Flexibility in Financial Accounting Income Strategies and Earnings Management in the Netherlands
van Rooijen, J.G.

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Chapter 7

New proxies for detecting managerial influence over accounting income

7.1 Introduction

The framework for managerial influence over accounting income was presented in chapter 2 and elaborated in chapters 3, 4 and 5. Together these chapters provide the motivation and foundation for the empirical research of this study. Chapter 6 provided an overview and evaluation of the proxies to detect managerial influence over accounting income used in previous research.

This study is, among other things, aimed at providing a new approach in detecting managerial influence over accounting income. A great number of contemporary studies in the area of managerial influence over accounting income focus on the detection of managerial influence over accounting income because this seems to be an essential first step in the process of learning more about income strategies and earnings management. In this chapter new proxies to detect managerial influence over accounting income are developed.

There are three relevant dimensions when studying managerial influence over accounting income. The first dimension relates to the relative magnitude of the firm’s income range and to the question what the firm’s possibilities are to influence accounting income (i.e. the firm’s financial accounting discretion). The first dimension will be one of the objects of the new proxy variables discussed in this chapter.

The second dimension is the position of the firm’s actual accounting income on the feasible income range. This second dimension reflects the firm’s income strategy and will also be object of the new proxy variables discussed in this chapter. This second dimension can be interpreted as a variable that captures the relative degree of liberalism or conservatism of a
firm’s income strategy. This variable does not only capture the accounting interventions of the current year, but the firm’s prior accounting decisions as well.

Finally, the third dimension is the difference between accounting income and unadjusted income and is the object in contemporary earnings management research. Unadjusted income serves as an estimate for the unobservable outcome of the financial process in the absence of earnings management (i.e. the financial situation). Unadjusted income is inherently unobservable and can only be estimated under certain assumptions. Unadjusted income equals accounting income +/- the sum of both current and non-current discretionary accounting accruals and real transactions primarily undertaken to influence accounting income. The difference between accounting income and unadjusted income is the result of specific purposeful accounting interventions aimed at the implementation of the firm’s overall income strategy (i.e. earnings management) and will also be object of the new proxy variable discussed in this chapter.

This chapter motivates and explains the dependent variables of this study and addresses the second research question of this study, namely: how can financial accounting flexibility be observed and its use for income strategies and earnings management be detected and analyzed? New proxy variables to measure financial accounting discretion and detect managerial influence over accounting income are developed in order to answer this question. Paragraph 7.2 of this chapter provides an overview of the assumptions on which the new proxy variables to measure income strategies, earnings management and discretion are based. Paragraph 7.3 provides a detailed discussion of the discretionary accounting items taken into account in the new proxy variables and finally paragraph 7.4 presents the new proxy variables.

In the next chapter the new proxy variables are used to test the theory and reasoning of managerial influence over accounting income in the accounting setting in the Netherlands.
7.2 Assumptions

The new proxy variables to detect managerial influence over accounting income developed in this chapter are based on a portfolio of individual accounting items. The income strategy approach of Zmijewski and Hagerman (1981) is extended and altered by taking more discretionary accounting items and their (estimated) actual monetary effects into account. Further, the approach concentrates on non-current accounting items and requires detailed analysis of financial statements.

The proxy variables developed in this chapter are based on a number of general assumptions. First, the financial statements facilitate both decision-making and contracting. Further, managers use their accounting discretion in order to implement a comprehensive income strategy taking into account the firm specific aspects of the framework for managerial influence over accounting income. This comprehensive income strategy trades off the effects of different alternatives on the firm's contract set in a way that is optimal for the firm's management (Zmijewski and Hagerman 1981, pp. 133-134). The comprehensive income strategy may result in specific accounting interventions (i.e. earnings management) in the reporting process, having an effect on specific individual accounting items.

Further, the proxy variable developed in this chapter is based on a number of specific assumptions. First, the firm's management and the firm's stakeholders are assumed to focus on accounting income. Accounting or net income is the difference between a firm's total revenues and expenses for the accounting period. Accounting income thus includes extraordinary items as well. For practical reasons however, accounting income before taxes is used in this study. Taking into account (estimated) actual monetary effects also results in the need to take into account the tax effects of these monetary effects. Since the tax rate may differ per firm and per firm/year and some accounting items have tax effects while others do not have tax effects, the tax effects cannot be properly estimated and therefore accounting income is corrected for taxes. Thus, in this study, accounting income, unadjusted income and
the income range are adjusted for taxes and all accounting numbers are before taxes\textsuperscript{110}. However, because the approach in this study is based on relative numbers that are all before taxes the effect of this limitation will be limited, it will only affect the income range measure.

Second, financial accounting discretion is limited to the fifteen discretionary items listed in Table 7.1. The items are selected from the overview of financial accounting flexibility presented in chapter 5 by using two criteria: flexibility and availability. Flexibility is GAAP oriented and is based on the options for firms to decide on alternative accounting methods, estimates and real transactions (primarily undertaken to influence accounting income) in relation to specific individual accounting items. Availability is based on the possibility to estimate the monetary effects of individual accounting items on accounting income before taxes. Availability relates to the disclosure of accounting information regarding specific individual accounting items, to the possibility to recalculate accounting number and to the possibility to benchmark the outcome of specific accounting items with an alternative. These aspects are discussed per accounting item in the next paragraph. Thus, availability is research oriented. Ideally all discretionary accounting items should be taken into account since managers are assumed to implement a comprehensive income strategy. However, when it is not possible to do so in an effective and meaningful manner noise is introduced in the proxy variables and there will be a trade off between strength (completeness) and misspecification (noise) in this respect.

Further, the discretionary items in Table 7.1 are classified in two levels based on the availability criterion mentioned before. The distinction between level 1 and level 2 is based on the possibility to estimate the discretionary part of the accounting items. Items are classified as level 1 if the discretionary effect on the income range and on accounting income before taxes can be distilled directly from the financial statements or can be calculated using different accepted accounting principles with accompanying estimates that are the same for all

\textsuperscript{110} As discussed in chapter 3 taxation in general may be an incentive to exert influence over accounting income. Since tax is not expected to influence accounting income in the Netherlands this aspect of taxation is not taken into account in the empirical part of this study. As discussed in chapter 5, there is some flexibility in taxation itself and therefore taxation may serve as an accrual to exert influence over accounting income (net income after taxes). Since accounting income is corrected for taxes, taxation as an accrual is not taken into account in the empirical part of this study either.
firms in this study. Thus, once the number of accounting alternatives is regarded as fixed, the discretionary effect of the accounting item can be calculated objectively. The level 1 items can be classified as single accounting items where managerial influence over accounting income is detected by a direct approach\textsuperscript{111}.

