

An analysis of financial ratios for the Oslo Stock Exchange

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Share prices are driven by companies' operations, funding and the risk premium required by investors. This article examines financial ratios that may reflect these three variables for the Oslo Stock Exchange in the period 1997 to 2007. The operating profits of listed companies are high at present. However, there are indications that earnings are levelling off. Listed companies have increased their equity ratios and appear to be very robust. However, much of the increase in equity consists of intangible assets. Still, even with increased book value, profitability has remained at a historically high level. Valuation multiples provide a somewhat mixed picture of the pricing of equities on the Oslo Stock Exchange. We argue that it may be useful to use multiples that adjust for cyclically high earnings, and perhaps also for changes in the composition of equity.

1. Introduction

Norges Bank monitors the Norwegian equity market for three reasons. First, developments in share prices, share issues and the financial reports of listed companies may provide us with information about cyclical developments. Second, this information provides indications of general developments in the Norwegian corporate sector. This is important for banks' earnings and therefore for financial stability. Third, developments on the Oslo Stock Exchange may also have a direct bearing on financial stability. Financial institutions derive income from the sale and issue of shares, and price changes affect the value of the shares on the institutions' balance sheets. The Stock Exchange is also a source of funding for both financial institutions and other enterprises.

This provides motivating factors for analysing the forces driving share prices. According to financial theory, share prices reflect the present value of the expected cash flow from companies to shareholders. Five factors are crucial for determining present value:

- Value added
- Labour costs
- Funding
- Taxation
- Required rate of return / cost of capital

The most important is value added in companies. Value added can be defined as operating income less operating costs excluding labour costs. Non-labour operating costs represent value added outside the company. Much of the value added in companies accrues to employees in the form of wages (and to the state in the form of income tax). *Operating profit* is operating income less all operating costs, including wages. Operating profit is *the share of the value added that accrues to the investors* (and the state in the form of corporate and capital taxes). Employees often have a clearly defined contractual claim. It is therefore the investors that run the greatest risk and have the greatest potential gain from variations in value added.

Financing determines how operating profits are distributed among investors. More debt financing increases potential value added for equity holders. At the same time, changes in the interest rate level will have greater consequences for return on equity (ROE).

The purpose of this article is to discuss key figures that can shed light on developments in operating profit, financial conditions and risk premiums (the market's valuation of the shares). Current developments in financial ratios are discussed on the basis of an internally developed data set.

The article is structured as follows: Section 2 provides the theoretical basis for studying the accounts and financial ratios that are discussed later. The data set is described in Section 3. This is followed by a discussion of how fundamentals can be aggregated across companies. Developments in corporate operating profits and financing are discussed in Sections 4 and 5, and their collective effect on ROE is considered in Section 6. Section 7 considers assessments of equity valuation relative to fundamentals. A key question is whether valuation multiples reflect the risk premium on shares. Section 8 provides a summary of the article.

2. Share prices, earnings and risk premium

The relationship between share prices, earnings and risk premium can be illustrated by means of simple share pricing models. Both Gordon's formula and the EVA model are based on the assumption that the value of shares is equal to the present value of shareholder cash flow.

Gordon's formula

In Gordon's formula, the price of a share is assumed to be equal to the present value of all future dividends. At time t the share price is P_t and the dividend D_t . Shares are expected to generate annual dividends that grow at

¹ The views expressed in the article are the author's own and are not necessarily those of Norges Bank. I would like to thank Jesper Hein, Knut Sandal, Børne Dyre Syversten and other colleagues at Norges Bank for helpful comments and contributions.

a constant annual rate of g . If the cost of capital (the required rate of return) is equal to k , the relationship between share price, dividend, dividend growth rate and cost of capital can be expressed as follows:

$$P_t = \frac{D_t(1+g)}{(k-g)} \quad (1)$$

It is reasonable to assume that the cost of capital for shares is higher than for risk-free investment alternatives. It is therefore usual to split the cost of capital into long-term risk-free interest rate (r) and a risk premium (rp). The risk premium is an extra compensation investors get when they carry systematic market risk.

$$k = r + rp \quad (2)$$

The fact that the dividend in equation (1) grows at a constant rate (g), means that in this model there is no uncertainty associated with future dividends. This is an assumption that simplifies the expression. In reality, there is uncertainty associated with the dividend, which is the reason that investors require a risk premium (rp) as in equation (2). If a constant percentage (b) of earnings (E) is retained, while the remainder is paid as dividends, we have the following relationship between earnings and dividends:

$$D_t = E_t(1-b) \quad (3)$$

Equation (1) can then be expressed as:

$$P_t = E_t \frac{(1-b)(1+g)}{(r+rp-g)} \quad (4)$$

This means that share prices and earnings must covary. Or that the share price must be given by companies' earnings multiplied by a constant factor - the P/E multiple² (the fraction in equation (4)). This variable will be discussed in Section 6 in connection with valuation.

However, it is useful to note the significance of uncertainty for equity valuation. It is reasonable to assume that the factors in the denominator in equation (4) will be most important for the P/E level. If short-term variations are disregarded, it appears that both the interest rate level (r) and earnings growth for the equity market as a whole (g) will depend to some extent on nominal growth in the economy. If the effect on P/E of changes in the interest rate level and growth offset one another to some extent, variations in the risk premium (rp) will affect the P/E level more strongly. A high (low) P/E may then reflect a low (high) risk premium.

The Economic Value Added (EVA) model and abnormal return

The EVA model is an alternative means of calculating the present value of equity. The basis of this model is that the present value of the cash flow to shareholders

is equal to the book value when the return on equity is equal to the cost of capital. The equity value can then be calculated as book value (B) plus the present value of the difference between the return on equity and the cost of capital.

$$P_t = B_t + \frac{B_t(r_t^{EQ} - k)}{(1+k)} + \frac{B_{t+1}(r_{t+1}^{EQ} - k)}{(1+k)^2} + \frac{B_{t+2}(r_{t+2}^{EQ} - k)}{(1+k)^3} + \dots \quad (5)$$

r_t^{EQ} is return on equity in year t , or the result as a percentage of book capital ($r_t^{EQ} = E_t / B_{t-1}$). The difference between return on equity and cost of capital is the Economic Value Added or abnormal return. The advantage of the EVA model over Gordon's model, which requires a perception of (the constant) dividend growth in perpetuity, is the basis in known accounting variables (B_t) and the need to be forward-looking for only the next few years. The model is also more flexible, as it can capture short-term variations in earnings which may have a substantial positive or negative value. Abnormal return is assumed not to be sustainable over time, partly because over time investors will move capital from poor to good projects.

Assume that earnings and book value grow at a constant rate (g), and that the difference between return on equity and required rate of return is constant for n periods. With these simplifications, the relationship between share price, book value, required rate of return and return on equity can be found by means of the formula for a finite series.³

$$P_t = B_t + B_t(r_{t+1}^{EQ} - k) \frac{1 - \left(\frac{1+g}{1+k}\right)^n}{k-g} \quad (6)$$

A price level higher (lower) than the book value is due to the fact that the return on equity in a period is assumed to be higher (lower) than the required rate of return. This may be a result of variation in earnings and/or cost of capital. It will be seen later that the return on equity varies considerably - much more than it is reasonable to assume that the cost of capital varies. However, a given variation in the cost of capital will have a stronger effect than a corresponding variation in return on equity, because the cost of capital also affects the fraction in equation (6).

The valuation ratio P/B (share price/book value) is discussed in Section 6, and a slight rewrite of equation 6 shows that use of the ratio P/B may be consistent with the EVA model:

$$\frac{P_t}{B_t} = 1 + (r_{t+1}^{EQ} - (r + rp)) \frac{1 - \left(\frac{1+g}{1+r+rp}\right)^n}{r + rp - g} \quad (7)$$

Whereas application of the Gordon model showed that a high (low) P/E could be related to a low (high) risk premium, equation (7) shows that the EVA model indicates that a high (low) P/B can also be related to a low (high) risk premium. It is true that both numerator and denominator in the fraction in equation (7) will rise

² P/E = price/earnings.

³ See for example Knut Boye: Verdiberegninger på grunnlag av kontantoverskudd og unormal avkastning (Value calculations based on cash surplus and abnormal return), *Praktisk økonomi & finans*, Year 15, no. 2, 1999.

with an increase in the risk premium, but the effect on the denominator will be stronger than the effect on the numerator.

Insights from the models and Oslo Stock Exchange data

Both models show that there should be a positive long-term relationship between annual profits and the share price. This is also consistent with the picture in Chart 1, and provides the basis for the subsequent analyses in this article. In the short term, however, increased profits do not necessarily lead to a rise in share prices. Share prices are driven by new information. This means, among other things, that the publication of good results does not affect the share price if the results are in line with expectations. If good results are expected, earnings growth is priced in at the time of publication, and earnings growth for the previous year will therefore also be reflected in price movements in the course of the period.

