

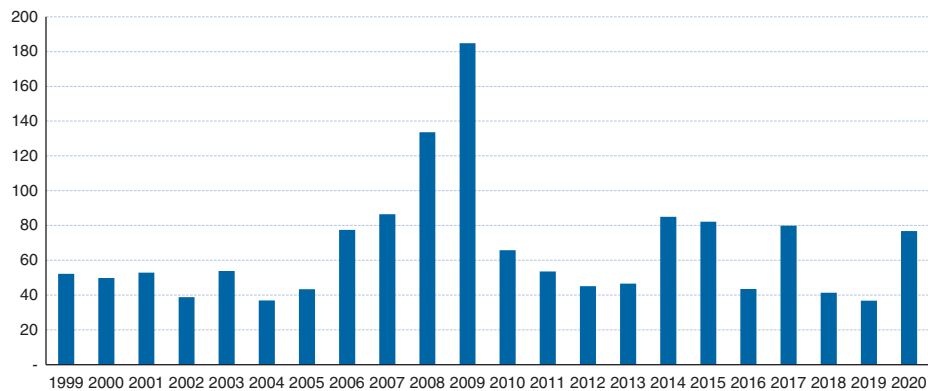
Chapter 38

SHARE ISSUES

There are no victories at bargain prices

The previous chapters have already begun assessing the reasons for equity financing. This chapter analyses the consequences for the shareholder of a share issue (or capital increase). Capital increases resulting from mergers and acquisitions will be dealt with in Chapter 46.

Equity issues of listed companies in Europe (in €bn)



Source: Data from Dealogic

The strong increase in share issues in 2008 and 2009 is mainly explained by the strengthening of financial institutions' balance sheets, which had been negatively impacted by the crisis (UBS, Citi, RBS, etc.), by the financing of external growth (Carlsberg, Inbev, etc.) or refinancing of external growth initially implemented with debt (Lafarge, Pernod-Ricard, etc.), or finally by capital-raising in anticipation of future transactions (CRH).

Section 38.1

A DEFINITION OF A SHARE ISSUE

1/ A SHARE ISSUE IS A SALE OF SHARES . . .

A share issue is, first of all, a **sale of shares**. But who is the seller? The **current shareholder**. The paradox is that the seller receives no money. As we shall see in this chapter, **to avoid diluting their stake in the company at the time of a share issue, the shareholder must subscribe to the same proportion of the new issue that they hold of the pre-existing shares**. Only if they subscribe to more than that, is the shareholder (from the standpoint of their own portfolio) buying additional control; if less, they are selling control.

Up to now, we have presented market value as a sanction on the company's management, an external judgement that the company can ignore so long as its shareholders are not selling out and it is not asking them to stump up more money. A share issue, which conceptually is a sale of shares at market value, has the effect of reintroducing this value sanction via the company's treasury, i.e. its cash balance. **For the first time, market value, previously an external datum, interferes in the management of the company.**

2/ . . . THE PROCEEDS OF WHICH GO TO THE COMPANY, AND THUS INDIRECTLY TO ALL OF ITS INVESTORS . . .

This may seem paradoxical, but it is not. The proceeds of the capital increase indeed go to the company. Shareholders will benefit to the extent that the additional funds enable the company to develop its business and thereby increase its earnings. Creditors will see their claims on the company made less risky and therefore more valuable.

3/ . . . WHICH IMPLIES SHARING BETWEEN OLD AND NEW SHAREHOLDERS

When a company issues bonds or takes out a loan from a bank, it is selling a "financial product". It is contracting to pay interest at a fixed or indexed rate and repay what it has borrowed on a specified schedule. As long as it meets its contractual obligations, the company does not lose its *autonomy*.

In contrast, when a company issues new shares, the current shareholders agree to share their rights to the company's equity capital (which is increased by the proceeds of the issue), their rights to its future earnings and their control over the company itself with the new shareholders.

A capital increase is simply a sale of shares. It implies sharing the parameters of the company. The magnitude of this sharing depends on the market value of the equity capital, but, in return, it applies to a cake made larger by the proceeds of the capital increase.