Items are classified as level 2 if the discretionary effect on accounting income before taxes cannot be distilled directly from the financial statements and can only be estimated using a firm specific benchmark capturing both the accounting method as well as the accounting estimate. For level 2 items the total monetary amount of the accounting items is separated in a non-discretionary and a discretionary part by benchmarking\textsuperscript{112}. Benchmarking introduces an indirect observation of accounting method choice and estimates in the proxy variables for level 2. The procedures used estimating the discretionary part of level 2 items are however the same for all firms in this study. The level 2 items can be classified as single accounting items where managerial influence over accounting income is detected by an indirect approach.

The level distinction is used because the risk of miss-specification is presumably larger when taking the level 2 items into account than taking only the level 1 items into account. However, the measure should have more strength by taking into account the level 2 items, because more subtle discretionary items are taken into account in the level 2 items. The level distinction is also discussed per accounting item in the next paragraph.

All the discretionary accounting items mentioned in Table 7.1 influence the income range. As will be discussed in the next paragraph, the first four discretionary accounting items do not have any effect on unadjusted income. The first four items only affect the income range because the items only relate to accounting method choice and not to specific accounting interventions. For these items the possible accounting interventions such as estimation changes, impairments of intangible fixed assets and accounting policy changes are accounted for in the proxy variables under the numbers 6, 7 and 14.

\textsuperscript{111} For a general discussion of direct and indirect approaches to detect managerial influence over accounting income see chapter 6.

\textsuperscript{112} The firm's average percentage over the research period serves as the benchmark and the difference between the average percentage and the actual percentage is regarded as discretionary.
<table>
<thead>
<tr>
<th>Nr.</th>
<th>Reference to Chapter 5</th>
<th>Discretionary Accounting Item</th>
<th>Level</th>
<th>Income Range</th>
<th>Unadjusted Income</th>
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<tr>
<td>1</td>
<td>4/5</td>
<td>Research and development expenses</td>
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<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>2</td>
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<td>Goodwill</td>
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<td>yes</td>
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<tr>
<td>3</td>
<td>7/8/9</td>
<td>Intangible rights</td>
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</tr>
<tr>
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<td>2/3/6</td>
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<td>no</td>
</tr>
<tr>
<td>5</td>
<td>25-28</td>
<td>Depreciation of tangible fixed assets</td>
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<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>6</td>
<td>81</td>
<td>Estimation changes</td>
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<td>yes</td>
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<tr>
<td>7</td>
<td>1/29</td>
<td>Impairments of assets</td>
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<td>yes</td>
<td>yes</td>
</tr>
<tr>
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<td>43/44</td>
<td>Work in progress</td>
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<td>yes</td>
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<tr>
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<td>50-56</td>
<td>Pension costs</td>
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<td>71/77/84</td>
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<td>79</td>
<td>Accounting policy changes</td>
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<tr>
<td>15</td>
<td>85</td>
<td>Extraordinary items</td>
<td>1</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Table 7.1: Discretionary accounting items examined in this study

Both level 1 and level 2 items are assumed to be totally discretionary. For the level 1 items this implies zero-base accounting\(^{113}\) and for the level 2 items this implies that the boundaries of the discretion are determined by the actual extremes of the firm. Regarding the accounting policies it is assumed that the cumulative effect of alternative accounting policies is reflected directly in shareholders' equity, similar to the preference of the CAR (guideline 140, section 113 and 116). Further, the items listed in Table 7.1 are only taken into account if they are disclosed in the financial statements. Finally, in order to prevent the proxy from taking discretionary accounting items into account twice, estimation changes (Nr. 6), impairments of assets (Nr. 7), direct equity movements (Nr. 13), accounting policy changes (Nr. 14) and extraordinary items (Nr. 15) are only taken into account if they are not part of one of the other individual accounting items.

\(^{113}\) Zero base accounting is accounting from the ground up as though the accounting item occurred for the first time in the financial statements.
7.3 Discussion of discretionary accounting items

This paragraph provides a discussion of the items listed in Table 7.1. For each item it is stated why it is regarded as discretionary, how it is accounted for in the proxy variables to detect managerial influence over accounting income (i.e. how the item influences the income range and unadjusted income) and whether level 1 or 2 is appropriate.

1. Research and development expenses

Research and development (R&D) expenses are regarded as discretionary because the firm's management can decide on the level of expenses as well as the accounting method used. The level of R&D expenses is discretionary and a normal level of expenses could for example be estimated in relation to turnover (Murphy and Zimmerman, 1993).

However, because R&D expenses are not always disclosed this aspect is not taken into account in this study. R&D expenses may be capitalized if there are grounds for expecting future economic benefits, which provide sufficient scope for amortization. Alternatively, R&D expenses may be taken into the income statement directly, even when there is sufficient scope for amortization. If R&D expenses are disclosed, two alternatives are taken into account:

- Take amount directly to income statement
- Capitalize and amortize in five years (the maximum period)

Given the maximum amortization period of five years, the R&D expenses in the period 1984 until 1987 are also taken into account in order to compare the alternatives in the first four years of the research period. R&D is regarded as a level 1 item because the R&D amounts are distilled directly from the financial statements and once decided on the amortization period the effect on the income range can be calculated objectively. Since firms R&D expenses are likely to have a yearly recurrence it is unlikely that R&D alternatives will have a very significant impact on a firm’s income range. Only when firms change the amount of R&D

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114 See also paragraph 5.3.1 for a discussion of the flexibility related to R&D expenses.
115 R&D accounting choice is for example examined by Daley and Vigeland (1983).
significantly, accounting alternatives will have an impact on the income range. An example of the treatment of R&D expenses in this research is provided for AkzoNobel in Appendix B1.

