

Improvements of the cash-flow statement control function in financial reporting*

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Abstract

On the basis of deductive considerations applying professional judgement, the article focuses on the additional value of accounting information that can be given to the users of financial statements by a properly prepared statement of cash flows. It is based on the finding that the professional literature is inconsistent in distinguishing liquidity and profitability information, and consequently also in distinguishing between the ratios calculated on that basis. It therefore stimulates an improvement in the quality of accounting information with a direct statement of cash flows, based on tracing instead of calculating the actual cash flow. On the basis of financial statements, including a direct statement of cash flows, the ratio analysis of financial statements should be approached from both aspects of profitability and cash return. The cash flow ratios would serve as a control mechanism over the assumptions used when preparing the balance sheet and income statement within the chosen financial reporting framework.

Key words: accounting information, financial reporting framework, direct statement of cash flows, cash flow ratios, control mechanism

JEL classification: M4, M41, M48

1. Introduction

The *primary goal* of this article is to present arguments for the better evaluation of the assumptions used within a chosen financial reporting framework and to encourage stakeholders to search for some kind of ‘warning system’ to help in detecting financial difficulties in a firm’s operations. A ‘warning system’ seems necessary

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as business frauds and bankruptcies not anticipated by financial statements and by auditors' reports make us suspect that the system of financial reporting is not good enough to protect the interests of investors and the public interest as a whole. The argument underlying this statement is:

The Generally Accepted Accounting Principles (Williams, 2002; FASB Pronouncements, 2007; hereinafter: 'GAAP') and the International Financial Reporting Standards (IFRS, 2007; hereinafter: 'IFRS') require a presentation of cash flows by groups of activities (operation, investment, financing) as follows:

- The cash flows from operating activities can be determined by a direct or indirect method. Even the direct method is in itself indirect as it gathers information about cash flows from an already prepared balance sheet and income statement.
- The cash flows from investing activities are determined on the basis of changes in long-term assets and short-term investments not classified as cash equivalents on two successive balance sheet dates and (under the IFRS) on the basis of the income statement items with an investment character. Although the accounting principles or standards suggest the presentation of investment cash flows in gross amounts, the possibility of such a presentation depends (especially for the external user) on the quality of the disclosures made in the balance sheet and income statement.
- Similarly to the cash flows from investing activities the cash flows from financing activities are determined on the basis of changes in financial liabilities on two successive balance sheet dates and (under the IFRS) income statement items with a financing character. The quality of the presentation in gross amounts is questionable for the same reason as in the case of cash flows from investing activities.

The main problem is that such a presentation is not a result of cash flows recognition during the period but is tied to an already prepared balance sheet and income statement. Further, the accounting principles or standards treat the different groups of cash flows in different ways depending upon whether they are derived from the balance sheet or income statement. Last but not least, the timeliness of the cash flow statement depends upon the timeliness of the balance sheet and the income statement, making the cash flow information less relevant than it is supposed to be for discovering the liquidity problems of a firm.

The accounting information would be significantly improved with a direct statement of cash flows based on authentic data about cash flows in the period and not derived from the balance sheet and income statement. On the basis of a direct statement of cash flows a system of cash flow ratios could be created serving as a control mechanism over the comparable ratios derived from the income statement and also over the assumptions used within the chosen financial reporting framework.

To enable the creation of the control mechanism mentioned above the direct cash flow statement and the main classification of cash flows should be prescribed through a modification of accounting principles or standards in a uniform way. As far as the direct statement of cash flows is not required by the accounting principles or standards it can serve, together with the ratios calculated on its basis, as a good mechanism of the internal control system. In this way the article could be interesting not only for managers but also for investors, creditors, accounting legislators and the auditing profession.

The prevailing method in the article is deductive consideration applying professional judgement.

2. The influence of the identified financial reporting framework

In the past, different authors have called attention to the fact that financial statements prepared on an accrual basis are not the best indicator of liquidity and even solvency (understood as long-term liquidity) of a firm. Let us consider Ohlson's bankruptcy prediction model (1980: 129) according to which 13 out of 105 bankrupt firms included in the sample were misclassified. The financial reports of the misclassified bankrupt firms seemed to lack any 'warning signals' of an impending bankruptcy. All but two of the 13 firms even reported a profit. Recent events have also shown that financial reports are not necessarily (albeit 'true and fair' if we believe the auditor's report) the best indicator of what is actually going on in a firm.

The collapse of the Enron Corporation caused a revolution in the auditing and accounting fields. It has fuelled suspicions that the system of financial reporting is not good enough to protect the interests of investors and the public interest as a whole. Many organisations all over the world are now trying to improve the financial reporting systems. The question is: which set of financial statements would be appropriate to give the users all the information they need besides the market price? Let us have a quick look at the information derived from the existing solutions in the GAAP and the IFRS.

2.1. The information in financial statements

Balance sheet: With the gradual changes to the measurement of assets and liabilities from historical value to fair value the relevance of balance sheet information is rising and its reliability is falling. The reliability problem can be reduced by the disclosure of historical values, but in this way the predictive value, feedback value and timeliness of accounting information are still suffering. An important basis for the fair presentation of balance sheet items, especially in an environment with an inefficient market, is the recoverable amount as a present value of estimated future cash flows ensured by the

particular asset or financial instrument. If we wanted to ensure the verifiability and representational faithfulness as parts of the reliability of the balance sheet information the projected cash flow statements should be included in the balance sheet disclosures for the assets and financial instruments (or groups of them if measurement of the cash flow for a separated asset is impossible) with an estimated carrying amount on the basis of expected cash flows. In this way, the user of accounting information could estimate the neutrality of information by him- or herself.

The comparability of balance sheet information is limited by the different financial reporting frameworks. Additional problems are caused by introducing new accounting principles (standards) and changes in accounting policies and estimates.

Income statement: The presentation of revenues and expenses on an accrual basis implies certain assumptions, depending upon the defined financial reporting framework and accounting policies and/or estimates. As a consequence, the reliability and relevance of the accounting information in the income statement are worse than in the balance sheet irrespective of the fact that some income statement items depend upon the value of the balance sheet items. The comparability of the income statement information is also worse (compared with the balance sheet information) for two main reasons.

