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A comment on ED 2, Share-Based Payment.

The objective of this comment is to call attention to the effect that ED 2 will result in misrepresentations of the actual financial effects for companies that grants certain employee share options.

Briefly stated – ED 2 can result in financial statements, particularly income statements, which do not reflect the financial effects of the actual behaviour of the companies. Application of ED 2 can result in income statement effects that may be either higher or lower than the actual financial effects for the company that has entered into equity settled share-based payment arrangement. Unfortunately it seems likely that these financial statement effects will be intertwined with in a risk selection bias – risk averse companies will end up having “double expensed” share-based compensation in their income statements whereas risk taking companies may end up having severely “under expensed” such compensation in their income statements.

These financial statement effects do not result from any of the specific choices in ED 2, for which you have elicited comments. Therefore, I will focus on the description of the financial statement effects.

The effects will be described by a very simple example in which some other problems (dealt with in ED 2) are “simplified away” in order to focus on the expense problem.

Assume that a public company at the beginning of year 1 grants its employees a share option, specifically a European call option, by entering into a share-based payment arrangement. The option vests at the end of year 4 and the employees have at that time the right to exercise their option to buy the company shares for 100, which is identical to the price of the shares at grant date.

Assume that the company does not pay any dividend during the 4 years. The volatility of the company's share price is 25% (yearly basis) and the risk free interest rate is 5,2 p.a. (continuously compounded). In consequence, the option has a market price of 28,76 at grant date, cf. the Black-Scholes formula.

Assume further that the company adopts the risk taking strategy to postpone acquiring its own shares for as long as possible. This means that the company will not acquire its own shares if the price is lower than 100 at the vesting date. Only if the price is higher than 100 at the vesting date the company will acquire its own shares for their market price and immediately resell them to the employees for 100.

Now assume two scenarios for the price of these shares at vesting date:

Scenario	Share price at vesting date
Share price increase	150
Share price decrease	50

Assume finally that the company follows the rules of ED 2.

The financial statement effects resulting directly from the option (i.e. by ignoring any financial effects caused by the incentive effects of the option) will then be as summarized in table 1 and 2.

Table 1 Acquisition of treasury shares postponed
Share Price Increase. ED 2 rules used.

	Transactions/Events	Assets	Liabilities	
		Cash	SHE(Shareholder' Equity)	
			Direct regulation of SHE	Income statement/ Retained earnings
Year 1	Grant of option			
	Wages ¹		7,19	(7,19)
	Ending Balance		7,19	-7,19
Year 2	Wages		7,19	(7,19)
	Ending Balance		14,38	-14,38
Year 3	Wages		7,19	(7,19)
	Ending Balance		21,57	-21,57
Year 4	Wages		7,19	(7,19)
	Preliminary balance before exercise		28,76	-28,76
	Share purchase	(150)	(150)	
	Option exercised	100	100	
	Ending Balance	-50,00	-21,24	-28,76

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

Table 2 Acquisition of treasury shares postponed
Share Price Decrease. ED 2 rules used.

	Transactions/Events	Assets	Liabilities	
		Cash	SHE	
			Direct regulation of SHE	Income statement/ Retained earnings
Year 1	Grant of option			
	Wages ¹		7,19	(7,19)
	Ending Balance		7,19	-7,19
Year 2	Wages		7,19	(7,19)
	Ending Balance		14,38	-14,38
Year 3	Wages		7,19	(7,19)
	Ending Balance		21,57	-21,57
Year 4	Wages		7,19	(7,19)
	Ending Balance	0	+28,76	-28,76

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

The total income statement effect for the four years is identical in the two scenarios. However, the total cash flow effects of the option differ *considerably* from the total income effect in each of the two scenarios.

Now suppose that the company follows a risk averse hedging strategy and specifically that it follows a modified delta-based hedging strategy for balancing its option obligation with treasury shares, cf. option pricing theory. The modification of delta-based strategy assumed here is that the company readjusts its possessions of treasury shares every second month during the 4 years in accordance with the actual delta values of the option at those days, which means that the company does not “continuously” readjusts its possessions of shares as prescribed by option-pricing theory.