Chart 1 shows price movements, after-tax earnings and book values for companies in the OBX index since 1997. Accounting variables are discussed in more depth in the next section. Here it suffices to note that after-tax earnings (black line) correspond to E in equation (4). If Gordon's formula had been consistent with reality, the price index and after-tax earnings should have covaried. The yellow and blue lines in Chart 1 would then have been superimposed. In theory, this is not the case because the cost of capital (k) and/or earnings growth (g) are not constant. More volatile profits than prices indicate that variation in P/E for the Oslo Stock Exchange largely reflects short-term variations in earnings, rather than variations in the risk premium. Periods of solid earnings tend to be followed by periods of weaker earnings.

Both valuation models provide an expression of the present value of future cash flows, but otherwise they

differ substantially from one another. Gordon's formula is a long-term growth model, while the EVA model focuses primarily on temporary earnings variations. The two models provide insight into different factors that influence the value of shares, but both are conducive to analysing the information in company accounts.

Gordon's formula provides a simple illustration of a possible relationship between P/E and required rate of return. The required rate of return may vary as a result of variations in risk-free interest rate and/or risk premium. Research provides little evidence of a stable relationship between risk-free interest and P/E⁴, but provides some support for a relationship between risk premium and valuation multiples such as P/E and P/B.⁵ As mentioned, parallel changes in interest rate and growth may offset one another. The lack of correlation between the interest rate level and the P/E ratio may be because both earnings growth and interest rate level covary with the general level of activity in the economy. We will not pursue this further here, but empirical research to some extent supports that valuation multiples may provide information about risk premiums.

In the EVA model, the value of the shares is expressed as the value in a "normal situation" adjusted for the value of abnormal transitory income (or expenses). The model establishes a relationship between share prices and book values, but as long as the return on equity is expected to differ from the required rate of return, share prices and book values will develop differently. Book value (green line) in Chart 1 corresponds to B in equation (6). It appears that share prices may rise (fall) more than book values when profits rise (fall). This is consistent with the notion that variations in P/B may be due to temporary variations in ROE.

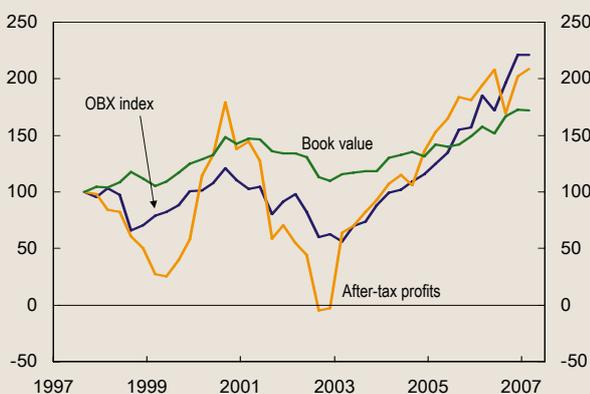
Both theory and empirical evidence indicate that variation in valuation ratios such as P/E and P/B may reflect variation in the cost of capital and risk premia. However, the multiples are also influenced by other factors, and must therefore be interpreted with caution.

3. The data set

An internally developed data set is used for the accounts of the companies in the OBX index on the Oslo Stock Exchange for the period 1996 Q4 to 2006 Q1. The OBX comprises the 25 most traded shares on the Oslo Stock Exchange. In 2006, the market value of the companies in the OBX index accounted for more than 70 per cent of the total market capitalisation of the Oslo Stock Exchange. Developments in these companies therefore provide a good picture of developments in listed companies.

Accounts data are derived from companies' quarterly reporting at group level. In some cases, where quarterly figures have not been available, data from annual reports have been used, and broken down to the best of our ability.

Chart 1 Developments in share prices, earnings and book value. Indexed 30 September 1997. Quarterly figures



Source: Norges Bank

⁴ See for example Clifford Asness: "Fight the FED Model", *The Journal of Portfolio Management*, Fall 2003.

⁵ See for example J.H. Cochrane: "New facts in finance", *Economic Perspectives*, vol. 23, no. 3, Federal Reserve Bank of Chicago 1999, and Randi Næs and Johannes Skjeltorp: "Har aksjepremien krympet?" (Has the equity premium shrunk?), *Økonomisk Forum* no. 5, 2005.

The data set consists of the following profit and loss account items: operating income, earnings before interest, tax, depreciation and amortisation (EBITDA), earnings before interest and tax (EBIT), net financial items, earnings before tax, taxes and net profit. EBITDA is adjusted for high extraordinary income and expenses in cases where such items are considered to distort the picture of underlying operations. Extraordinary income and expenses are included in EBIT. Where financial items have been adequately specified in the accounts, only interest income and expenses have been included.⁶

The following balance sheet items are used: assets, intangible assets, cash and short-term investments, interest-bearing debt, minority interests and equity. Some accounting concepts are explained in Box 1.

The data are aggregated at index level by converting all accounts figures into amounts per share. The amounts per share are then multiplied by the number of shares in the index for each company, and then aggregated over all the companies.

There are some problems associated with the use of

accounts figures. First, historical figures do not always apply to the future. For example, a group may change rapidly through the acquisition or disposal of subsidiaries. Moreover, accounts are based on principles intended to make them reliable. Book values, for example, are often based on cost of acquisition rather than best estimate of market value, because the cost of acquisition is indisputable, while estimates of market value normally require judgement. Accounting for income and expenses on an accruals basis is another source of uncertainty. Even if the framework provided by accounting legislation is adhered to, choices in connection with accruals may influence the results substantially. Nor can it be ruled out that some companies do not comply with the legislation, and engage in accounts manipulation.

4. Operations

Share prices are closely linked to developments in value added. Value added is created through operations. Properties of and developments in some financial ratios for companies' operations are discussed below.

Box 1: Main items in the profit and loss account:

Operating income		
– Operating expenses		
= Earnings before interest, tax, depreciation and amortisation (EBITDA)		
– Depreciation		
– Amortisation		
= <u>Earnings before interest and tax (EBIT)</u>	=>	<i>to shareholders, creditors and the state</i>
+ Dividends from other companies		
+ Net financial items	=>	<i>to creditors (less tax on interest)</i>
= <u>Pre-tax operating profit</u>		
– Taxes	=>	<i>to the state</i>
+ Net profit from discontinued operations		
= <u>Net profit</u>	=>	<i>to shareholders</i>

EBIT Earnings Before Interest and Tax is equal to operating profits. Operating profits is what the enterprise is left with after costs have been covered, and is what can be distributed among creditors, the state (tax) and shareholders.

EBITDA Earnings Before Interest, Tax, Depreciation and Amortisation. Depreciation and amortisation are two of the main noncash operating expenses. Thus EBITDA can virtually be regarded as cash flow from operations. However, EBITDA does not capture the need for reinvestment in order to maintain operations.

EBI EBIT less adjusted tax. By adjusted tax is meant tax on both income on equity (taxes) and borrowed capital (financial items times 28 per cent tax). It is usual to subtract tax from operating profits/loss when making comparisons across different tax regimes. EBI is commonly referred to as NOPLAT (Net Operating Profit Less Adjusted Tax).

EBIDA EBITDA less adjusted tax.

⁶ In the financial sector, the distinction between 'operating' and 'financial' is an artificial one. In order to integrate the financial sector in the analysis, we have defined 'debt to other financial institutions', 'securities debt' and 'subordinated loans' as financing with borrowed capital (interest-bearing debt). Interest expenses on this debt are defined as financial items.

Earnings before or after depreciation and amortisation?

Operating profits provide an expression of the result of companies' ordinary operations (before financial items). It is a commonly used measure of a company's operations. It appears that there may be less variation in operating profits before than after depreciation and amortisation. The question is whether this is due to noise or information, and hence which of the two concepts is the best measure of developments in operations. For example, the EBI of the OBX companies has increased by an annual rate of more than 40 per cent since 2002 Q3. During the same period, EBIDA has increased by an annual rate of less than 15 per cent.

The difference between the two variables is depreciation and amortisation. Depreciation is a calculated cost, and an accounting expression of the reduction in the value of a capital asset. In reality, depreciation may vary with the use of the asset, but in practice assets are depreciated gradually over time. There is therefore reason to believe that depreciation is not particularly cyclical in nature, and will gradually increase over time in pace with rising nominal values on companies' balance sheets. The data confirm this assumption.

Amortisation (write-down) is also a calculated cost, but of a more extraordinary nature than depreciation. Amortisation⁷ represents a more unexpected reduction in the value of assets. The reduction may be explicit, as a result of damage to the assets. In other cases the reduction may be more implicit. For example, when the return on equity is too low to justify the value at which the assets are recorded, they will normally be written down. In practice it may be difficult to determine whether the return is temporarily low, for example as a result of a cyclical downturn, or permanently reduced. There may therefore be a tendency for write-downs to increase during a cyclical downturn, and for developments in operating profits (EBI or EBIT) to provide a distorted picture of developments in underlying operating conditions. Operational developments may then appear excessively weak in the period in which the write-downs are made, thereby erroneously implying that operations improve in the subsequent period. The accounting return on capital subsequently will also be permanently higher, because the write-downs reduce the book capital.