1. The comparability of income statement information originating from different financial reporting frameworks is limited by the different ways to recognise value changes in assets and liabilities in the income statement.
2. The comparability of income statement information originating from the same financial reporting framework in different periods is limited because revenues and expenses are influenced by new accounting principles and changes in accounting policies and/or estimates. The effect of such changes on the income statement items is usually larger than the effect on the balance sheet items because the changes also affect a different (changed) recognition of revenues and expenses. Additional limits in comparability are presented when the whole effect of changes is recognised in the period of the changes.

Statement of cash flows: The quality attributes of accounting information do not always go hand in hand with each other. The attributes not assured by one financial statement should be included in the other, which means that shortcomings of the balance sheet and income statement could be rectified by the statement of cash flows.

The statement of cash flows in the GAAP's Statement of Financial Accounting Standard (hereinafter: 'SFAS') 95 and International Accounting Standard (hereinafter: 'IAS'³) 7 is very strongly tied to the balance sheet and income statement

³ In 2001 the IASs issued by the International Accounting Standards Committee (IASC) became part

items and as such still affected by accounting policies and/or estimates. Further, its timeliness depends on the timeliness of the balance sheet and the income statement, which makes the cash flows information less relevant than it is supposed to be for discovering the liquidity problems of a firm. The relevance (including timeliness) of the cash flow information could be significantly improved by preparing a direct cash flow statement.

Let us now examine some arguments.

The statement of cash flows prepared under the indirect method (regarding cash flows from operating activities) according to the SFAS 95 or IAS 7 is, in fact, a statement of changes in the financial position expressed as a cash position. In addition, the statement of changes in the financial position is only a systematic presentation of changes in the balance sheets of two successive accounting periods. Under the direct method (regarding cash flows from operating activities) the final cash position is a result of changes derived from the balance sheet and the income statement of the accounting period. As such, the statement of cash flows is not likely to give much more information than other financial statements. In fact, it shows the same information from a different point of view.

Under IAS 7 interest paid and interest and dividends received are treated as either cash flows from operating activities because they affect the net income or loss, or as cash flows from financing and investing activities since they reflect the costs of financial sources and returns on investments. The dividends paid are treated as either cash flows from investing activities because they reflect the costs of financial sources, or cash flows from operating activities as they help users determine the operating ability of the firm for a dividend payment.

Under SFAS 95 interest paid and interest and dividends received are treated as cash flows from operating activities, and the dividends received as cash flows from financing activities. The logic is strongly tied to the logic of the income statement.

Under IAS 7 cash flows arising from taxes on income are normally classified as cash flows from operating activities. Exceptions are made when they can be specifically identified with financing and investing activities. Under the GAAP income taxes are classified as cash flows from operating activities.

Usually all disclosures needed to prepare the statement of cash flows precisely are not at the user's or even the firm's disposal and therefore professional assumptions and approximations are applied, for example:

of the IFRSs issued by the International Accounting Standards Board (IASB) which succeeded the IASC.

- The presumption that accounts payable are only connected with the purchases intended for operating activities. In many cases they also include liabilities from long-term investments.
- Some firms include the depreciation costs in the costs of goods sold with a special disclosure of the depreciation amount. In this case, the cash disbursements (connected with the costs of goods sold) from operating activities have to be reduced by the depreciation amount. Besides, cash disbursements for different investments out of depreciation funds are to be identified.

With the proper classification of cash flow items among operating, investing and financing activities the direct statement of cash flows would solve all the problems described above.

2.2. Critical view of the statement of cash flows

There are many reasons to compare the profitability and solvency of companies in different countries. The most important are the capital market efficiency⁴, mergers, acquisitions, monopoly regulation, competition and tax policy seen in different countries.

But it seems that some profitability and solvency phenomena of the firms cannot be explained well enough with the presentation and substance of cash flows in line with the existing accounting solutions.

The definition of cash flows in the IFRS is similar to that in the GAAP. In both cases, the firm is supposed to disclose the total amount and separated items of cash and cash equivalents. The definition of cash flows is reasonable because in a world of very rapidly growing amounts of new financial instruments it is impossible to itemise all kinds of cash equivalents.

The cash flows presentation: As a result of existing solutions in accounting principles the cash flows from investing and financing activities and in the case of using the indirect method also the cash flows from operating activities are presented in more or less adjusted amounts.

The definition of substance: As already mentioned, the IFRS and the GAAP allow different solutions. The establishment of the net cash flow from operating activities

⁴ A lot of research has been done in order to find out to what extent the behaviour of participants in the capital market is affected by published financial statements and the differences in national accounting standards. The results have shown that the issue of the financial statements usually brings new information about the market participants, although it is very possible that the issued information already existed in other sources. Anyway, the most important role of financial reporting is to minimise information asymmetry in the capital market.

under the GAAP is closer to the definition of income than under IAS 7. The IAS on one hand follows the GAAP but on the other it tries to stress the real substance of cash flows more than the GAAP with one exception: it is unclear what the criteria are for the possible inclusion of dividends paid under cash flows from operating activities.

Further, it is commonly known (Davis, Dukes, Dyckman, 1998: 187; Küting, Weber, 1997: 186) that most American firms prefer to prepare cash flows from operating activities via the indirect method, even though use of the direct method is encouraged by SFAS 95 as it reflects the gross amounts of the principle components of cash receipts and cash payments from operating activities, while the indirect method does not.

One can find more justifications of such an approach:

- Firms prefer to use the indirect method because they are used to the formerly prescribed statement of changes in the financial position.
- Firms tend to issue as little information as possible, especially when cash flows are in question.
- The procedures required by the direct method of preparing cash flows from operating activities are more complicated.
- Firms are (perhaps) unaware of the additional information coming out from cash flows from operating activities prepared under the direct method.
- Firms believe there is not much additional information given by the cash flow statement under SFAS 95.

As a consequence of the facts mentioned in many researches the net cash flow has been simplified as net income increased by depreciation charges and sometimes by deferred taxes. In these cases, cash flow ratios have been classified in the same group as profitability ratios (Caruthers et al., 1973; Johnson, 1979; Chen and Shimerda, 1981). However, Gombola and Ketz (1983) established on the basis of the sample (119 industrial firms with accounting data in the period 1962–1980) that cash flow ratios have not been classified in the same group as profitability ratios, but have constituted a separate group. Some other researches have led to similar conclusions (for example, Doogar et al., 1990).

