

Tax Services

Tax Benchmarking Survey for the Chemical Industry

2008/2009

Introduction

A current challenge for the tax professional is to identify the right balance when planning for taxes. On one side of the balance, taxes are a significant cost to the corporation and should be controlled and managed in the quest to create shareholder value and maximize earnings per share. On the other side, the amount of tax paid by large corporations is coming under increased scrutiny and public debate.

Tax disclosures in annual reports provide important insight into companies' tax affairs, with the effective tax rate (ETR) being the headline rate commonly quoted by chief financial officers when discussing their tax affairs in annual reports. Tax is increasingly found on boardroom agendas, with directors taking a greater interest in their company's tax strategy and how it is being identified and managed.

This PricewaterhouseCoopers study gives insight to tax departments as they review their tax strategy, provides information on where they stand compared with their peer group, and allows them to compare the drivers of their effective tax rate with those of other companies.

Our financial analysis was based on a number of tax ratios that are derived from publicly available information. The use of public information meant that we could include any listed company, giving us a good overview from which to draw conclusions. It is important to note that our study shows a high-level analysis of key tax ratios. The information is sourced from a data provider and checked against annual reports for quality assurance. We have not adjusted for one-time distorting items or losses. (Our in-depth Tax Rate Benchmarking studies, carried out on smaller peer groups, drill down to underlying or adjusted ETR.) In this study, losses, tax refunds, and exceptional items can serve as drivers of the individual company ETR, although our use of a statistically trimmed sample minimizes the impact of these on the study's conclusions.

This study took 46 of the leading global chemical companies from the fine, basic, bulk, specialty, and petrochemicals sectors. The companies are listed in the appendix. Within the sample, 23 companies were US-based; five each from Germany and Japan; three each from Canada and Switzerland; two each from China, France, and the Netherlands; and one from India. This report summarizes the findings from benchmarking key financial indicators for tax for the past three years. All information is taken from publicly available financial statements spanning the period from January 2005 to December 2007. (Four companies in our sample have March 31 year-ends, meaning their 2008 data is included. The data for these companies over the three years ending in 2006, 2007, and 2008 is shown as 2005, 2006, and 2007, respectively.)

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Key findings

- The three-year average effective tax rate (ETR) for the 46 companies in this study is 28 percent. The ETR has shown a modest reduction of 1.8 percent between 2005 and 2007.
- The ETRs of “multinational” companies are slightly lower (three-year average 28 percent) than those of “domestic” companies (three-year average 29.5 percent).
- The ETRs of US-based companies were lower (three-year average 26.8 percent) than inbound companies (three-year average 29.9 percent).
- Our analysis shows an overall increase in tax payments as a percentage of income before tax in 2006 before a drop again in 2007, resulting in only a minor increase overall.
- Foreign operations and prior year adjustments are significant favorable drivers of the tax rate. Effect of restructuring the business and permanent differences are the most significant unfavorable drivers.

Tax rate benchmarking in the chemical industry

In this study, we analyzed four key tax ratios:

- **Effective tax rate**—This is the tax provision as a percentage of income before tax taken from the face of the income statement. It gives a basic analysis of the impact of tax on results.
- **Current tax rate**—This is the current tax provision as a percentage of income before tax where current tax is that element of the total tax charge that is not deferred. Comparing this ratio to the effective tax rate gives an indication of the impact of deferred tax.
- **Cash tax rate**—This is the cash tax paid as a percentage of income before tax that is paid by the corporation during the period. It gives an indication of the true cost of tax to the company.
- **Cash tax paid as a percentage of current tax provision**—This ratio may give an indication of the level of tax reserves included in the current period tax provision. Assuming fairly constant profits, cash tax paid during the year should be approximately equal to the current tax provision recorded during the same period. A lower ratio indicates that the current tax provision is higher than the cash tax paid during the year and, as a result, there may be an element of tax reserves within the current tax provision.

