



MEASURING AND ANALYSING PROFIT DEVELOPMENTS IN THE EURO AREA

Profit developments are of general interest for macroeconomic analysis and, in particular, they play an important role in the analysis of investment, growth and prices. However, it must be borne in mind that the measurement of profits at the macroeconomic level is subject to a high degree of uncertainty and may also reflect measurement problems associated with other economic variables. Hence, it is advisable to consider several profit indicators from different sources and to be cautious in drawing inferences.

These caveats are particularly relevant when considering profit developments over a longer time period or across countries. Bearing these caveats in mind, the broad picture that emerges from various indicators of profits in the euro area would seem to indicate that, following generally unfavourable profit conditions in the 1970s, euro area profitability recovered gradually during the 1980s and 1990s. This broad picture holds true irrespective of whether one considers the so-called profit share (i.e. the gross operating surplus as a percentage of total GDP) or the net rate of return on capital (i.e. the gross operating surplus less depreciation of capital as a percentage of total net capital). Although it is very difficult to make international comparisons, available evidence would seem to indicate that euro area profitability has remained below that of the United States.

Considering profit developments since 1999, the euro area economy has been hit by a number of shocks, including a strong increase in oil prices and movements in exchange rates, and by a slowdown in economic activity. These shocks have had an impact on profit developments in the euro area, as in the short run profits tend to act as a buffer against sharp movements in external prices and in unit labour costs, although the impact of these shocks has differed across sectors of economic activity.

Looking forward, it is important that an adequate rate of return be attained in the euro area to stimulate investment and to sustain economic growth. Continued labour and product market reforms are necessary to ensure an efficient allocation of resources and price-setting behaviour within a competitive environment. This process must also be supported by continued wage moderation.

I INTRODUCTION

Profits are of interest for macroeconomic analysis for a number of reasons. In particular, together with wages, profits are a primary determinant of domestic price pressures. In the short run, profits tend to act as a buffer against external shocks and cyclical variations in unit labour costs. Beyond the short run, profit behaviour has implications for price developments. Profit developments also play a significant role in determining firms' behaviour, particularly in relation to investment and employment decisions. Thus, the analysis of profits is an important part of any general economic analysis and also plays a role in the context of the economic analysis carried out

within the framework of the ECB's monetary policy strategy.

At the euro area level, the analysis of profit developments is particularly challenging. While, as indicated below, national account data are especially useful because the European System of Accounts (ESA 95) is a harmonised statistical framework adopted by all EU countries, the level of detail of the data remains limited. With regard to information on profits from other sources such as company account or tax data, euro area analysis is made difficult by differences in national practices.

Section 2 of this article provides an introduction to the alternative concepts and

measures of profits. The usefulness of the various measures depends largely on the specific issue being addressed, for example, whether it is related to investment or to wage-price dynamics. Alternative sources of information on euro area profits are also considered. These sources include national account and company account data. Section 3 presents an analysis of profit developments in the euro area from 1960 to 2003. Longer-term comparisons should be interpreted with caution, however, due to data measurement issues, as should international comparisons. Section 4 offers some concluding remarks.

2 CONCEPTS AND USES OF PROFIT DATA

The measurement of profits and profitability is surrounded by considerable uncertainty. Generally, profits are calculated as a residual and therefore may contain distortions associated with the difficulties in measuring other economic variables. Furthermore, absolute measures of profits are not particularly informative in themselves, since they simply reflect the size of the economy, of the sector of activity or of the company. By relating profits to measures of input or output, profitability measures can be constructed that contain more directly useful information for economic analysis. For example, profitability measures are often calculated relating profits either to a measure of output or to capital input. However, in the latter case, measurement difficulties associated with profits may be compounded by the difficulties in measuring the capital stock. Thus, profits may be considered in a number of alternative ways, with the preferred choice often depending on the issue that one is trying to address. Hence, bearing this and the data caveats in mind, it is advisable to consider several profit indicators from different sources and to be cautious in drawing inferences.

Before presenting alternative indicators of profit developments, it may be useful to consider briefly the relative advantages and disadvantages of the two main sources of profit

data for economic analysis in the euro area, which are national account and corporate account data (for further details, see the annex).