As such, the statement of cash flows evidently influenced by the previously valid statement of changes in the financial position does not ensure the adequate quality of cash flow information. Through the basis for preparation (the balance sheet and the income statement) it is also influenced by accounting instruments affecting previously prepared financial statements.

The conclusions are:

1. The statement of cash flows, derived from the income statement and prepared under the indirect method as far as the cash flows from operating activities are concerned, does not give much additional insight into the cash flows of a firm. The direct method of determining cash flows from operating activities improves the quality of accounting information but is unfortunately concentrated on the establishment and not on the tracing of cash flows.
2. Special problems are caused by changes of balance sheet and income statement items with a mixed substance, partly representing cash flows and partly not.
3. An additional problem is created by simplifications connected with assumptions that certain expenses (revenues) are automatically cash outflows (inflows); for example, a balance sheet item can include (allowed or not) hidden reserves.
4. Financial analysis is interested in the future financial position of a firm. The cash flows derived from already prepared financial statements usually involves older data, more occupied with the past than with the present and future.
5. Anomalies can be caused by changes in the group of companies included in a consolidated financial statement. As the inclusion of new subsidiaries affects the items of the balance sheet and not necessarily the income statement, the establishment of cash flows of the new group is created from an incomparable balance sheet and income statement.
6. The external user cannot eliminate all effects of revaluation because they do not have adequate data.
7. For the previous reasons the accounting principles or standards have not yet exploited all possible opportunities to improve accounting information.

One of the important tools which should be able to exercise control over accounting estimates, policies and mechanisms of creative accounting could be a properly prepared statement of cash flows.

3. The advantage of a direct statement of cash flows

Accounting information would be significantly improved with a direct statement of cash flows. Considering such a statement it has to be taken into account that with computerised bookkeeping the costs of gathering information are much lower than 20 years ago. On the other hand, the stronger competitive surroundings have made wrong decisions much more expensive than they used to be in the past.

Accounting is supposed to provide a lot of information for decision-making purposes. From this point of view, interim data about cash flows is especially important. Income of the year as presented in the income statement is no longer an adequate basis in the field of daily financial decision-making. In connection with a flexible financial policy many firms have already created new informational basis and analytical instruments. These bases and instruments should also serve the external user in the form of a direct statement of cash flows.

Recent events have shown that the cash flows of the firm should not be the privilege of internal financial information. A detailed examination of accounting principles and standards leads to the conclusion that for a quality financial analysis the information included in a direct statement of cash flows is needed:

- as long as firms do not perform current inventory counting and cannot prepare the balance sheet and the income statement (required for establishing the cash flow) on a permanent basis without a time lag;
- as long as the possible choices between accounting policies and/or practices on the basis of accounting principles or standards enable firms to eliminate all non-cash effects included in the balance sheet and the income statement;
- as long as the identified financial reporting frameworks significantly affect the comparability of income statements; and
- as long as for the previous reasons the direct statement of cash flows is the only financial statement able to assure timely, reliable (including neutral) and comparable financial information with an adequate predictive value and comparable substance regarding the projected cash flows used to make investment decisions.

An important advantage of the direct statement of cash flows for current analysis would be the tracing (instead of the establishment) of cash flows from firms' activities. As firms should in one way or another control their cash flows for internal purposes the direct statement of cash flows should not cause much additional effort and cost and would be easily initiated. But the management should assure the reasonable classification of cash flows as cash flows from operating, investing and financing activities.

At the end of each accounting period daily, monthly or quarterly statements of cash flows could easily be summarised in the cash flow statement of the accounting period connecting the cash position of the firm at the beginning of the period with the cash position of the firm at the end of the period and presenting gross amounts of cash flows from operating, investing and financing activities.

To enable these decisions the main classification of cash flows should be prescribed by accounting principles or standards in a uniform way. In accordance with the substance:

- interest paid as the price of financial sources should be classified as a cash outflow from financing activities;
- interest and dividends received as a return on investments not necessary to carry out operating activities should be classified as cash inflows from investing activities;
- dividends paid as the price of equity financing should be classified as cash outflows from financing activities;
- taxes arising from operating activities should be classified as cash outflows from operating activities, taxes arising from investing activities should be classified as cash outflows from investing activities and taxes arising from financing activities should be classified as cash outflows from financing activities;
- the classification of cash flows arising from leases should depend on the substance of the transaction rather than the form of the contract;
- the extraordinary cash flows from operating activities which appear occasionally and are not connected with average operating activities should be disclosed.

Such a statement of cash flows prepared in the direct way would only present cash flows and not include its reconciliation to the net income with non-cash items (like a debt to equity swap or asset financing with a long-term commercial credit) already included in other financial statements. Besides it would not be sensitive to differences in financial reporting frameworks. The only accounting item still connected with the direct statement of cash flows would be the conversion of cash in a foreign currency into cash in the reporting currency.

The main advantages of the suggested direct statement of cash flows are:

- As it originates in the cash position of the firm at the beginning of the period and runs into the cash position of the firm at the end of the period it links two balance sheets together without a lasting and unnecessary (often even inadequate) reconciliation to the net income.
- Cash flows in the fields of operating, investing and financing activities are presented in proper gross amounts and in the same way.
- The presentation of basic items of cash flows from operating activities (sale, purchase of materials and raw materials, wages and salaries etc.) enables the user to compare items of the statement of cash flows with the income statement's items.

- The statement presents the net cash effect of each group of activities (operating, investing, financing).
- The effect of extraordinary events on the cash flows is evident without an additional explanation.
- The statement does not begof cash flows with non-cash items.
- It is an adequate basis for a comparison with the projected cash flows used to make investment decisions.
- Over the cash items (inflows and outflows) from operating, investing and financing activities without adequate items in the income statement the direct statement of cash flows enables the user to take decisions about off-balance-sheet financing that is becoming more and more frequent and complicated.