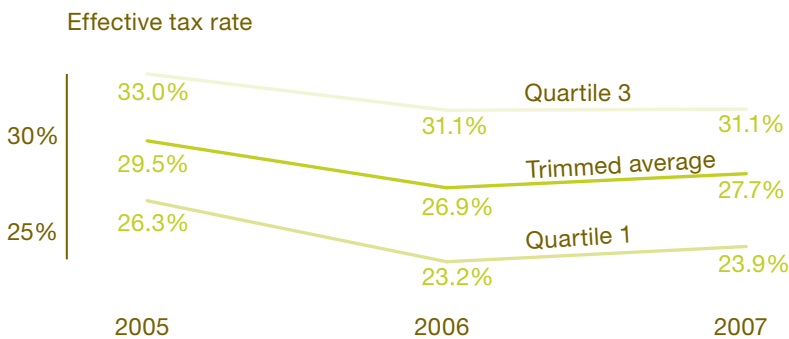
Effective tax rate

The average ETR of the companies taken over the three-year period is 28 percent

For further detail on “trimmed average” and “quartiles,” see the appendix.

The ETR has shown a modest reduction of 1.8 percent from 2005 to 2007. The quartiles show a movement from 2005 to 2007 of 1.9 percent (upper quartile) and 2.4 percent (lower quartile). Further analysis of a variety of other tax ratios reveals some interesting trends.

Nine companies in the sample incurred a loss before tax or a tax refund in the three years under review. This can distort the ETR. In this study, the average three-year ETR excluding these companies is 29.4 percent, showing that these companies have had an influence on ratios, but not enough to significantly change the results.



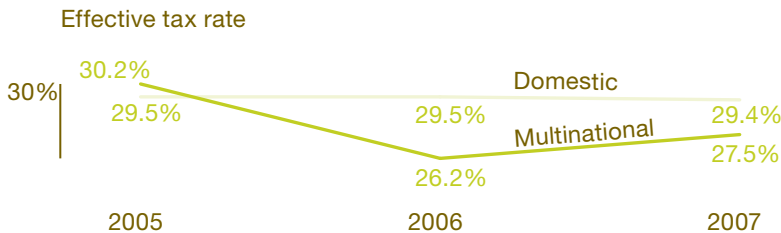
The trimmed average represents the average ratio for companies (excluding outliers) in the sector for the last three financial periods.

Quartile 3 and Quartile 1 represent the resulting ratio where 75% and 25% of companies lie below that point, respectively.

Geographies – “domestic” vs. “multinational”

Globalization has a significant impact in this study. We categorized the companies in this study as “multinational” if more than 25 percent of their gross revenue was derived from outside their home territory and “domestic” if less than 25 percent of their gross revenue was derived from outside their home territory. (Classification was based on most recent 10-K available.)

The lower ETR of “multinational” companies reflects the fact that companies operating internationally generally have opportunities to undertake cross-border tax planning and operate in low tax jurisdictions. In contrast, the “domestic” companies generally have more limited opportunities to manage their ETR.

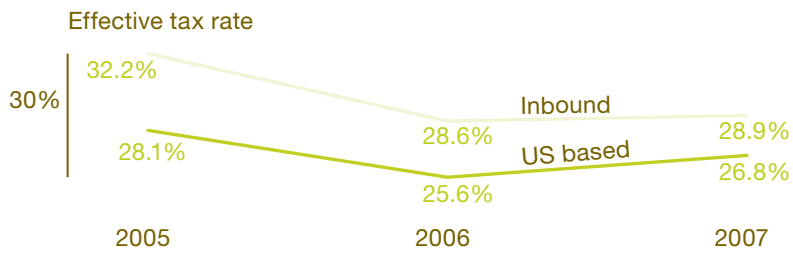


The median rate has been quoted in this chart. It is a more robust estimate of the middle of a smaller peer group, e.g. with 8 values.

Domestic ETR sample is 8 companies; multinational ETR sample is 38 companies.

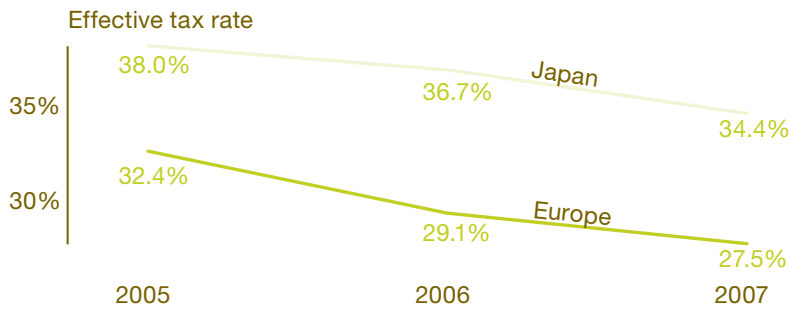
Geographies – US based vs. foreign based

This chart shows the ETRs of US-based and foreign-based (inbound) companies in our sample.