National account data are the primary source of data in this article. The main reason for this is that national account data are relatively consistent across countries and over time. The ESA 95 is a harmonised statistical framework, adopted by all EU countries. ESA 95 data for the euro area are available at a quarterly frequency from 1991 onwards. In addition, by contrast with company accounts, if national accounting conventions change, consistent historical national account data are usually also made available. Lastly, national accounts cover the whole economy. However, they are not without limitations for macroeconomic analysis. For example, what is typically referred to as profit within the national account framework covers a wide range of income flows, including interest payments and taxes due on profits (i.e. the corporate equivalent of gross operating profit).

Instead, firms and investors generally focus on the net profit or loss, i.e. after deducting interest payments and taxes. Hence, measures of profits available from corporate sources may differ due to different focuses and accounting treatments. Although a measure of profits/earnings based on company account data is discussed in this article, limited emphasis is placed on information from company accounts. Accounting standards and practices are not as harmonised as national account statistics and the comparability of data from taxation statistics may be distorted by differing tax rules across countries. The main differences in accounting practices across countries include the treatment of extraordinary items, the value adjustment of assets and the capitalisation of interest.¹ However, corporate measures of profits/earnings may be of interest when analysing firms' behaviour.

¹ For a further discussion of the main accounting problems in international profitability comparisons, see for example "BACH: Guide for the database users", Vol. 1, European Commission, 2001.

In the national account framework, the gross operating surplus (and mixed income) – the national account measure of profits – is calculated as GDP less compensation of employees and less taxes (minus subsidies) on production. Hence, this measure combines both the gross operating surplus (the income of the entrepreneurial factor of production) and gross mixed income (which incorporates the entrepreneurial income of unincorporated enterprises in the household sector as well as the compensation of the labour of owner-workers of unincorporated enterprises in the household sector). It should also be noted that the gross operating surplus (and mixed income) is not net of corporate income tax (which is considered as a secondary income flow) or interest payments, which may have implications for economic analysis. The operating surplus (and mixed income) may also be defined on a net (of depreciation) basis. However, although this concept might be more economically meaningful, its calculation involves additional measurement challenges, in particular in relation to the depreciation rate across countries, across sectors of activity and over time.

In the corporate profit and loss account, gross operating profit may be broadly defined as total operating income less wages and other operating costs. Using this basic measure, additional indicators of profits can be calculated, including, for example, net operating profit, which takes into consideration depreciation. Further profit measures may be calculated taking into account interest payments and taxes.

As indicated above, absolute measures of profits may be combined with measures of input or output to construct profitability measures useful for economic analysis. A first such measure is the so-called profit share, which can be calculated as the ratio of the gross operating surplus (and mixed income) to GDP. This measure is of interest for macroeconomic analysis, since movements in the profit share are primarily determined by the relative

dynamics of the gross operating surplus and labour costs. For example, recent research has focused on the labour/profit share as a measure of real marginal costs and the relationship with inflation dynamics.

A concept closely related to the profit share is the profit mark-up (over unit labour costs) indicator. The change in the profit mark-up is usually calculated by reference to the difference between the rate of growth in the gross value added deflator and that in unit labour costs. It should be noted that this can only be a crude approximation, as it does not take into consideration corporate tax and interest payments. It also makes implicit assumptions about the evolution of other taxes (minus subsidies) on production. There are a number of advantages to using the change in the profit mark-up as opposed to the absolute level of the profit mark-up. First, as it is calculated in terms of rates of change, it is not subject to the caveats highlighted above about interpreting the precise level of different profit indicators. Second, the rate of change in the profit mark-up measure also has an appealing economic interpretation, as it allows for a decomposition of price changes into labour cost and profit mark-up developments.

An additional measure, which may be the focus of companies and investors, is the rate of return on capital. The rate of return on capital can be defined as the net operating surplus (and mixed income) divided by the total capital stock. However, the calculation of the capital stock is a complicated measurement, which can be sensitive to factors such as assumed asset lives and depreciation rates, and the treatment of investment in intangible capital.