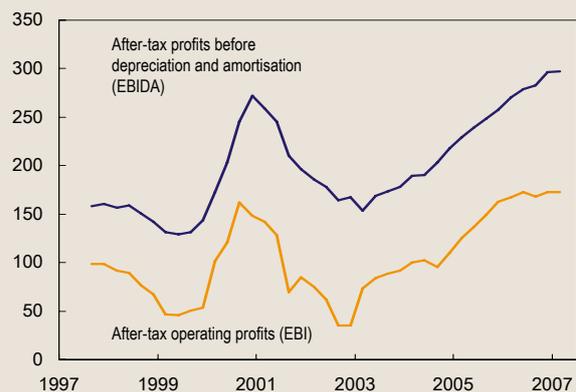
This source of error is reduced if developments in operating conditions are described in terms of operating profits before depreciation and amortisation (EBIDA or EBITDA). But if depreciation and amortisation are disregarded, so are substantial real costs like the reduction in the value of a capital asset and other assets. To the extent that these costs change over time, they will also represent a source of error in an assessment of operations. This is particularly relevant in view of the recent increase in the number of oil rig companies on the Oslo

Stock Exchange. These companies make substantial investments in oil rigs and thereby incur large depreciation costs. When the value of these companies increases as a share of the OBX, the weighted average depreciation for OBX companies also increases. This may be a reason why growth in operating profits has recently levelled off more than EBITDA (see tax-adjusted figures in Charts 2 and 3). When assessing developments in operations, operating profits both before and after depreciation and amortisation should therefore be monitored. The variables provide more information collectively than they do individually.

Operating profits after tax

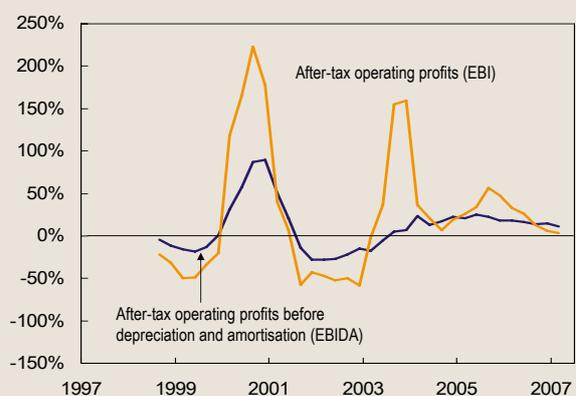
Data show that the average tax rate (tax as a percentage of earnings before tax) for companies in the OBX index has risen from around 30 per cent before 2000 to around 45 per cent since 2001. As tax rates vary considerably, it is not a given that developments in operating profits

Chart 2 After-tax operating profits before and after depreciation and amortisation. NOK per share. Quarterly figures



Source: Norges Bank

Chart 3 Annual growth in after-tax operating profits before and after depreciation and amortisation. Per cent. Quarterly figures



Source: Norges Bank

⁷ Assets may also be written up, but as prudence is an important principle in accounting, this has not been common. Under the new IFRS accounting rules it may become more common.

(before tax) provide a reliable picture of developments in the value added that accrues to investors.⁸

The change in average tax rate is related to the change in the companies included in the index, and particularly an increase in the share of the index represented by oil companies. Variation in the size of the petroleum sector is due both to the listing of Statoil in 2001 and to cyclical fluctuations in the sector. The companies that produce petroleum on the Norwegian continental shelf pay more tax than other companies. The petroleum companies do not pay for government awarded licences, but the government collects economic rent through a supplementary tax of 50 per cent (petroleum tax) on petroleum recovered from the Norwegian continental shelf, in addition to ordinary corporate tax of 28 per cent. Variations in oil prices and oil companies' weighting in the index therefore influence average tax rates at index level.

This creates a particular challenge with respect to accounting analysis at index level. Whether investors expect to be left with 55 per cent or 70 per cent of the profit after tax is fairly important to an assessment of profitability. This implies that operating profits should be tax-adjusted to ensure comparability over time. Another argument for tax-adjusting operating items is that the figures will otherwise overweight the economic importance of the petroleum sector relative to other sectors, from the investors' point of view. We therefore use EBIT and EBITDA *after tax* to describe developments in operations. The variables will be referred to as EBI and EBIDA, respectively. Chart 2 shows developments in these variables. Annual growth in operating profits (EBI) since 1997 has been about 6 per cent, and somewhat higher for EBIDA. There has been a sharp improvement in operating profits since the cyclical turnaround in 2003, but growth now appears to have slowed.⁹ Chart 3 shows annual growth in EBIDA and EBI, and shows that earnings growth has weakened.

Solid earnings growth since 2003 has been underpinned by high operating margins (see Chart 4). Operating margins are operating profits (EBI and EBITDA are used) as a percentage of turnover (operating income). Although developments have been satisfactory and margins are high, there has been a tendency for margins to level off and decrease slightly in 2006. While the operating margin after tax peaked at almost 12 per cent in 2005 Q4, the operating margin before tax continued to rise up to 2006 Q3, and was then over 20 per cent. Because of petroleum tax, the operating margin before tax provides overly positive picture of profitability for investors.

Trends and cycles in operating profits

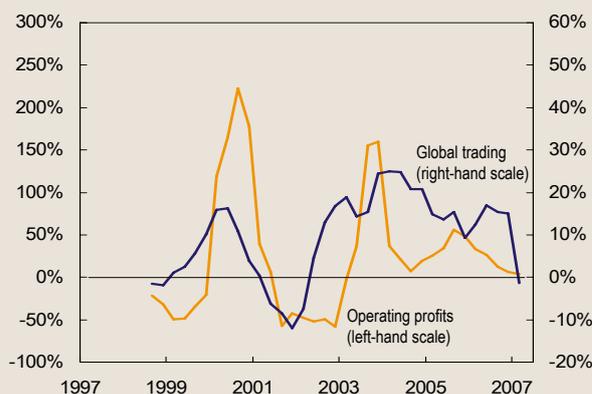
The companies on the Oslo Stock Exchange are concen-

Chart 4 After-tax operating margins for the Oslo Stock Exchange (OBX) excluding financial sector. Per cent. Quarterly figures



Source: Norges Bank

Chart 5 Annual growth in global trading and annual growth in operating profits on the Oslo Stock Exchange (OBX). Per cent. Quarterly figures



Sources: Reuters EcoWin and Norges Bank

trated in industries such as manufacturing, commodities, energy and shipping. All these industries benefit from increased global manufacturing output and trade. The operating profits of the companies on the Oslo Stock Exchange are therefore cyclically sensitive (see Chart 5).

By distinguishing between trend and cyclical paths, we obtain a better picture of underlying developments in operating conditions. Trend growth in operating profits should reflect developments in capital employed¹⁰ and normal (or average) return on capital employed (ROCE). ROCE is operating profits as a percentage of capital employed. Chart 6 shows developments in current and average ROCE. We use ROCE based both on operating profits¹¹ and EBIDA. Chart 7 shows developments in the two operating profit variables EBIDA and EBI and trend growth calculated as capital employed multiplied by the five-year average rate of return.

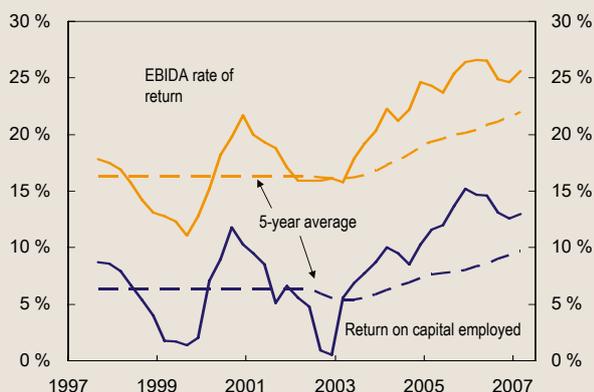
⁸ See for example Knut Boye: "Verdsettelse av Statoil" (Valuation of Statoil), *Praktisk økonomi & finans*, Year 15, no. 2, 1999.

⁹ The path of EBITDA growth differs from that of EBIT as a result of increases in tax rates in recent years. Average annual growth figures for EBITDA and EBIT have been 9 per cent and 10 per cent, respectively, since 1997.

¹⁰ The sum of equity and interest-bearing debt. 'Capital employed' refers to capital that is invested in the enterprise.

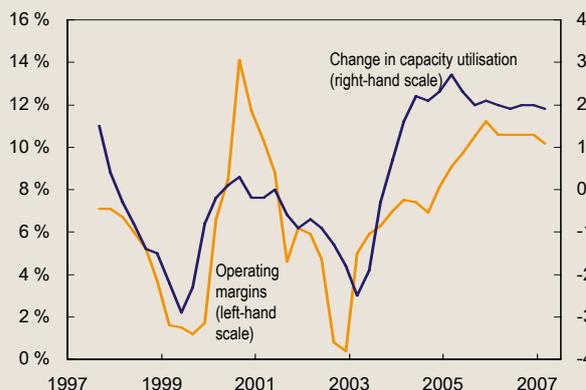
¹¹ Commonly abbreviated as ROCE.