The direct statement of cash flows is no longer a bridge between the income statement and the balance sheet but a special financial statement able to help the user estimate:

- the ability of the firm for asset financing,
- the dependence upon external sources of financing,
- the anticipated dividend policy,
- the ability to pay off debt,
- financial flexibility with regard to expected needs and opportunities,
- the financial approaches of management, and
- the quality of income.

4. Ratio analysis of financial statements

Financial ratios are on one hand a very simple but on the other a very complicated instrument for valuing a firm, which can lead to the wrong decisions. In spite of this, classical financial analysis still prevails in the explanation of composed financial information. Accounting research indicates that good financial analysis is rewarding (Fried et al., 1994: 323–324) because:

- it places those investors who do not understand the financial reporting framework in the rapidly developing environment in a subordinate position;

- especially for the securities of small firms the market efficiency is questionable; and
- recent history indicates that financial markets may overlook warning signs and cause substantial financial losses for investors.

The better the basis, the better the analysis. Financial statements analysis does not give answers to all questions about a firm but enables the proper questions to be posed about a firm's performance.

The definition of ratios is not standardised. There is a certain consensus about the significance of some ratios, but there is no agreement about the way they are calculated, their relative importance and their possible classification in different groups. Institutions like the American Securities and Exchange Commission and the Financial Accounting Standards Board do not give instructions for ratio analysis with the exception of earnings per share.

Different analysts stress different attributes of the same ratio. For example, the inventory turnover ratio is treated either as a liquidity ratio, a profitability ratio or as a performance ratio.⁵

The return and profitability ratios, the asset utilisation and efficiency ratios (also known as activity ratios) and a great deal of liquidity ratios and long-term debt and solvency ratios (also known as equity position and coverage ratios) are mostly calculated from the income statement and balance sheet items. From time to time these ratios are accompanied by a cash flow statement's ratio, where the cash flow is calculated on the basis of the balance sheet and income statement items. Regarding their substance, some ratios would better be classified in some other group. Some others cause doubt about the consistent use of actual cash flows. Let me give some examples:

- Bernstein and Wild classify book value per share among profitability ratios. In fact, without any additional information the ratio does not tell us much about profitability.
- The same authors classify operating cash flow to income among profitability ratios. Undoubtedly, the ratio tells us something, but it is not a profitability ratio.
- The relationship between cash dividends and income to common equity is classified by Davis, Dukes and Dyckman among profitability ratios and by Bernstein and Wild among the return on invested capital ratios. The numerator of the ratio represents the cash flow item (dividends paid) and the denominator the

⁵ See a different classification of financial ratios into groups for details; for example: Bernstein and Wild, 1998: 405–620, Davis et al., 1998: 189–191, Fried et al., 1994: 198–231.

income statement item. Normally, both items (if we want them to be comparable) do not appear in the same accounting period because the dividends for the period are paid out with a time lag.

- Liquidity ratios are a mixture of ratios calculated on the basis of accounting flows⁶, ratios calculated on the basis of more or less indirect cash flows, and ratios calculated on the basis of the balance sheet. All these ratios do not belong to the same group, whatever name is used.
- Davis, Dukes and Dyckman classify price-earning ratio among profitability ratios, although it shows the market valuation of the firm's existing and projected financial position.

On one hand, the theorists assess that there is empirical evidence confirming that cash flow ratios have different attributes than income statement ratios (Fried et al., 1994: 226), but on the other hand the same theorists do not treat them as two separate groups.

Other theorists stress that certain phenomena in firms cannot be explained well enough with revenues and expenses. Let us consider a few examples:

- 'Let us mention, that 11 firms (branch 15: Production of food, beverage and fodder) which have failed to meet their commitments for more than 60 days, expressed on average 11 % return on equity. From the point of credit analysis it is also interesting that the firms which have failed to meet their commitments for less than 60 days expressed 1,7 times interest earned. Intuitively this data is not logical...' (Mramor et al., 1998: 38).
- 'The models including financial ratios, are less effective than the models demonstrating the ability to meet the commitments (blockades of the accounts) ...' (Mramor and Valentinčič, 2001: 5).
- 'According to the results the ratios by themselves do not tell us much about the liquidity of small private firms ...' (Mramor and Valentinčič, 2001: 29).
- 'Unlike the vast majority of studies using capital markets data that fail to find evidence of incremental information content, our results are consistent with the view that cash flow data provide useful information to market participants...' (Swanson and Vikrey, 1997: 62).

⁶ The accounting flows mean revenues and expenses as presented in the income statement.

4.1. The accounting flows' ratios

When talking about income, answers to questions like:

- which cash flows are included in income and when,
- which changes in the asset value are included in income, and
- how and when the changes in asset value are measured and recognised depend on the accepted financial reporting framework.

Liquidity ratios like the current ratio or the quick ratio are in fact ratios of the horizontal financial structure showing the coverage of short-term liabilities with short-term assets on a certain date. The treatment of such ratios like liquidity ratios is by itself problematic because it is unreasonable to connect coverage on the chosen day with liquidity. That is why it is very important for the external user to take into account how long ago the financial statements were prepared. Even if the data are estimated as suitable, the ratios indicate the expected liquidity only with the proposition that the liquidity behaviour in the future will be the same as in the past. Such a proposition is questionable in the circumstances of an unproven connection between current and projected liquidity.

The use of the current and the quick ratio presumes that all current assets are ready to be transformed into cash. In fact, it is very difficult to say that all current assets can be used to settle liabilities. A certain level of inventory and receivables is always presented in a going concern. Besides, some current assets are not necessarily convertible into cash (for example, obsolete inventory, irrecoverable receivables). In this case, the liquidity ratios are more some kind of safety frontier than a liquidity indicator.

Another group of ratios classified as liquidity ratios are turnover ratios. Such ratios measure the efficiency of operations more than the short-term liquidity.

The presented capital structure and solvency ratios also include:

- the ratios of horizontal and vertical financial structure, this time shown as relations between long-term or all items of assets and liabilities; or
- fixed charges coverage ratios, calculated on the basis of the income statement.

On the basis of such criteria the accounting policies and estimates chosen by the management are influenced more by the effective and profitable use of assets than by liquidity.