2. Goodwill

Goodwill expenses are regarded as discretionary because the firm’s management can influence the goodwill amount as well as the accounting method used. The goodwill amount itself relates to the goodwill calculation (i.e. restatement of the financial statements of the participating interest) and is not taken into account because there is no information available to benchmark the goodwill amount. Goodwill expenses may be capitalized, charged to shareholders’ equity or taken into the income statement directly. Because the last option is hardly ever used this option is not taken into account as an accounting alternative in this study. Regarding goodwill four accounting alternatives are taken into account in calculating the effect of goodwill on the firm’s income range:

- Charge directly to shareholders’ equity
- Capitalize and amortize in five years
- Capitalize and amortize in twenty years
- Capitalize and amortize in forty years

The amortization period of five years is chosen because this period is explicitly mentioned in BW2 section 386, subsection 3. The period of twenty years is chosen because it is the maximum period in IAS 22 section 42. An amortization period within the extremes of five and forty years will however only be relevant if the goodwill amounts vary widely over time. The period of forty years is chosen because this is the maximum period according to US GAAP and because this period is used by a number of firms in the Netherlands. Apart from the goodwill amounts in the research period (1988-1997) the goodwill amounts between 1978 and 1987 are also taken into account. 1978 is the starting date for practical reasons. Theoretically the forty years before 1988 should be taken into account since forty years is the maximum amortization period used in this study.

See also paragraph 5.3.1 for the flexibility related to accounting for goodwill.

This option is not used by the firms in the research sample of this study.
However, because goodwill became an accounting issue in the 1980s it is unlikely that taking into account goodwill before 1978 would have a material impact on the income range. Goodwill is regarded as a level 1 item because the goodwill amounts are distilled directly from the financial statements and the effect on the firm’s income range can be calculated objectively once decided on the amortization period. Given the goodwill amounts related to takeovers, it is very likely that goodwill accounting will have a very significant impact on the income range\textsuperscript{118}. AEX-index firms for example wrote off NLG 14bn goodwill in 1997, bringing the cumulative charge since 1987 to 75bn (Merrill Lynch, 1998a). Given this impact and the possibility to charge goodwill directly to shareholders’ equity it is also very likely that this will be the preferred alternative for most firms in this study’s research sample\textsuperscript{119}. An example of the treatment of goodwill in this research is provided for Hagemeyer in Appendix B2.

3. Intangible rights\textsuperscript{120}

Intangible rights are industrial and intellectual rights and are regarded as discretionary because the firm’s management can decide on the accounting method used as well as on the classification of the expenses\textsuperscript{121}. Generally, intangible rights may be capitalized if there are grounds for expecting future economic benefits which provide sufficient scope for amortization or taken into the income statement directly. Regarding intangible rights five alternatives are taken into account:

- Take the full amount directly to the income statement
- Capitalize and amortize in five years
- Capitalize and amortize in twenty years
- Capitalize and amortize in forty years
- Capitalize without systematic amortization

\textsuperscript{118} See also De Bos and Mulder (2000) for a discussion of the effect of goodwill accounting alternatives on accounting income and shareholders’ equity.

\textsuperscript{119} Huijgen (1996) has extensively investigated goodwill accounting in the Netherlands.

\textsuperscript{120} See also paragraph 5.3.1 for the flexibility related to accounting for intangible rights.

\textsuperscript{121} The Pierce-Brown and Steele (1999) study is an example of the use intangible rights (brand accounting) in the dependent variable.
Since intangible rights, other than R&D expenses, cannot be capitalized if the rights are developed by the firm itself, there is a close classificatory relation between accounting for goodwill and accounting for intangible rights. For this reason the amortization periods chosen in the measurement variable of these rights are the same as chosen for goodwill accounting. The option to take the amount directly to the income statement is only taken into account if the amounts are not significant in relation to accounting income before taxes because it is unlikely that firms will use this option otherwise. The option to capitalize intangible rights without systematic amortization is only taken into account for a specific group of intellectual rights (i.e. copy and publishing rights for music, books etc.) because this option is not used for other intellectual rights in the research sample of this study.

Because accounting for intangible rights became an accounting issue in the late 1980s no attempt is made to systematically include intangible rights prior to 1988. When however intangible rights were capitalized on the opening balance of 1988, the amount is taken into account under the assumption that the opening balance amount was acquired in 1987. Intangible rights are regarded as a level 1 item because the amounts are distilled directly from the financial statements and once decided on the amortization period the effect on the income range can be calculated objectively. Accounting for intangible rights is likely to have a very significant impact on the income range for certain industries, such as publishers. Given this impact it is likely that firms in these industries are likely to capitalize intangible rights and choose the longest possible amortization period. An example of the treatment of intangible rights in this research is provided for Wolters Kluwer in Appendix B3.

4. Other intangible fixed assets\(^{122}\)

Intangible fixed assets, not included under R&D, goodwill or intangible rights, such as expenses in connection with the incorporation and the issue of shares, are regarded as discretionary because the firm’s management can decide on the accounting method used\(^{123}\). If other intangible fixed assets are disclosed two alternatives are taken into account:

- Take the full amount directly to the income statement

\(^{122}\) See also paragraph 5.3.1 for the flexibility related to accounting for other intangible fixed assets.

\(^{123}\) The Pierce-Brown and Steele (1999) study is an example of the use of intangible rights (brand accounting) in the dependent variable.
• Capitalize and amortize in five years

Other intangible fixed assets are regarded as a level 1 item because the amounts are distilled directly from the financial statements and once decided on the amortization period, the effect on the income range can be calculated objectively. In general, the amounts related to other intangible fixed assets are relatively small and it is unlikely that the alternatives will have a significant impact on a firm’s income range. An example of the treatment of intangible rights in this study is provided for DSM in Appendix B4.

Because the discretionary items discussed above only reflect the possibility to influence accounting income by a possible accounting policy change, the items only effect the income range and not unadjusted income. For these items estimation changes, impairments of intangible fixed assets and accounting policy changes are accounted for in the proxy variables under the numbers 6, 7 and 14 and of course these items do affect unadjusted income since these items reflect the result of specific accounting interventions.

