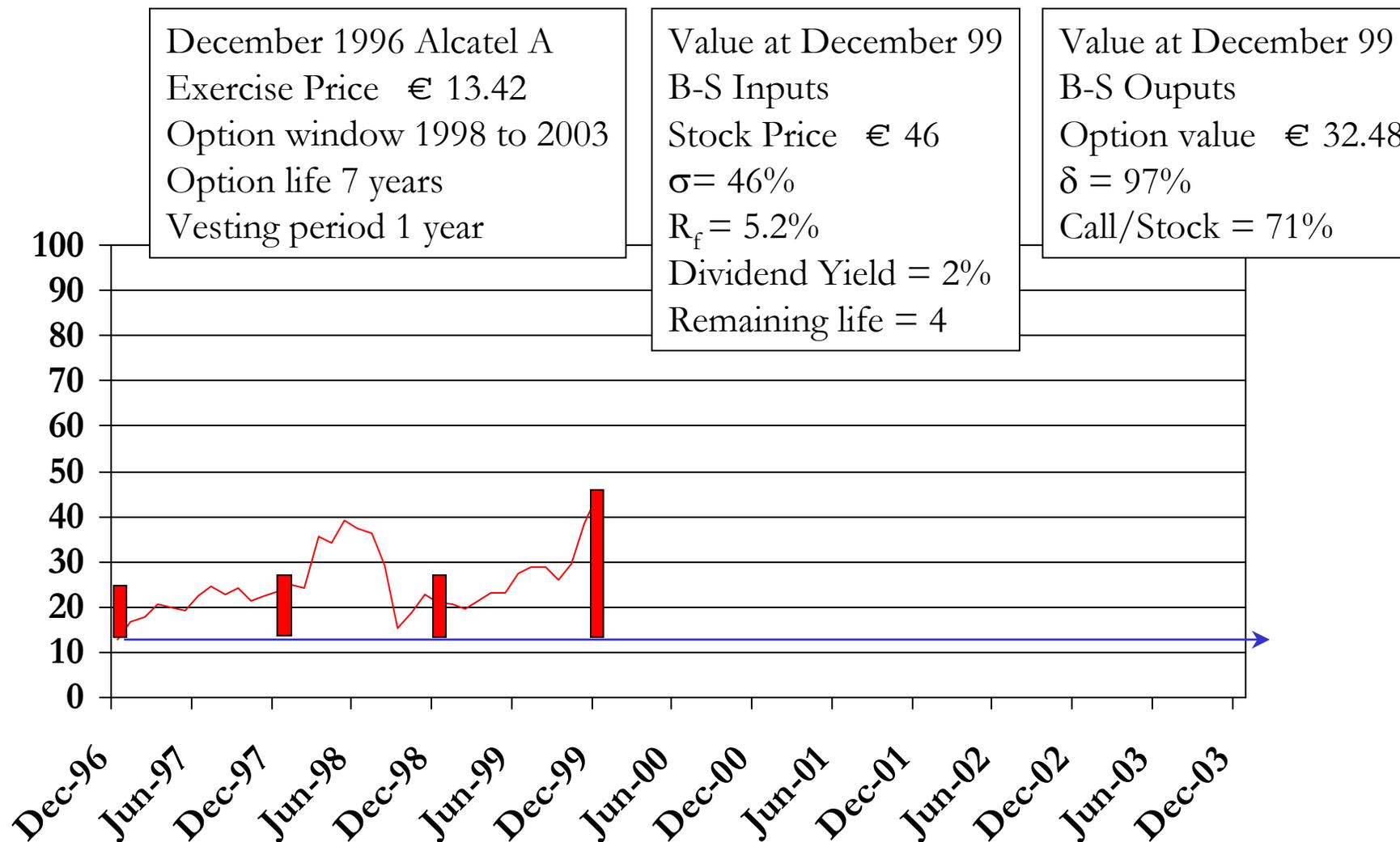
The Alcatel 1996 option timeline

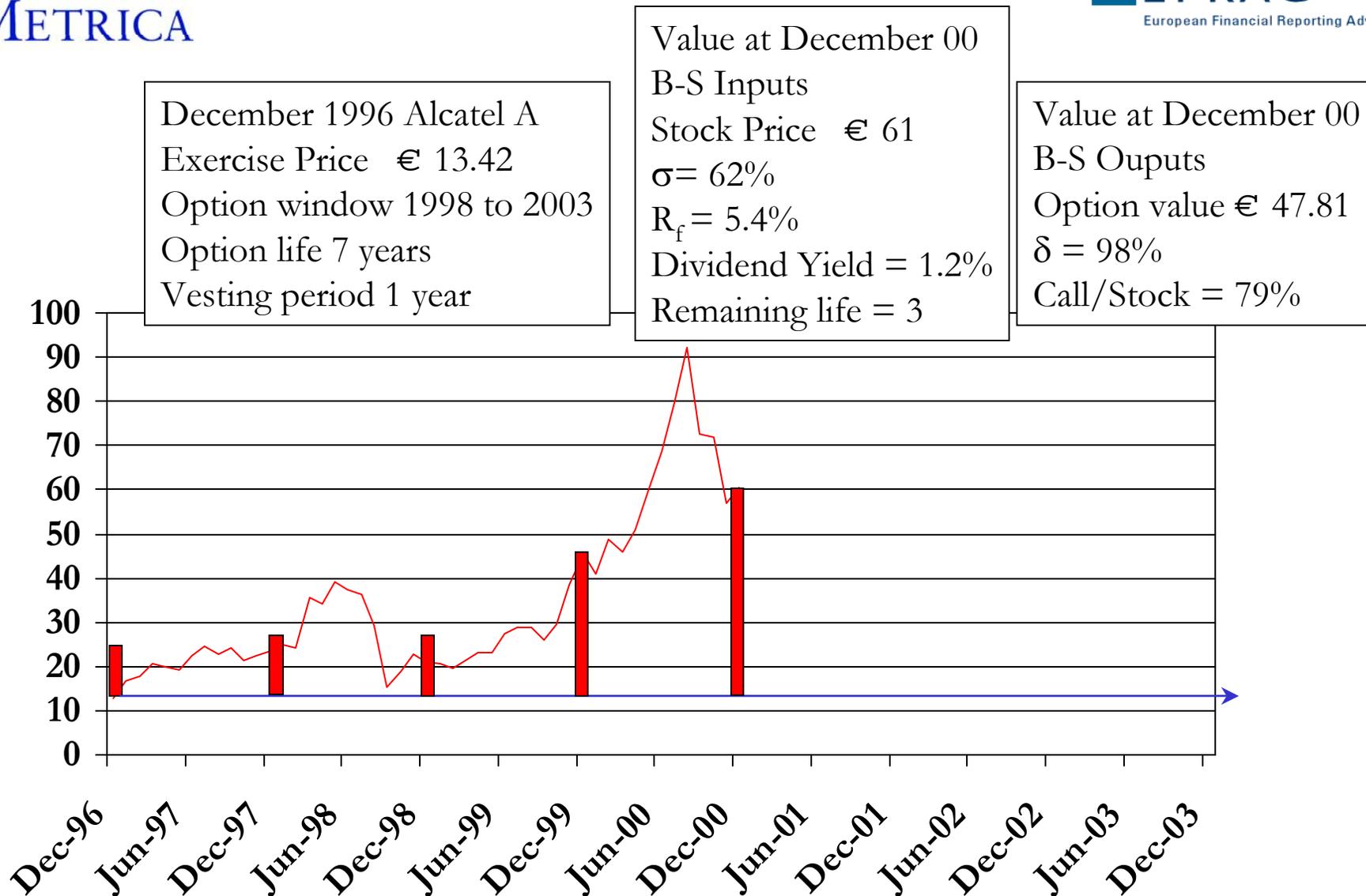


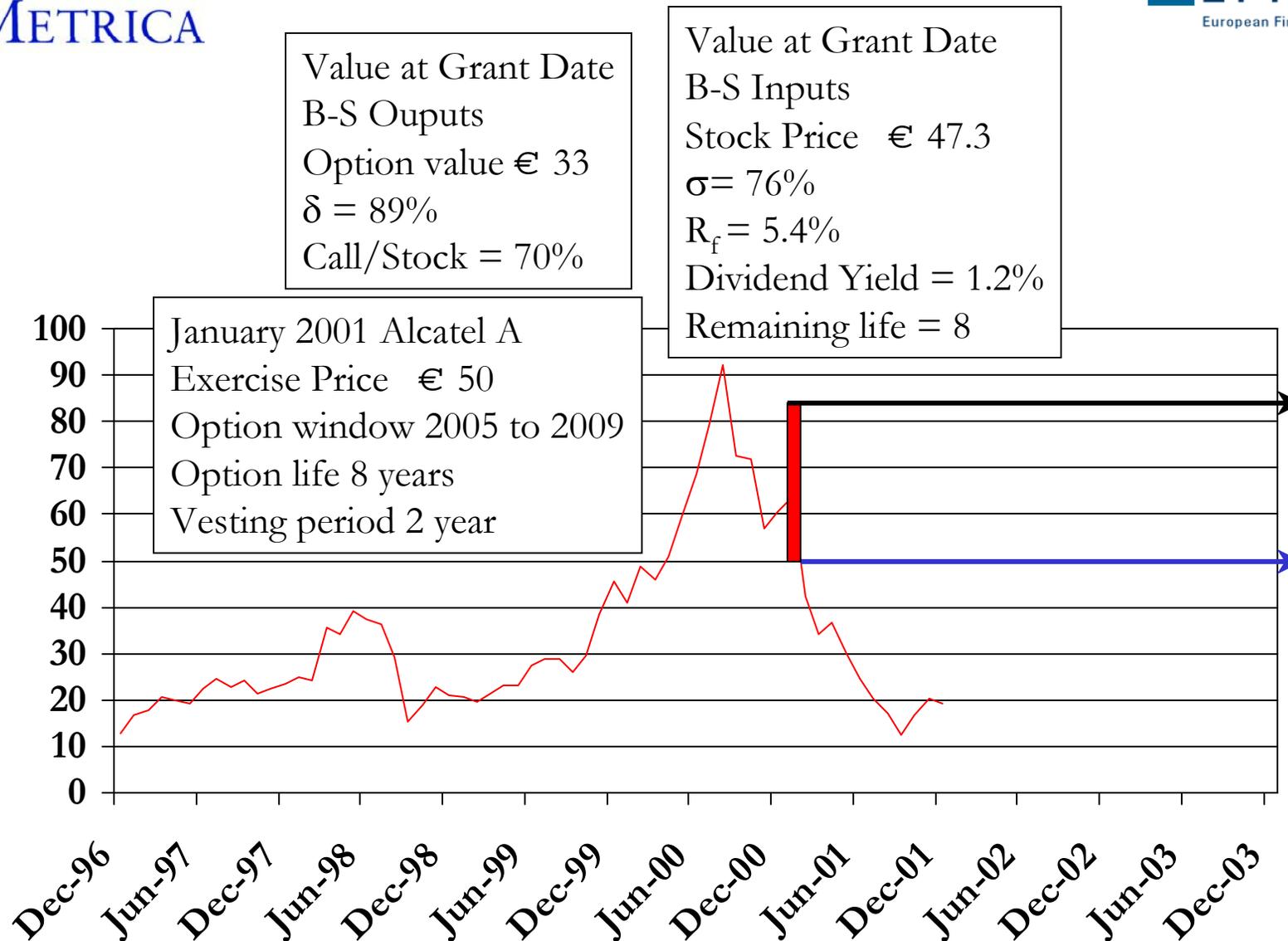


