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International Reporting Standards

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The Development of Voluntary Cash Flow Statements in Germany and the Influence of International Reporting Standards

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Abstract

This paper studies the incentives of German firms to voluntarily disclose cash flow statements over time. While cash flow statement are mandated under many GAAP regimes, its disclosure has not been mandatory in Germany until recently. Nevertheless, an increasing number of firms provides cash flow statements voluntarily. These firms are likely to be influenced by recommendations of the German accounting profession, IAS 7 as well as the respective standards of other countries. The idea of the paper is to study this influence by looking at the adoption pattern over time and the format of the cash flow statement. It documents the development of voluntary cash flow statement disclosures by German firms with respect to "milestones" in the evolution of German professional recommendations and respective international standards. The cross-sectional determinants of voluntary and international cash flow statements are analyzed using probit regressions and factor analysis. The results are generally consistent with the idea that capital-market forces drive voluntary cash flow statements that are in line with international reporting practice.

1. Introduction

The analysis of a firm's incentives to voluntarily disclose financial information has been a matter of considerable interest in both analytical and empirical accounting research. Although many financial disclosures are mandatory in practice, it is important to understand incentives to provide information in the absence of regulation. In particular, the analysis of private disclosure benefits and costs may provide valuable insights to standard setters contemplating mandatory disclosures.

This paper studies the incentives of German firms to voluntarily disclose cash flow statements over time. Cash flow statements are considered an important element of the annual report and mandated under many GAAP regimes. Until recently, however, its disclosure has not been compulsory in Germany. Nevertheless, an increasing number of German firms provides cash flow statements voluntarily. Presumably, these firms are influenced by recommendations of the German auditing profession, the respective international standards as well as standards of other countries.

The purpose of the paper is to analyze the cross-sectional determinants of voluntary cash flow statements by large German firms during a period of major changes in disclosure practice. It also studies the link between the development of voluntary cash flow statement disclosures by German firms and the evolution of German professional recommendations as well as international reporting standards. The main hypothesis is that capital market forces induce firms to provide cash flow statements and that international reporting standards and professional recommendations influence the *form* of the statement.

Therefore, disclosure practice is examined at three dates. These dates are chosen with respect to "milestones" in the evolution of accounting standards for cash flow statements from the perspective of German firms. In 1992, there were two opposing "standards", US SFAS 95 and the revised IAS 7 on one side and the recommendation HFA 1978 by the German Institute of Chartered Accountants (IdW) on the other side. By 1994, the revised IAS 7 is accepted in cross-border filings by IOSCO and viewed as equivalent to US SFAS 95 by the SEC. These events lent further legitimacy to IAS 7 and made it even more attractive to German firms looking for an accepted standard on cash flow statements. By 1996, a German firm could refer to the newly issued professional recommendation HFA 1995, which is almost identical to the revised IAS 7, when preparing its cash flow statement.

Thus, the paper studies cross-sectional as well as time-related aspects, which promises insights into firms' adoption decisions, aside from documenting the evolution of German accounting practice with respect to the cash flow statement. Recent studies on voluntary disclosures of cash flow statements by German firms are merely descriptive or at most univariate (e.g., Haller and Jakoby, 1994; Schulte and Müller, 1994; Stahn, 1996 and 1997; Jakoby et al., 1999).[1] This paper also uses multivariate and factor analysis to assess the incremental explanatory power of the variables.

The discussion proceeds as follows: Section 2 describes the institutional setting and the development of professional recommendations and accounting standards on cash flow statements. Section 3 reviews the findings of previous studies on voluntary disclosures of cash flow statements in Germany and section 4 characterizes firms' disclosure strategies. Section 5 describe the selection of the sample and the data. It also provides the frequencies for various kinds of cash flow statements and the adoption histories. In section 6, the hypotheses are derived and the determinants of voluntary cash flow statements are analyzed. Section 7 studies the determinants of international cash flow statements and section 8 concludes the paper.