5. Depreciation of tangible fixed assets\textsuperscript{124}

The depreciation of tangible fixed assets is regarded as discretionary because the determination of the useful economic life and the residual value is discretionary as well as the depreciation method\textsuperscript{125}. Because it is impossible to recalculate the depreciation amounts, the depreciation amount is benchmarked in order to assess the effect of managerial influence on unadjusted income and the income range. Depreciation is benchmarked to the firm’s average amount of depreciation as a percentage of the year’s acquisition price or current value of the tangible fixed assets. This type of benchmarking is improved by categorizing total tangible fixed assets in four categories:

a. Buildings and land for business purposes
b. Machinery and plant
c. Other fixed assets, including operating assets and assets not used in the production process

\textsuperscript{124} See also paragraph 5.3.1 for the flexibility related to the depreciation of tangible fixed assets.

\textsuperscript{125} Depreciation as (part of) a dependent variable is for example examined by Hagerman and Zmijewski (1979) and Dhaliwal et al. (1982).
d. Industry specific fixed assets such as airplanes, vessels and transport ships when disclosed separately (if disclosed).

The accounting intervention (i.e. the effect on unadjusted income) is calculated per category per firm year as:

**Average depreciation % * (beginning balance + end balance)/2 - actual depreciation.**

The effect on the firm's income range is calculated based on the actual maximum and minimum percentages of the firm over the research period. Thus, the correction in order to calculate the effect on the income range is calculated as:

**Maximum depreciation % * (beginning balance + end balance)/2 - actual depreciation.**

**Minimum depreciation % * (beginning balance + end balance)/2 - actual depreciation.**

Assume for example that based on the calculations mentioned before, the maximum and minimum percentages in the period 1988-1997 for the depreciation of buildings and land for business purposes are 5.05% and 3.21% and that the average percentage in this period is 3.93%. When the beginning balance is 82,096, the end balance 94,001 and the actual depreciation amount is 3,844 in the year 1990 then the depreciation percentage in 1990 is 4.37%. However, in the year 1990 a depreciation amount of 0.0393*(82,096 + 94,001)/2=3,460 was expected. The accounting intervention is then estimated as 3,460 - 3,844 = -384. Thus, it is assumed that management decreased accounting income before taxes in the year 1990 by 384. Or to put it differently, the total accrual amount of 3,844 is separated between a non-discretionary part of 3,460 and a discretionary part of 384.

Further, the effect on the income range of the maximum and minimum value of the depreciation charge is calculated as:

\[
0.0505*(82,096 + 94,001)/2 - 3,844 = 602 \\
0.0321*(82,096 + 94,001)/2 - 3,844 = -1018.
\]

Thus, regarding the accounting extremes it is assumed that management could have reported 602 less accounting income before taxes and 1,018 more accounting income before taxes in the year 1990.

\[126\] Calculated as the actual depreciation amount (3,844) divided by the average balance ((82,096 + 94,001)/2).
Because the monetary effects cannot be distilled directly from the financial statements and benchmarking includes depreciation methods as well as accounting estimates this item is categorized as a level 2 item. When firms have relative more tangible fixed assets and fluctuating depreciation percentages the benchmark method will have a significant impact on the income range as well as unadjusted income. This may especially be the case for firms with industry specific fixed assets. An example of the treatment of the depreciation of tangible fixed assets in this research is provided for KLM, category a; buildings and land for business purposes, in Appendix B5.

6. Estimation changes

Disclosed estimation changes of tangible and intangible fixed assets are regarded as discretionary and taken into account because they affect unadjusted income as well as the income range. It is assumed that disclosed estimation changes affect the income range as well as unadjusted income for the amounts disclosed. Thus, it is assumed that the effect of the estimation change is totally discretionary and implies that the effect of the estimation change is objective in a sense that it could not have been another estimation. The disclosed amount of the estimation change is corrected on the depreciation intervention as calculated under item 5. Because the effect of estimation changes is taken directly from the financial statements they are regarded as a level 1 item.

7. Impairment of assets

Value adjustments of tangible and intangible fixed assets (i.e. asset write-downs) are regarded as discretionary and taken into account because they affect unadjusted income as well as the income range. It is assumed that disclosed impairments of assets affect the income range as well as unadjusted income for the amounts disclosed. Thus, it is assumed that the impairment is totally discretionary and implies that the amount of the impairment is objective in a sense that it could not have been a larger or a smaller amount. The disclosed amount of the impairment is corrected on the depreciation accounting intervention as calculated under item

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127 See also paragraph 5.3.8 for the flexibility related to changes in accounting estimates.
128 See also paragraph 5.3.1 for the flexibility related to impairment of assets.
129 Discretionary asset write-downs as a dependent variable have for example been examined by Strong and Meyer (1987), Shaw (1988) and Francis et al. (1996).
5. Because the effect of disclosed impairments are taken directly from the financial statements they are regarded as a level 1 item.

8. Work in progress\textsuperscript{130}

Work in progress on construction contracts is regarded as discretionary because different profit recognition methods are possible and the amounts of work in progress on the balance sheet are related to managerial judgement. Because it is impossible to recalculate work in progress, the amount is benchmarked to the firm’s installments in order to assess the effect on unadjusted income and the income range. Since installments are part of the contract and are made by a third party it is assumed that the installments are non-discretionary and that on average there is a fixed relationship between the installments and work in progress. In general, there will be a relation between installments and the work in progress amount on the balance sheet because third parties make installments based on a certain stage of completion of the work in progress.

The accounting intervention (i.e. the effect on unadjusted income) is calculated per year as:

- Average \% work in progress of installments \* installments - actual work in progress.

The effect on the firm’s income range is calculated based on the firm’s actual maximum and minimum percentages work in progress of the installments of the firm over the research period. Thus, the correction in order to calculate the effect on the income range is calculated as:

- Maximum \% work in progress of installments \* installments - actual work in progress.
- Minimum \% work in progress of installments \* installments - actual work in progress.

