Earnings Management: Empirical Evidence on value relevance and Income smoothing.
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CHAPTER 4: MEASURING EARNINGS MANAGEMENT

4.1 INTRODUCTION AND PLAN OF THE CHAPTER

When measuring earnings management there are practical issues that deserve attention. The latitude or slack in the outcome of the reporting process is the maximum amount of intervention that can be used to manage earnings over a reporting period. Rather than focusing on determining the possible upper- and lower bounds of reported earnings, the maximum possible adjustments, the interventions that management actually makes to influence earnings are relevant for the inference of earnings management in an empirical context.

Since earnings management is an inherently unobservable process, proxies are needed to make inferences. Generally, there are two possible approaches that can be taken. Either specific line items can be identified or benchmarks for normal levels of various variables can be used. Both approaches have their advantages and issues.

It has been mentioned before that earnings management is an inherently unobservable process and that the only thing that can be used for empirical analysis is behaviour as if earnings are managed.

This section is dedicated to the identification of the techniques that can and very likely are used to manage earnings. Structuring the different options that are available to management can be done in several ways. In order to specify operational criteria for inferring earnings management it is helpful to examine the afforded latitude of the accrual based accounting system. This provides us with the broadest possible set of criteria of what can be included in the operational definition of earnings management in designing proxies for earnings management in an empirical context.

Proxies are needed to make measurement possible. The proxies for discretionary accounting can take two forms. Either specific line items of a discretionary nature are
identified or benchmarks are used to determine normal levels of variables. An example of the latter approach is the family of accrual models. These models generate low power tests in the US. The advantage of using line items is increased precision whereas benchmarking can yield a more encompassing but noisy measure. Stronger results are expected for line items then for the noisy measure of accruals since accruals contains even less theoretical grounds in the Netherlands where sample size is relatively small and accrual accounting is implemented differently from the US. The highly judgmental accounting system of the Netherlands provides much more opportunities to use discretionary line items then the accounting system of the US. As a consequence it is expected that Dutch managers will use discretionary line items much more than discretionary accruals than their US counterparts.

Plan of the chapter
There are two methods for measuring earnings management. Paragraph 4.2 will discuss the discretionary line items approach that uses specific items to infer earnings management. Paragraph 4.3 will examine the accrual approach to earnings management. Finally, paragraph 4.4 will summarize and discuss the two different methods of measurement.

4.2 DISCRETIONARY LINE ITEMS

Naser (1993) categorizes the different discretionary accounting decisions by which item in the balance sheet or the income statement is affected. Although this manner of classification is convenient for the systematic identification of different discretionary techniques it does not deal with the type of adjustment or with the consequences of double entry bookkeeping. The double entry system has the property that at least two items are affected by a single discretionary accounting intervention. For instance, if the valuation method is changed both the asset and a revaluation account are affected. Moreover, the depreciation cost and hence the earnings also change. A second objection to the structuring of discretionary line items by their place in the balance sheet or income statement is that not all
discretionary accounting interventions are equal. Some involve actual transactions and some do not even have to be disclosed, some cause a reversal in later periods whereas others do not. A choice was made to select three types of discretionary line items, which are often used and have a high impact on the reported earnings:

- Accounting changes
- Extraordinary items
- Restructuring provisions

Accounting changes and extraordinary items are collections of actions that result in changes in reported earnings. The third category is included since it allows substantial discretion and is often used. The three categories are by no means complete but they do represent items of substantial discretion and are observed often in frequency and magnitude. Below the three categories will be discussed separately.

**Accounting changes**

According to Hoogendoorn (1990) accounting changes are a concept that in the Anglo-Saxon literature encompasses a broad set of terms. Accounting changes include changes in accounting principles also known as changes in accounting policies. Furthermore, changes in valuation method and changes in the reporting entity fall under the accounting changes concept.

Not included in the meaning of accounting changes are changes in classification. If a reported item is calculated in the same manner, but is disclosed as a different item than in previous years this does not constitute to an accounting change.

The concepts that are used in the Netherlands are different from those used in the Anglo-Saxon literature. According to the Dutch accounting standards board (CAR 140.104) three main categories of changes in accounting principles can be discerned:

A. Changes in valuation method and method of performance calculation:
   - Changes in the pricing method used for assets and liabilities;
   - Changes in allocation methods of costs and benefits over time;
   - Changes in the criteria for direct mutations in equity;

B. Changes in consolidation criteria,
C. Changes in presentation.

Only category A influences the reported earnings. According to the Dutch accounting standards board (RJ 140.105) the following firm-years do not amount to a change of accounting method:

A. First time disclosure of an item not previously disclosed;
B. The reporting method used for an action that has occurred for the first time;
C. A change in estimation.