Assume, again, two share price change scenarios, one with a share price increase and one with a share price decrease, and assume specifically that there are the following two sets of share prices at year ends, and that the share prices between these dates can be found by linear interpolation:

Scenario	Share price by option grant, Beginning of year 1	Share price. End of year 1	Share price. End of year 2	Share price. End of year 3	Share price at vesting date, End of year 4
Share price increase	100	110	130	140	150
Share price decrease	100	90	70	60	50

Assume further that the interest rate for the company is in fact 5,2% p.a. (continuously compounded), cf. the interest rate assumption used by the calculation of market price of the option.

The following two tables, tables 3 and 4, summarize the financial statement effect in these two scenarios by application of ED 2.

Table 3.Acquisition of treasury shares postponed
Share Price Increase. ED 2 rules used.

	Transactions/ Events	Assets	Liabilities		
		Cash	Borrowings	SHE	
				Direct regulation of SHE	Income statement/ R. Earnings
Year 1	Grant of option				
	Acquisition of shares by grant ²		74,73	(74,73)	
	Additional acquisition of shares ³		4,01	(4,01)	
	Interest expense ⁴		4,07		(4,07)
	Wages ¹			7,19	(7,19)
	Ending Balance		82,81	-71,55	-11,26
Year 2	Acquisition of shares		12,30	(12,30)	
	Interest expense		4,69		(4,69)
	Wages			7,19	(7,19)
	Ending Balance		99,79	-76,66	-23,13
Year 3	Acquisition of shares		9,08	(9,08)	
	Interest expense		5,51		(5,51)
	Wages			7,19	(7,19)
	Ending Balance		114,39	-78,55	-35,84
Year 4	Acquisition of shares		6,77	(6,77)	
	Interest expense		6,32		(6,32)
	Wages			7,19	(7,19)
	Option exercised	100,00		100,00	
	Settlement of borrowings	-127,48	-127,48		
	Ending Balance	-27,48	0	21,87	-49,34

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

² Determined by the delta value of the option at grant date

³ Determined by the delta values of the option at the dates when the possessions of the treasury shares are adjusted

⁴ Interests expense on the borrowings needed to finance the possessions of treasury shares

Table 4.Acquisition of treasury shares postponed
Share Price Increase. ED 2 rules used.

	Transactions/ Events	Assets	Liabilities		
		Cash	Borrowings	SHE	
				Direct regulation of SHE	Income statement/ R. Earnings
Year 1	Grant of option				
	Acquisition of shares by grant ²		74,73	(74,73)	
	Sales of shares ³		(10,94)	10,94	
	Interest expense ⁴		3,77		(3,77)
	Wages ¹			7,19	(7,19)
	Ending Balance		67,55	-56,60	-10,96
Year 2	Sales of shares		(25,98)	25,98	
	Interest expense		3,06		(3,06)
	Wages			7,19	(7,19)
	Ending Balance		44,63	-23,42	-21,21
Year 3	Sales of shares		(16,22)	16,22	
	Interest expense		1,99		(1,99)
	Wages			7,19	(7,19)
	Ending Balance		30,40	-0,01	-30,39
Year 4	Sales of shares		(2,50)	2,50	
	Interest expense		1,53		(1,53)
	Wages			7,19	(7,19)
	Settlement of borrowings	-29,43	29,43		
	Ending Balance	-29,43	0	9,68	-39,11

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

² Determined by the delta value of the option at grant date

³ Determined by the delta values of the option at the dates when the possessions of the treasury shares are adjusted

⁴ Interests expense on the borrowings needed to finance the possessions of treasury shares

It appears that the total expense over the 4 years is considerably higher than total cash outflow during that period in both scenarios, but especially so with the share price increase. This effect is not specific for these examples. The expensing of the market value of the option represents – roughly stated - an expensing of the *expected* interests expenses incurred by a delta hedging strategy of the option obligation (and this is especially true in the case that the share price increases). The total expenses will consequently be too high due to the expensing of both these *expected* interest expenses and the *actual* interest expenses resulting from the company's hedging strategy, here a modified delta hedging strategy.