Another profit indicator is the profit margin indicator, or profit as a share of total output, i.e. including intermediate consumption. Considering the profit margin indicator instead of the profit mark-up indicator may provide some insight (particularly at the sector-of-activity level) into the share of profit in total output and the relative importance of

Profit and profitability: concepts and uses

Concept	Definition	Comment
Gross operating surplus (and mixed income)	GDP less compensation of employees less taxes (minus subsidies) on production	National accounts' equivalent of gross operating profit. Proxy for measuring absolute profits. Indicator for considering internal sources of funding available for investment.
Profit share indicator	Ratio of gross operating surplus (and mixed income) to GDP	Proxy for analysing relative wage and price dynamics.
Profit mark-up indicator	Ratio of gross value added deflator to unit labour costs	Proxy for analysing pricing behaviour.
Profit margin indicator	Ratio of gross operating surplus (and mixed income) to total output (i.e. including intermediate consumption)	A measure allowing for an analysis of behaviour along the pricing chain.
Rate of return on capital indicator	Ratio of net operating surplus (and mixed income) to net capital stock	A measure used by firms to guide investment decisions. It may also play a role in determining international capital flows.

intermediate inputs. For instance, if the share of profit in total output is relatively small or the prices of inputs are relatively volatile, profit margins could be more susceptible to fluctuations in input costs or output. However, comparisons across sectors of activity or over time are difficult, as the way in which the sector of activity is organised (e.g. the degree of vertical integration) affects the ratio of intermediate consumption to total output and could blur genuine movements in profitability. Furthermore, at present, national account data on gross output and intermediate consumption in the euro area are only available with a considerable lag.

The table above summarises alternative indicators of profit developments drawn from national accounts, as well as the analytical use of these indicators.

3 DEVELOPMENTS IN EURO AREA PROFITS AND PROFITABILITY

This section considers profit developments in the euro area over the period from 1960 to 2003, using a number of different profitability indicators from different sources. However, it must be recalled that comparing profit developments over a longer time period is

fraught with difficulty due to data constraints. In particular, ESA 95 data are only available for the euro area from 1991 onwards. This section first considers longer-term profit movements and then looks at more recent developments. The advantage of this approach is that it may help to distinguish whether more recent profit developments reflect a long-run adjustment process or rather indicate short-term cyclical factors or variations in costs.

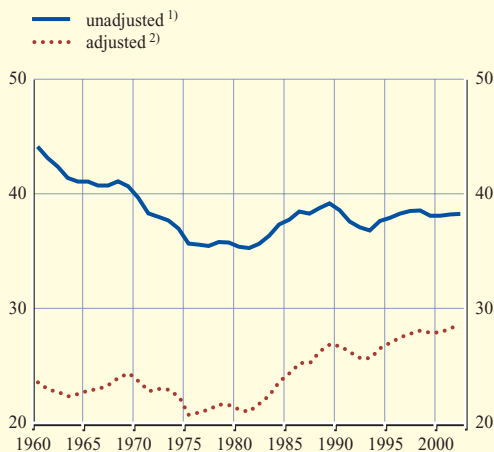
DEVELOPMENTS IN THE PROFIT SHARE INDICATOR

As highlighted above, one way to analyse economy-wide profit developments is to examine the labour and profit shares. In the European Commission's AMECO database, annual data are available back to 1960.² Chart 1 presents two different measures of the profit share in the euro area. The two measures differ in their treatment of the imputed labour income of the self-employed (i.e. part of gross mixed income). The first measure (i.e. the "unadjusted" measure) includes all the income of the self-employed as part of "profit". The second measure is adjusted for the imputed

² Data from 1991 onwards are based on ESA 95, while data for the earlier period are based on ESA 79, which is less harmonised. Once again, this highlights the need for careful interpretation of the data over time.

Chart 1 Profit share indicator in the euro area

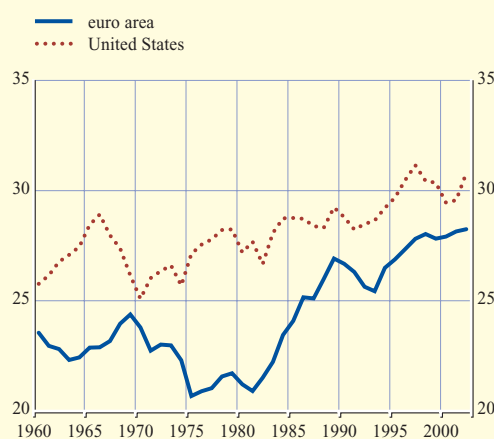
(percentages, annual data)



Sources: European Commission AMECO database and ECB calculations.