Assume for example that based on the calculations mentioned before, the firm’s maximum and minimum percentages in the period 1988-1997 for the work in progress as a percentage of the installments are 94.54\% and 88.34\% and that the firm’s average percentage in this period is 90.87\%. When the work in progress amount is 635,661 and the installments are 689,918 in the year 1988 then the percentage in 1988 is 92.14\%. However, in the year 1988 a work in progress amount of 0.9087*689,918 = 626,928 was expected. The accounting intervention is

\textsuperscript{130} See also paragraph 5.3.2 for the flexibility related to work in progress.
then estimated as $626,928 - 635,661 = -8,733$. Thus, it is assumed that management increased accounting income before taxes in the year 1988 by 8,733. Further, the effect on the income range of the maximum and minimum value of the percentage is calculated as:

\[
0.9454 \times 689,918 - 635,661 = 16,587 \text{ and }
\]
\[
0.8834 \times 689,918 - 635,661 = -26,187.
\]

Thus, regarding the accounting extremes it is assumed that management could have reported 26,187 less accounting income before taxes and 16,587 more accounting income before taxes in the year 1988.

Again the benchmark method is used to partition the discretionary and the non-discretionary component of the work in progress amount on the balance sheet. Because benchmarking includes valuation methods as well as accounting estimates this item is categorized as a level 2 item. For firms with relative large amounts of work in progress the benchmark method will have a significant impact on the dependent variable. Examples of firms with work in progress are construction companies and services firms. An example of the treatment of work in progress in this research is provided for NBM Amstelland in Appendix B6.

9. *Pension costs*\(^{131}\)

Pension costs are regarded as discretionary because the pension charges may be calculated on a different basis (for example on a general or specific basis, differences in the interest percentage and with or without taking account of future pay rises). Because it is impossible to recalculate the pension costs, the pension costs are benchmarked to the firm’s average amount of pension costs as a percentage of total staff costs\(^{132}\) in order to assess the effect on unadjusted income and the income range. It is assumed that total staff costs are non-discretionary and that there is a strong relationship between total staff cost and the firm’s pension costs.

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\(^{131}\) See also paragraph 5.3.4 for the flexibility related to pension provisions.

\(^{132}\) This includes total wages and social security charges (pension costs not included).
The accounting intervention (i.e. the effect on unadjusted income) is calculated per year as:
Average % pension costs of total staff cost * total staff cost - actual pension costs.
The effect on the firm's income range is calculated based on the firm's actual maximum and minimum percentages of the firm over the research period. Thus, the correction in order to calculate the effect on the income range is calculated as:
Maximum % pension costs of total staff cost * total staff cost - actual pension costs.
Minimum % pension costs of total staff cost * total staff cost - actual pension costs.

Assume for example that based on the calculations mentioned before, the firm's maximum and minimum percentages in the period 1988-1997 for pension costs as a percentage of total staff costs are 7.15% and 2.46% and that the firm's average percentage in this period is 3.79%. When the pension costs are 41,326 and the total staff costs are 1,490,785 in the year 1994 then the percentage is 2.77%. However, in the year 1994 pension costs of 0.0379*1,490,785 = 56,501 were expected. The accounting intervention is then estimated as 56,501 - 41,326 = 15,175. Thus, it is assumed that management increased accounting income before taxes in the year 1994 by 15,277. Further, the effect on the income range of the maximum and minimum value of the percentage is calculated as:
0.0715*1,490,785 = 65,265 and
0.0246*1,490,785 = 4,653.

Thus, regarding the accounting extremes it is assumed that management could have reported 65,265 less accounting income before taxes and 4,653 more accounting income before taxes in the year 1994.

Again the benchmark method is used to partition the discretionary and the non-discretionary component of the pension cost amount. Because benchmarking includes accounting methods as well as estimates, pension costs are categorized as a level 2 item. Since pension costs relate to staff costs it is likely that the benchmark method will have the largest impact on labor-intensive firms. An example of the treatment of the depreciation of tangible fixed assets in this research is provided for Stork in Appendix B7.
10. Adjustment company pension fund

Adjustments in the relation with the company pension fund are regarded as discretionary and taken into account because they affect unadjusted income as well as the income range. Although in the Netherlands, contrary to for example the US, the company pension fund is seen as a separate (legal) entity with its own management and responsibilities, the contractual arrangements between the firm and the pension fund leave often room for managerial influence over accounting income, for example by pension refunds and pension holidays granted by the pension fund to the firm. Contrary to other countries where the pension fund is seen as an integral part of the firm, it is unlikely that firms are able to claim the total company pension fund surplus. It is for this reason that the total surplus is not taken into account for the income range in this approach. According to a Merrill Lynch (1998b) report, company pension funds in the Netherlands have more money than they need. They examined 26 company pension funds and found that these funds had NLG 26bn more than the minimum actuarial needs as at 31 December 1996. Further, they state that several firms already “tap” their pension fund surplus and that the surplus (or deficit) should be viewed as an integral part of the value of the firm. The disclosed amount of the pension fund adjustment is corrected on the pension costs accounting intervention as calculated under item 9. Because the effect of disclosed adjustments are taken directly from the financial statements they are regarded as a level 1 item. Since this discretionary item relates to the company pension fund it is likely that taking account of this item will have the largest impact on firms with well funded pension funds. The probability of a firm having well funded pension funds is among other things associated with the age of a firm and its pension fund and the size of the firm and its workforce.

11. Reorganization provision

Reorganization provisions are regarded as discretionary because the timing as well as the amount is based on managerial judgement. The effect on unadjusted income and the

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133 See also paragraph 5.3.4 for the flexibility related to pension provisions.
134 Overfunded pension plans as a dependent variable has for example been examined by Thomas (1989) and Pierce-Brown and Steele (1999).
135 See also paragraph 5.3.4 for the flexibility related to reorganization provisions.
136 Reorganization provisions as a dependent variable have for the Netherlands for example been examined by Overboom and Vergoossen (1997) and Ter Hoeven (1997).
income range is based on the assumption that changes in reorganization provisions are totally discretionary. Thus, it is assumed that the non-discretionary part of the reorganization provision equals last period’s total reorganization provision. However, when part of change is due to the consolidation of new acquisitions, this disclosed part of the change is not taken into account because it is not charged against this year’s income statement. Because the effect (i.e. the change) of reorganization provisions can be taken directly from the financial statements it is regarded as a level 1 item. Ter Hoeven (1997) found that 40% of the financial statements of listed firms in the Netherlands in the period 1979-1993 contained reorganization provisions. Given this frequency and the relative large amounts of the reorganization provisions it is expected that this discretionary item will have a significant impact on the dependent variable of this study.