2.   Institutional Setting

During the time period covered in this study, fiscal years ending between 1992 and 1996, German firms were not obliged to provide cash flow statements in the annual reports. The legal accounting rules relevant in this context are §§ 264 (2) and 297 (2) HGB. They stipulate among other things that the annual report of a corporation has to provide a true and fair view of the firm's financial position. Based on the legal commentaries, it is generally accepted that this requirement does not imply a cash flow statement. However, the disclosure of a cash flow statement in the annual report is viewed as generally sufficient to provide a true and fair view of the firm's financial position.[2]

The only legal requirement to disclose a cash flow statement comes from § 21 (1) BörsZulV. It states that corporations registering securities for public trading have to provide a statement of sources and uses of funds for the last three years in the *prospectus*. A particular format is not required. Firms may supply a simple statement of the changes in the balance sheet positions ("Bewegungsbilanz") or a more sophisticated cash flow statement (§ 23 BörsZulV).

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[1]   Their findings are reviewed in more detail below. Schneider (1985) provides an extensive study of voluntary cash flow information by German firms, but covers disclosure practice between 1972 and 1981.

Filling the gap left by the regulator, the German Institute of Chartered Accountants (IdW) issued a recommendation on cash flow statements (HFA 1978). Its purpose was to standardize *German* practice and to provide guidelines for auditing voluntarily disclosed statements. The professional opinion closely followed the prevailing US accounting standard on cash flow statements at the time: APB 19 (Serfling and Marx, 1991, p. 345). In particular, it suggested a sources and uses format and three alternative funds definitions, of which net working capital was recommended in the interest of international comparability. In 1990, HFA 1978 was slightly modified as a consequence of the implementation of the fourth and seventh EU directives into German accounting law in 1985.[3] However, this adaptation involved only minor changes. In particular, the recommendations for the format of the statement and the funds definition were not altered even though they were no longer in line with international practice at that time.

This discrepancy led the Schmalenbach Gesellschaft für Betriebswirtschaft (SG), a leading organization of practitioners and academics in Germany, to initiate a working group on cash flow statements. Its recommendation, which was published in Fall 1993,[4] closely followed the revised IAS 7 and the US SFAS 95. In particular, it suggested to define cash flows as changes in cash and cash equivalents only and to classify them by operating, investment and financing activities. An event that might also have been important for German accounting practice is the listing of Daimler Benz at the NYSE in October 1993. This decision made it the first German corporation to prepare a cash flow statement according to SFAS 95 and set a prime example for other companies, which is likely to have fuelled the development towards a new format for the cash flow statement and a narrow funds definition.[5] Another important event was the acceptance of the revised IAS 7 in cross-border filings by IOSCO in October 1993 and its subsequent acceptance by the SEC as equivalent to SFAS 95. This lent further legitimacy to IAS 7 and made it even more attractive to German firms looking for an accepted standard on cash flow statements. According to Wallace et al. (1997, p. 5), IAS 7 is "the standard of those countries that do not have a systematic and formal policy of setting their own accounting standards."

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[2] See Bude and Karig (1990), Rz. 37 and Adler, Düring and Schmaltz (1997), Rz. 70-71.

[3] Note that the fourth EU directive gave accounting regulators the option to make cash flow statements compulsory and that the German regulator chose to implement the directive without a requirement. Further note that the IdW (1979) advised against mandatory cash flow statements.

[4] First reports of this working group were published in 1990. See Buchmann and Chmielewicz (1990) and Haller and Jakoby (1994, p. 646).

[5] For this conjecture, see Haller and Jakoby (1994) and Jakoby et al. (1999).