In my view these financial statements effects from the application of ED 2 are likely to result in behavioural reactions by the companies. Because of the effects for the income statement some companies may see a need to settle their option obligations by a financial market transaction at grant date even though it might be more economical for them to hedge the obligation themselves due to market imperfections. For the same reason other companies might be tempted to bear all the economic risk of the option obligation by postponing the acquisition of their own shares until exercise date. These two strategies seem to be the only strategies by which “double expensing” in the income statement can be avoided if ED 2 rules were to be followed.

The “double expensing” in the financial statements can be avoided, I think, *only* by a different accounting approach than that used in ED 2.

This approach is described in the following.

In the alternative approach the option obligation is recognized in the financial statements at grant date and a corresponding asset of the same size, “deferred wages”(?), is also recognized. The company’s possessions of hedging/balancing treasury shares are likewise recognized as an asset - and all changes in fair value of the option obligation and in the market price of the treasury shares are recognized as accounting gains and losses.

In the case whereby employees’ options are exercised the capital paid by the employees is booked as the fair value of the shares, not as the price paid for the shares. Preserving the other parts of ED 2 the financial statement effects in the above four cases will be as summarized in tables 5-8.

Table 5 Acquisition of treasury shares postponed
Share Price Increase. Alternative method.

	Transactions/Events	Assets		Liabilities		
		Cash	Deferred wages	Option obligation	SHE	
					SHE directly	Income statement/ R. earnings
Year 1	Grant of option		28,76	28,76		
	Wages ¹		(7,19)			(7,19)
	Fair value change of option obligation			2,72		(2,72)
	Ending Balance		21,57	31,49		-9,91
Year 2	Wages		(7,19)			(7,19)
	Fair value change of option obligation.			11,18		(11,18)
	Ending Balance		14,38	42,66		-28,28
Year 3	Wages		(7,19)	7,19		(7,19)
	Fair value change of option obligation.			3,05		(3,05)
	Ending Balance		7,19	45,71		-38,52
Year 4	Wages		(7,19)			(7,19)
	Fair value change of option obligation.			4,29		(4,29)
	Preliminary balance		0	50,00		-50,00
	Acquisition of shares	-150			-150	
	Option exercised	+100		-50,00	+150	
	Ending Balance	-50	0			-50,00

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, 28,76.

Table 6 Acquisition of treasury shares postponed
Share Price Decrease. Alternative method.

	Transactions/Events	Assets		Liabilities		
		Cash	Deferred wages	Option obligation	SHE	
					SHE directly	Income statement/ R.E.
Year 1	Grant of option		28,76	28,76		
	Wages ¹		(7,19)			(7,19)
	Fair value change of option obligation		21,57	(11,40)		11,40
	Ending Balance		21,57	17,37		4,20
Year 2	Wages		(7,19)			(7,19)
	Fair value change of option obligation			(13,49)		13,49
	Ending Balance		14,38	3,88		10,50
Year 3	Wages		(7,19)	7,19		(7,19)
	Fair value change of option obligation			(3,63)		3,63
	Ending Balance		7,19	0,24		6,95
Year 4	Wages		(7,19)			(7,19)
	Fair value change of option obligation			(0,24)		0,24
	Ending Balance	0	0	0	0	0

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

Table 7 Modified delta based strategy to balance option obligation with treasury shares
Share Price Increase. Alternative method.