12. Other discretionary provisions\textsuperscript{137}

Other discretionary provisions\textsuperscript{138}, such as guarantee provisions, environmental pollution and contract risks, are regarded as discretionary because the timing as well as the amount is often based on management judgement\textsuperscript{139}. The effect on unadjusted income and the income range is based on the assumption that the changes in other provisions are totally discretionary. Thus, it is assumed that the non-discretionary part of the other provisions equals last period’s other provisions. However, when part of change is due to the consolidation of new acquisitions, this disclosed part of the change is not taken into account because it is not charged against this year’s income statement. The adjustments are calculated on a provision specific basis. Because the effect (i.e. the change) of other discretionary provisions can be taken directly from the financial statements they are regarded as a level 1 item.

13. Direct equity movements\textsuperscript{140}

Movements in shareholders equity should, according to the all inclusive concept of income, be accounted for in the income statement unless they reflect the movements in equity relating to the financial relationship with the firm’s shareholders. As stated in paragraph 5.3.5 there

\textsuperscript{137} See also paragraph 5.3.4 for the flexibility related to other provisions.

\textsuperscript{138} Other discretionary provisions are all provisions except provision for pensions, taxation and reorganization.

\textsuperscript{139} Other provisions as a dependent variable have in the Netherlands for been examined by Overboom and Vergoossen (1997).

\textsuperscript{140} See also paragraph 5.3.5 for the flexibility related to shareholders’ equity.
are also a number of other direct equity movements possible that do not relate to the financial relationship with the firm’s shareholders. The CAR guidelines mention in this respect: revaluation adjustments, goodwill, exchange differences, the effect of fundamental errors and material non-recurring or exceptional items (adjustments to the provision for deferred taxes due to changes in the tax rate, effects of financial reorganizations, losses due to the destruction of capital and adverse effects of nationalizations). Except for the first item, revaluation adjustments, there is an option to account for the movements in the income statements (as extraordinary items) or as a direct equity movement. Since the movement in relation to goodwill is discussed under item 2 and the effect of accounting policy changes is discussed under the item 14, the other discretionary items are taken into accounting here. It is assumed that direct equity movements affect the income range as well as unadjusted income for the amount disclosed. Because the effect of direct equity movements is disclosed in the financial statements, they are regarded as a level 1 item.

14. Accounting policy changes\(^{141}\)

Accounting policy changes are regarded as discretionary because the timing as well as the change itself is often based on managerial judgement. Accounting policy changes are only taken into account if they are not part of one of the other discretionary accounting items. It is assumed that the monetary effect of accounting policy changes affects the income range as well as unadjusted income for the amount disclosed\(^{142}\). Because the disclosed (material) current year effect can be taken directly from the financial statements they are regarded as a level 1 item. Hoogendoorn (1990) found that 29% of the financial statements of listed firms in the Netherlands in the period 1977-1986 contained accounting policy changes. Given this frequency it is expected that this discretionary item will have a significant impact on the dependent variable of this study.

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\(^{141}\) See also paragraph 5.3.8 for the flexibility related to changes in accounting policies.

\(^{142}\) Changes in accounting policies as a dependent variable have been examined by a number of studies (see paragraph 6.2).
15. Extraordinary items

Extraordinary gains and losses, other than resulting from the items mentioned above, are regarded as discretionary because the timing of these items is often based on managerial judgement. Extraordinary items are only taken into account if they are not part of one of the other discretionary accounting items. Although the classification of accounting items as extraordinary is also discretionary this aspect is not taken into account in this study because the focus of this study is on accounting income after extraordinary items. Examples of extraordinary items taken into account are gains and losses on the disposal of assets and affiliates (i.e. real transactions). Because the extraordinary items are disclosed in the financial statements they are regarded as a level 1 item.

7.4. The income strategy, earnings management and income range proxies

The new proxy variables to measure financial accounting discretion and to detect managerial influence over accounting income are based on the idea that, given the firm’s financial accounting discretion, the firm’s management can position the firm’s accounting income before taxes on the feasible income range. The approach involves the following steps:
1. Analyzing individual financial statements in depth in order to obtain information on the discretionary accounting items listed in Table 7.1.
2. Calculating the impact of the individual accounting items when the (discretionary) amounts cannot be distilled directly from the financial statements. The calculations are made according to the methods described in the previous paragraph. Appendices B1-B7 provide examples of these calculations for the relevant items.
3. Calculating the income range per firm/year according to the method described below.
4. Calculating unadjusted income before taxes per firm/year according to the method described below. Like the previous step this is done on a level 1 and on a level 2 basis. An example of step 3 and 4 is provided for AkzoNobel 1990 in Appendix B8.

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143 See also paragraph 5.3.8 for the flexibility related to extraordinary income and expenses.
144 Extraordinary income and expenses as a dependent variable have been examined by a number of studies (see paragraph 6.2).
5. Calculating the proxy variables for the three relevant dimensions when examining managerial influence over accounting income as mentioned in the introduction of this chapter. The calculations result in the three new proxy variables: the income range proxy (IR), the income strategy proxy (IS) and the earnings management proxy (EM).

In the approach discussed in this chapter the feasible income range is determined by the 15 items listed in Table 7.1. One of the first steps in detecting managerial influence over accounting income is estimating the feasible income range based on the items listed in Table 7.1. This first step results in a minimum and a maximum position of the income range (i.e. the boundaries of accounting income). The minimal accounting income before taxes (Ymin) and the maximal accounting income before taxes (Ymax) are modeled as:

\[
Y_{\text{min}} = Y_r - 1\text{min}-2\text{min}-3\text{min}-4\text{min}-5\text{amin}-5\text{bmin}-5\text{dmin}-6\text{min}-7\text{min}-8\text{min}-9\text{min}-10\text{min}-11\text{min}-12\text{min}-13\text{min}-14\text{min}-15\text{min}
\]

\[\text{eq. 7.1}\]

\[
Y_{\text{max}} = Y_r + 1\text{max}+2\text{max}+3\text{max}+4\text{max}+5\text{amax}+5\text{bmax}+5\text{cmax}+5\text{dmax}+6\text{max}+7\text{max}+8\text{max}+9\text{max}+10\text{max}+11\text{max}+12\text{max}+13\text{max}+14\text{max}+15\text{max}
\]

\[\text{eq. 7.2}\]

Where

\[
Y_{\text{min}} = \text{minimum accounting income before taxes that could have been reported}
\]

\[
Y_{\text{max}} = \text{maximum accounting income before taxes that could have been reported}
\]

\[
Y_r = \text{accounting income before taxes as actually reported}
\]

\[
n_{\text{min}} = \text{the possible correction based on item } n \text{ that could have been reported and that would have resulted in the minimization of item } n.
\]

\[
n_{\text{max}} = \text{the possible correction based on item } n \text{ that could have been reported and that would have resulted in the maximization of item } n.
\]

The numbers in eq. 7.1 and 7.2 relate to the discretionary accounting items mentioned in Table 7.1. For item number 5, depreciation of tangible fixed assets, the letters relate to the four categories of tangible fixed assets. The income range of a firm is defined as Ymax-Ymin.