1) Unadjusted for imputed labour income of the self-employed.
2) Adjusted for imputed labour income of the self-employed.**Chart 2 Profit share indicator in the euro area and the United States**

(percentages, annual data)



Sources: European Commission AMECO database and ECB calculations.

Note: Adjusted for imputed labour income of the self-employed.

labour income of the self-employed. This measure is calculated assuming that the labour income per self-employed person is the same as compensation per employee (see the annex for more details). Needless to say, this is only a crude approximation.³ While both measures exhibit a broadly similar pattern, the absolute level varies across measures.

Since 1960 the profit share in the euro area, unadjusted for the imputed labour income of the self-employed, has varied between approximately 35% and 45% of total GDP (see Chart 1). From a share of above 40% in the early 1960s, the profit share decreased in the period 1969-1975 in the euro area as a whole to a level of around 35%. Factors typically associated with these developments, which were mutually reinforcing, are the following: the decline in productivity growth since the late 1960s, the oil price crisis of 1973 and the consequences of strong labour cost increases in the early 1970s.

Since the mid-1970s, and particularly during the 1980s, this movement has been partially reversed. The profit share increased gradually

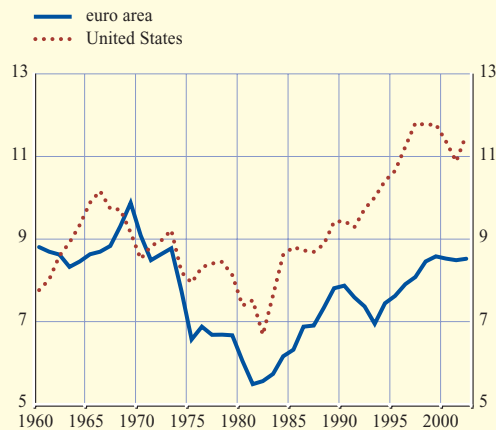
from around 35% in the early 1980s to slightly below 40% in the late 1990s and early 2000s. This recovery in the profit share is often attributed to labour market developments. In particular, the high labour costs stemming from the real wage increases of the early 1970s are typically interpreted as having triggered a process of substitution of capital for labour, thereby reducing the employment rate. Moreover, the upsurge in unemployment since the early 1980s in the euro area, in turn, has highlighted the need to restore wage moderation. Although the level of the profit share adjusted for the imputed income of the self-employed is lower than that of the unadjusted profit share, the profile over time is broadly similar.

The evolution of the profit share in the euro area partly differs from that in the United States (see Chart 2). In the United States, the profit share has been less volatile since the early 1970s and

³ Both the average level of compensation per employee and the ratio of self-employed to total employment have varied significantly across sectors of activity and over time. This underlines the crude nature of this adjustment.

Chart 3 Net return on capital in the euro area and the United States

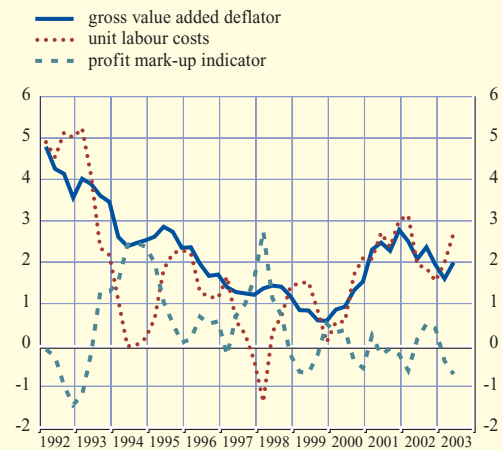
(percentages, annual data)



Sources: European Commission AMECO database and ECB calculations.
Note: Adjusted for imputed labour income of the self-employed.

Chart 4 Gross value added deflator, unit labour costs and the profit mark-up indicator

(annual percentage changes, quarterly data)



Sources: Eurostat ESA 95 database and ECB calculations.

a gradual upward trend has been observed over the last three decades. This is often related to the growing importance of the services sector (which tends to have higher profit shares) or to technological factors, although data issues, such as the adjustment for the imputed labour income of the self-employed, could be at play. The share of profits in the euro area, adjusted for the imputed labour income of the self-employed, remains somewhat below that in the United States. However, in the light of the measurement caveats outlined earlier, too much importance should not be placed on the specific levels of the profit share in the United States and the euro area.