The ratios calculated from the accounting flows can be reasonably classified in two main groups:

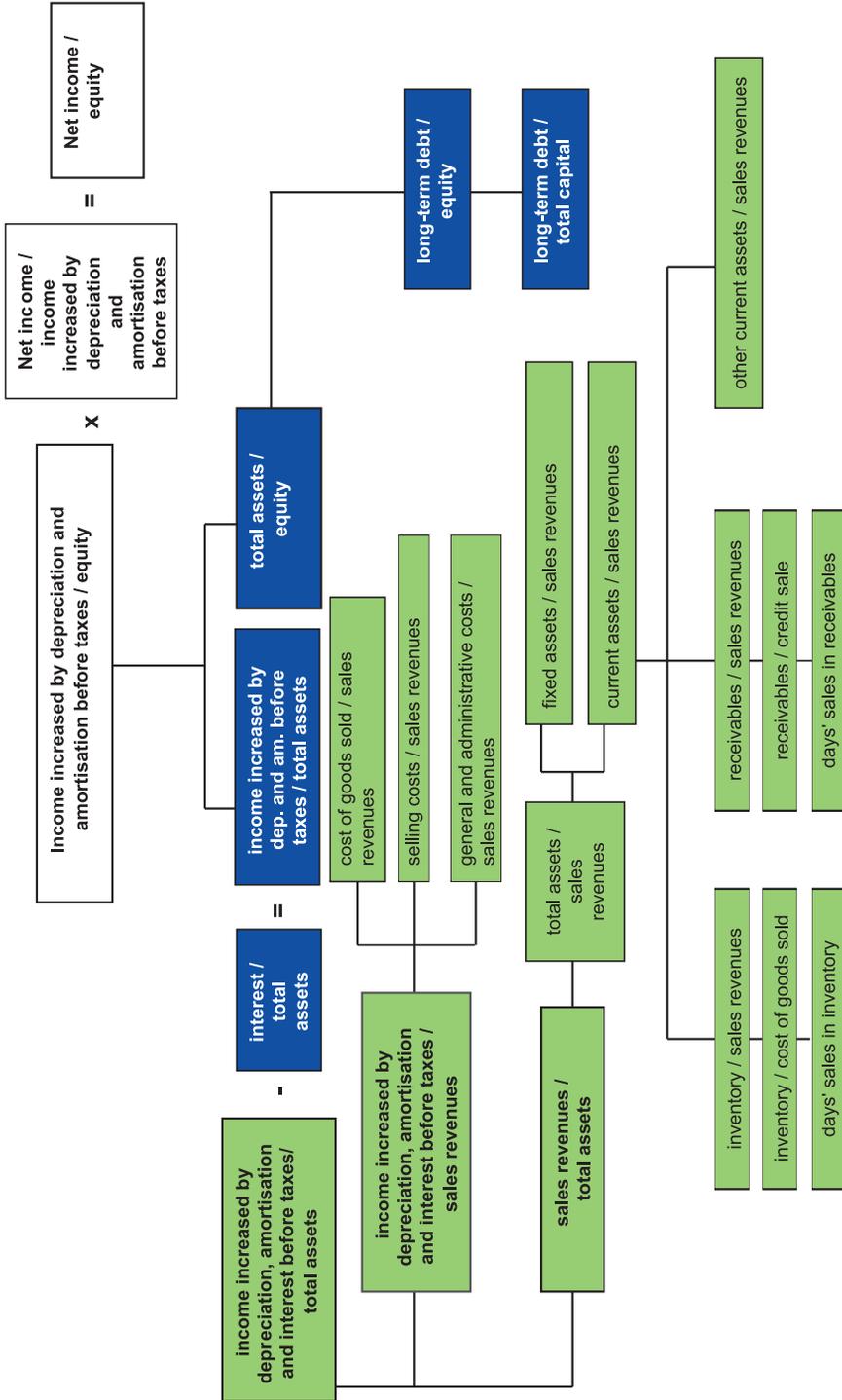
- income statement ratios:
- efficiency ratios (turnover ratios and common economy ratios as relationships between revenues and different kinds of expenses),
- debt ratios, derived from the income statement (like times interest earned);
- profitability ratios;
- balance sheet ratios:
- ratios of the horizontal financial structure (as relationships between different items of assets and liabilities),
- ratios of the investment structure (as relationships between different items of assets), and
- ratios of the vertical financial structure (as relationships between different items of liabilities).

These ratios, organised in a modified DU PONT system, are presented in Exhibit 1.

On the basis of the ratios' connections the user can analyse the reasons for changes in the return on assets or equity taking into account the effect of operating leverage (bottom-left and light part of Exhibit 1) and the effect of financial leverage (upper-right and dark part of Exhibit 1).

As the accounting flows are under the strong influence of the financial reporting framework, the ratios calculated on the basis of the accounting flows are also affected by this framework. For this reason it would be wise to create a control mechanism for the accounting flows' ratios on the basis of a direct cash flows statement.

Exhibit 1: Modified DU PONT system



4.2. The cash flows' ratios

As mentioned, accounting flows do not assure adequate information about the liquidity of a firm. Let us take a hypothetical fast-growing firm which has to finance its inventory before it is sold and is unable to collect the receivables without a time lag. While profit is recognised in the income statement, the statement of cash flows expresses negative net cash flow from operating activities. Since the liquidity problems are not recognised in the income statement, the income statement ratios cannot be a good indicator of liquidity. For this purpose, a direct statement of cash flows is to be used as well as the ratios calculated on its basis. If we wanted the cash flows' statement ratios to be a control mechanism over the accounting flows' propositions they should have been calculated in the same way as the income statement ratios. This means that the comparable system of ratios would include not only a direct statement of cash flows' items but also the balance sheet's items. The question is what kinds of adjustments would be necessary for the balance sheet's items to reflect the effect of the financial reporting framework as little as possible.

Financial reporting frameworks like the GAAP and the IFRS rely more and more on market prices as fair values. Market prices of some assets and liabilities are more easily attainable than for others. On the other hand, projected cash flows and the discount rate as the basis for fair value calculations where market prices are unavailable depend upon the expectations of individual valuers. In consequence the fair values recognised in the financial statements are defined in different, mutually incompatible ways. For these reasons the calculation of the direct statement of cash flows' ratios should include disclosures of those balance sheet items which would have been (for the purpose of this calculation) valued differently from the way prescribed by the financial reporting framework. As the benefits from the accounting information should be greater than the costs incurred, only the important adjustments necessary for satisfactory relevant and comparable calculation of financial ratios are suggested in this article.