Finally, the main committee of the IdW and the working group of the SG released a joint exposure draft late in 1994 and a final joint recommendation in 1995 replacing HFA 1978. The new professional opinion closely follows international standards on cash flow statements to harmonize German with international practice (IdW/SG, 1995, S. 210). In particular, it suggests a classification of cash flows by operating, investment and financing activities and a narrow funds definition based on cash and cash equivalents.[6]

In April 1998, new legislation was introduced. The KonTraG ("Gesetz zur Kontrolle und Transparenz im Unternehmensbereich") requires that all exchange-listed corporations provide cash flow statements in their consolidated financial statements for fiscal years beginning *after* 12/31/1998. Detailed rules for the cash flow statement are in preparation by the new founded German standard setting body (DSR), but have not become effective.

3. Voluntary Cash Flow Statements prior to 1992

Previous studies have documented the development of voluntary disclosures of cash flow statements over time. The following table provides a summary of their findings with respect to German industrial firms with publicly traded stock:[7]

Study	Sample (listed industrials only)	Year	Percentage of firms disclosing	
			CFS of some form	CFS with funds change separated out
Berndsen (1979)	116 large industrials	1974	56%	8%
Coenenberg and Schmidt (1978)	115 large industrials	1970	36%	5%
		1975	51%	9%
Busse von Colbe (1981)	43 large industrials	1977	70%	NA
Schmidt (1981)	213 randomly selected industrials	1980	49%	6%
Schneider (1985)	152 randomly selected industrials	1972	31%	ƒ 11%
		1981	53%	
Busse von Colbe (1990)	42 large industrials	1982	71%	NA
Haller and Jakoby	53 large industrials	1991	77%	NA

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[6] For an explicit comparison, see Mansch et al. (1995) and Jakoby et al. (1999).

[7] For comparability reasons, table 1 reports results for *exchange-listed industrial* firms only. Note that the studies may comprise more firms, in particular financials. For an overview covering also studies on non-listed firms see Haller and Jakoby (1994). See also Stahn (1996 and 1997).

(1994)				
Schulte and Müller (1994)	53 large industrials	1991	72%	36%
Jakoby et al. (1999)	DAX 30 industrials	1988	96%	38%
		1997	100%	100%

Table 1: Development of voluntary cash flow statements disclosed by German firms

Table 1 shows that voluntary disclosures of cash flow statements are increasing over time. Note further that studies with samples selected on the basis of firm size typically report smaller percentages as sample size increases, and larger percentages than randomly selected samples.

Based on these studies, German disclosure practice prior to 1992 and hence at the starting point of my study can be described as follows: The majority of German firms reported a "cash flow statement" of some form. However, only few firms provided cash flow statements separating out a funds change at the bottom line. That is, most firms still disclosed simple statements on changes in assets and liabilities as opposed to "modern" cash flow statements. This is surprising given that APB 19 and HFA 1978 asked for the funds change to be separated out. Moreover, many German firms still preferred the "old" sources and uses format for the cash flow statements. In summary, the disclosure practice of many German firms prior to 1992 was not in line with international standards and practice.

4. Characterization of Disclosure and Adoption Strategies

As international standards and German professional recommendations on the cash flow statement exhibit an increasing degree of harmonization, the pressure to conform with international disclosure practice is likely to have increased for German firms. Consequently, the percentage of firms voluntarily disclosing a cash flow statement is likely to increase between 1992 and 1996, and more importantly, the statements provided are expected to be more and more in line with international practice.[8] While the former could simply be a continuation of the trend documented by previous studies (table 1) and hence unrelated to international and professional standard setting, the latter is likely to be associated with recent developments described in section 2.

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[8] The recent study by Jakoby et al. (1999) confirms this conjecture for the DAX 30 firms.

However, this conjecture cannot be directly tested as many firms do not indicate in the annual report which standard they have followed in preparing the cash flow statement. For this reason, I use the format of the cash flow statement as well as the funds definition as distinguishing features and as a measure of influence of international standards.[9] For instance, a firm that discloses a cash flow statement in 1994 for the first time using the "new" operating, investing and financing format and a narrow funds definition (cash and cash equivalents) is likely to follow international standards. Such an influence is unlikely if the firm uses the "old" sources and uses format and a wide funds definition (as recommended by HFA 1978). Similarly, firms switching from the old to the new format are likely to be influenced by the developments described in section 2.