To illustrate, consider Company E with equity capital worth \$1,000m split between two shareholders, F (80%) and G (20%).

If G sells their entire shareholding (\$200m) to H, neither the value nor the proportion of F's equity in the company is changed. If, on the other hand, H is a new shareholder brought in by means of an issue of new shares, they will have to put in \$250m to obtain a 20% interest, rather than \$200m as previously, since the value of equity after a capital increase of \$250m is \$1,250m (1,000 + 250). The new shareholder's interest is indeed 20% of the larger amount. **Percentage interests should always be reckoned on the post money value, i.e. value including the newly issued shares.**

After this \$250m share issue has been added to the \$1,000m base, the value of F's shareholding in the company is the same as it was (\$800m), but their ownership percentage has decreased from 80% to 64% (800 / 1,250), while G's has decreased from 20% to 16%.

We see that if a shareholder does not participate in a capital increase, their percentage interest declines. This effect is called **dilution**.

In contrast, if the share issue is reserved entirely for F, their percentage interest in the company rises from 80% to 84% (1,050 / 1,250), and the equity interest of all other shareholder(s) is necessarily diluted.

Lastly, if F and G each take part in the share issue in exact proportion to their current shareholding, **the market value of equity no longer matters** in this one particular case. Their ownership percentages remain the same, and each puts up the same amount of funds for new shares regardless of the market value. In effect, F and G are selling new shares to themselves.

This is illustrated in the table below¹ for equity values of \$500m, \$1,000m and \$2,000m.

	Value of equity in E (\$m)	Value of shares held by F	Value of shares held by G	Value of shares held by H
Before share issue	1,000	800 or 80%	200 or 20%	
G sells 20% of the shares to H for 200	1,000	800 or 80%	0 or 0% (+200)	200 or 20% (-200)
H subscribes to a cash share issue of 250	1,250	800 or 64%	200 or 16%	250 or 20% (-250)
G sells 20% of the shares to F for 200	1,000	1000 or 100% (-200)	0 or 0% (+200)	
F subscribes to a cash share issue of 250	1,250	1050 or 84% (-250)	200 or 16%	
F and G subscribe to a share issue increase of 250 in proportion to their ownership percentage at different initial values of equity (1,000, 2,000 and 500, respectively)	1,250	1000 or 80% (-200)	250 or 20% (-50)	
	2250	1800 or 80% (-200)	450 or 20% (-50)	
	750	600 or 80% (-200)	150 or 20% (-50)	

¹ Figures in parentheses indicate cash flows: positive means an inflow; negative an outflow.

Section 38.2

CURRENT AND NEW SHAREHOLDERS

1/ DILUTION OF CONTROL

Returning to the examples given above, we see that there is dilution of control – that is, reduction in the percentage equity interest of certain shareholders – whenever those shareholders do not subscribe to an issue of new shares in proportion to their current shareholding.

The dilution is greatest for any shareholder who does not participate at all in the capital increase. It is nil for any shareholder who subscribes in proportion to their holding. By convention, we will say that:

Dilution of control is the reduction of rights in the company sustained by a shareholder for which the share issue entails neither an outflow nor an inflow of funds.

Recall that if new shares are issued at a price significantly below their value, current shareholders will usually have pre-emptive subscription rights that enable them to buy the new shares at that price. This right of first refusal is itself tradeable and can be acquired by investors who would like to become shareholders on the occasion of the capital increase.

In the absence of subscription rights, the calculation of dilution of control by a share issue is straightforward:

$$\frac{\text{Number of new shares}}{\text{Number of old shares} + \text{Number of new shares}}$$

When the issue of shares is made with an issue of pre-emptive subscription rights, this calculation no longer holds. Rights allow the shareholder to partially participate in the issue of shares without spending any money, as they can sell part of their rights and participate with these funds and the remaining rights to the rights issue. This transaction does not imply any cash-in or cash-out. Hence, the dilution suffered is overestimated by the previous calculation. It is therefore necessary to compute the dilution due only to the share issue regardless of the method used (rights issue).