The first dimension when examining managerial influence over accounting income relates to the possibilities to influence accounting income. The possibilities are reflected by the income range. Because the income range is expressed as an absolute amount it is necessary to scale this absolute amount in order to reflect the relative possibilities of management to influence accounting income. Since the income range relates to the income statement the most obvious
method is to scale the income range to a relatively stable non-discretionary item in the income statement. For this reason the income range is scaled to turnover\(^{145}\). The \textit{income range} proxy is modeled as:

\[
IR = \frac{Y_{\text{max}} - Y_{\text{min}}}{\text{Turnover}} \quad \text{eq. 7.3}
\]

Where
- \( IR \) = the income range proxy; the relative possibility to influence accounting income before taxes
- \( Y_{\text{min}} \) = minimum accounting income before taxes that could have been reported
- \( Y_{\text{max}} \) = maximum accounting income before taxes that could have been reported
- \( \text{Turnover} \) = total turnover of the firm

The second dimension when examining managerial influence over accounting income relates to the position of the firm's accounting income before taxes as actually reported on the feasible income range. The income strategy proxy reflects this position. The income strategy proxy can be interpreted as a proxy that captures the degree of liberalism or conservatism of a firm's income strategy. The \textit{income strategy} proxy is modeled as:

\[
IS_r = \frac{Y_r - Y_{\text{min}}}{Y_{\text{max}} - Y_{\text{min}}} \quad \text{eq. 7.4}
\]

Where
- \( IS_r \) = the income strategy proxy; the position of the firm's accounting income before taxes as actually reported on the firm's income range
- \( Y_r \) = accounting income before taxes as actually reported
- \( Y_{\text{min}} \) = minimum accounting income before taxes that could have been reported
- \( Y_{\text{max}} \) = maximum accounting income before taxes that could have been reported

The income strategy proxy is always between 0 and 1. When \( IS_r \) is 0 the firm is as conservative as possible since it reports \( Y_{\text{min}} \). When \( IS_r \) is 1 the firm is as liberal as possible since it reports \( Y_{\text{max}} \).

\(^{145}\) Turnover is a relatively stable non-discretionary item. Relatively because management may exert influence over revenue recognition, through real transactions primarily undertaken to influence accounting income as well as through pure accounting decisions.
The next step is calculating unadjusted income before taxes (Yu). Unadjusted income is the outcome of the financial accounting process in absence of accounting interventions caused by the discretionary accounting items listed in Table 7.1. Accounting income before taxes as actually reported (Yr) is the outcome of the financial accounting process, given the accounting choices and estimates of the firm’s management. The third dimension when examining managerial influence over accounting income is the difference between accounting income before taxes as actually reported (Yr) and unadjusted income before taxes (Yu). Unadjusted income before taxes equals Yr +/- the sum of discretionary accounting accruals and real transactions primarily undertaken to influence accounting income. Thus unadjusted income before taxes (Yu) is modeled as:

\[
Yu = Yr - (A5a + A5b + A5c + A5d + A6 + A7 + A8 + A9 + A10 + A11 + A12 + A13 + A14 + A15)
\]

Where

- \( Yu \) = unadjusted accounting income before taxes
- \( Yr \) = accounting income before taxes as actually reported
- \( A_n \) = the discretionary part of item \( n \)

The position of unadjusted accounting income before taxation on the income range is modeled as:

\[
ISu = \frac{Yu - Y_{min}}{Y_{max} - Y_{min}}
\]

Where

- \( ISu \) = the position of unadjusted income before taxes on the firm’s income range before taxes
- \( Yu \) = unadjusted accounting income before taxes
- \( Y_{min} \) = minimum accounting income before taxes that could have been reported
- \( Y_{max} \) = maximum accounting income before taxes that could have been reported

The position of unadjusted income before taxes on the income range is necessary in order to model the earnings management proxy. The earnings management proxy captures the

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146 As stated in the previous section the items 1–4 only affect the income range. The items do not affect unadjusted income.
purposeful accounting interventions aimed at the implementation of the firm’s income strategy. The earnings management proxy is modeled as:

$$EM = ISr - ISu$$

Where

- $EM$ = the earnings management proxy
- $ISr$ = the position of the firm’s accounting income before taxes on the firm’s income range before taxes
- $ISu$ = the position of unadjusted accounting income before taxes on the firm’s income range before taxes

$EM$ is always between $-1$ and $1$ and specifies the effect of the accounting interventions. When $EM$ is $-1$ management has taken actions to report $Y_{min}$ where unadjusted accounting income before taxes was $Y_{max}$. When $EM$ is $1$ management has taken actions to report $Y_{max}$ where unadjusted accounting income before taxes was $Y_{min}$.

A potential problem with the specification of the earnings management proxy is that it assumes a linear cost function for accounting interventions. This may be a problem when the same relative adjustment on the income range causes different efforts. It may for example be that an adjustment close to the accounting boundaries ($Y_{min}$ and $Y_{max}$) will cause more effort than an adjustment in the middle of the income range. Factors causing a non-linear cost function of accounting interventions may be the fact that more visible accounting interventions are needed or because the auditor opposes to interventions that bring accounting income to the upper boundary.\(^{147}\). Since it is assumed that the items listed in Table 7.1 are totally discretionery it is assumed that the position of unadjusted income on the income range is not relevant and that the cost function of accounting interventions is linear.