NET RATE OF RETURN ON CAPITAL

As already mentioned, another indicator of profit developments is the net rate of return on capital. Keeping in mind the data caveats outlined earlier, for the euro area, this measure shows a broadly similar profile to that of the profit share measure (see Chart 3). Thus, following a decline in the 1970s, the net rate of return on capital recovered slowly during the 1980s and 1990s. In addition, similar to the profit share indicator, the net rate of return on

capital in the euro area appears to be below that in the United States.

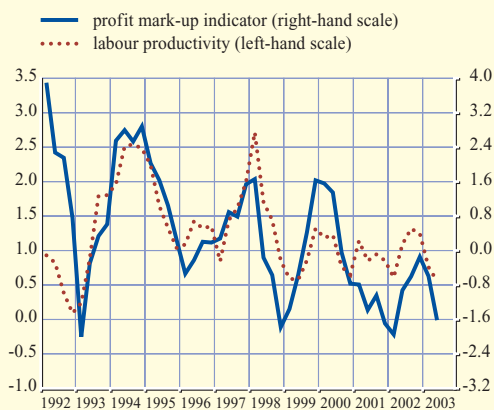
PROFIT MARK-UP INDICATOR

Chart 4 presents the profit mark-up indicator, which is the difference between the rate of change in the gross value added deflator and the rate of change in unit labour costs. These data are only available at a quarterly frequency from 1991 onwards. This measure shows broadly the same picture as the profit share indicator described above. During most of the 1990s, the profit mark-up indicator recovered as the rate of change in the GDP deflator was above that in unit labour costs. However, a stronger cyclical pattern is evident, as the data are available at a quarterly frequency, which highlights more clearly the buffer role of profits against short-term cyclical fluctuations in unit labour costs.

Cyclical movements in labour productivity are a primary determinant of short-term movements in the profit mark-up indicator. For example, the deterioration observed in the profit mark-up indicator in 2000 and 2001 reflected mainly the increase in unit labour cost growth brought about by the cyclical weakness in economic

Chart 5 Profit mark-up indicator and labour productivity

(annual percentage changes, quarterly data)



Sources: Eurostat ESA 95 database and ECB calculations.
Note: The profit mark-up indicator is calculated by subtracting the annual growth rate of unit labour costs from the annual growth rate of the gross value added deflator.

activity and labour productivity (see Chart 5), but also to some extent higher external cost pressures. While some recovery in profit mark-ups took place in the early part of 2002, the renewed weakness in economic activity in the latter part of 2002 and the first half of 2003 resulted in a renewed deterioration in profit mark-ups.

DEVELOPMENTS BY SECTOR OF ACTIVITY

The picture for the whole economy presented thus far masks developments in specific sectors of activity. The box describes developments in

profit margins by sector of activity and cross-country dispersions over the period 1991-2001, using data from the OECD's STAN database. Although, as indicated in Chart 4, the profit mark-up has remained broadly unchanged for the whole euro area economy since 1999, this masks differing developments across sectors of activity. The increase in oil prices and the depreciation of the euro in 1999 and 2000 had a negative impact on euro area producers for the euro area market via higher input costs. The negative impact of higher input costs on exporting producers was largely offset by the favourable impact of exchange rates on selling prices. However, the appreciation of the euro since 2002 has meant that this favourable impact on selling prices has been eroded for exporters. Conversely, as the impact of the oil price and exchange rate movements in 1999 and 2000 has unwound, input cost developments for euro area producers have been more favourable since 2002. Likewise, considering goods producers and service providers, the impact of exchange rate and intermediate cost fluctuations on the former is greater given the larger share of intermediate inputs in the production process of goods than is generally the case for the provision of services. On the other hand, given the larger labour input into services, fluctuations in labour costs are an even more important determinant of services price developments. In this regard, unit labour cost growth has been strong over the last three years. This mainly reflects subdued labour productivity growth as a result of the slowdown in economic activity.

Box

PROFIT MARGIN DEVELOPMENTS BY SECTOR OF ACTIVITY AND DISPERSION ACROSS EURO AREA COUNTRIES

One of the main objectives of EU integration during the past two decades has been to move towards full product market integration. The resulting increase in the level of competition within the EU could be expected to have led to a convergence of profit margins, assuming that national profit margin levels differed prior to the integration process. The objective of this box is to determine to what extent profit margins at the sector-of-economic-activity (hereafter sector) level varied across euro area countries during the 1990s. The analysis presented uses sector profit

margins for twenty-one sectors and eight euro area countries, measured as the gross operating surplus (adjusted for the imputed labour income of the self-employed) relative to total output. However, comparisons across sectors or countries are difficult, as the way in which the sector is organised (e.g. the degree of vertical integration) affects the ratio of intermediate consumption to total output and hence the profit margin measure. Moreover, the gross operating surplus includes the consumption of fixed capital, which also makes comparisons across sectors difficult.