Inbound ETR sample is 20 companies; USbased ETR sample is 26 companies.

The US-based companies had lower ETRs in all the years in the sample, although the differential narrowed from 2005 to 2007. Of the inbound companies, five had headquarters in Japan and nine in Europe, and both these groupings saw their ETRs fall from 2005 to 2007.



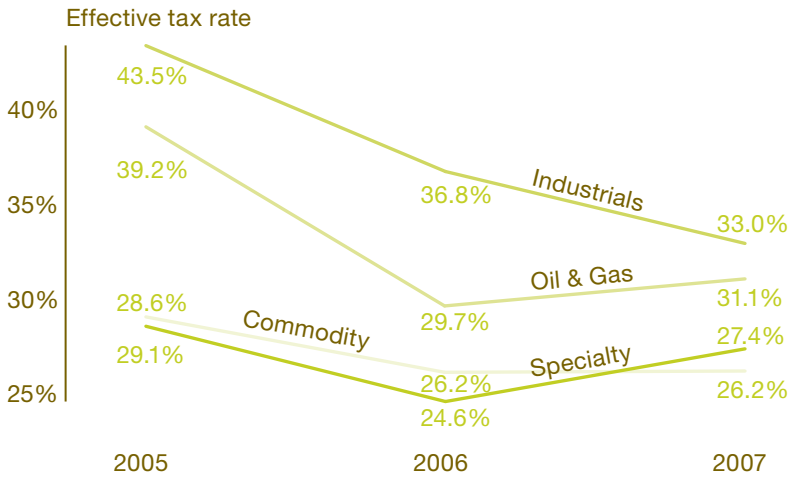
The trimmed average represents the average ratio for companies (excluding outliers) in the sector for the last 3 financial periods.

Japan ETR sample is 5 ; Europe ETR sample is 9.

Industry segment

This chart shows the ETRs of the study companies by industry segment.

The ETRs of the specialty and commodity companies were very similar over the three years studied. Oil and gas companies had a higher ETR, which can be attributed to the applicable sector taxes. Industrial companies also had a high ETR. This can be attributed partly to the fact that two of the four industrial companies in the study are based in Japan; one of these companies has an average three-year ETR of 49 percent and the other 38 percent.



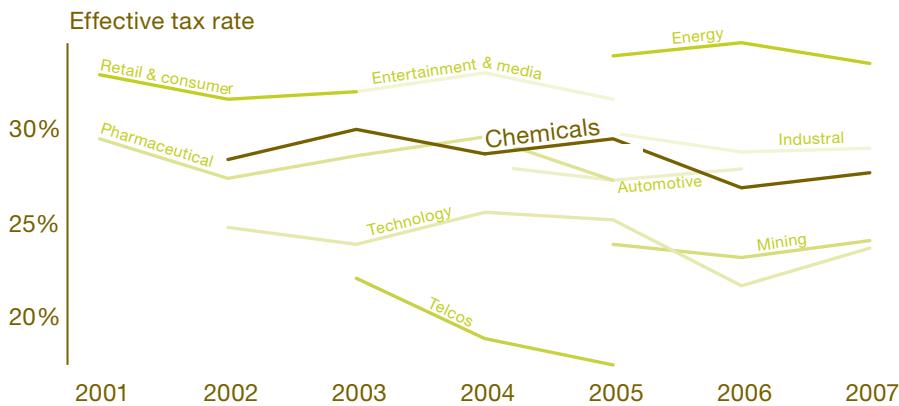
The trimmed average represents the average ratio for companies (excluding outliers) in the sector for the last 3 financial periods.

Samples sizes:
Industrials 4
Oil & gas 5
Commodity 18
Specialty 19

Chemical industry vs. other industries

PricewaterhouseCoopers has performed benchmarking studies for various industries, and the chart below shows the ETR trend line of the chemical companies versus companies in other industries studied to date.