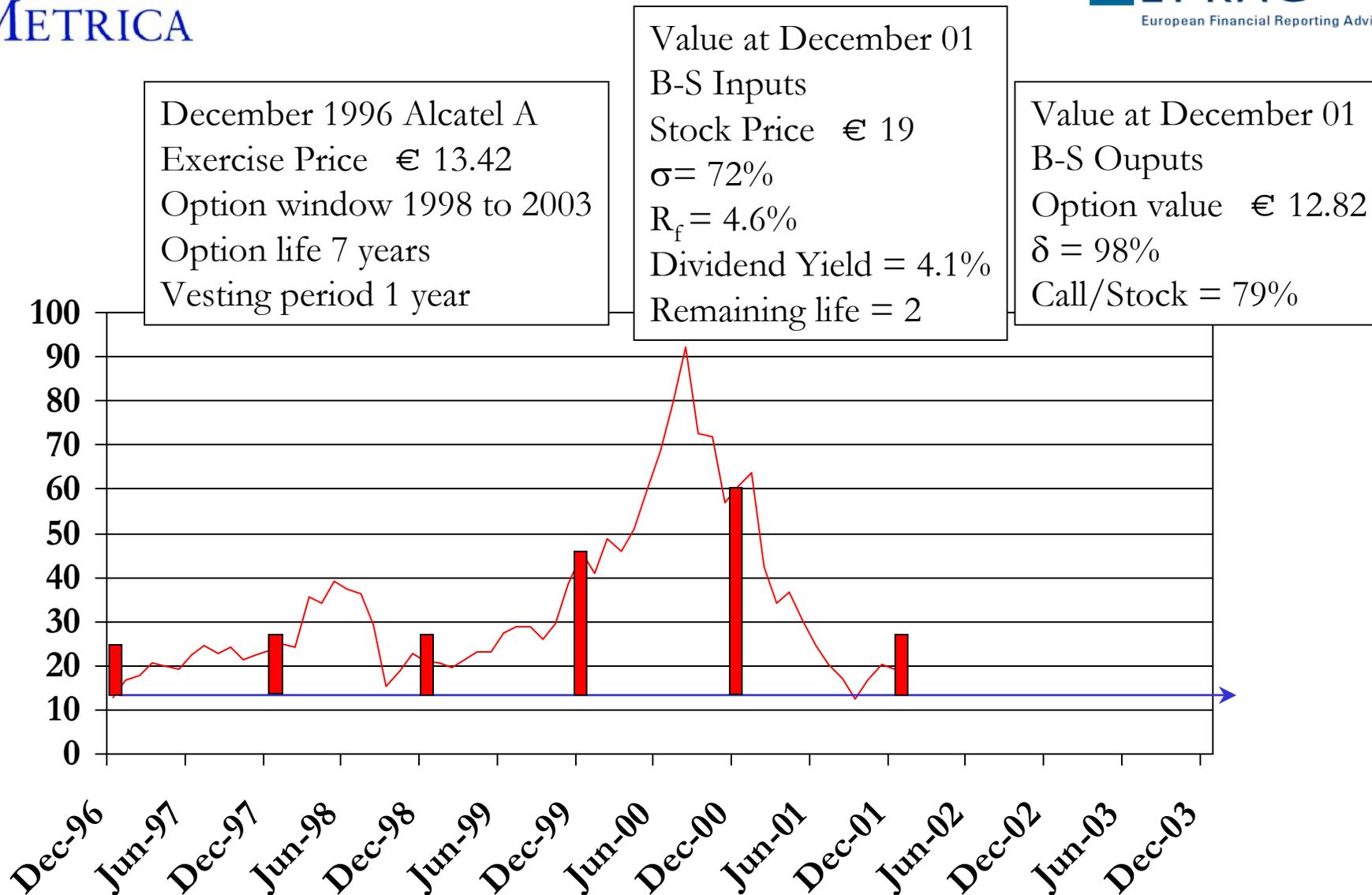


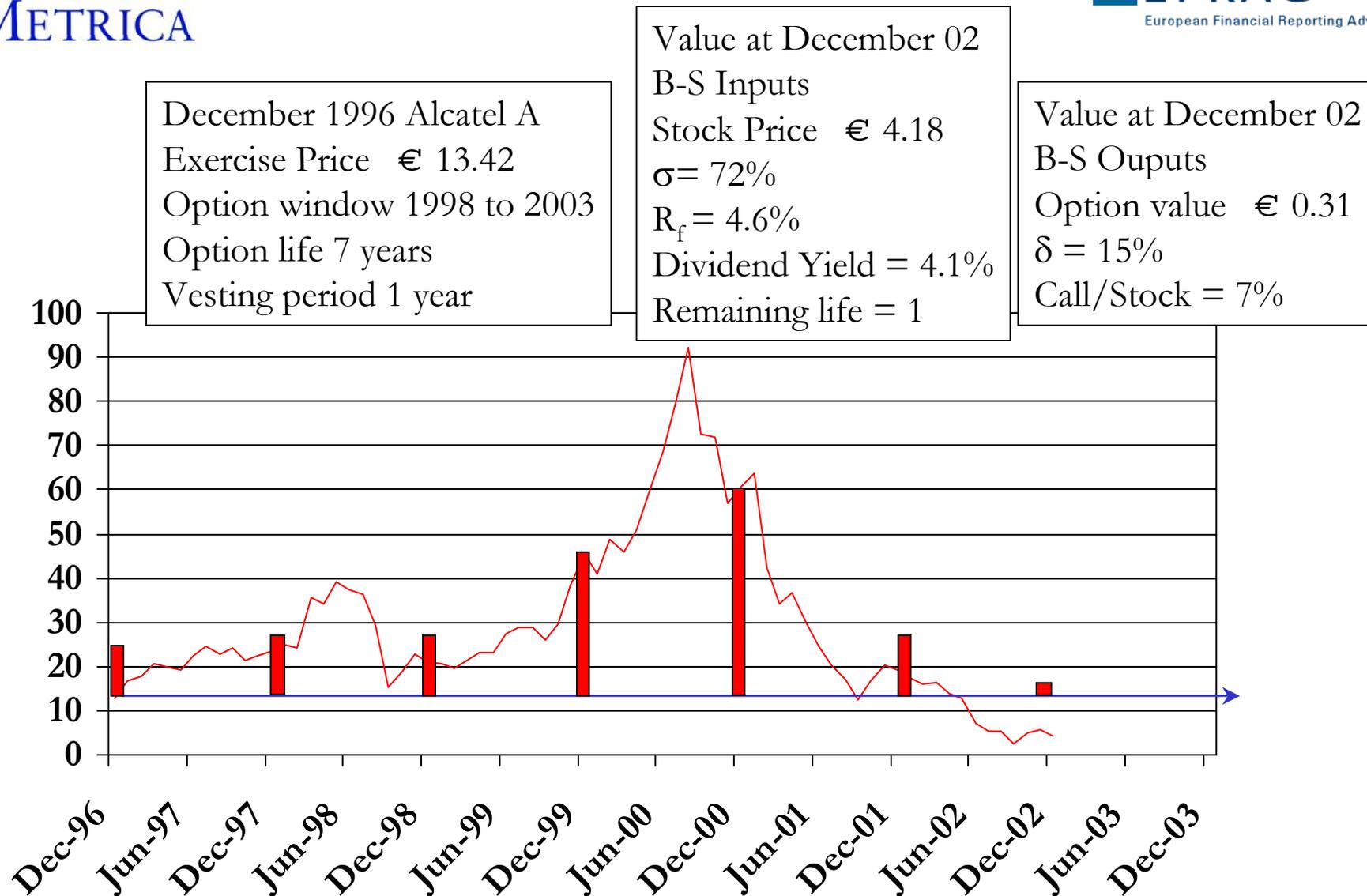


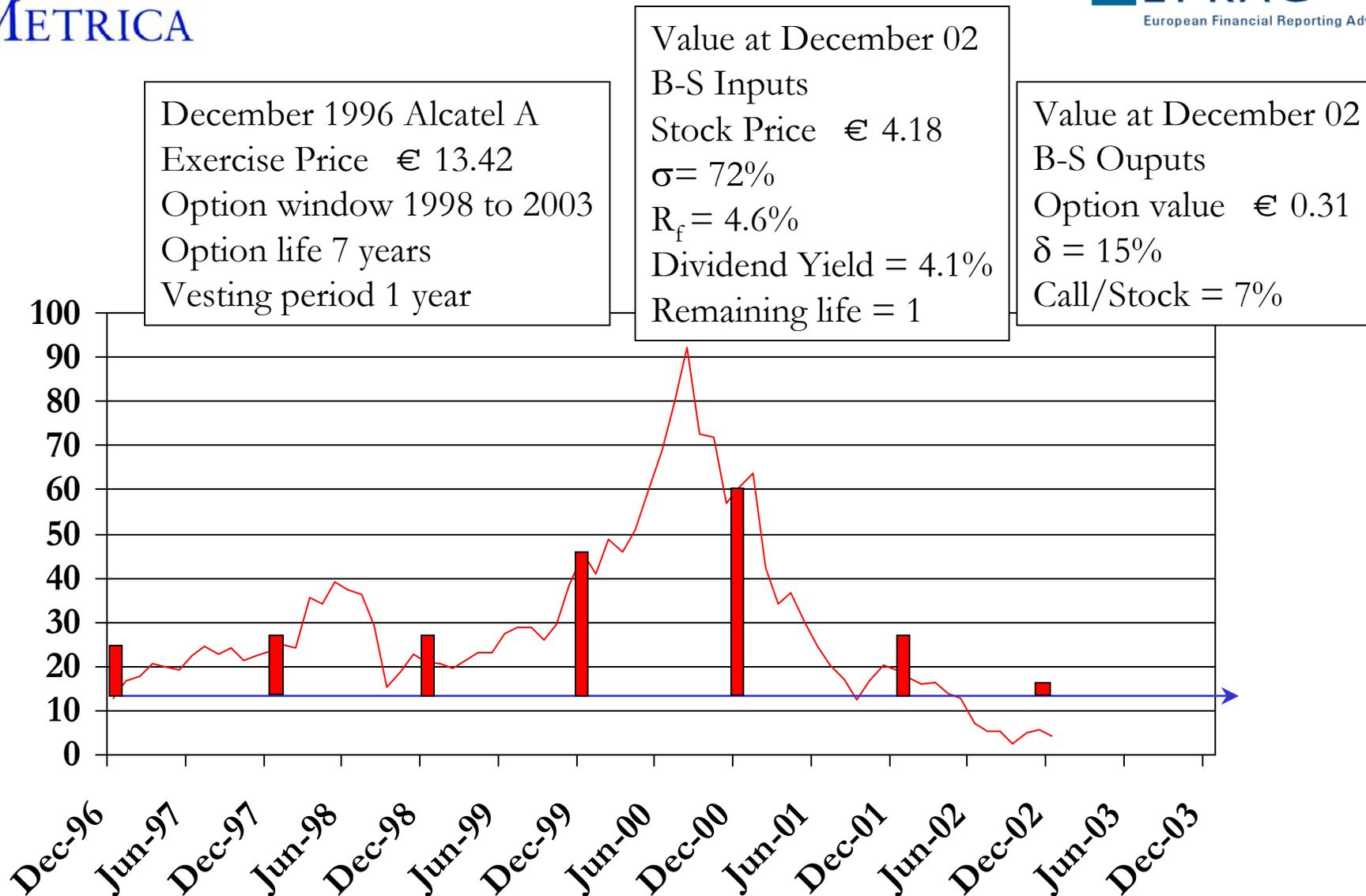












The EU has set itself the objective of becoming
“the most competitive and dynamic knowledge-
based economy in the world, capable of
sustainable economic growth with more and
better jobs and greater social cohesion”

EU Summit, Lisbon March 2000

There is evidence that employee financial participation is a catalyst for the realisation of this goal

- Enhancing productivity
- Encouraging competitiveness
- Expanding returns on capital
- Encourages worker involvement
- Improves quality of work
- Contributes to greater social cohesion
- Enabling value creation

Commission of the European communities

Brussels, 05.07.2002 Com (2002) 364 final

Would adoption of the proposed IASB statement
“Accounting for share based payment”
promote the stated objective?