The simplest way to calculate real dilution is to reckon on an aggregate basis rather than per share. Real dilution is then calculated as follows:

$$\text{Real dilution} = \frac{\text{Proceeds of capital increase}}{\text{Value of equity before capital increase} + \text{Proceeds of capital increase}}$$

Dilution computed using the formula at the top of this page is sometimes referred to as apparent dilution when it is (improperly) used in the presence of preferential subscription rights. The difference between real dilution and apparent dilution is called technical dilution as it is due to the existence of subscriptions rights.

This dilution reflects the dilution of the power of the shareholder in the company and has nothing to do with the dilution of EPS, which we will analyse in Section 38.3.

2/ ANTICIPATION MECHANISM

$$^2 \quad 41.4\% = (400 / 100)^{1/4} - 1.$$

Take the example of a highly profitable company, entirely equity-financed, that now has investments of 100. With these investments, the company is on track to be worth 400 in four years, which corresponds to an annual internal rate of return of 41.4%.² Suppose that this company can invest an additional 100 at a rate of return similar to that on its current investments. To finance this additional capital requirement, it must sell new shares. Suppose also that the shareholders' required rate of return is 10%.

Before the company announces the share issue and before the market anticipates it, the value of its equity capital four years hence is going to be 400, which, discounted at 10%, is 273 today.

If, upon the announcement of the capital increase, management succeeds in convincing the market that the company will indeed be worth 800 in four years, which is 546 today, the value accruing to current shareholders is $546 - 100 = 446$. There is thus instantaneous value creation of 173 ($446 - 273$) for the current shareholders.

The anticipation mechanism operates in such a way that new shareholders will not receive an excess rate of return. They will get only the return they require, which is 10%. If the intended use of funds is clearly indicated when the capital increase is announced, the share price *before* the capital increase will reflect the investment opportunities, and only the current shareholders will benefit from the value creation arising from them.

Some share prices that show very high P/E ratios are merely reflecting anticipation of exceptional investment opportunities. The reader will be able to observe companies whose share prices are at times so high that they cannot correspond to growth opportunities financed in the traditional way by operating cash flow and borrowing. The shareholders of these companies have placed a bet on the internal and external growth opportunities the company may be able to seize, as it may have done in the past, financed in part by issuing new shares.

Section 38.3

SHARE ISSUES AND ACCOUNTING CRITERIA

In this section, we reckon only in terms of adjusted figures. The reader is referred to Chapter 22 for the calculation of the share price adjusted for a rights issue.

Accountants and lawyers are accustomed to apportioning the proceeds of a capital increase between the increase in authorised capital (the number of new shares issued multiplied by the par value of the share) and the increase in the share premium account (the remainder). We are confident they will know how to distinguish between the two meanings of "capital increase".

1/ SHARE ISSUE AND EARNINGS PER SHARE

A capital increase will change earnings per share instantaneously. If EPS decreases, there is said to be **dilution** of earnings; if it increases, there is said to be **accretion** (or the operation is said to be "earnings-enhancing", which may sound better). But be careful! This dilution has nothing in common with the dilution of Section 38.2 other than the

name, and is calculated differently. That one has to do with a shareholder's percentage of ownership, this other one with earnings per share.

Consider Company B, the shares of which carry a low P/E (5) justified by the company's high risk and low growth prospects and Company A, where high prospects for EPS growth justify a high P/E (20). For both companies, shareholders require an after-tax rate of return on equity of 10%, and we will assume that both Company B and Company A invest the funds raised by a capital increase at 10%; there is neither creation nor destruction of value on this occasion. For both, the value of equity capital therefore increases by the amount of the capital increase.

Company A and Company B each increase the number of shares by 50%, which, invested at 10%, will increase their net earnings. The impact of the capital increase will be as shown in the table below.

	Before capital increase				After capital increase				
	Market value of equity	P/E	Earnings	Number of shares	EPS	Market value of equity	Earnings	Number of shares	EPS
Company A	€3,000m	20	€150m	10m	€15	€4,500m	€300m	15m	€20 (+33%)
Company B	€3,000m	5	€600m	200m	€3	€4,500m	€750m	300m	€2.5 (-17%)

Company B's EPS decreases by 17%, whereas the transaction does not destroy value. Similarly, Company A's EPS increases by 33% but the transaction does not create value.