Chart 6 Measure of return on capital employed (after tax) for the Oslo Stock Exchange (OBX) excluding financial sector. Past year and 5-year average. Per cent. Quarterly figures



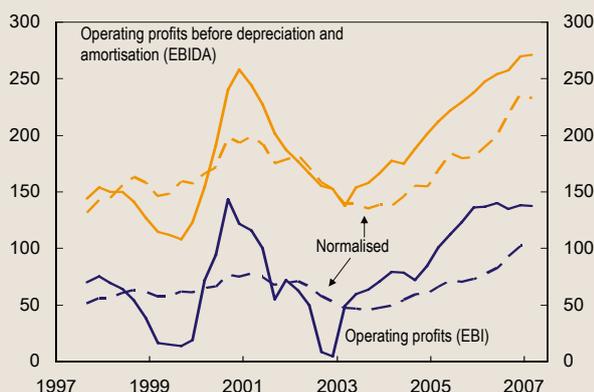
Source: Norges Bank

Chart 8 Annual change in manufacturing capacity utilisation (per cent) and operating margins on the Oslo Stock Exchange (OBX) (percentage points). Quarterly figures



Sources: Statistics Norway and Norges Bank

Chart 7 Operating profits and normalised operating profits (trend) for the Oslo Stock Exchange (OBX) excluding financial sector. NOK per share. Quarterly figures



Source: Norges Bank

Operating profits tend to lie above trend during cyclical upturns. Strong growth in operating profits often coincides with strong growth in the global economy (see Chart 5). Chart 8 shows how developments in operating margins and a change in capacity utilisation have coincided in the past ten years. The capacity utilisation rate in manufacturing¹² is an indicator of pressures in the economy, and indicates how large a share of manufacturing production capacity has been utilised. When capacity utilisation is high, pressures in the economy are high and cost inflation is high. Higher cost inflation exerts downward pressure on operating margins. Lower operating margins tend to be reflected in weaker operating profits. Given a high level of activity and high utilisation of production factors, there is little probability of a sustained rise in operating profits above trend in the immediate future.

¹² Figures based on questionnaires and published by Statistics Norway.

¹³ The conclusion of Consensus Forecasts' questionnaire in May 2007 is also consistent with this, and indicates that forecasters expect operating profits in Norwegian companies to fall in 2007, 2008 and 2009.

¹⁴ Unless otherwise specified, the financial sector is excluded from the analysis in this section because financial institutions have a completely different funding structure from other companies.

¹⁵ Intangible assets include goodwill, deferred tax benefit and items specified as 'Other intangible assets'.

Summary

Operating profits (both before and after depreciation and amortisation) after tax is the best measure of developments in the share of value added in listed companies that accrues to the investors. With high (low) operating profits, there will be a large (small) amount to distribute among the investors, and the value of capital employed will be similarly high (low). Operating profits are high at present. However, growth in profits is slowing, and the levelling off of operating margins and falling return on capital employed indicate slower growth in value added for investors.¹³ If this is not fully priced, it may depress share prices ahead.

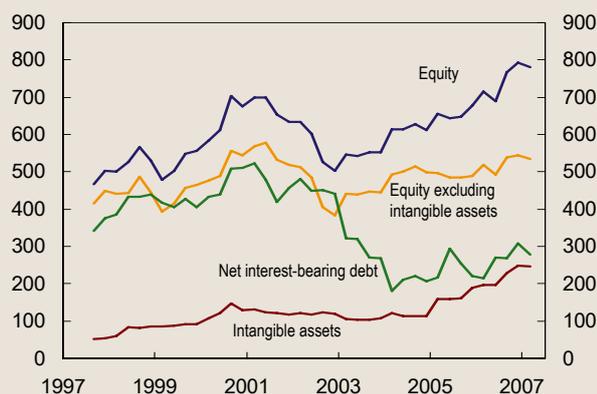
5. Financial factors and balance sheet robustness

Companies' value generation for investors was discussed in the previous section. Investors seek to maximise their share of value added, but the creditors (lenders of capital) have a contractual right to have their claims covered before shareholders. Corporate funding and financial expenses are decisive for the distribution of assets between investors and lenders of capital. If capital returns are higher than interest expenses, higher borrowing will increase the return on equity. Funding also determines how robust companies are to an increase in financing expenses and/or weaknesses in operating conditions.

In recent years, finances at OBX companies¹⁴ have exhibited four trends:

- Financial costs have fallen considerably since 2003.
- Intangible assets increased sharply in 2005 and 2006.¹⁵

Chart 9 Balance sheet items for the Oslo Stock Exchange (OBX) excluding financial sector. NOK per share. Quarterly figures



Source: Norges Bank

- Equity has grown by almost 10 per cent annually since 2003.¹⁶
- Net interest-bearing debt was halved in the course of 2003 and 2004 (see Chart 9).¹⁷

Falling financial costs

The interest expenses of companies listed on the Oslo Stock Exchange (OBX) have fallen gradually since 2003, and are still at very low levels both historically and not least relative to operating profits (see Chart 10). The fall in interest expenses can be attributed to both a lower debt level and a lower average interest rate on debt (see Chart 11).

The fall in average interest rates on debt for the OBX (including financials) since 2003 is in line with developments in short-term interest rates and credit premia. If the financial sector is excluded, interest rates on debt increased in 2003 and 2004 and then fell sharply in 2005 and 2006. The lack of covariation with developments in short-term rates may reflect variations in the credit premium on the debt of companies in the index, more fixed-interest rate loans for these companies than for companies in the financial sector, and a portion of foreign currency debt at a different interest rate than NOK debt. Large variations in the debt level across companies and over time may also influence the figures.

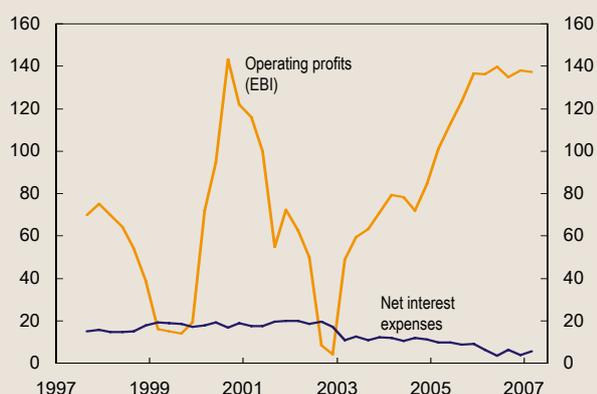
Growth in intangible assets

Intangible assets are goodwill, deferred tax benefit¹⁸ and other intangible assets (patents, licences, trademarks, balance sheet costs associated with the development of operating methods etc.).

In the period 2000 to 2005, intangible assets accounted for 6-8 per cent of OBX companies' total assets. Over the past two years, this share has risen to almost 12 per cent. The balance sheet value of assets shall in principle reflect their capacity to yield future returns. This applies whether the assets are tangible or intangible. Comparative advantages are often associated with intangible assets such as trademarks, patents or internally developed methods and models. Intangible assets can therefore contribute substantially to the return on capital. However, intangible assets are often difficult to value. Tangible assets often have alternative uses, while intangible assets are often idiosyncratic, and may by definition "lose their value" in pace with falling profitability at the company.

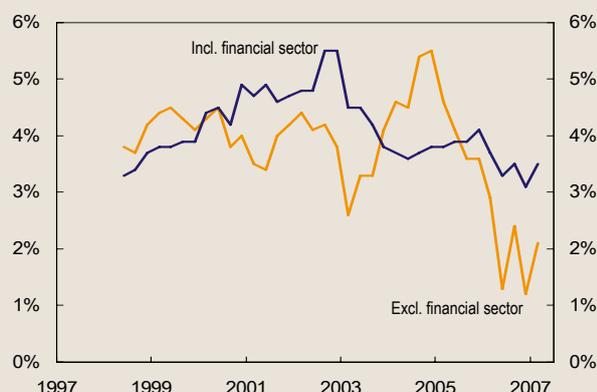
Goodwill often constitutes a substantial share of the intangible assets. When a company acquires another, the value of the assets of the acquired company must by definition be equal to the company's debt plus the price paid for the equity. When the assets are entered in the accounts, values must be assigned to the various

Chart 10 Developments in operating profits and net interest expenses for the Oslo Stock Exchange (OBX) excluding financial sector. NOK per share. Quarterly figures



Source: Norges Bank

Chart 11 Average interest rate on debt for the Oslo Stock Exchange (OBX) including and excluding financial sector. Per cent. Quarterly figures



Source: Norges Bank

¹⁶ Shareholders' equity and minority interests are both counted as equity.

¹⁷ Net interest-bearing debt is interest-bearing debt less cash and short-term investments.

¹⁸ If the enterprise has suffered a loss in an accounting year, the loss is tax-deductible in later years. Deferred tax assets are primarily the balance sheet value of tax deductions that can be carried forward later (but it may also be due to other factors). Deferred tax expense is a tax obligation that has to be paid in a later accounting period.

assets. If it is not possible to link the whole value up to the individual assets, the residual is entered as goodwill. Goodwill reflects the fact that the purchaser has assessed the value as being higher than the sum of the assets that can be identified and entered on the balance sheet. Thus goodwill represents the buyer's expectations regarding future returns. Anything else would not be consistent with paying so much for the acquired company.