Figure 7.1 provides an example in order to visualize the income range and calculate the different proxies for managerial influence over accounting income. The example is based on AkzoNobel NV (level 1) for the financial year 1990. Figure 7.2 provides the full graph for AkzoNobel NV (level 1) over the research period.

\(^{147}\) Although the individual accounting interventions are all within GAAP a combination of income increasing accounting interventions up to the point where accounting income equals the maximum position of accounting income, may be found to aggressive by the auditors due to for example the possible litigation risk involved when going-concern problems arise in the future.
AkzoNobel NV in Figure 7.1 could, within GAAP, report accounting income before taxes ranging from 247 to 1.308 in the financial year 1990 based on the items listed in Table 7.1. The firm’s management made accounting choices and interventions in the financial accounting process in order to report accounting income before taxes of 927. In absence of the accounting interventions related to the discretionary items listed in Table 7.1 AkzoNobel NV would have reported accounting income before taxes of 1.016 in the financial year 1990. Further, when turnover totals 17.245 in the financial year 1990 the proxies can be calculated as follows:

1. The income range proxy (IR): the difference between the maximum and the minimum accounting income before taxes is 1.061 in the financial year 1990. The income range proxy measures the possibilities for AkzoNobel NV’s management to exert influence over accounting income. By scaling these possibilities to total sales the relative possibilities can be examined over time and between firms. The income range proxy for AkzoNobel NV can be calculates as: 
\[
\frac{1.308-247}{17.245} = 0.062.
\]

2. The income strategy proxy (IS): this proxy captures the relative position of AkzoNobel NV’s accounting income before taxes on AkzoNobel NV’s income range. The income strategy proxy for AkzoNobel NV can be calculated as: 
\[
\frac{927-247}{1.308-247} = 0.641.
\]
From this it can be concluded that the income strategy of AkzoNobel NV is relatively liberal since accounting income before taxes is relatively close to the upper boundary of the income range.

3. The earnings management proxy (EM): this proxy captures the accounting interventions of AkzoNobel NV in order to implement the income strategy. In order to proxy for the accounting interventions, first the position of AkzoNobel NV’s unadjusted accounting income before taxes on the income range is calculated as 
\[
\frac{1.016-247}{1.308-247} = 
\]
The earnings management proxy is calculated as the position of accounting income before taxes on the income range (i.e. the income strategy proxy) minus the position of unadjusted accounting income before taxes on the income range. For AkzoNobel NV the earnings management proxy is calculated as 0.641 - 0.830 = -0.189. From this it can be concluded that AkzoNobel NV made purposeful accounting interventions to lower accounting income before taxes.

Figure 7.2. Income range for AkzoNobel for the financial years 1988 - 1997.

The income range and unadjusted accounting income before taxes can be estimated by taking into account the level 1 items and estimated by taking into account the level 1 items as well as the level 2 items. For every firm/year in the research sample of this study the following proxies are established that will be used as independent variables in this research:

- Income range proxy level 1 (IR1)
- Income range proxy level 2 (IR2)
- Income strategy proxy level 1 (IS1)
• Income strategy proxy level 2 (IS2)
• Earnings management proxy level 1 (EM1)
• Earnings management proxy level 2 (EM2)

As stated before the proxy variables on level 2 include the discretionary accounting items on level 1 as well as on level 2. The income range on level 2 will therefore always exceed the income range on level 1.

Figure 7.2 provides the full graph for AkzoNobel NV (level 1) over the research period. Max 1, the upper boundary in the graph represents the maximum accounting income before taxes that could have been reported by AkzoNobel NV, taking into account the level 1 items only. Min 1, the under boundary in the graph represents the minimum accounting income before taxes that could have been reported by AkzoNobel NV, taking into account the level 1 items only. The dashed line in the middle of the graph represents unadjusted income for AkzoNobel NV, taking into account the level 1 items only. The second line in the middle represents accounting income before taxes as reported by AkzoNobel NV in the financial years 1988 – 1997.

For the 65 individual listed firms in this study\textsuperscript{148}, Appendix C visualizes the position of accounting income as actually reported and unadjusted income before taxes on the income range for level 1 as well as for level 2. Although these graphical presentations for individual listed firms over the period 1988-1997 may stimulate a debate over the accounting behavior of certain firms, scientific conclusions regarding managerial influence over accounting income can hardly be based on the perceived behavior of one firm.

7.5 Summary and implications for this study

The second main research question of this study addresses the question how financial accounting discretion can be observed and the use for income strategies and earnings

\textsuperscript{148} The research sample is described in the next chapter.
management be detected and analyzed. One aspect of this question is how previous studies on financial accounting discretion and managerial influence over accounting income specified the dependent variable. Chapter 6 provided an overview of proxy variables used in prior research and it was concluded that the problems associated with prior proxy variables leave room for the development of alternative proxy variables.

This chapter is aimed at the development of alternative proxy variables to measure financial accounting discretion and to detect managerial influence over accounting income. Together the chapters 6 and 7 provide an answer to the second research question of this study, namely: How can financial accounting flexibility be observed and its use for income strategies and earnings management be detected and analyzed?

As stated in the introduction of this chapter, there are three relevant dimensions when studying managerial influence over accounting income. The first dimension relates to the relative magnitude of the firm’s income range and to the question what the firm’s possibilities are to influence accounting income (i.e. the firm’s financial accounting discretion). In this study the first dimension is measured by the income range proxy (IR). The income range proxy reflects the relative possibilities to influence accounting income before taxes as a percentage of turnover. The second dimension is the relative position of the firm’s actual accounting income on the feasible income range and is measured in this study by the income strategy proxy (IS). The income strategy proxy can be interpreted as a proxy that captures the degree of liberalism or conservatism of a firm’s income strategy. Finally, the third dimension is the difference between accounting income and unadjusted income and is the object in contemporary earnings management research. In this study this dimension is measured by the earnings management proxy (EM). The earnings management proxy captures the purposeful accounting interventions aimed at the implementation of the firm’s income strategy.

The next chapter examines the relationship between the incentives for and constraints on managerial influence over accounting income and the income range, income strategy and earnings management proxies in order to provide alternative explanations for managerial influence over accounting income in the Netherlands.