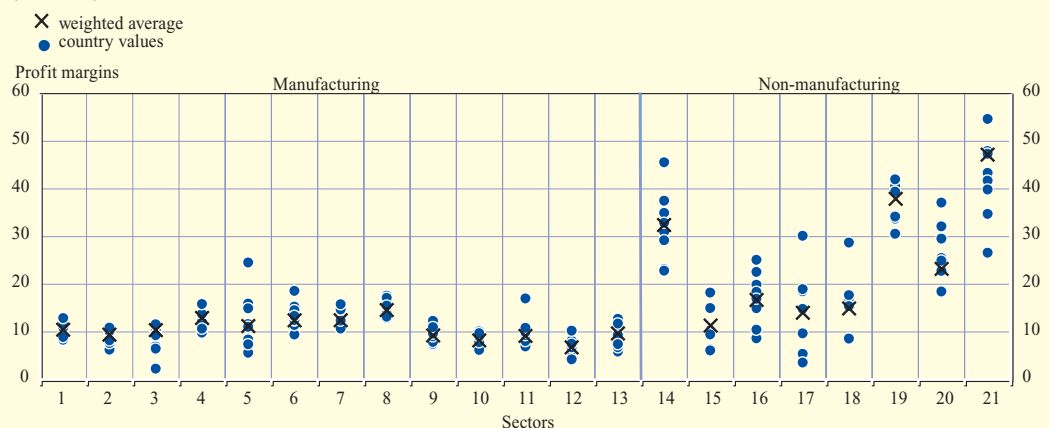
The chart plots the average sector profit margin levels for the period 1991-2001 for eight euro area countries, as well as the weighted euro area average for each individual sector. The non-manufacturing sectors include the electricity, gas and water supply industry, the construction sector and six business sector services. The data source is the OECD's STAN database. The table shows the sectoral coefficients of variation, measured as the standard deviation relative to the mean, as well as the spread between the averages of the three maximum and minimum values.

Overall profit margin levels were higher in non-manufacturing sectors than in manufacturing sectors. However, as indicated above, the differences in levels across sectors have to be interpreted with caution due to the possible distortion introduced by the inclusion of intermediate inputs.

Turning to differences across countries within sectors, the spread between the averages of the three maximum and minimum values as well as the coefficients of variation reveal that the dispersion across euro area countries has been somewhat higher in the non-manufacturing sectors than in the manufacturing sectors. When looking at data at a more detailed level, the results provide a more mixed picture. Indeed, within manufacturing the dispersion across euro area countries appears to have been relatively low in some sectors, such as other non-metallic mineral products, rubber and plastic products, as well as machinery and equipment not

Sector profit margin level averages and dispersion across euro area countries

(1991-2001)



Source: OECD STAN database.

1) Numbers on the x-axis refer to the sectors listed in the table below.

2) The eight euro area countries considered are Belgium, Germany, Spain, France, Italy, the Netherlands, Austria and Finland. These eight countries accounted for 94.4% of euro area GDP in 2001.

3) Data for Belgium and Spain are available from 1995 to 2000.

4) The adjustment for the imputed labour income of the self-employed is described in the annex.

5) The percentage of self-employed relative to total employment on average between 1991 and 2001 varied considerably across countries. The ratio was 27% in Italy, 19.9% in Austria, 17.5% in Belgium, 17.2% in Spain, 15% in the Netherlands, 13.1% in Finland and 10.2% in Germany and France.