- Creates an expense
- Reduces distributable earnings
- Introduces additional volatility
- Reduces credibility in accounts
- Reduces investor confidence
- Thus many firms will shy away

The proposal dramatically increases the cost of expanding
Employee financial participation

The economic consequences of ED2 need to be investigated

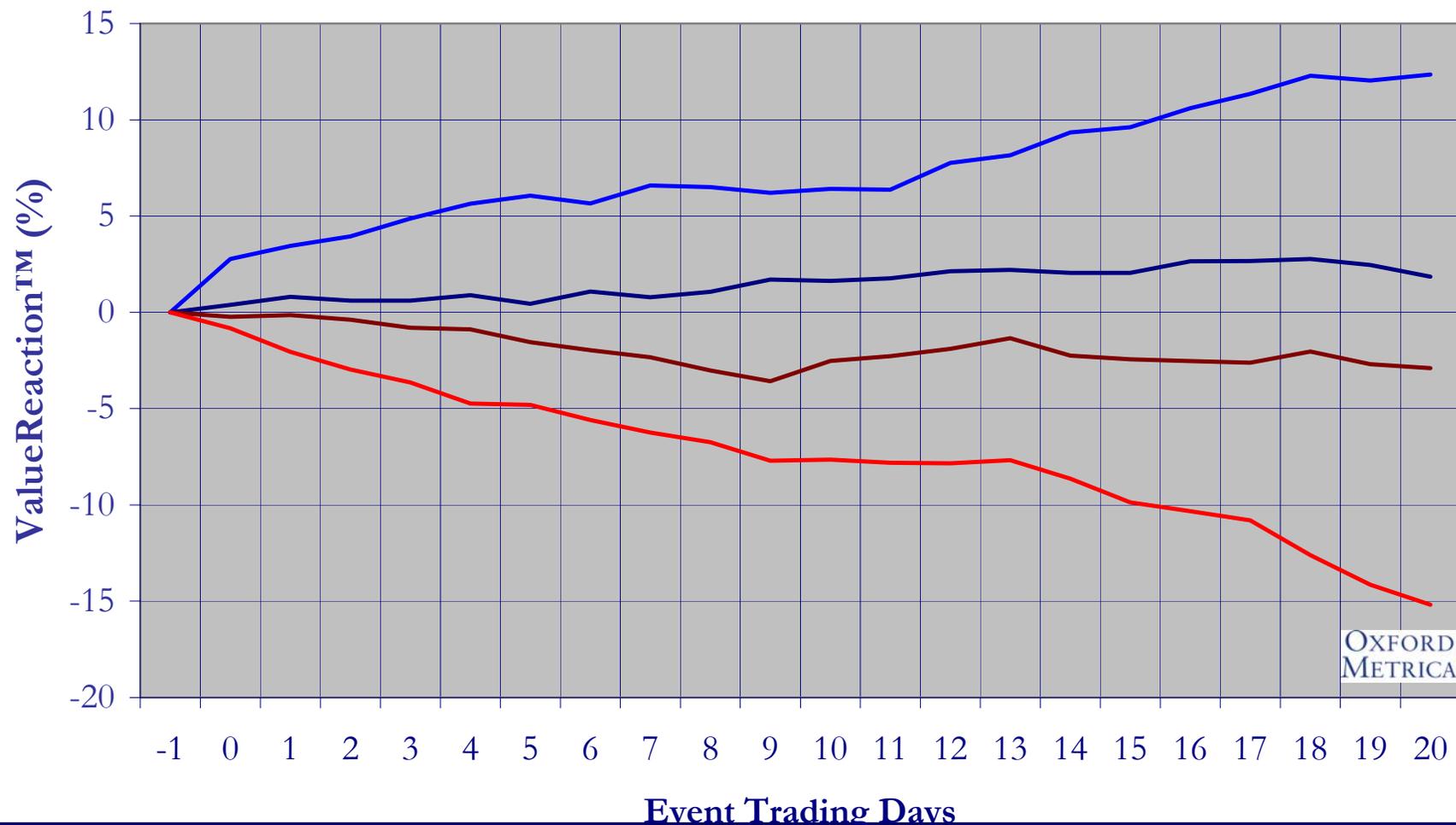
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Where accounting standards have non-neutral effects it seems reasonable to expect regulatory agencies to inform themselves on these potential effects. Especially when the standards are not driven by principle.