For the purpose of this study, I characterize firms with respect to the three dates and their disclosure strategies as follows: At the outset, in 1992, five Anglo-American countries as well as the IASC had completed their standards on the cash flow statement requiring among other things the operating, investing and financing format as well as a narrow funds definition (Wallace et al., 1997). In contrast, the German professional recommendation HFA 1978 (revised 1990) still suggested the "old" sources and uses format and a wide funds definition. Thus, German firms preparing a cash flow statement according to international standards in 1992 can be characterized as *trendsetters*. This group comprises (a) firms that already published an "international" cash flow statement prior to 1992, (b) firms that disclosed a cash flow statement of some form but switched in 1992 to an "international statement" and (c) firms that published such a statement for the first time.

By 1994, a movement towards international cash flow statements was evident and gained momentum. The pressure to conform with international practice was increasing largely due to events, such as Daimler Benz decision to seek a listing at the NYSE and the acceptance of IAS 7 by IOSCO and subsequently by the SEC. Furthermore, the working group of the Schmalenbach Gesellschaft suggested firms to follow the international standards on cash flow statements. Thus, I refer to firms that decided to publish a cash flow statement according to international standards or switched to such a statement in 1994 as *early adopters*.

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[9] Note that the differences between the recommendation HFA 1978 and the new standards SFAS 95 and revised IAS 7 are not only a matter of form. Complying with the latter generally has implications in terms of the information provided to capital markets as well as competitors. The new standards mandate the disclosure of additional cash flow information that is not provided elsewhere in the annual report. Given that cash flow statements are voluntary in Germany, it is possible, however, that a firm only switches the format without

By 1996, German professional recommendations and the international standards were in line again. The harmonization process for the cash flow statement was completed and firms could also rely on a German recommendation and not only some international standard in preparing the cash flow statement. Thus, I view firms publishing an international cash flow statement for the first time in 1996 as *late followers*.

Besides the three groups mentioned, there are some firms that did not publish a cash flow statement in 1996. These firms will be forced to publish a cash flow statement at the latest in their fiscal year beginning after 12/31/1998.

5.   Development of Voluntary Cash Flow Statement Disclosures from 1992 to 1996

5.1   Sample Selection and Data

Sample firms are chosen based on the DAX 100 stock index and "Die Großen 500" list published by "Die Welt" (1996). The latter contains the largest 553 German non-financial firms ranked by total revenues.[10] From this list, I eliminate all firms that are not listed at a German exchange prior to October, 30th 1992 because previous studies suggest that the disclosure of cash flow statements differs significantly between listed and non-listed firms (e.g., Busse von Colbe, 1990; Haller and Jakoby, 1994).

Furthermore, I eliminate from both sources all firms that are either a subsidiary of a foreign firm or of a German parent included in the sample because the subsidiary's decision to disclose cash flow statements may not be "independent" or voluntary.[11] For instance, the parent may determine the subsidiary's disclosure policy via group-wide accounting and consolidation procedures (see Görges and Schulte (1994) for evidence). If both the subsidiary and the German parent were included in the sample, the parent's disclosure choice would be counted twice resulting in biased results. Alternatively, the subsidiaries may not provide cash flow statements precisely because a consolidated cash flow statements presented by the parent

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[10] providing additional cash flow information. For this reason I also use variables accounting for additional cash flow information. See section 5 for details.

[10] The smallest firm had in 1996 a total revenue of about one billion DM. The list was then double-checked against the Worldscope database. This check revealed five firms with total revenues of approximately one billion or more that were missing from Welt 500 list. They were added to the sample.

[11] The criterion was a stake in the firm's outstanding capital greater or equal to 50%. A similar argument can be made for associated firms, i.e. the case where a sample firm holds a stake between 20 and 50% in another sample firm's capital. However, this case is not present in the final sample. Note that sample firms may be subsidiaries or associates of *non-sample* firms, in particular, financials. But as in Germany industrial subsidiaries are generally not consolidated by financials and as the accounting practices for financials are quite different, a direct link between the parent's and the subsidiary's policies is more difficult to establish.