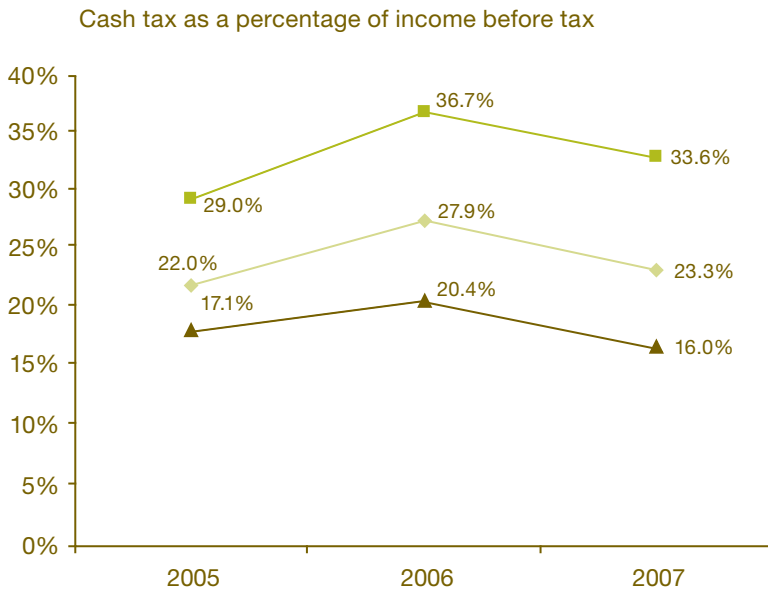
Chemical companies have ETRs significantly lower than companies in the entertainment & media industries, although above those of the technology and telecommunications industries. One factor affecting this is the losses in the telecommunications industry and particularly the technology industry, influencing the ETR downward.



Cash tax paid as a percentage of income before tax

Although the ETR gives a basic indication of the impact of tax on results, some consider the cash tax rate — that is, the cash tax paid in the year (as disclosed in the cash flow statement or supplementary information to the statement) as a percentage of income — to be a better measure of the true cost of tax to the company. Despite the element of timing mismatch — for example, in some territories, 50 percent of tax due on profits is not paid until after the year-end — on a trend basis, the cash tax ratio gives a good picture of a company's tax cost.

The average rate over the three years is 24.4 percent; it is interesting to note, though, the wide spread of companies in 2007, with the inter-quartile range increasing to 17.6 percent in 2007. This shows that a wide variety of tax payments exist within the study companies.



The trimmed average represents the average ratio for companies (excluding outliers) in the sector for the last three financial periods.

Quartile 3 and Quartile 1 represent the resulting ratio where 75% and 25% of companies lie below that point, respectively.

Cash tax paid as a percentage of current tax provision

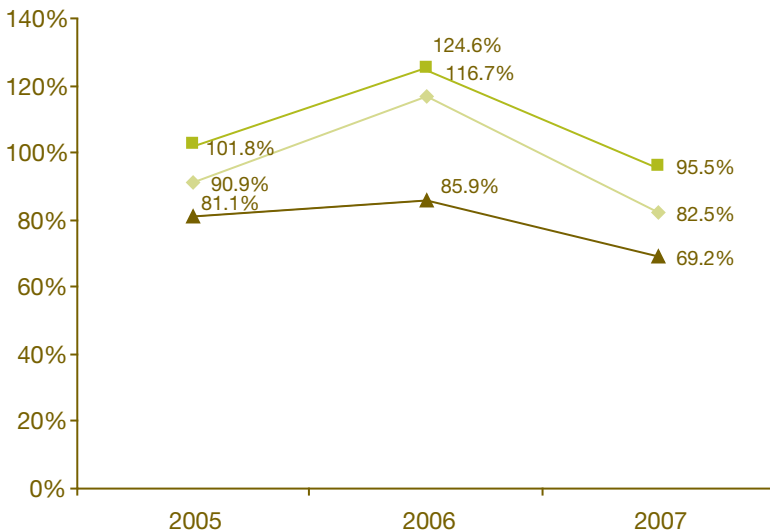
An interesting trend is seen in the ratio of cash tax paid as a percentage of current tax provision. This ratio may give an indication of the level of tax reserves included in the current period tax provision. Assuming fairly constant profits, cash tax paid during the year should be approximately equal to the current tax provision recorded during the same period. A lower ratio indicates that the current tax provision is higher than the cash tax paid during the year. This could imply that the company may be recording reserves in its tax provision over and above the tax paid to the authorities. Companies adopting aggressive tax strategies would be more likely to book current year reserves to allow for the possibility of a successful challenge from the tax authorities. This reflects the impact of FIN 48, Accounting for Uncertain Tax Positions, adopted as of January 1, 2007. Note that FIN 48 is discussed in greater detail later in this document.

As we know, the tax contingency reserve is recorded under FIN 48 if it is not “more likely than not” that the company will be successful upon audit based on the technical merits of the position. Accordingly, we do see reserves recorded for the full amount of the issue if the possibility of defending the position is less than 50 percent. Therefore, we should see a disconnect between the provision recorded and the applicable cash tax.