This demonstrates once again that earnings per share are not a reliable indicator of value creation or destruction. These changes are merely mechanical and depend fundamentally on:

- the company's P/E ratio; and
- the rate of return on the investments made with the proceeds of the share issue.

More generally, the rule the reader will want to retain is that any capital increase will:

- **mechanically lead to a dilution** of EPS whenever the reverse of P/E is greater than the rate of return on the investments financed by the share issue;
- **be neutral** whenever the reverse of P/E is equal to this incremental return; and
- **mechanically lead to an increase** or "enhancement" of EPS whenever the reverse of P/E is less than incremental return.

It can easily be demonstrated that the earnings dilution occasioned by a capital increase at the market price is equal to:

$$\text{Change in EPS} = P/E \times \frac{\text{Capital raised}}{\text{Market capitalisation after capital increase}} \times \left(\text{After-tax rate of return} - \frac{1}{P/E} \right)$$

For Company A, any investment that generates a return per year greater than 5% (the reverse of P/E of 20) will increase earnings per share, whereas for Company B the bar is set higher at 20% (reverse of 5). Hence the appeal of issuing new shares when P/E's are high, even when the capital increase does not create value in and of itself.

With the wisdom that derives from experience, and notwithstanding what any theory might indicate, whenever P/E ratios are high, it is the duty of managers to contemplate the possibility of carrying out a capital increase!

In the short term, it is rare for funds raised by a capital increase to earn the required rate of return immediately, either because they are sitting in the bank waiting for the investments to be made or because some period of time must elapse before the achieved rate of return reaches the required level. Consequently, it is not rare for EPS to decrease following a capital increase – but this does not necessarily mean that value is being destroyed.

Three measures of EPS dilution might be distinguished here: instantaneous dilution, with no reinvestment of the funds raised, which is seldom calculated because it holds no interest; dilution, assuming investment of the funds at the risk-free rate of interest, which is the measure that financial analysts generally calculate; and dilution with reinvestment of the funds, which is obviously the measure of most interest, but is difficult to get hold of because it requires forecasting the rate of return on future investments.

In the long term, EPS dilution should normally be offset by the earnings generated by the investment financed by the capital increase or by risk reduction via a more balanced financial structure. It is therefore necessary to study the expected rate of return on that investment, for it will determine the future course of the company's value.

2/ SHARE ISSUE AND VALUE OF EQUITY CAPITAL

To say that the book value of a company's equity increases after a capital increase is to state the obvious, since the proceeds of the share issue are included in that book value.

It is of more interest to compare the percentage increase in book value with the ratio of the proceeds of the capital increase to the market value of equity and to calculate the growth in value per share.

Let's take the example of Company C, whose equity value represents 50%, 100% or 200% of its book value. In all cases, we set the proceeds of the capital increase at the actual percentage level, which is 33% of the group's equity value before the transaction.

(in \$m)	Case 1	Case 2	Case 3
Book value of equity	300	300	300
Market value of equity	150	300	600
Capital increase	50	100	200
Dilution	25%	25%	25%
Increase in book value	+17%	+33%	+66%

In case 1, because the market value (150) is below the book value of equity (300), the increase in capital requires a major effort from shareholders (25%) and leads only to a limited increase in Company C's book equity: +17%.

On the contrary, when the market value of equity is way above its book value (case 3), the same effort by shareholders in dilution terms (25%) leads to a much higher increase in book equity (+66% vs. +17%).

We can illustrate this with the example of Credit Suisse, that issued shares in April 2021. It was valued at the time of its IPO at CHF 20.1bn and had CHF 42.7bn book equity. The IPO was implemented partly through an issue of new shares for CHF 1.8bn. The new shareholders, who brought 4% of the book equity of Credit Suisse post-transaction (1.8 compared to $42.7 + 1.8 = \text{CHF } 44.5\text{bn}$), have 8% of capital. The existing shareholders have had their equity per share reduced from CHF 18.3 to CHF 17.5 (−4.4%). The new shareholders, who contributed CHF 8.65 per Credit Suisse share, now have CHF 17.5 book equity per share (hence an immediate accretion of 102%)! This is the entrance bonus that a high risk low profit bank has to offer to convince new investors to buy shares.