	Transactions/Events	Assets			Liabilities		
		Cash	Deferred Wages	Treasury shares	Obligations		SHE
					Borrowing	Option obligation	Income statement/R.E.
Year 1	Grant of option		28,76			28,76	
	Acquisition of shares by grant ²			74,73	74,73		
	Additional acquisition of shares ³			4,01	4,01		
	Fair value change of shares			7,61			7,61
	Fair value change of option obligation					2,72	(2,72)
	Interest expense				4,07		(4,07)
	Wages ¹		(7,19)				(7,19)
	Ending Balance		21,57	86,35	82,81	31,49	-6,37
Year 2	Acquisition of shares			12,30	12,30		
	Fair value change of shares			16,56			16,56
	Fair value change of option obligation					11,18	(11,18)
	Interest expense ⁴				4,69		(4,69)
	Wages		(7,19)				(7,19)
	Ending Balance		14,38	115,21	99,79	42,66	-12,86
Year 3	Acquisition of shares			9,08	9,08		
	Fair value change of shares			9,12			9,12
	Fair value change of option obligation					3,05	(3,05)
	Interest expense				5,51		(5,51)
	Wages		(7,19)				(7,19)
	Ending Balance		7,19	133,42	114,39	45,71	-19,49
Year 4	Acquisition of shares			6,77	6,77		
	Fair value change of shares			9,81			9,81
	Fair value change of option obligation					4,29	(4,29)
	Interest expense				6,32		(6,32)
	Wages		(7,19)				(7,19)
	Exercise of option	100,00		(150,00)		(50,00)	
	Settlement of borrowing	(127,48)			(127,48)		
	Ending Balance	-27,48	0,00	0,00	0,00	0,00	-27,48

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

² Determined by the delta value of the option at grant date

³ Determined by the delta values of the option at the dates when the possessions of the treasury shares are adjusted

⁴ Interests expense on the borrowings needed to finance the possessions of treasury shares

Table 8 Modified delta based strategy to balance option obligation with treasury shares
Share Price Decrease. Alternative method.

	Transactions/Events	Assets			Liabilities		
		Cash	Deferred wages	Treasury shares	Obligations		SHE
					Borrowing	Option obligation	Income statement/ R.E.
Year 1	Grant of option		28,76			28,76	
	Acquisition of shares by grant ²			74,73	74,73		
	Sale of treasury shares ³			(10,94)	(10,94)		
	Fair value change of shares			(7,03)			(7,03)
	Fair value change of option obligation					(11,40)	11,40
	Interest expense ⁴				3,77		(3,77)
	Wages ¹		(7,19)				(7,19)
	Ending Balance		21,57	56,75	67,55	17,37	-6,59
Year 2	Sale of treasury shares			(25,98)	(25,98)		
	Fair value change of shares			(10,10)			(10,10)
	Fair value change of option obligation					(13,49)	13,49
	Interest expense				3,06		(3,06)
	Wages		(7,19)				(7,19)
	Ending Balance		14,38	20,67	44,63	3,88	-13,46
Year 3	Sale of treasury shares			(16,22)	(16,22)		
	Fair value change of shares			(1,83)			(1,83)
	Fair value change of option obligation					(3,63)	3,63
	Interest expense				1,99		-1,99
	Wages		(7,19)				(7,19)
	Bal		7,19	2,62	30,40	0,24	-20,84
Year 4	Sale of treasury shares			(2,50)	(2,50)		
	Fair value change of shares			(0,12)			(0,12)
	Fair value change of option obligation					(0,24)	0,24
	Interest expense				1,53		(1,53)
	Wages		(7,19)				(7,19)
	Settlement of borrowings	(29,43)			(29,43)		
	Ending Balance	-29,43	0,00	0,00	0,00	0,00	-29,43

¹ For all years the wages are found as ¼ the Black-Scholes price of the option at grant date, **28,76**.

² Determined by the delta value of the option at grant date

³ Determined by the delta values of the option at the dates when the possessions of the treasury shares are adjusted

⁴ Interests expense on the borrowings needed to finance the possessions of treasury shares

I hope that you find these comments of interest. And I wish you luck with your further endeavours on your regulation of share-based payments, the aim with which I sympathise.

Yours sincerely

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