The three-year average ratio of tax paid to current tax provision is 96.7 percent, indicating that companies generally build tax reserves, although this ratio is close to the expected value of 100 percent.

The peak in 2006 indicates reduced reserves being recorded that year, perhaps as a result of the new provisions around FIN 48 introduced in July 2006. See further analysis of FIN 48 disclosures in the year ended December 31, 2007.

Tax paid as a percentage of current tax provision



The trimmed average represents the average ratio for companies (excluding outliers) in the sector for the last three financial periods.

Quartile 3 and Quartile 1 represent the resulting ratio where 75% and 25% of companies lie below that point, respectively.

Tax drivers in the chemical industry

A number of factors drive the tax rates of chemical companies up and down. A tax professional has different options available when seeking to manage and control the tax charge.

In general, the ETRs of our sample were below relevant statutory rates. In the following chart, each bar represents a company, and the size of the bar shows the impact of the reconciling items. Where a company has a negative bar, the ETR is below the statutory rate, and a positive bar indicates that the ETR is above the statutory rate. The company at the far right-hand side of the chart is based in France and has a bar of +15 percent. This indicates that reconciling items increase the statutory rate of 38 percent by 15 percent to leave an effective rate of 53 percent. Five companies have been omitted because their bars are distorted and in excess of -30 percent or +30 percent.



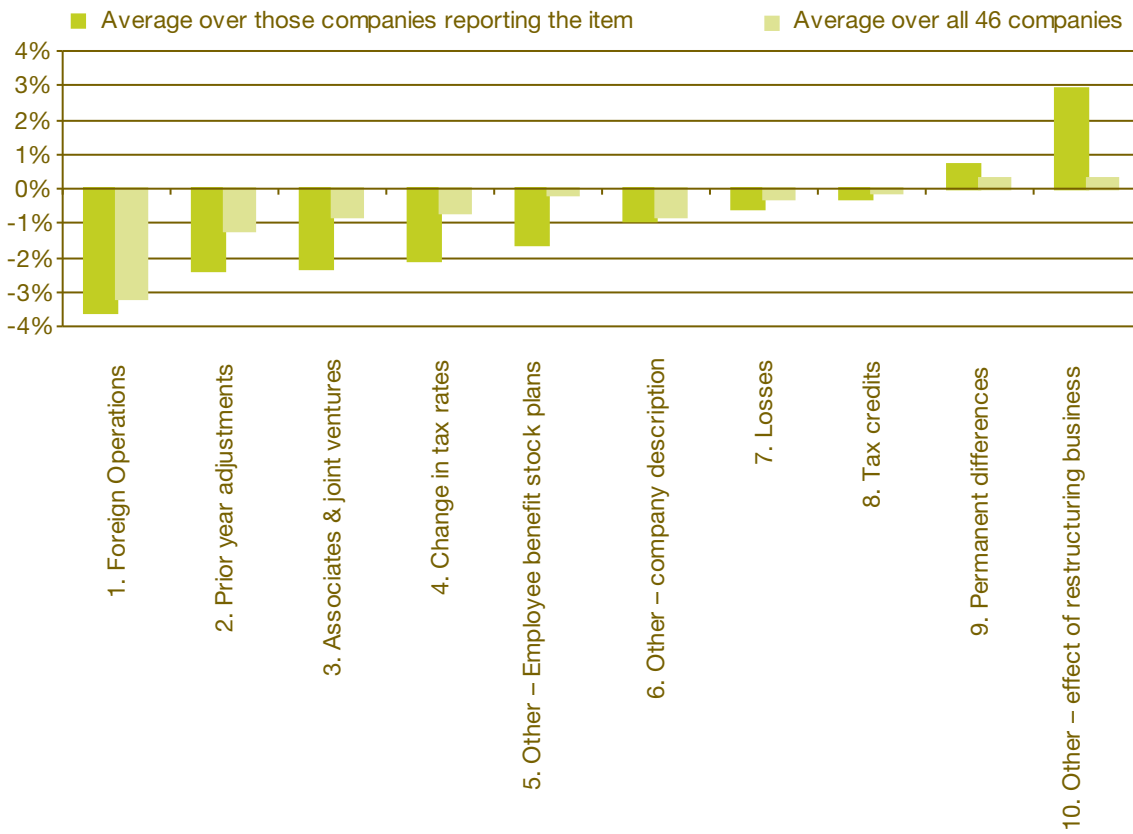
The overall picture is one where the tax rate is frequently driven below the statutory rate.