At a constant capital structure, the increase in equity allows a parallel increase in debt and thus in the company's overall financial resources. This phenomenon is all the more important when the company is profitable and its market value is greater than its book value. Here we link up again to the PBR (price-to-book ratio) notion that we examined in Chapter 22.

A capital increase may increase a company's financial power considerably, with relatively little dilution of control.

- If market value is greater than book value, the dilution of control will be countered by a greater increase in financial resources.
- If market value of equity coincides with book value, the dilution of control will be accompanied by a similar increase in the company's overall financial resources.
- If market value is less than book value, the dilution of control will be accompanied by a lesser increase in financial resources.

For shareholders of a highly profitable company, i.e. of which the market value of equity is much higher than the book value, the share issue will have a very positive impact in the short term.

In the mid-term all depends on the use of the proceeds of the share issue and obviously on the return of the investment undertaken compared to its cost of capital.

Section 38.4

SHARE ISSUES AND FINANCE THEORY

1/ SHARE ISSUES AND MARKETS IN EQUILIBRIUM

A share issue is analysed first and foremost as a sale of new shares at a certain price. If that price is equal to the true value of the share, there is no creation of value, nor is any current shareholder made worse off. This is an obvious point that is easily lost sight of in the analysis of financial criteria that we will get to later on.

If the new shares are sold at a high price (more than their value), the company will have benefited from a low-cost source of financing to the detriment of its most recent shareholders. Tesla, which was able to raise money on very advantageous terms in the second half of 2020, can be cited as an example.

Recall that the cost entailed by a share issue is neither the immediate return on the stock nor the accounting rate of return on equity. It is the rate of return required by shareholders given the market valuation of the stock (see Chapter 19 for the determination of cost of equity).

As we have seen, however, this cost is eminently variable. The sanction for not meeting it is that, other things being equal, the value of the share will decline. The company will be worth less, but in the short term there will be no impact on its cash position.

2/ SHAREHOLDERS AND CREDITORS

For a company in financial distress, a share issue results in a transfer of value from shareholders to creditors, since the new money put in by the former enhances the value of the claims held by the latter. According to the contingent claims model, the creditors of a “risky” business are able to appropriate a large share of the increase in the company’s value due to an injection of additional funds by shareholders. The value of the put option sold by creditors to shareholders has a lower value. This is the reason why recovery plans for troubled companies always link any new equity financing to prior or concomitant concessions on the part of lenders.

Recapitalisation increases the intrinsic value of the equity and thereby reduces the riskiness of the company, thus increasing the value of its debt as well. Creditors run less risk by holding that debt. This effect is perceptible, though, only if the value of debt is close to the value of operating assets – that is, only if the debt is fairly high-risk.

3/ SHAREHOLDERS AND MANAGERS

A capital increase is generally a highly salutary thing to do because it helps to reduce the asymmetry of information between shareholders and managers. A call on the market for fresh capital is accompanied by a series of disclosures on the financial health of the company and the profitability of the investments that will be financed by the issue of new shares. This practice effectively clears management of suspicion and reduces the agency costs of divergence between their interest and the interest of outside shareholders. A share issue thus encourages managers to manage in a way that maximises the shareholders’ interest.

4/ SHARE ISSUE AS A SIGNAL

If one assumes that managers look out for the interests of current shareholders, it is hard to see how they could propose an issue of new shares when the share price is undervalued, as shareholders would be diluted in bad financial conditions.

If one believes in asymmetry of information, a share issue ought to be a signal that the share price is overvalued. A share issue may be a sign that managers believe the company’s future cash flows will be less than what is reflected in the current share price. The management team takes advantage of the overvaluation by issuing new shares. The funds provided by this issue will then serve not to finance new investments but to make up for the cash shortfall due to lower-than-expected operating cash flows.