(Stahn, 1997, p. 1193).[12] Similarly, the disclosure policy of subsidiaries with a foreign parent may be heavily influenced by foreign disclosure standards and the parent's disclosure policy.[13] In addition, I eliminate two outliers.[14] The final sample contains 103 non-financial firms.

All dependent variables are created based on the hard copies of the annual reports. However, it is not obvious what precisely constitutes a cash flow statement due to the voluntary nature of the disclosure. Thus, I create several variables to check the robustness of my results with respect to the classification used. The first variable (CFS1) is binary and indicates whether a cash flow statement of any format is published in the annual report. Since previous studies view the "separating out" of a funds change at the bottom line as the distinguishing feature of a cash flow statement (e.g., Haller and Jakoby, 1994; Bauer and Schader, 1996), the second variable (CFS2) is also binary and indicates whether there is a cash flow statement with a funds change as separate line item. This definition is purely based on format. However, the format is presumably less important to investors than additional information provided via the cash flow statement. Based on the idea of "substance over form", the third variable (CFS3) classifies according to the fact that a funds change is disclosed (not necessarily at the bottom-line) *and* that there is at least one line item, which (a) is typically not provided elsewhere in the annual report and (b) helps in determining the firm's cash flows.[15] However, this binary classification comprises for CFS3=0, firms that do not publish a cash flow statement as well as firms that publish a cash flow statement, but do not meet the additional information criterion. To avoid this lumping and to account for qualitative differences in disclosures, I define an ordinal variable with three levels indicating a cash flow statement that satisfies the information criterion (CFS4=2), any other cash flow statement (CFS4=1) and lack thereof (CFS4=0).

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[12] For instance, Veba discloses a cash flow statement for the group only. The subsidiaries, Raab Karcher, Stinnes and Preussen Elektra do not publish individual cash flow statements in their annual reports.

[13] For instance, Goebel and Fuchs (1995, p. 1522) report that Alsen Breitenburg Zement- und Kalkwerke GmbH publishes an annual report based on international accounting standards due to his affiliation with the Swiss Holderbank group.

[14] They were identified as influential observations distorting some of the regressions. Eliminating them seems justified on theoretical grounds as one firm is an organization solely set up to promote the business of its owners (1800 independent shoe retailers) and the other firm was in severe financial distress during the sample period.

[15] Examples are gains from selling fixed assets, gains from accounting associates at equity, cash flows from selling fixed assets (as opposed to book values), gross cash flows from new loans and repayments, changes in cash and cash equivalents due to currency translation or valuation changes. Note that some of these are non-cash items. However, they help to compute the firm's cash flow in a retrograde fashion.

I also create dummy variables for the form of the cash flow statement provided. The variable FORMAT indicates whether the cash flow statement is based on the "new" operating, investing, financing format (=1) or the "old" sources and uses format. This variable can be considered for cash flow statements of any form (CFS1=1) and those that separate out a funds change (CFS2=1), respectively, FORMAT1 and FORMAT2. The variable FUNDS indicates whether the funds definition used is narrow (=1), i.e. comprises cash and cash equivalents only, or wide (=0).[16] The latter variable requires cash flow statements separating out a funds change, i.e. CFS2=1.

Finally, format and funds dummies can be combined to distinguish cash flow statements according to international standards and more traditional cash flow statements. The ordinal variable CFS5 indicates a cash flow statement according to international standards (=2), a non-international statement with a funds change as separate line item (=1) and lack of any such cash flow statement (=0).[17] The last variable is constructed like CFS5, but attempts to account for additional information content of the cash flow statement using CFS3. A classification as "international" requires that CFS3=1, FORMAT=1 and FUNDS=1. Thus, CFS6 indicates an international statement (=2), a non-international statement (=1) and lack thereof (=0).