For the implementation of an earnings management strategy there is another aspect of accounting changes that is of interest. Apart from the manner in which an item is calculated the reporting on the change is of influence on the reported earnings as well.

Hoogendoorn (1991) concludes that specific regulations for accounting can generally be deemed satisfactory. However, he also concludes that the practice in the Netherlands is often not compliant with the regulations for disclosure. Specifically the disclosure of reasons for implementing an accounting change, the adaptation of prior book years to show the effects of the accounting change, the adjustment of multi period overviews, and the comparison of earnings are seriously deficient. Hoogendoorn (1991) also notes that the legal stipulation that auditors should include non-compliance with the law is simply not carried out.

Vergoossen (1996) examines the relation between functional fixation of analysts and the disclosure about accounting changes in the Netherlands. The nature and disclosure of the accounting change are important factors in determining the fixation of analysts.

Summarily, it can be concluded that accounting changes in the Netherlands differ in some aspects from the accounting changes in the US. In both countries accounting changes must be disclosed and are hence relatively visible as an instrument for managing earnings. The advantage for the researcher is that due to the disclosure requirements the discretion can be calculated directly from the financial report without the need to resort to statistical estimation. However, it is allowed to disclose the effect on the prior year. This complicates the calculation of the effect for the

\[ \text{Van der Wel (1987) concludes that in practice this often does not occur in the Netherlands.} \]
current years earnings. Accounting changes can be identified quite easily but the effect will often be disclosed for the prior year.

*Extraordinary items*

Regulatory bodies have paid substantial attention to the extraordinary items. According to the law in the Netherlands in article BW 2.377 section 1\(^{14}\) the extraordinary items are those not arising in the ordinary course of the business operations of the legal entity. As such they are very broadly defined. In the case of extraordinary gains or losses there are two ways in which it they can be used to manage earnings. First, the extraordinary items can be used for classification purposes. By marking an item as extraordinary it can be pushed down on the profit and loss statement and thus it will not influence operational income. While this certainly is an interesting use of extraordinary items it does not influence the level of reported earnings.

As a measurable proxy for earnings management that yields comparable data to other line-items it is the use to influence the bottom line rather then the classification that is of interest. Both extraordinary gains and losses can occur simultaneously. Gains often occur as result of the sale of an asset above book value and losses often result from provisioning. This has an interesting consequence. The losses will reverse in later years if the provision is used and the gains will not affect future years since the sale of an asset is final. Not all gains are non-reverting and not extraordinary losses are reverting but the combination of offsetting gains and losses can mitigate the effect on reported net income while changing slack for future periods.

*Restructuring provisions*

A final category of substantial discretion in reporting is the provision for restructuring charges. When a firm disposes of part of its activities and or when a firm restructures its organization it can form or add to a restructuring provision. While reorganizations and restructuring can be separate activities they are grouped here and referred to as restructuring charges. Even the Guideline RJ 2.53.924 allows

\(^{14}\) BW or the “Burgelijk Wetboek” is the part of the Civil Code that includes in Book 2 title 9 the laws on financial reporting.
for the inclusion of the total amount of the provision for cessation of activities as a single amount on the balance sheet, e.g. under the caption ‘Provision for reorganization costs’.

Restructuring is a frequently occurring process in many firms. When costs for redundancy schemes, operational losses and for instance professional fees are expected they can and should be provisioned for.

Hoogendoorn (1997) notes that the magnitude of a provision cannot be determined unequivocally. Furthermore, he concludes that provisions are one of the most subjective elements of an annual report and that this subjectivity allows provisions to be used as part of the accounting policy of a firm. Improper use of provisions can be mitigated by an external audit, although this will not reduce the subjectivity.

Empirical research for the Netherlands by Overboom and Vergoossen (1997) for 574 annual reports over the period 1988-1994 finds that provisions are used for earnings management. Their findings show that provision policies are associated with smoother earnings, that changes in provisions occur more often and are larger in amount in years of earnings decreases and that there is a relation with management changes.