The reconciling items, as disclosed in the statutory-effective rate reconciliation, were analyzed, collated, and averaged over the sample. We have used two methods of averaging over the sample:

- Averaging over only those companies that reported the reconciling item.
- Averaging over all 46 companies. Using this method, reconciling items reported by most companies in the sample will show more of an impact than those items reported by only a few companies.

	Average over those companies reporting the item	Average over all 46 companies
1. Foreign operations	-3.6%	-3.2%
2. Prior year adjustments	-2.4%	-1.2%
3. Associates & joint ventures	-2.3%	-0.8%
4. Change in tax rates	-2.1%	-0.7%
5. Other – employee benefit stock plans	-1.6%	-0.2%
6. Other – company description	-0.9%	-0.8%
7. Losses	-0.6%	-0.3%
8. Tax credits	-0.3%	-0.1%
9. Permanent differences	0.7%	0.3%
10. Other – effect of restructuring business ¹	2.9%	0.3%

Any individual reconciling items greater than +30 percent or less than -30 percent have been removed from the averages because of their distorting effect. This can be shown graphically:



Although the impacts of foreign operations and other – company description are reported by most companies in the sample, it is apparent that change in tax rates and effect of restructuring business have a significant impact on those companies reporting these items.

Foreign operations

This reconciling item was reported by a number of companies in the sample, which shows the benefit to the industry of increasing globalization.

International rate differences

This reconciling item was reported by a number of companies in the sample, showing the benefit to the industry of increasing globalization.

Tax credits

Credits are offered by jurisdictions as incentives and may affect a company's behavior. This category primarily included research and development credits, business credits, and incentives. The impact for companies reporting this item was significant.

Change in tax rates

This category reflects the impact of changes in tax rates on the company's tax liability.

Other sources of income

A major factor in this category is income received from equity affiliates, which increased the overall tax liability of the sample.

Change in valuation allowance

A valuation allowance is recorded when it is not more likely than not that a deferred tax asset is recognizable. The valuation allowance is offset against the deferred tax asset, offsetting the asset on the balance sheet and creating a charge to the income statement. Although there were many valuation allowance changes going both directions, the net of these to the companies overall is a valuation allowance increase in the current year.

State and local taxes

State taxes net of federal benefit had differing impacts on different companies, resulting in an overall tax-reducing effect.

Other – PwC description

This category includes items that did not fit into our specific categories.

Analysis of FIN 48 – Accounting for uncertainty in income taxes

This is the first tax rate benchmarking study where we have seen the impact of FIN 48. FIN 48 applies to accounting periods commencing after December 15, 2006. Companies with a year-end of December 31, 2007, the majority of companies in our sample, have provided the financial statement users and tax authorities alike with new information about their tax for the first time.

On July 13, 2006, the Financial Accounting Standards Board (FASB) issued FIN 48 (Accounting for Uncertainty in Income Taxes). FIN 48 prescribes detailed rules for determining when benefits from an uncertain tax position, either taken or expected to be taken, are certain enough to be recognized in the financial statements. FIN 48 requires companies to disclose in their tax footnotes the amount of unrecognized tax benefits (UTBs) that have not been recognized fully in the financial statements.

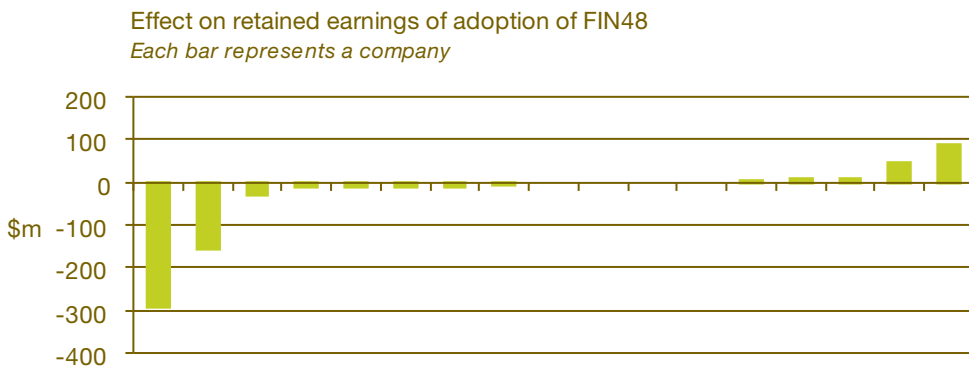
Accounting for uncertain tax positions has historically been an area of considerable complexity and judgment. FIN 48 encompasses a two-step approach to all tax positions:

1. Step one determines whether any benefit may be taken based on whether it is more likely than not that the tax benefit will be upheld by the tax authorities.
2. Step two takes the benefits identified in step one and measures the amount of benefit that should be recognized.