In practice, the announcement of a capital increase produces a downward adjustment of 3–5% in the share price. Only the current shareholders suffer this diminution of value. Some claim that this effect is due to the negative consequences of the share issue on the company's accounting ratios (see Section 38.3). We do not think so. Others explain it by invoking a market mechanism: a product sells for a bit less when there is a larger quantity of it; "you catch more flies with honey than with vinegar". Lastly, still others explain it as being due to the negative signal that a share issue sends. The reader who wants to raise fresh capital for their company should take this effect into account and be able to respond in advance to the criticisms.

The summary of this chapter can be downloaded from www.vernimmen.com.

A share issue is a sale of shares, the proceeds of which go to the company and thus indirectly to all shareholders who will therefore share future cash flows.

In the theory of markets in equilibrium, the cost of a capital increase is equal to the cost of equity given the valuation of the shares. This is neither the dividend yield nor the earnings yield (reverse of P/E). It is a forward-looking cost and one to which there is no firm commitment on the company's part. (*Ex post* it may be quite different: exorbitantly high or actually negative.) Value is created for current shareholders if the capital increase captures the value creation stemming from the new funds.

A capital increase tends to benefit lenders to the detriment of shareholders insofar as the market re-rates the company's debt to reflect the reduced risk of its share issue. A capital increase tends to favour current shareholders over new, via a transfer of value, if the rate of return on new investments is correctly anticipated. The a priori negative signal that any capital increase sends – namely, that the shares are overvalued – has to be countered (signalling theory). A capital increase entails a temporary reduction in informational asymmetry (agency theory).

The reduction in equity rights of a shareholder that neither puts in nor takes out funds on the occasion of a capital increase is called real dilution. In the case of a rights issue, real dilution is different from apparent or overall dilution.

This dilution of power and control is to be distinguished from the dilution (or its opposite) in the company's financial parameters in the short term. Any share issue increases EPS when the reciprocal of P/E is less than the after-tax rate of return on reinvested funds. Book value per share is diluted for current shareholders if the company's market capitalisation is less than its book value.

- 1/Is the issue price of the new shares important in a capital increase where each shareholder subscribes their share of the capital increase?
- 2/What is dilution of control?
- 3/When are there three different measures of dilution of control? What are they?
- 4/What is the purpose of subscription rights? What is their theoretical value?
- 5/At what price is a capital increase effected when made with an issue of subscription rights? When made without?

SUMMARY

QUESTIONS

- 6/How can a company be sold by means of a capital increase?
- 7/What is the consequence of a capital increase on EPS in the short term? In the long term?
- 8/Should there be an issue of new shares whenever the share price is overvalued?
- 9/Why are the most profitable companies the ones that gain the most by issuing new shares?
- 10/Does a capital increase with pre-emptive subscription rights signal overvaluation of the shares more strongly than one without?
- 11/What can happen if rights trade significantly below their theoretical price? What is the limit?
- 12/Why are share issues a complex decision to take for family-owned companies?
- 13/What is most important in a capital increase?
- 14/In the presence of subscription rights, what is the most relevant dilution of control?

EXERCISES

- 1/
 - (a) A company has a market value of €100m divided into 1 million shares. It proposes to raise funds equivalent to 25% of its value by issuing new shares at €75. Calculate the value of the subscription right, the apparent, technical and real dilutions, the adjustment coefficient and the subscription ratio.
 - (b) A shareholder holds 90 shares of the company above. Show the bonus share aspect inherent in a capital increase of this kind.
 - (c) If the shareholder does not subscribe to the new issue, what is their new ownership percentage? Calculate it in two different ways.
 - (d) Show that if all shareholders subscribe to the capital increase, the issue price does not matter.
 - (e) What is EPS after the capital increase if previously it was €10?
 - (f) If the book value of equity was €80m before the capital increase, what is the percentage increase in it? What is the book value per share before the operation? What is it after the operation?
 - (g) Answer questions (a) through (f) again assuming that, after a sharp run-up in share prices, the market value of the company has doubled. The amount of the capital increase is still €25m, but the issue price rises to €150. What conclusions do you draw?
- 2/Case study: Carbios share issue in May 2021.