Acquisitions will, due to the definition of goodwill, quite often cause an increase in intangible assets. Take, for example, two identical companies, A and B, both with book value of 100. Both companies have issued 100 shares, which are traded on the stock exchange at a price of 2. Suppose that A acquires B at a price equivalent to the current market price of 200, by issuing 100 new shares that are exchanged for shares in B. For the sake of simplicity, suppose that A finds no reason to write up the value of B's assets, so that goodwill of 100 has to be entered for the merged company AB. AB's book value is 300 – in this case the sum of the book value of A and B plus goodwill. Total book value has increased by 50 per cent without any real change in the companies' financing.

In general, acquisitions take place at more than market value (before the public announcement). An increase in price will increase the book value (and goodwill) in the merged company. More acquisition activity may therefore lead to strong growth in intangible assets, a tendency that will be reinforced if the acquisitions are based on optimistic return expectations. If there are several bidders for a company, the sales price will always end up reflecting the expectations of the most optimistic bidder (winner's curse).

Companies in the OBX index have been involved in many major corporate transactions in recent years. This may well have contributed to the increase in intangible assets. Orkla, for example, incorporated Elkem and two other companies into its consolidated accounts in the first quarter of 2005. In the same quarter, however, a new accounting standard (IFRS) was also introduced, which has led to major changes in the accounting of corporate assets. A full overview of the effects of IFRS would require a more thorough analysis. Both factors may nevertheless be arguments for also analysing the effect of excluding intangible assets.

In the following we consider three types of ratios of developments in the financial features of companies on the Oslo Stock Exchange: gearing ratios, interest coverage ratios (ratio of financial costs to operating profit) and ratios of debt to operating income. The ratios say something about how robust companies are to negative economic shocks.

Gearing¹⁹ ratios

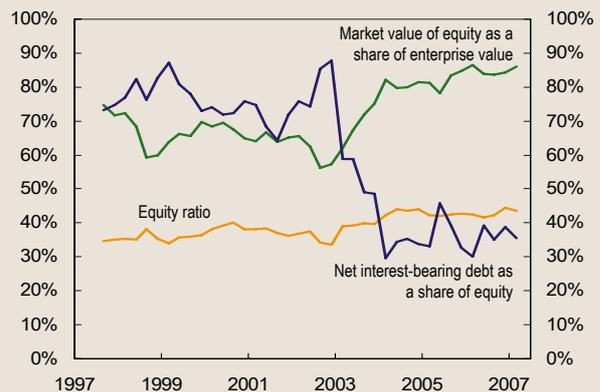
The debt level in the OBX companies fell markedly in the period 2003-2004 (see Chart 12). Measured as

net interest-bearing debt as a percentage of equity, the gearing has changed from 60-85 per cent before 2003 to 30-45 per cent afterwards. In parallel with this, the market value as a percentage of enterprise value (the sum of market value and net interest-bearing debt) rose to over 80 per cent. The equity ratio gradually increased from 35 per cent in 1998 to 44 per cent in 2004, and has since remained at a level of just under 45 per cent. If the equity ratio is adjusted for intangible values, the ratio shows a similar course up to 2004. Since then, however, this measure of the equity ratio has fallen by about 5 percentage points (see Chart 13).

Interest coverage

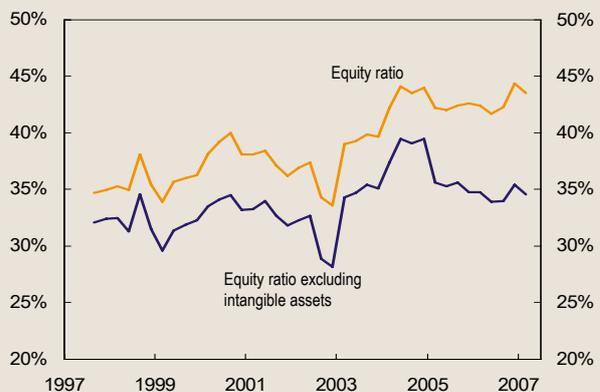
Interest coverage is equal to operating profits divided by interest expenses. The financial ratio indicates how many times operating profits cover annual interest expenses. When EBITDA divided by interest expenses equals 1, it can be interpreted, in a somewhat stylised

Chart 12 Key figures for gearing on the Oslo Stock Exchange (OBX) excluding financial sector. Per cent. Quarterly figures



Source: Norges Bank

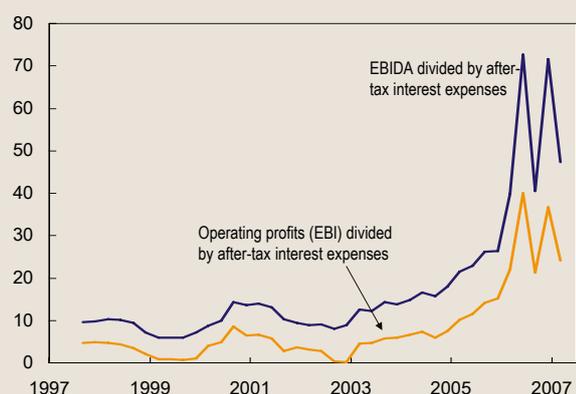
Chart 13 Key figures for gearing on the Oslo Stock Exchange (OBX) excluding financial sector. Per cent. Quarterly figures



Source: Norges Bank

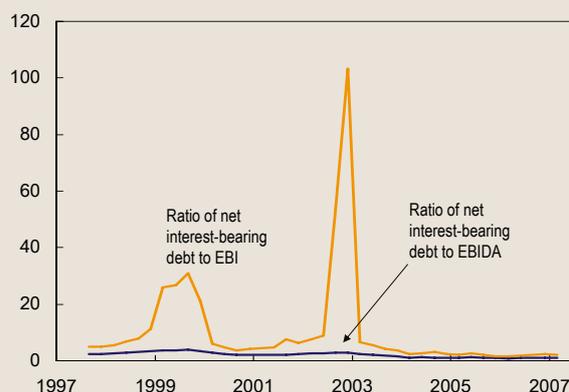
¹⁹ In a situation where equity is more than 100 per cent exposed to a risk factor, it is usual to describe the exposure as geared. It is usual to achieve gearing through borrowing, but derivatives may also be used. If interest-bearing debt is equal to 50 per cent of equity, it means that the equity is exposed for 150 per cent of its own value, and hence geared 50 per cent.

Chart 14 Interest coverage on the Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures



Source: Norges Bank

Chart 15 Ratio of net interest-bearing debt to operating profits on the Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures



Source: Norges Bank

manner, as meaning that operations just cover interest expenses as long as there is no need for reinvestment to maintain operations. When EBIT divided by interest expenses is 1, it can be interpreted as indicating that operations just cover interest expenses plus reinvestments. In order to achieve greater consistency over time, these financial ratios are also calculated after tax. Although interest rate coverage cannot be interpreted as literally as indicated above, it is not likely to impair the information imparted by the ratio about developments in companies' capacity for absorbing higher interest expenses.

Not surprisingly, the combination of higher operating profit, lower debt-equity ratio and lower interest rate level has resulted in a pronounced improvement in companies' interest coverage (see Chart 14). Whereas interest coverage measured by EBI was less than 1 in early 2003, it is now almost 25 times the interest expenses of the non-financial companies in the OBX. In the same period, interest coverage based on EBIDA has increased from 8 to almost 50 times interest expenses.

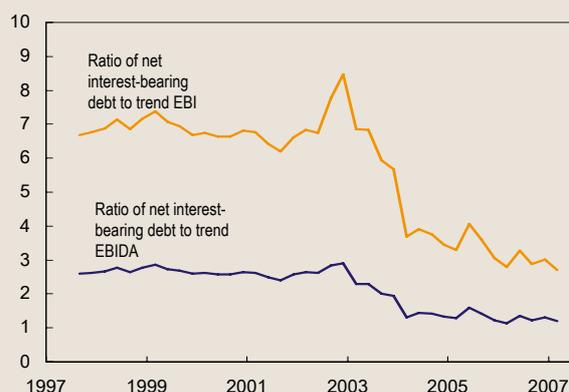
The financial ratio is clearly strongly affected by cyclical developments in operating profits. In this case, it is not a problem since interest coverage can be interpreted as an expression of companies' debt-servicing capacity *in the short term*. It is natural that short-term debt-servicing capacity varies with the business cycle.

Ratio of net interest-bearing debt to operating profit

Net interest-bearing debt divided by operating profits also provides an indication of the debt-servicing capacity of companies. The financial ratio can (in stylised terms) be interpreted as the number of years it takes to repay the debt.

The ratios for the past few years show a sharp improvement in companies' debt-servicing capacity. As a result of lower debt and improved earnings, debt

Chart 16 Ratio of net interest-bearing debt to operating profits on the Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures



Source: Norges Bank

is now only at about the level of the past year's EBIDA and equal to twice operating profits (after tax).