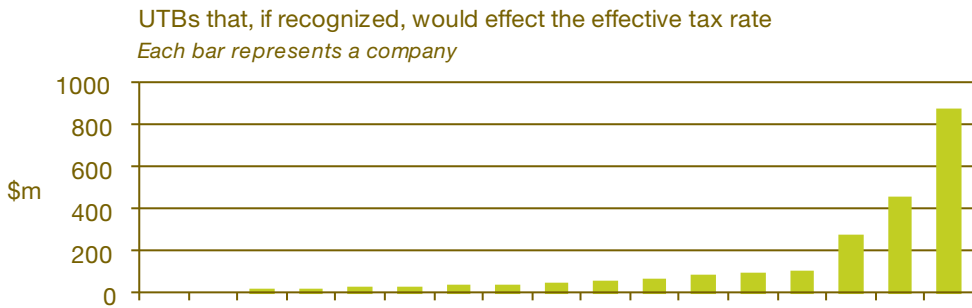
Recent reports have highlighted the burden of FIN 48 on organizations and their need for processes to identify and monitor uncertain tax positions. The increased disclosure and transparency may lead to increased attention on certain tax positions, and organizations will need to consider their approach to provisioning.

We have summarized the disclosure we found from reviewing our study companies and give some examples.

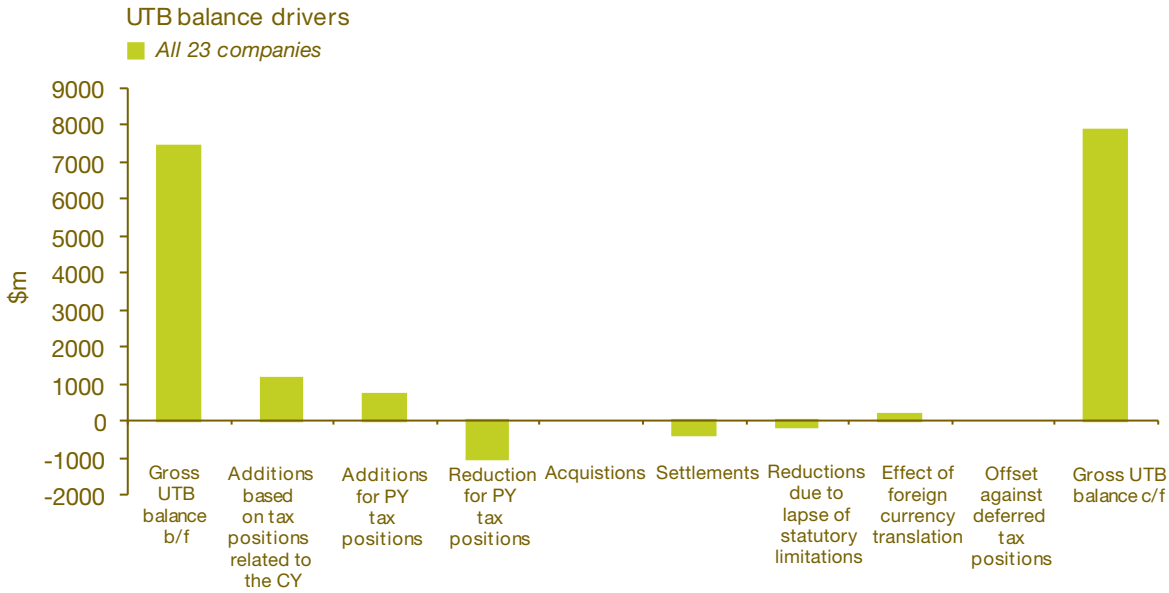
Companies reported the cumulative effect of adoption of FIN 48 on their retained earnings and reserve for UTBs. We found both increases and decreases in liability for UTBs as a result of adoption of FIN 48, usually with a corresponding impact on retained earnings. We have shown the reported effect on retained earnings.