The valuation of short-term assets and liabilities

Generally the book value of cash, cash equivalents and differed items represents their real value well enough. The same holds for accounts receivable with the proposition that regarding the appropriate accounting policy only collectable receivables are included in their net book value. As far as short-term financial investments are concerned, the financial reporting frameworks principally recommend their subsequent measurement at fair value equal to the market value. The question is whether the market value is really fair especially if we take into account that small capital markets are not efficient at all (even not in a weak form). It is not a problem if a firm wishes to sell its investments soon. The problem arises if a firm abuses the accounting principles and classifies long-term financial investments among short-term items. Irrespective of this fact we suppose that the book value of short-term financial investments is close enough to their reasonable value.

On the other hand, the inventory as a balance sheet item is valued according to the method chosen considering accounting principles or standards. In this way the recognised value of inventory is defined by the financial reporting framework. For the statement of cash flows' ratios to be comparable it is necessary to value the inventory at a net realisable value. If market prices vary significantly at the end of the accounting period it is appropriate to use the average price of the inventory in the last three months of the accounting period.

The book values of short-term liabilities are also an appropriate approximation of their real values and it is unreasonable to adjust them.

The valuation of long-term assets

Long-term operating receivables should be recognised in the balance sheet (like short-term receivables) at their net realisable value, which is convenient for the calculation of the statement of cash flows' ratios.

As a rule, intangible assets are carried at cost less any accumulated amortisation, which is good enough for the calculation of the statement of cash flows' ratios.

Depreciable fixed assets are normally measured at cost less any accumulated depreciation and any accumulated impairment losses. It is reasonable to take the balance sheet value into account when calculating statements of the cash flows' value. Land and natural resources should be taken into account at their market value regarding the average net selling price in the last three months of the accounting period.

If a firm does not have any better data then long-term investments should also be treated at their book value.

The valuation of long-term financial liabilities

For the purpose of the cash flows' ratios calculation the value of long-term financial liabilities can be treated in different ways:

- as the balance sheet's value;
- as the present value of projected cash flows;
- as the market value or
- on the basis of the total capital's value.

The value recognised in the balance sheet is a good approximation of the present value of long-term debt if the maturity date is close and/or interest rates are approximately

the same as the prevailing market interest rate on the same kind of debt. If this is not so and appropriate data is available (this condition is hard to fulfil) the proper presentation of indebtedness requires a new valuation of long-term financial debt.

The valuation of equity

For the purpose of analysis equity can be valued

- at historical value;
- at market value or
- at the estimated value.

Regarding the quality of accounting information, historical value is reliable but not relevant. As such, it is not an adequate basis for calculating the statement of cash flows' ratios.

The market value of equity implies market efficiency not presented in reality. In consequence the market price of equity is not the result of solely projected cash flows. Besides, the equity of all firms is not quoted on stock exchanges. As a result, the market value is not an adequate basis for the calculation of cash flows' ratios which should also help to identify over- and undervalued shares on the capital market.

From the theoretical point of view the estimated value would be the best to identify the real value of equity. But in fact it faces two serious problems:

- a problem connected with projected cash flows and
- a problem connected with the discount rate.

As both problems are already widely described in financial literature a practical solution is suggested in this article.

Discounted cash flow models are only as good as their input data. The basic question of such models is not whether they offer a proper answer, but whether the input data is appropriate. Wrongly used they bring an exact answer which is completely incorrect. If we take into account all the problems connected with the estimated value of equity the use of this value is much less attractive than at first sight. In terms of the costs-benefits view it may even be unreasonable. With the enforcement of contemporary financial reporting frameworks it is logical to presume that the balance sheet' value of equity adjusted for the proposed revaluation of land and other natural resources, inventory and long-term financial liabilities as necessary is within the interval between the historical value and the estimated – discounted cash flow value and good enough for calculating the statement of cash flows' ratios.

The differences between accounting flows and cash flows cause differences between the ratios calculated on the basis of the income statement and the statement of cash

flows. As the statement of cash flows is much more comprehensive than the income statement, the ratios calculated on its basis cover not only operating but also the entire investing and financing activity. Hence we have divided the cash flows' ratios into two groups: activity ratios and coverage ratios.

As mentioned, the main role of the cash flows' ratios is to serve as a control mechanism over the assumptions used within the chosen financial reporting framework. Therefore, it is reasonable to calculate the cash flows' statement ratios in a way comparable to the way of calculating income statement ratios. On this basis, the activity ratios can be classified as cash flows' ratios in two main groups:

- the direct statement of cash flows' ratios:
- efficiency ratios (turnover ratios and common economy ratios as relationships between cash inflows and different kinds of cash outflows),
- debt ratios derived from the direct statement of cash flows,
- cash return ratios;
- the adjusted balance sheet ratios:
- ratios of the horizontal financial structure (as relationships between different items of assets and liabilities);
- ratios of the investment structure (as relationships between different items of assets); and
- ratios of the vertical financial structure (as relationships between different items of liabilities).

The adjusted balance sheet ratios are very similar to the balance sheet ratios calculated from the accounting flows. The differences arise from the described adjustments affecting certain items of assets, liabilities and equity as a consequence.

In the same way as the accounting flows ratios the cash flows' ratios can also be connected in the modified DU PONT system (Exhibit 2⁷).

The cash flows' ratios generally show the effect of the firm's activity.⁸ In this context, we would like to draw attention to the ratio showing the cash rate of the return on equity. This ratio can be presented in different ways:

⁷ NCF in Exhibit 2 is a net cash flow from operating activities increased by *ordinary cash inflows from investments*. That means that NCF does not include the cash sales of fixed assets.