The ratio of interest-bearing debt to operating profit can be interpreted as an indicator for long-term debt-servicing capacity. A definite weakness of this financial ratio in such a context is that it is as sensitive to cyclical variations in operating profits as Chart 15 indicates. We have therefore also calculated an indicator that shows the ratio of interest-bearing debt to normalised (trend) operating profits (see Chart 16). In the period 1998 to 2002, debt was around 2½ times trend operating profits before depreciation and amortisation and 6-7 times trend operating profits. Since then debt has fallen to respectively 1¼ and 3 times the two trend operating profit variables.

Summary

How the company is financed is crucial for the distribution of operating profits between creditors and

shareholders and may have a strong effect on how robust companies are to higher funding costs and deterioration in operating conditions. This comes to the same thing of course. As creditors have priority on cash flows and assets, the company will be insolvent if the creditor claims are not covered. In that case, the shareholders lose control of the company unless more equity is injected. The shareholders have the advantage that creditors only get a pre-determined amount, while the remaining assets accrue to shareholders. As long as ROCE is higher than borrowing costs, gearing (debt financing) pays off for equity holders. However, the vulnerability of the company increases with gearing.

At present, the companies on the Oslo Stock Exchange appear very robust. ROCE is high, gearing is low and financing costs are low. However, there has been unusually strong growth in intangible assets. Some of the growth is due to an increase in goodwill items. This can be interpreted as a decline in the substance of the equity. Equity ratios excluding intangible assets have declined substantially in the last two years, but are still high compared with the period 1998 to 2003.

6. Return on capital

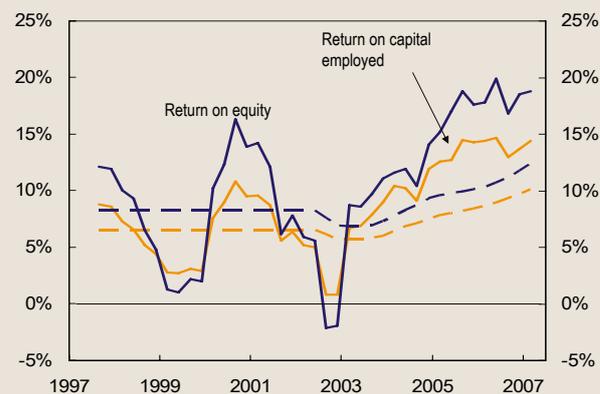
So far, we have seen that operating profits are a measure of the value added that accrues to investors, and that financing determines how operating profits are distributed. However, we have not yet presented a measure that enables us to assess whether the level of operating profits is high or low. Operating profits must be viewed in relation to the amount of capital tied up in the company.

Return on capital employed (ROCE) is operating profits as a percentage of capital employed, and is a measure of return on total capital invested in the company. Return on equity²⁰ (ROE) is net profit²¹ as a percentage of equity. There is a close relationship between the two variables, and the difference is created by the financing. ROE is over time higher than ROCE of course, since equity is the most exposed to risk. When profitability has been at its weakest, ROE has been lower than ROCE (see Chart 17). This happens only when the average interest rate on debt is higher than the return on capital employed. If gearing is high during such periods, ROE may be negative even if the operating margin is positive.

Return on capital employed is the product of operating margin and capital turnover (see Box 2). The operating margin is very cyclical, which largely explains wide variations in profitability. The operating margin varies considerably because companies have fixed costs which accrue irrespective of the activity level.

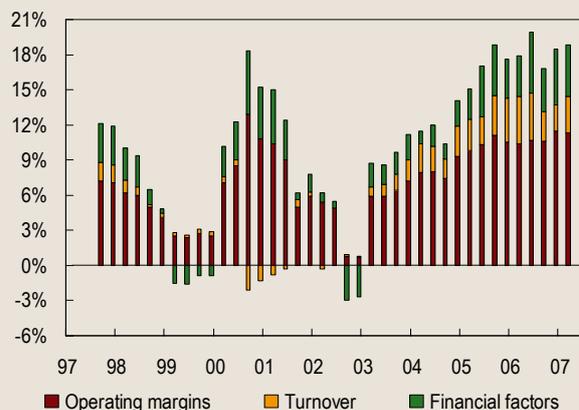
Chart 18 shows the contribution from three main factors to ROE: operating margin, capital turnover and equity gearing (financial factor). These variables are defined in Box 2.

Chart 17 After-tax rate of return for the Oslo Stock Exchange (OBX) excluding financial sector. Past year and 5-year average. Per cent. Quarterly figures



Source: Norges Bank

Chart 18 Effect of operating margins, capital turnover and financing on return on equity. Percentage points. Quarterly figures



Source: Norges Bank

Capital turnover can be regarded as a measure of capital efficiency. A higher turnover for a given operating margin indicates more efficient use of capital. In Chart 18, the contribution from turnover is positive when turnover is more than one, and negative when turnover is less than one.

The financial factor can be broken down into the contribution from the ratio of return on capital employed to the average interest rate on debt (ratio of rate of return on total capital employed to average interest rate on borrowed capital), and the contribution from the actual gearing ratio (see Box 2). Higher (lower) gearing results in increased (reduced) ROE if the interest rate on debt is lower than the return on capital employed (the normal case), and lower (higher) ROE if the interest rate on debt is higher.

The breakdown of the financial factor is not shown in Chart 18, but in those cases where the financial factor contribution is negative, we know that the average interest rate on debt has been higher than the return on capital employed. We have already mentioned that

²⁰ Total equity includes minority stakes in group companies.

²¹ The net profit is the part of the value added that accrues to shareholders (see Box 1).

Box 2: Relationship between ROE and ROCE

The following variables are used below:

r	return on equity (ROE)
R	return on capital employed (ROCE)
E	net profit
EQ	equity
D	interest-bearing debt
F	financial items (after tax)
$i = F/D$	(average) interest rate on corporate debt (after tax)
S	sales (operating income)

It can be shown that return on equity (r) depends on the operating margin, capital turnover, the ratio of funding costs to ROCE (cost of capital factor) and the gearing of the companies. We can start with the following relationship between ROE and ROCE:

$$r = \frac{E}{EQ} = \frac{[R(EQ + D) - iD]}{EQ} = R + (R - i) \frac{D}{EQ}$$

This expression can be rewritten so that the four factors under discussion emerge from the formula:

$$r = R + (R - i) \frac{D}{EQ} = R \left[1 + \left(1 - \frac{i}{R} \right) \frac{D}{EQ} \right]$$

$$r = \left[\frac{E + F}{S} \right] \left[\frac{S}{EQ + D} \right] \left[1 + \left(1 - \frac{i}{R} \right) \frac{D}{EQ} \right] \quad (8)$$

The factors in equation (8) will be referred to as follows:

$$\left[\frac{E + F}{S} \right] \quad \text{operating margin}$$

$$\left[\frac{S}{EQ + D} \right] \quad \text{capital turnover}$$

$$\frac{i}{R} \quad \text{cost of capital factor}$$

$$\frac{D}{EQ} \quad \text{gearing}$$

$$\left[1 + \left(1 - \frac{i}{R} \right) \frac{D}{EQ} \right] \quad \text{financial factor}$$

A lower operating margin, lower capital turnover and higher interest rates on debt relative to ROCE result in lower ROE. Lower gearing results in reduced ROE if the average interest rate on debt is lower than ROCE (the normal case), and higher return on equity if the average interest rate on debt is highest. The product of operating margin and capital turnover is equal to ROCE. The expression that we have called the financial factor combines the effect of the cost of capital factor and gearing, and can be regarded as the combined effect of debt financing on ROE.

gearing of companies on the Oslo Stock Exchange fell sharply in 2004. We can therefore say with certainty that a higher financial factor contribution in recent years was due to lower interest rates on debt and stable, high ROCE (see also Charts 16 and 17).

All three factors appear to contribute to making ROE cyclical. Variations in the operating margin contribute most to the variation in ROE. But in the periods when the operating margin was very low, capital turnover often fell as well, and the financial factor was negative. It might be expected that the strong growth in equity would have a negative impact on profitability. So far, profitability has remained high, although capital turnover has been slightly reduced.

7. Valuation multiples

High valuation of equities may indicate vulnerability to a fall in prices, while low valuation may indicate a potential for a price rise. As mentioned in Section 2, high (low) valuation may be synonymous with a low (high) risk premium. A theoretical rationale for the use of P/E and P/B ratios was provided in Section 2. However, there are many other related valuation multiples.

Valuation multiples often consist of a value variable (such as a share price) that is compared to a value driver (for example earnings per share – EPS). However, the real value driver for enterprises is expectations regarding future cash flows. Expectations cannot be observed, so substitutes have to be used for analysing valuation. It is not certain that they develop in the same way as the real value driver. Variation in valuation multiples may therefore be influenced by factors other than valuation or changes in risk premia. The objective is to find multiples that shed as much light as possible on developments in risk premia.

It is usual to distinguish between two groups of valuation multiples: total multiples and equity multiples. Equity multiples are generally used, not least because the value (market value) is easily available at the stock exchange. In theory, total multiples have a clear advantage in that they are influenced to only a minor extent by variations in the equity ratio. Any variations in risk premia, which are captured by the valuation ratio, will then be due to a general change in the risk premium and not due to a change in corporate gearing. The value variable, which is the enterprise value, is less readily available, however, and must be calculated as the sum of the market value of equity and debt.