Companies also reported the total unrecognized tax benefits that, if recognized, would impact the effective tax rate. These ranged from small amounts (\$3 million) to significant amounts (\$864 million).



Under FIN48, companies are required to report the amounts of their UTBs in tabular format. Disclosure required covered opening balance, additions, reductions, and adjustments for foreign currency, acquisitions, etc. The amounts reported under each category are shown below.



A further provision required by FIN 48 is the estimation of movements in UTBs in the next 12 months. Some examples of disclosure are shown below.

“The liability at January 1, 2007, and December 31, 2007, is reduced by \$41.2 million and \$52.6 million of offsetting benefits associated with the corresponding effects of potential transfer pricing adjustments, state income taxes and temporary adjustments.”

“During 2007, our subsidiary companies in China restructured their operations in a way that allows them to benefit from a local tax incentive. Because the incentive legislation is not clear in all respects, the exact amount of the benefit is uncertain.”

A summary of the type of disclosure is shown below.

Early Warning Disclosures		
Type of disclosure	Number of companies	% of companies out of total
Specific	2	20%
General	2	20%
Immaterial / No Change	6	60%
No Disclosure	0	0%
Total	10	

Based on the analysis results, it is clear that there is no specific pattern in direction in which the companies in the report manage or present their annual effective tax rate and corresponding tax disclosures. Clearly, such variable results appear to demonstrate that companies understand the current environment, including the need for them to present actual effective tax rate results reflective of true discrete events. Further, the descriptive information presented ranges from cryptic to quite detailed.

As organizations observe increased scrutiny by the Securities and Exchange Commission, FASB, and the public, additional information is likely to be required in the quarterly and annual financial statement filings. Transparency is clearly a primary driver of the regulatory authorities. In this regard, as we consider the annual filing requirements that include the disclosures under FIN 48, Accounting for Uncertainty in Income Taxes, we are reminded of the significant changes associated with related tax disclosures. We no longer observe changes to tax contingency reserves vaguely presented within an annual footnote, but instead in a comprehensive analysis dedicated to a company’s potential future liabilities associated with the operation’s uncertain tax positions. At the same time, there are now detailed disclosures related to current open tax audits and the potential changes that could occur within 12 months. Clearly, the tax contingency reserve and other critical tax information are no longer items exclusively discussed between the company and its auditors. Such matters must now be presented in the light of day, open to public scrutiny.

Source of information

Our financial analysis was based on a number of ratios that could be derived from publicly available information. The use of public information meant that we could include a large sample size of 46 companies without the need to contact each company, giving us a good overview from which to draw conclusions.

Statistical analysis

Trimmed average

Our conclusions are based on a statistical analysis of the ratios. In a tax benchmarking exercise of this nature, particular ratios may be distorted because of one-off, nonrecurring items. Exceptional items, for example, often attract associated tax at rates far from the statutory rate.

It was necessary to exclude these extreme values, and this was done on a consistent basis by taking a trimmed average of a particular sample. The trimmed average is the average result of the data, obtained by excluding 15 percent of the data points from both the top and bottom of the set. It is a robust estimate of the location of a sample, excluding outlying data points.

Quartiles

These record the ratio where 75 percent and 25 percent of the sample companies lie below that point, respectively. By displaying results in this manner, it is possible to identify the range in which the results of the majority of companies fall.

The terms used in the charts to represent the upper (above the trimmed average) and lower (below the trimmed average) quartiles are Q3 and Q1.

List of companies

US companies

Air Products & Chemicals

Albemarle

Ashland

Chemtura

Clorox

Dow Chemical

DuPont

Eastman Chemical

ExxonMobil

Hexion

Honeywell

IFF

Lubrizol

Monsanto

Nalco Holding

NL IndustriesPPG

Praxair

Rockwood Specialties

Rohm & Haas

Sigma-Aldrich

Tronox

Westlake

Canada

Methanex

Nova Chemicals

Potash Sask

Germany

BASF

Bayer

Evonik Industries

Lanxess

Linde Group

Switzerland

Ciba Specialty Chemicals

Syngenta

LyondellBasell

Netherlands

Akzo Nobel

DSM

France

Air Liquide

Total

India

Reliance Industries

China

China Petroleum & Chemical

Shanghai Petrochemical

Japans

Dainippon Ink & Chemicals

Kuraray Chemicals

Mitsubishi Chemical

Mitsui Chemicals

Sumitomo Chemical

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