In sum, it can be stated that restructuring provisions have large influences on reported earnings, are open to discretion and have low disclosure requirements. This combination of properties makes restructuring charges very suitable for implementing accounting policy.

4.3 DISCRETIONARY ACCRUALS

Accrual accounting is based on the notion that there is a difference between cost and expenditures versus benefits and revenue. Due to this fact net income can be seen as the adjustment of the operational cash flow for transitory components resulting in net income from operations. Adjustment items are called accruals. There are a number of subjective decisions involved in the allocation of expenditures and revenue over time. It is important to note that accruals are a correction on the cash based financial-
economic approach. In the earnings management literature it is often assumed that accruals are open to more discretion than cash flows. Although under the assumption of clean-surplus accounting the final amount of un-discounted cash flows is equal to the amount of un-discounted earnings the time effect disturbs this relationship.

According to Schipper (1989) and Dechow et al. (1994) it is very difficult to separate total accruals into discretionary accruals and non-discretionary accruals.

It can be argued that it is likely that discretionary accruals are used to manage earnings. The low degree of detectability of accruals by users of financial statements when used for earnings management makes it a suited instrument for implementing accounting objectives. However, by the same reasoning accrual management is not suited for signaling.

Since discretionary adjustments in working capital accruals can only be estimated with the use of benchmark models the resulting proxy is bound to be a less accurate measure of earnings management than line items such as accounting changes. On the other hand there is reason to belief that earnings management is also implemented with the help of discretionary working capital accruals rather than solely with visible line items. The estimation of the scope of earnings management seems to be better served with accrual models but the accuracy of detection is with line items.

The method of estimating the discretionary accruals has evolved from Healy (1985). Besides the estimation method used for non-financial firms several models that are specifically used for financial institutions are also discussed. Dechow, et al. (1995) started with the assumption that accruals can be split into a discretionary and a non-discretionary part.

$$\text{DA}_t = \alpha + \beta \text{PART}_t \sum_{k=1}^{K} \gamma_k X_{kt} + \varepsilon_t$$ \hspace{1cm} \text{eq. 4.1}

where

- **DA** = discretionary accruals (typically deflated by lagged total assets);
- **PART** = a dummy variable Partitioning the data set into two groups for which earnings management predictions are specified by the researcher
- **$X_{kt}$** = (for $k=1, \ldots, K$) other relevant variables influencing discretionary accruals; and
- **$\varepsilon$** = an error term that is independently and identically normally distributed.

They note that unfortunately the researcher will have to use a proxy for DA being $DAP(\text{proxy})$ and the other relevant variables are omitted, thus the model can be rewritten as:
\[ DAP_t = \alpha + \beta PART_t \sum_{k=1}^{K} \gamma_k X_{kt} + \nu_t + \epsilon_t \]  

where

\[ \nu_t = \text{some error in the proxy.} \]

The model typically estimated by the researcher becomes:

\[ DAP_t = \hat{\alpha} + \hat{\beta} \text{PART}_t + \epsilon_t \]  

There are more than 20 variations on the accrual estimation model. Below seven important models will be discussed.

1) The Healy model

Healy (1985) makes the first attempt in the earnings management literature to estimate earnings management by estimating deviations from normal levels of accruals. In his model, he starts with total working-capital accruals. Total accruals (TA) are defined by:

\[ ACR_t = \frac{(\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t)}{A_{t-1}} \]  

Where

- \( ACR \) = total working capital accruals
- \( \Delta CA \) = change in current assets
- \( \Delta CL \) = change in current liabilities
- \( \Delta Cash \) = change in cash and cash equivalents
- \( \Delta STD \) = change in debt included in current liabilities
- \( Dep \) = depreciation and amortization expense
- \( A \) = total assets

Healy predicts that systematic earnings management occurs in every period. He partitions his sample in one upward and two downward groups. The following model for non-discretionary accruals (NDA) is used:

\[ NDA_t = \frac{\sum_{i=t}^{T} TA_i}{T} \]  

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Where:

\[ \text{NDA}_t = \text{estimated non-discretionary accruals}; \]
\[ \text{TA}_t = \text{total accruals scaled by lagged total assets}; \]
\[ t = 1, 2, \ldots, T \text{ is a year subscript for years included in the estimation period; and} \]
\[ r = \text{a year subscript indicating a year in the event period}. \]

The difference between the total accruals and the non-discretionary accruals leaves the discretionary accruals. This model assumes that accruals are a constant fraction of lagged assets. Any deviation from the average is seen as earnings management.