P/E

The most widely used equity multiple is the price-to-earnings ratio (P/E). It is usual to calculate P/E on the basis of either historical accounts figures or analysts' average estimates for earnings one year ahead. Both

methods have advantages and drawbacks. Chart 19 shows P/E on the basis of historical earnings for US, European and Norwegian equities. Historically based P/E has varied considerably over time. In some cases, P/E is high because share prices have risen substantially, as they did in the US and Europe around 2000. In other cases, high P/E is due to extraordinarily low earnings. This was the situation in Norway in the first and second quarters of 2002. In the third and fourth quarters, earnings were marginally negative, and P/E therefore had a high negative value. This is a problem with traditional P/E multiples. If earnings are cyclical and volatile, the ratio may be high in cyclical downturns and low in cyclical upturns, and it may be very difficult to distinguish any variation in the ratio that is due to variation in the share risk premium. Today's moderate P/E level must be viewed in the light of cyclically strong earnings, as discussed below.

The advantage of using earnings estimates for calculating P/E is that analysts' estimates of future earn-

Chart 19 P/E based on historical earnings in Norway, Europe and the US. Quarterly figures



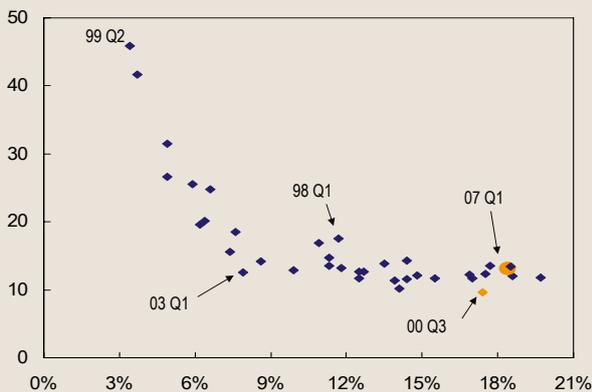
Source: Norges Bank

Chart 20 P/E based on forward-looking earnings estimates in Norway, Europe and the US. Monthly figures



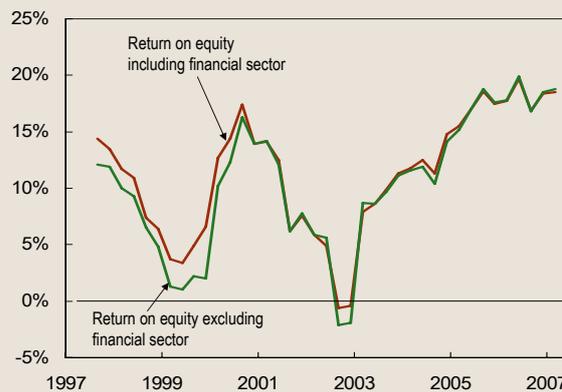
Source: Norges Bank

Chart 21 Return on equity in per cent (x-axis) and valuation ratio P/E (y-axis). Oslo Stock Exchange (OBX). Quarterly figures. 1997 Q3 – 2007 Q1



Source: Norges Bank

Chart 22 Return on equity on the Oslo Stock Exchange (OBX) including and excluding financial sector. Quarterly figures



Source: Norges Bank

ings are less influenced by past extraordinary events. Analysts can also take into account changes in the cyclical situation over the next 1-2 years. On the other hand, over- and underestimates may be made. In practice, forward-looking P/Es often present the same picture as historically-based P/Es. See Chart 20, which in the case of the US and Europe has many similarities with Chart 19.

If corporate earnings reflect the cyclical situation, a traditional P/E multiple may easily underestimate vulnerability to price falls during cyclical upturns, and overestimate vulnerability during downturns (see Chart 21). There is a tendency for P/Es to be low (high) when earnings per share are above (below) trend. This may indicate that investors disregard what they assume to be temporary peaks and troughs in earnings, and price shares on the assumption that earnings will revert to trend. It may therefore be appropriate to base calculations of P/E on normalised (trend) earnings. Trend earnings as calculated in Section 4 are used.

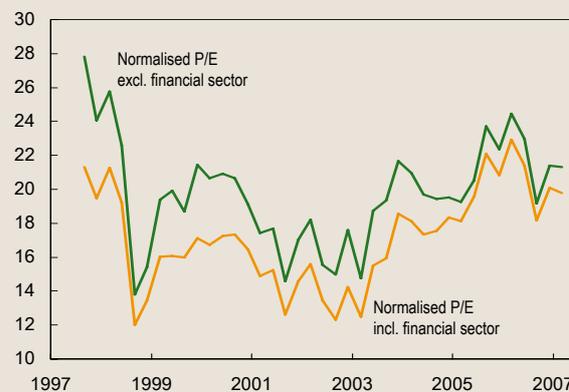
Profitability varies substantially over time, and has been extraordinarily high for the past 2-3 years (see Chart 22)²². P/E for the Oslo Stock Exchange based on normalised earnings²³ indicates that the valuation of the Oslo Stock Exchange may be fairly high (see Chart 23), when one takes into account that profitability over trend is not sustainable in the long run. The period of very high profitability has lasted a long time. A tight labour market and capacity constraints imply that profitability may decline.

P/B

Another widely used equity multiple is that of market value to book value of equity (P/B). P/B has increased

substantially for Norwegian companies in recent years, and is historically high (see Chart 24). P/B and normalised P/E are closely related valuation multiples (see chart). The variable (P) is the same, and since normalised earnings are book value multiplied by 5-year average ROE, the ratios will follow a fairly similar trend. The two ratios have moved slightly apart in recent years. This is because sustained high profitability has raised average ROE and normalised earnings. The price of equity (P/B) has become unusually high in the Norwegian market. This has to some extent been justified by high ROE. Over time, increased investment in companies with high ROE may support continued earnings growth. However, more equity will make it difficult to maintain ROE, and any increase in debt

Chart 23 Normalised P/E for the Oslo Stock Exchange (OBX) including and excluding financial sector. Quarterly figures

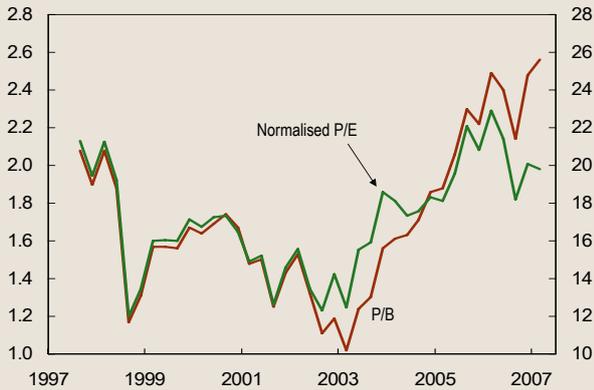


Source: Norges Bank

²² Chart 22 shows ROE calculated on the basis of "pre-tax profit", less "tax" and not "net profit" (see Box 1). The effect of using "pre-tax profit" is to exclude the results of discontinued operations, and include the profits that accrue to minority shareholders. Return on equity based on "result before tax" therefore reflects the profitability of continuing operations for all shareholders. In this way one avoids erratic profitability due to one-off gains on the disposal of parts of the company.

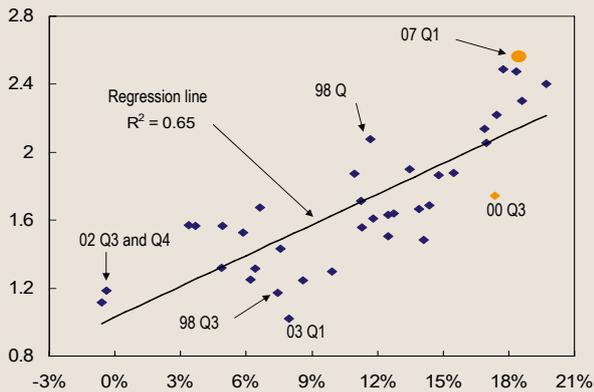
²³ Normalised earnings are estimated by first calculating annual ROE, which is obtained by dividing pre-tax profit by the book value of the equity (including minority shareholders' share of equity). We then calculate average ROE over 5 years and find normalised earnings by multiplying average ROE by book value.

Chart 24 P/B and normalised P/E for the Oslo Stock Exchange (OBX). Quarterly figures



Source: Norges Bank

Chart 25 Return on equity in per cent (x-axis) and valuation ratio P/B (y-axis). Oslo Stock Exchange (OBX). Quarterly figures. 1997 Q3 –2007 Q1



Sources: Norges Bank

Chart 26 P/B for the Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures



Source: Norges Bank

financing will increase vulnerability in the event of an economic downturn.

The theory in Section 2 (see for example equation (7)), indicates that high P/B is not necessarily a danger signal as long as ROE is solid. The key figure may then be revised downwards as a result of equity growth, and not necessarily a price fall. However, P/B appears to be relatively high now, even taking into account the high level of ROE (see Chart 25). This can be interpreted as indicating that current stock prices are based on expectations that the current high earnings will persist. This possibility cannot be ruled out. For example, many oil rig companies are now signing long-term contracts with record-high rental prices. Historically, however, earnings on the Oslo Stock Exchange have always varied substantially with the business cycle, and P/B has always been high before a sharp fall in prices.