The standard is not supported by accounting principles
EFRAG's public comments testify to this

The US experience: Voluntary announcements do have impact?

ValueReaction™ Quartiles



OXFORD
METRICA

The outsourcing of standards by EU to IASB is new
and a genuine process is desirable

- Highly divisive issue in the US
- Could be divisive within Europe
- Opportunity to demonstrate participative process
- Public need to be informed of the issue
- Simply a media driven event currently

The problem with the ED

- Employee Stock Options (ESOs) are not a corporate expense
 - ✓ Invents a new expense
 - ✓ Beyond IASB's framework definition of an expense
 - ✓ Ties the ESO to arms length transactions to justify the definition
 - ✓ NB...opportunity cost argument sensibly not invoked
 - ✓ Establishes the principle of not equating cost to company for services to benefit to the recipient
 - ✓ Unnecessarily restrictive on measurement
 - ✓ Acknowledges valuation of the option is a proxy for the benefit
 - ✓ Conveniently uncouples the ESOs from arm's length for measurement
 - ✓ Requires the value to participant approach for ESOs even where value of services package is known

The problem with the ED (cont)

- The valuation of options is fraught with difficulty¹
 - ❑ Black-Scholes & Binomial are models problematic
 - ✓ Do not deal with trading restrictions
 - ✓ Do not deal with forfeiture
 - ✓ Are designed for short term instruments
 - ✓ Each input is a random variable with a high margin of error
 - ❑ There is considerable empirical evidence on the impact of these models
 - ✓ FAS 123 has allowed footnote disclosure as an alternative to expensing
 - ✓ All but 2 companies rejected expensing
 - ✓ Almost all applied B-S for the footnote disclosure
 - ✓ Thus considerable data now exist.

¹EFRAG's public comments acknowledge this

The problem with the ED (cont)

- Accounting principles are rejected
 - ❑ Options would be double counted
 - ✓ Reduction of earnings
 - ✓ Dilution
 - ✓ Reported EPS hit in numerator & denominator
 - ❑ Expensing options would restrict dividends legally attributable
 - ✓ Expensing reduces attributable earnings
 - ✓ Even though option holders have no legal right to dividends before exercise
 - ❑ Reduction in credibility of reported numbers
 - ✓ The better a firm's prospects the lower its income?
 - ❑ Financial reports are meant to inform investor expectations..not the reverse
 - ❑ The first time ever that “truing up” is not achieved

Proposed Briefing & European Summit

- Empirical evidence on expensing
 - ✓ US Experience
 - ✓ Impact of expensing on earnings
 - ✓ Impact across different firms & sectors
 - ✓ B-S data and measurement impact
 - ✓ European impact
 - ✓ Extent of effects
 - ✓ Modelling impact of expensing
- Detailed analysis of alternatives
 - ✓ A proposed disclosure impact with corporate consultation
- A summit on the issue

Recommendations

- A time for further research & debate
- Tighten up the measurement guidelines
- Apply a demanding disclosure regime
- Develop an understanding of the data
 - ✓ US experience helpful...7 years of data
 - ✓ European data are emerging
- Uncouple B-S from grant date model
- Allow a disclosure alternative
- Do not accept ED2