Sector profit margin level dispersion across euro area countries – 1991-2001

	Coeff. of variation ¹⁾	3 minimum value average	3 maximum value average	Spread ²⁾
Total³⁾	0.28	12.0	19.6	7.6
Total manufacturing³⁾	0.23	8.4	12.9	4.5
1 Food products, beverages and tobacco	0.17	8.7	12.0	3.3
2 Textiles, textile products, leather and footwear	0.18	7.1	9.9	2.7
3 Wood and products of wood and cork	0.37	5.2	11.1	5.9
4 Pulp, paper, paper products, printing and publishing	0.15	10.9	14.6	3.7
5 Coke, refined petroleum products and nuclear fuel	0.49	7.1	18.5	11.3
6 Chemicals and chemical products	0.21	11.1	16.1	5.1
7 Rubber and plastic products	0.14	11.1	14.3	3.2
8 Other non-metallic mineral products	0.13	12.9	17.0	4.1
9 Basic metals and fabricated metal products	0.19	7.5	11.1	3.6
10 Machinery and equipment NEC	0.15	7.3	9.9	2.6
11 Electrical and optical equipment	0.29	8.1	12.6	4.5
12 Transport equipment	0.29	5.0	8.6	3.7
13 Manufacturing NEC; recycling	0.29	6.7	11.9	5.3
Non-manufacturing³⁾	0.34	17.9	30.5	12.5
14 Electricity, gas and water supply	0.23	25.1	39.4	14.3
15 Construction	0.39	7.3	14.5	7.2
Business sector services³⁾	0.35	18.5	31.6	13.1
16 Wholesale and retail trade; repairs	0.33	11.4	22.5	11.2
17 Hotels and restaurants	0.86	2.0	22.6	20.6
18 Transport and storage	0.35	12.0	21.1	9.1
19 Post and telecommunications	0.12	32.1	40.7	8.5
20 Financial intermediation	0.25	19.9	32.9	13.0
21 Real estate, renting and business activities	0.21	33.7	50.0	16.3

Source: OECD STAN database.

1) Coefficient of variation is calculated as standard deviation divided by mean.

2) Spread is calculated as the difference between the averages of the three maximum and the three minimum values.

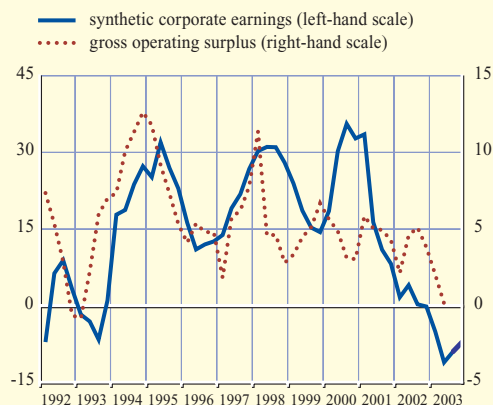
3) Data for sectoral aggregations are unweighted averages of component sectors.

elsewhere classified (NEC), and pulp, paper, paper products, printing and publishing. In other manufacturing sectors, however, such as coke, refined petroleum products and nuclear fuel, and wood and products of wood and cork, the dispersion appears to have been even higher than the average dispersion for business sector services. Within the non-manufacturing sectors, the dispersion across countries was comparatively low in network industries (post and telecommunications, and electricity, gas and water supply) as well as in real estate, renting and business activities.

Overall, the data reveal clear differences in sector profit margin levels across countries. Although the results need to be interpreted with the caveats mentioned earlier in mind, the sector profit margin levels were in general higher in non-manufacturing sectors than in manufacturing sectors. Moreover, the levels differed substantially more across countries in the non-manufacturing sectors than in the manufacturing sectors. The lower dispersion of profit margin levels observed in some sectors, especially in manufacturing sectors, may be seen as a result of a downward convergence of profit margins across euro area countries due to the progress achieved in product market integration. By contrast, the higher average level and dispersion of profit margins for non-manufacturing sectors during the period reviewed in this box could be related to the fact that the integration process in the non-manufacturing sectors tended to start at a later point in time and is generally still less advanced than in manufacturing.

Chart 6 National account profits and a synthetic measure of corporate profits derived from stock market indicators

(annual percentage changes, quarterly data)



Sources: Datastream and ECB calculations.
 Note: The market index covers approximately 80% of euro area stock market capitalisation. The gross operating surplus is adjusted for imputed labour income of the self-employed.