A special feature of developments in the book values of companies on the Oslo Stock Exchange is that the share of “intangible assets” has increased. In principle, the accounting of these assets should reflect the expected potential return to the same extent as the increased share of tangible assets. In practice, however, it is more difficult to estimate intangible assets. There is also a tendency in corporate acquisitions for overoptimistic pricing of acquired companies to be accompanied by growth in intangible assets (goodwill). One might estimate P/B on the basis of book value less intangible assets. Growth in P/B then appears even stronger (see Chart 26), and will make even greater demands on listed companies for high future profitability. However, this might be pushing this point to the extreme.

Equity multiples versus total multiples

One disadvantage of equity multiples is that variations in debt-equity ratios will result in variations in the cost of equity and hence to variations in the “correct level” of the multiple. The value of the companies reflects all expected future value added that will accrue to investors and is affected to only a minor extent by funding. Total multiples are therefore more stable than equity multiples if the debt-equity ratio changes over time.

In practice, however, the main problem appears to be common to both types of valuation ratios: they fluctuate too much with the business cycle. Earnings fluctuate considerably through the business cycle, and since investors disregard cyclical variations in earnings, the valuation ratios may reflect the cyclical variations in the value driver more than changes in the risk premium. Charts 27 and 28 show the enterprise value (EV) viewed in relation to operating profits before (EBIDA) and after (EBI) depreciation and amortisation and after tax. Both EV/EBIDA and EV/EBI have been calculated for current profit and for a normalised (trend) profit level.

Chart 29 shows the equity ratio P/E and total asset ratios EV/EBIDA and EV/EBI based on trend earnings

Chart 27 EV/EBIDA for the Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures

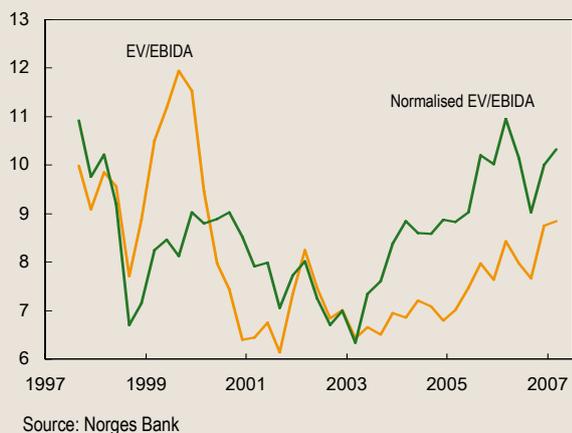


Chart 28 EV/EBI for Oslo Stock Exchange (OBX) excluding financial sector. Quarterly figures

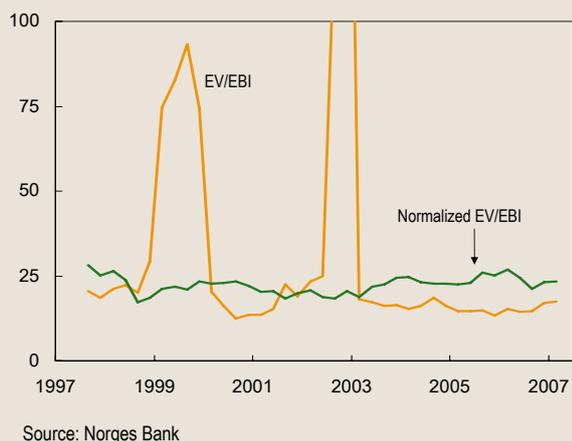
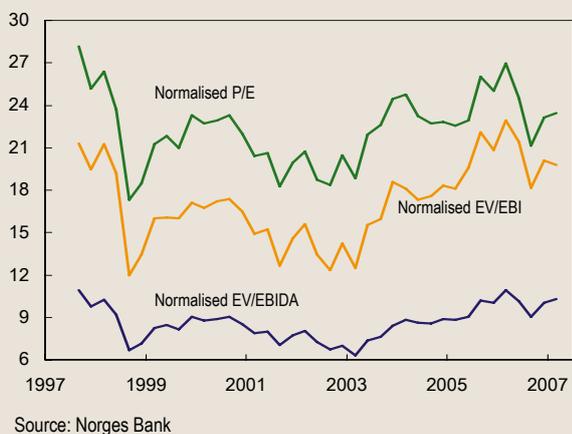


Chart 29 Valuation ratios for the Oslo Stock Exchange (OBX) based on trend earnings. Quarterly figures



figures. All three multiples appear to present the same picture of valuation developments. This may imply that there is not much to be gained in practice by changing from equity multiples to total multiples when assessing the valuation of the index level.²⁴ However, different types of multiples can be used as a cross check.

Summary

On balance, there appears to have been a tendency to increased valuation of Norwegian shares. P/B, normalised P/E and normalised total multiples are at historically high levels. There has also been a considerable rise in historical EV/EBIDA.

Historical P/E and forward-looking P/E are at moderate levels. Earnings would have to fall for traditional P/E multiples to signal that the market is expensive. Earnings for the companies on the Oslo Stock Exchange have been strongly procyclical, however, and the economy is booming at present.

With reference to the discussion of the relationship between valuation multiples and risk premia on shares, developments in the multiples may, if anything, indicate that the risk premium on Norwegian shares may have fallen in recent years.

8. Conclusions

Developments in share prices on the Oslo Stock Exchange are related to developments in companies' operating profits, funding and market pricing (or the risk premium required by investors). We have given examples in the article of how these relationships can be analysed using financial ratios and shown relevant developments.

The companies' operating profits depend on cyclical developments. Market participants allow for this, but turning points in earnings are difficult to foresee. On balance, operations in the companies on the Oslo Stock Exchange have shown a very positive evolution, although developments in operating margins and ROCE may indicate slower growth going forward.

Interest-bearing debt has been reduced in the last decade, also as a share of invested capital. All else being equal, companies may be more robust to reduced growth in operating profits and any increase in funding costs and debt level. Intangible assets account for a large share of asset growth. To the extent that this is goodwill, balance sheet substance is reduced. The financial strength of listed companies nevertheless appears solid.

High valuation is synonymous with low risk premia. Low risk premia result in increased vulnerability to price falls in the event of weaker fundamentals. However, valuation multiples are not perfect measures of value. They are also affected by factors other than variation

²⁴ We have admittedly based the assessment of the enterprise value on book values of interest-bearing debt, since the market value of interest-bearing debt is not readily available. As long as the average period with a fixed interest rate on debt is short, this should not be a problem. However, the possibility that it influences ratios cannot be excluded.

in risk premia. The ratios nevertheless appear to point towards increased valuation and lower risk premia for Norwegian shares in recent years. Measured in relation to book values, and on the basis of valuation ratios with trend earnings, Norwegian shares tend to be fairly expensive in the light of historical valuation multiples.

Some total multiples have recently risen substantially. Traditional P/E measures have also increased recently, but are at moderate levels because market participants probably do not expect the cyclically high profitability of companies to persist.

Tables previously published in *Economic Bulletin*

The Statistical Annex in Economic Bulletin has been reduced with effect from no. 1/06. The subsequent issues provided an overview of the statistics published up to and including no. 4/05, with website references. As from no. 1/07, the Statistical Annex has been removed entirely, partly because the majority of Norges Bank's statistics gathering activities have been transferred to Statistics Norway and partly because the statistics are updated more frequently on the Internet. The following is a list of tables published in Economic Bulletin up to and including 4/06, with website references.

1. Norges Bank. Balanse sheet
<http://www.norges-bank.no/publisert/balanse/>
2. Norges Bank. Investments for Government Pension Fund – Global
<http://www.norges-bank.no/petroleumsfondet/rapporter/>
3. Banks. Balanse sheet
<http://www.norges-bank.no/front/statistikk/no/fiks/>
<http://www.ssb.no/emner/10/13/10/orbofbm/>
4. Banks. Loans and deposits by public sectors
<http://www.norges-bank.no/front/statistikk/no/fiks/>
<http://www.ssb.no/emner/10/13/10/orbofbm/>
5. Banks. Profit/loss and capital adequacy data
<http://www.ssb.no/emner/10/13/10/orbofrk/>
6. Banks. Average interest rates on NOK loans and deposits
<http://www.ssb.no/emner/11/01/orbofrent/>
7. Securities registered with the Norwegian Central Securities Depository (VPS), by issuing sector, nominal value
<http://www.ssb.no/emner/11/01/vpstat/>
8. Securities registered with the Norwegian Central Securities Depository (VPS), by holding sector, market value
<http://www.ssb.no/emner/11/01/vpstat/>
9. Credit indicators and money supply
<http://www.ssb.no/emner/11/01/k2/>
<http://www.ssb.no/emner/11/01/m2/>
<http://www.ssb.no/emner/11/01/k3/>
10. Financial accounts of the household sector
<http://www.ssb.no/emner/09/01/finsek/>
11. Consumer price indices
<http://www.ssb.no/emner/08/02/10/kpi/> (CPI for Norway only)