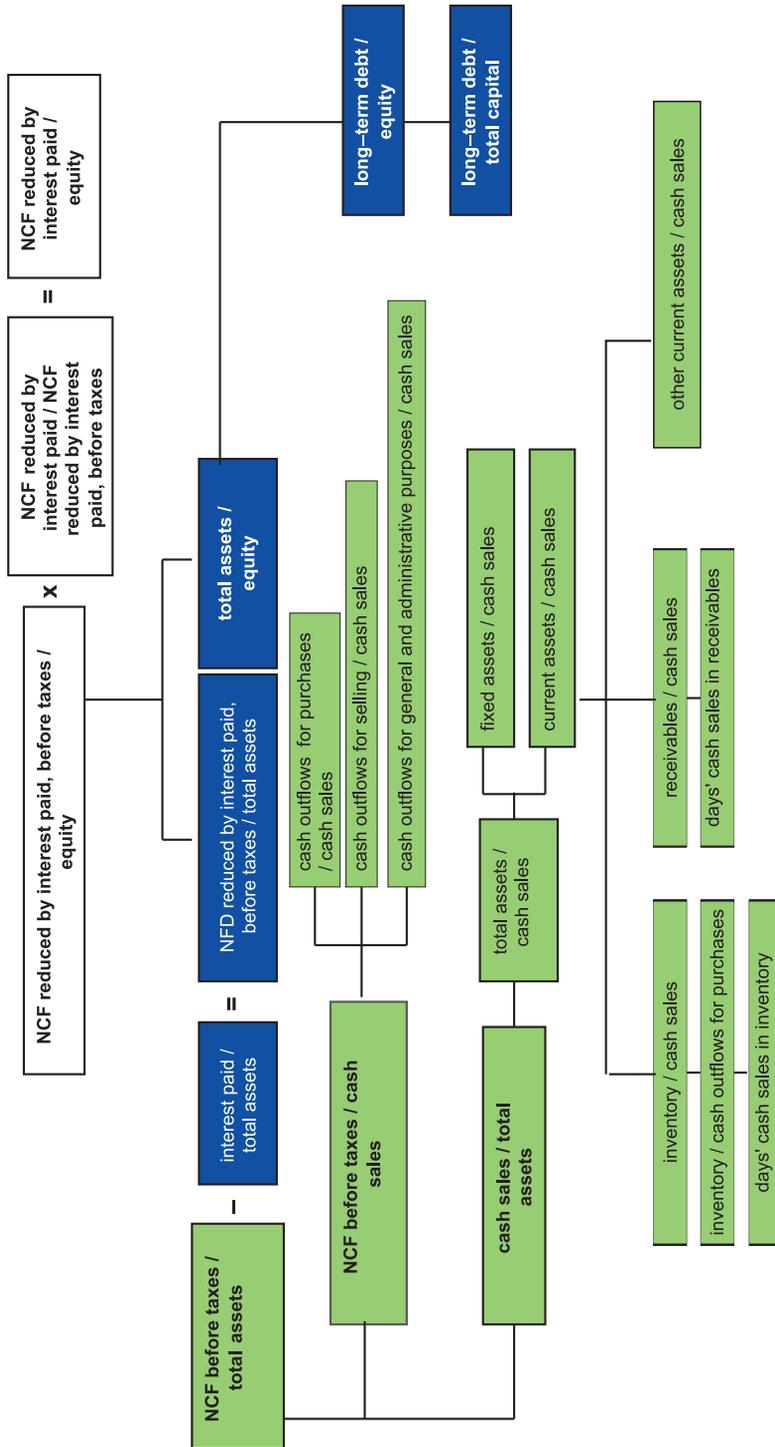
⁸ For example: the cash flows' ratio showing the average number of days cash sales in the inventory tells us how long it takes on average for the inventory to be paid (and not sold as the accounting ratio tells us). Similarly, the average number of days cash sales in receivables indicates how many times

- If we are interested in the cash rate of the return on ordinary activities the ratio is the relationship between the net cash flow from operating activities and the average number of common shares outstanding.
- If we are interested in the cash rate of the return on total activity irrespective of indebtedness the ratio is the relationship between the sum of the net cash flow from operating and investing activities and the average number of common shares outstanding.
- If we are interested in the cash rate of the return on total activity the ratio is the relationship between the sum of net cash flow from operating and investing activities reduced by interest paid and the average number of common shares outstanding.

Owing to the periodical effect of investments in fixed assets the cash rate of return on total activity irrespective of indebtedness and the cash rate of return on total activity should be calculated on the basis of several years.

the average receivables in the accounting period have been paid (and not included in the sales basis of revenue). Accounts payable turnover as the cash flows' ratio indicates how quickly on average purchases are paid (and not how quickly purchases are made).

Exhibit 2: Modified DU PONT system of cash flows' ratios



Since the direct statement of cash flows reflects operating, investing and financing activities, it is possible to calculate additional ratios of investing and financing activities. These ratios can be called *coverage ratios* and divided into two groups:

- *long-term investments' coverage ratios* showing the ability of a firm to ensure cash for long-term investments intended for operating activity;
- *financing coverage ratios* showing
 - the ability of a firm to cover repayment and the costs of debt and the required rate of return on equity with the net cash flow from its operating activity, and
 - to what extent the net cash flow from financing activity is covering the net cash outflows from operating and investing activity.

Both groups of ratios should be calculated not only on one year's basis but also on the basis of several years' average. The average levels off the random deviations that may affect the cash flows of a single accounting period.

Long-term investments' coverage ratios

The basic investments' coverage ratio would be the reinvestment coefficient as either:

- $\text{net cash inflow from operating activity} / \text{net cash outflow from investing activity}$

indicating to what extent net investments are financed by the net operating cash flow and how much additional money is needed for new investments, or

- $(\text{net cash inflow from operating activity} + \text{ordinary cash inflows from investments}) / \text{net investments in long-lived assets}$

indicating the internal financing sources for net investments in long-lived assets, or

- $(\text{net cash inflow from operating activity} + \text{ordinary cash inflows from investments} + \text{cash inflows from selling long-lived assets}) / \text{investments in long-lived assets}$

indicating the size and structure of internal financial sources for investments in long-lived assets.