Issue of 3m new shares without pre-emptive subscription rights:

Number of shares before the capital increase:	8.164m
Issue price:	€38
Latest price:	€41
Issue proceeds (gross):	€114m

- (a) Compare consolidated shareholders' equity (€49m) with the amount of the capital increase, the amount of the latter to market capitalisation before the operation. What do you conclude?
- (b) Calculate the real dilution entailed by the capital increase. Compare it with the increase in book equity from the share issue.
- (c) Calculate the share that new shareholders will hold in the capital and the shareholders' equity of Carbios.
- (d) What is your conclusion? Carbios is a green chemistry company that develops innovative biological processes to recycle plastics (PET) over and over again.

3/Other case studies of share issues are available on the Vernimmen.com website, including Rubis, Neovacs, Générale de Santé.

Questions

- 1/No, because regardless of the issue price, the shareholding is not modified.
- 2/Reduction in the equity rights of shareholders that do not subscribe to the capital increase in proportion to their current shareholding.
- 3/When there is a capital increase along with an issue of pre-emptive subscription rights. Apparent dilution (ignoring the value of the rights), real dilution (the one that matters) and technical dilution (solely attributable to the rights).
- 4/Subscription rights ensure that the current shareholders can take part in the share issue if they wish. Their theoretical value is presented on Section 25.3.
- 5/With or without rights, the capital increase is made at the value of the share. With rights because the investor's cost price must include acquired rights. Without rights because the discount, in relation to the value, is usually very small.
- 6/By having a very large capital increase with a very small issue price and hence a large value for rights.
- 7/Generally, dilution in the short term. For the long run, it depends on the returns generated by the projects that are financed.
- 8/In theory, yes. In practice, this is quite difficult to do.
- 9/Because this is the virtuous circle of the share issue.
- 10/Yes, because the substantial discount provides a cushion against a sharp drop in the market price and because the banks were unwilling to get caught up in a process that would have led to them guaranteeing a price close to the market price.
- 11/Arbitrage will take place: some investors will buy rights and short sell shares. This short sell will be repaid with the shares subscribed by the use of the rights. The lack of market efficiency is usually explained by the low liquidity of rights.
- 12/Because it leads to a dilution of control.
- 13/The profitability of the investments financed in this way.
- 14/Real dilution, because it takes into account the proceeds from the sale of the subscription rights as opposed to apparent dilution.

ANSWERS

Exercises

A detailed Excel version of the solutions is available at www.vernimmen.com.

- 1/ (a) Subscription right = €6.25, apparent dilution = 25%, real dilution = 20%, technical dilution = 5%, adjustment coefficient = 0.9375, subscription ratio = 1 new for 3 shares held.

- (b) The shareholder has 90 subscription rights. If they sell 72 of them and keep 18, they will be able to buy 6 new shares without expending any cash. This is equivalent to receiving 6 bonus shares.
- (c) $(90 + 6) / (1,000,000 + 333,333) = 0.0072 = (90 / 1,000,000) \times (1 - 20\%)$.
- (d) Since the control percentages are unchanged and the amount of increase is fixed, the price has no effect.
- (e) Before the funds raised are invested, EPS falls to €7.5.
- (f) Book value of equity increases by 31.25%. Book value per share drops from €80 before to €78.75 after.
- (g) Subscription right = €7.14, apparent dilution = 14.3%, real dilution = 11.1%, adjustment coefficient = 0.9643, subscription ratio = 1 new for 6 shares held. Book value per share after: €90.

2/Carbios case study.

- (a) The share issue increases the market cap by 34% but the book value of shareholders' equity by 133%.
- (b) Apparent dilution is $114 / (114 + 335) = 25\%$. But book equity increases by 133% for only a 25% dilution of current shareholders as equity is worth 7 times its book value.
- (c) $3 / (3 + 8.164) = 26.9\%$ of capital and $114 / (114 + 49) = 70\%$ of equity.
- (d) It is because Carbios is perceived as a value-creating company (equity value higher than book value of equity), that the new shareholder, although contributing 70% of the equity, is entitled to only 26.9% of the shares.

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