CORPORATE EARNINGS

Although national accounts are the main source of profit data in this article, it is nonetheless informative to compare the gross operating surplus measure extracted from national accounts with a synthetic measure of corporate earnings derived from information on stock market values and price/earnings ratios (see Chart 6). There is a good degree of comovement between the two measures, although the synthetic measure appears to lag the measure based on national accounts slightly. This might reflect the fact that not all companies report quarterly earnings and hence the earnings data can refer to the last annual earnings reported. Differences between the two measures may be related to factors such as coverage (corporate earnings refer only to a sub-set of publicly quoted companies, whereas national accounts refer to the whole economy) and differences in accounting treatment for items such as depreciation, stock options, etc.

4 CONCLUSIONS

A range of indicators of profit developments and alternative sources of profit data have been presented in this article. This range of indicators is necessary to enable cross-checks to be performed, as profits are generally calculated as a residual, suggesting that they may be subject to significant measurement errors.

These caveats are particularly relevant when considering profit developments over a longer time period or across countries. Bearing these caveats in mind, the broad picture that emerges from the various indicators of profits suggests that, following generally unfavourable profit conditions in the 1970s, euro area profitability recovered gradually during the 1980s and 1990s. This broad picture holds true irrespective of whether one considers the profit share or the net rate of return on capital. Although it is very difficult to make international comparisons, it appears that euro area profitability has remained below that of the United States.

Considering profit developments since 1999, the euro area has been hit by a number of shocks, including a strong increase in oil prices and movements in exchange rates, and by a slowdown in economic activity. These have had an impact on profit developments in the euro area, although the extent of their impact has differed across sectors of activity.

Looking forward, it is important that an adequate rate of return be attained in the euro area to stimulate investment and to sustain economic growth. Continued labour and product market reforms are necessary to ensure an efficient allocation of resources and price-setting behaviour within a competitive environment. This process must also be supported by continued wage moderation.

ANNEX: SOURCES OF EURO AREA PROFIT DATA

NATIONAL ACCOUNT DATA

The main source of the data used in this article is national account data, for the reasons outlined in Section 2. National accounts provide information on a number of indicators of profits and profitability including the gross operating surplus and mixed income, the profit share, the profit mark-up over unit labour costs, the profit margin and the rate of return on capital.

At present, quarterly euro area national account data in accordance with ESA 95 are available from Eurostat from 1991 onwards. Prior to this, annual data are available using ESA 79, e.g. from the European Commission's AMECO database.

However, one major issue when using national account data on the gross operating surplus and mixed income is the treatment of the imputed labour income of the self-employed. In practice, the measure of the gross operating surplus in the national accounts also includes gross mixed income, which is the operating surplus of unincorporated enterprises (OSPUE) owned by households. As some of this gross mixed income represents compensation of the labour of the self-employed as well as the entrepreneurial income of unincorporated enterprises, an adjustment should be made to reflect better the distinction between wage income and non-wage income, both of which form part of gross mixed income. This has implications for comparisons across sectors of activity, between countries or over time, if the degree of self-employment varies significantly across these dimensions. International comparisons suggest that some adjustments are necessary.⁴ OSPUE data would allow for the most robust adjustment, but unfortunately these data do not exist for the euro area as a whole. A more common adjustment is to assume that the imputed compensation per self-employed person equals compensation per employee. This crude adjustment, while much more tractable, is another reason to interpret profit data with caution. For instance, adjustments carried out at

the sector-of-activity level can yield a different result than if carried out at a more aggregate level.

COMPANY ACCOUNT DATA

Notwithstanding the caveats mentioned above concerning issues relating to the use of euro area-wide company account measures of profits, a synthetic measure of profits based on company account data is presented in this article. This measure is constructed using stock market data, specifically price/earnings (p/e) ratios and market values. Using p/e ratios and total market values, it is possible to construct an index of earnings. The growth rate of this synthetic measure is compared with the growth rate of the gross operating surplus measure derived from national account data. However, in addition to the more general caveats, when making such a comparison it should be borne in mind that the stock market measure only includes a sub-set of publicly quoted companies.

HYBRID DATA

The OECD's structural analysis (STAN) database combines data from national accounts with data from other sources, such as national industrial surveys/censuses. One of the main advantages of this source is the degree of sector-of-activity coverage, with data available at the two-digit ISIC Rev. 3 level. Data are available up to 2001 for detailed sectors of activity, and 2002 for more aggregate data. These data are used in the box to compare profitability across both countries and sectors.

4 Gollin, D., 2002. "Getting income shares right", *Journal of Political Economy*, Vol. 110, No. 2, pp. 458-474.