Financing coverage ratios

Financing coverage ratios can be calculated as coverage coefficients such as:

- $\text{net cash inflow from operating activity} / \text{interest paid}$,
- $\text{net cash inflow from operating activity} / \text{interest paid and repayment of (long-term) debt}$,

- *net cash inflow from operating activity / financing cash outflows (interest and dividends paid, repayment of debt), or*
- *net cash inflow from operating activity / (net cash outflow from investing activity + interest paid + repayment of debt + dividends paid).*

Especially in the years of an identified accounting loss and in the years of huge investments it is reasonable to calculate ratios showing to what extent the net cash flow from financing activity is covering the cash deficit of investing and maybe even operating activity. For example:

- *net cash inflow from financing activity / net cash outflow from investing activity.*

A ratio higher than 1 indicates that additional debt is covering not only the net cash outflow from investing activity but also the net cash outflow from operating activity.

Ratios measuring the quality of accounting flows

The cash flows' ratios in Exhibit 2 are presented in a way that is comparable with the accounting flows' ratios in Exhibit 1. Therefore they can help in the search for the reasons for differences between income before interest and depreciation costs, and the net cash flow from operating activities. At this point I would like to stress again that the abbreviation NCF in Exhibit 2 (already explained in Footnote 5) does not include cash inflows of selling long-term investments. The net effect of such selling is normally included in the income statement. For this reason it may be appropriate to compare net income before interest expenses with the sum of net cash flows from operating and investing activities. In more successive periods this comparison shows what the length of the interval is in which the existing long-lived assets are replaced. At the same time, it means that in periods without important investments the net cash flows from operating and investing activities should exceed the net income. In periods of important investments the sum of net cash flows from operating and investing activities could even be negative in spite of important net income. In this case, the cash flows from financing activities and eventual change of the debt ratio indicate the way of financing investments in long-lived assets.

The comparison between the net income and the net cash flow from operating activities is important for establishing a firm's financial position. It shows whether the net cash flow actually confirms the accounting income and the propositions of the financial reporting framework. This kind of analysis is particularly necessary when the net cash flow from operating activity is lower than the net income or when there are strong variations in the net cash flow between accounting periods.

For this reason the firm can (on the basis of the income statement and the direct statement of cash flows) calculate different coefficients indicating the quality of accounting flows such as:

- $(\text{net income} + \text{interest paid} - \text{interest and dividends received} + \text{depreciation and amortisation}) / \text{net cash flow from operating activity}$.

Important differences between the numerator and denominator mean that reasons for the differences are to be uncovered. This is possible after the firm discovers the sources of these differences through a comparison of the cash flows' and accounting flows' ratios. For example:

- $\text{cash sales} / \text{sales revenues}$.

If revenues are properly recognised on the basis of the financial reporting framework, the reasons for the lower quality of the accounting information can be allowances for bad receivables recognised as expenses and not always recorded separately in the income statement, which is important for the external user.

Ratios measuring the market valuation of the expected rate of return with regard to the actual cash rate of return

The direct statement of cash flows enables one to calculate another group of ratios measuring the market valuation of the expected rate of return with regard to the actual cash rate of return. The most important ratio of this kind would be:

- $\text{Dividend yield} = \text{annual cash dividends per common share} / \text{market price per common share}$.

Cash dividends are an item of the direct statement of cash flows and not an item of the income statement. They are normally paid out with a time lag of one accounting period, which means that the dividends in the accounting period are paid out on the basis of the previous year's balance sheet and income statement. Therefore, the dividend yield is in fact a cash (and not an accounting) yield.

The reverse ratio ($\text{market price per common share} / \text{annual cash dividends per common share}$) shows the market valuation of the expected cash returns of the firm with regard to the actual cash return.

5. Conclusions

Financial statements influence the decision-making process directly through the different users of accounting information and indirectly through the reactions of market participants to published financial information. Due to

historical development the statement of cash flows as defined by the prevailing financial reporting frameworks (the GAAP and the IFRS) is affected by the assumptions included in the preparation of the balance sheet and the income statement. It also does not bring much new insight into the operations of the firm and does not have much influence on the increased relevance, reliability and comparability of the complete set of general purpose financial statements. The quality of accounting information can be significantly improved by the preparation of a direct statement of cash flows based on tracing instead of establishing a firm's cash flows. Such a statement could serve as the basis for calculating liquidity and solvency ratios serving as a control mechanism over the ratios calculated on the basis of the income statement.

The findings presented here suggest possible areas for further work, as follows: they stimulate reflections on certain deficiencies of financial reporting frameworks and their elimination, they are an incentive for the practical implementation of a direct statement of cash flows, they encourage calculations of cash flow ratios serving as a control mechanism over assumptions included in preparation of the balance sheet and the income statement, they are an incentive for all those dealing with insolvency forecasting models to test these models with ratios that actually show the insolvency risk of a company, and they are a basis for reflection during the building or upgrading of models used in the forecasting of risks.

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Unapređenje kontrolne funkcije izvješća o novčanim tokovima u financijskom izvješćivanju

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Sažetak

Na osnovi deduktivnog pristupa u donošenju vrijednosnih prosudbi, članak je usmjeren na procjenu dodane vrijednosti računovodstvenih informacija koju korisnicima računovodstvenih izvješća može donijeti odgovarajuće oblikovano izvješće o novčanim tokovima. Istraživanje je zasnovano na zapažanju da u stručnoj literaturi nije dovoljno jasno razlikovanje između informacija o profitabilnosti i likvidnosti, i slijedom toga, nisu konzistentno grupirani pokazatelji profitabilnosti i likvidnosti. Prezentirano istraživanje je potaknuto namjerom unaprijeđenja kvalitete računovodstvenih informacija korištenjem izravne metode izvješća o novčanim tokovima. Računovodstvena izvješća koja uključuju i izravne metode izvješća o novčanim tokovima omogućuju analizu s oba stajališta: profitabilnosti i novčanog prinosa. Pokazatelji novčanih tokova mogu služiti kao kontrolni mehanizam odabranih pretpostavki u primjeni bilance i računa dobiti i gubitka sukladno okviru računovodstvenog izvješćivanja.

Ključne riječi: računovodstvena informacija, okvir računovodstvenog izvješćivanja, izravna metoda izvješća o novčanim tokovima, pokazatelji novčanih tokova, kontrolni mehanizam

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