2) DeAngelo (1986)

DeAngelo assumes that first order differences in accruals have an expected value of zero. Thus the DeAngelo model for NDA is:

\[ \text{NDA}_t = \text{TA}_{t-1} \]

eq. 4.6

Due to the nature of the accrual process it seems unlikely that accruals are constant over time. It is in fact a special case of the Healy model where TA is only dependent on last year’s total accruals instead of the average of the years in the estimation period.

3) The Jones Model (1991)

Jones relaxes the assumption that NDA are constant. She proposes a model that controls for the firm’s circumstances:

\[ \text{NDA}_t = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta \text{REV}_t) + \alpha_3(\text{PPE}_t), \]

where
\[ \Delta \text{REV}_t = \text{revenues in year } \tau \text{ less revenues in year } \tau-1 \text{ scaled by total assets at } \tau-1; \]
\[ \text{PPE}_t = \text{gross property plant and equipment in year scaled by total assets at } \tau-1; \]
\[ A_{t-1} = \text{total assets at } \tau-1; \text{ and} \]
\[ \alpha_1, \alpha_2, \alpha_3 = \text{firm-specific parameters}. \]

Estimates of the firm-specific parameters \( \alpha_1, \alpha_2, \alpha_3 \) are generated using the following model in the estimation period:

\[ \text{ACR}_t = a_1(1/A_{t-1}) + a_2(\Delta \text{REV}_t) + a_3(\text{PPE}_t) + e \]

eq. 4.8
where:
ACR = the total accruals

4) The Modified Jones Model (1991)
The modification is designed to eliminate a conjectured tendency of the Jones Model to measure discretionary accruals with error when discretion is used over revenues. In the modified model NDA is estimated as:

\[ NDA_T = \alpha_1 \left( \frac{1}{A_{T,1}} \right) + \alpha_2 (\Delta REV_T - \Delta REC_T) + \alpha_3 (PPE_T) \]  

where \( \Delta REC_T = \) net receivables in year \( T \) less receivables in year \( T-1 \) scaled by total assets at year \( T-1 \).

Dechow and Sloan (1996) argue that there are inherent differences between different industries. These industry differences influence the levels of items in working capital. To correct for this they use industry median values. To estimate the non-discretionary accruals (NDA) the run the following regression:

\[ NDA_T = \gamma_1 + \gamma_2 \text{median}(TA_T) \]  

where
\( \text{median}(TA_T) = \) the median value of total accruals scaled by lagged assets for all non-sample firms in the same 2-digit SIC code

The multitude of different models for estimating discretionary accruals give an indication of the difficulties that arise when estimating parameters that cannot be verified. Dechow et al. (1995) give evidence that the Modified Jones Model currently seems the most adept at detecting earnings management. However, the search for efficient models to estimate normal levels of variables is not finished yet.
Mertens (1997) notes that there are some serious issues with accruals as earnings management proxies. Since the amount of accruals in the absence of managerial discretion is not known for certain, the effect of accruals management becomes hard to estimate. Furthermore Mertens and Hassink (1992) show that the definitions of cash flows and accruals impact strongly on the outcome of the estimation process.
The issue of the reliability of discretionary accrual models will be examined further in the empirical analysis.

4.4 SUMMARY AND DISCUSSION

In this chapter issues relating to the measurement of earnings management were discussed. Since earnings management is an inherently unobservable process a proxy variable is needed for empirical analysis.

Two main methods for proxying earnings management currently exist in the literature. The first method, referred to as the discretionary line items method identifies specific items in the annual report that are open to a large degree of discretion in timing or amount. This method will not catch all earnings management activity but is relatively accurate for the items that are identified.

The second method of measuring earnings management aims to estimate normal levels of variables and marks deviations from the estimated normal levels as discretionary adjustments that are attributed to earnings management. The most used exponent of this approach is the accrual model methodology. Especially in US research earnings management is often proxied by discretionary accruals. The accuracy of this approach depends critically on the power of the model that is used to determine normal levels for variables. In the case of accruals the quality and precision of these models is open to debate. The accrual method is less precise then the discretionary line items approach but might give a better indication of the scope of the total earnings management.

The differences in institutional settings, especially the larger flexibility in Dutch reporting regulation make accruals less likely to be the prime method for implementing earnings management in the Netherlands.