5.2.   Descriptive Statistics and Adoption Histories

Tables 2a to 2c provide the frequencies of voluntary cash flow statements at the three dates:

	CFS1=1			CFS2=1			CFS3=1		
	1992	1994	1996	1992	1994	1996	1992	1994	1996
Number	61	78	93	28	54	85	8	36	66
Percentage (n=103)	59.2	75.7	90.3	27.2	52.4	82.5	7.8	35.0	64.1

Table 2a: Voluntary disclosure of cash flow statements in 1992, 1994 and 1996 (binary variables)
CFS1 = 1: Cash flow statement of any kind
CFS2 = 1: Cash flow statement with funds change as separate line item
CFS3 = 1: Cash flow statements with funds change that satisfies information criterion (see section 5.1)

[16]   I used the definition of cash and cash equivalents according to the revised IAS 7.
[17]   That is, CFS5=2 if FORMAT=1 and FUNDS=1, CFS5=1 if CFS2=1 (and either FORMAT or FUNDS equal to 0) and CFS5=0 if CFS2=0.

	FORMAT1=1			FORMAT2=1			FUNDS=1		
	1992 (n=61)	1994 (n=78)	1996 (n=93)	1992 (n=28)	1994 (n=54)	1996 (n=85)	1992 (n=28)	1994 (n=54)	1996 (n=85)
Number	6	37	75	5	37	75	20	50	82
Percentage	9.8	47.4	80.6	17.9	68.5	88.2	71.4	92.6	96.5

Table 2b: Voluntary disclosure of cash flow statements in 1992, 1994 and 1996 (binary variables)
FORMAT1 = 1: Statement uses operating, investing, financing format (all cash flow statements)
FORMAT2 = 1: Statement uses operating, investing, financing format (statements with funds change only)
FUNDS = 1: Statement uses a narrow funds definition

	CFS4 (n=103)			CFS5 (n=103)			CFS6 (n=103)		
	1992	1994	1996	1992	1994	1996	1992	1994	1996
Number (=2)	8	36	**66**	5	36	**73**	5	32	**65**
Number (=1)	**53**	**42**	27	23	18	12	23	22	20
Number (=0)	42	25	10	**75**	**49**	18	**75**	**49**	18

Table 2c: Voluntary disclosure of cash flow statements in 1992, 1994 and 1996 (ordinal variables with 3 levels)
CFS4: Variable indicates a cash flow statement with funds change that satisfies the information criterion (=2), a cash flow statement with funds change that fails the criterion and lack of any such statement (=0).
CFS5: Variable indicates a cash flow statement according to international standards (=2), a non-international statement with a funds change (=1) and lack of any such cash flow statement (=0).
CFS6: Variable indicates a cash flow statement according to international standards and with additional line items (=2), a non-international statement with a funds change (=1) and lack of any such cash flow statement (=0). See also definitions in section 5.1.

The tables 2a to 2c demonstrate that the trend found in previous studies continues in the 90s. For all variables the number of firms voluntarily disclosing a cash flow statement increases over time. Moreover, looking at the history of changes for each observation reveals that firms move only in one direction. Thus, it is the timing that matters and distinguishes firms. Notably, this holds for all dependent variables. That is, firms neither reverse their decision to disclose a cash flow statement nor do they reverse their decision to provide additional information or to use an international format. Thus, there is a steady trend towards "improved" and "more international" cash flow statements (as defined by my dependent variables).

Looking at the tables in detail shows that in 1992 only about half of the German firms in my sample published a cash flow statement of any kind (CFS1). This proportion increased to 90% in 1996. The increase over time is even more extreme if more restrictive definitions for the cash flow statement (CFS2 or CFS3) are considered. In 1992, only 27% provided a cash flow statement with a funds change as separate line item (CFS2). By 1996, there are three times as many firms with such a statement. For CFS3, the increase from 1992 to 1996 is even eight-

fold. Insights into qualitative differences are gained from CFS4. In 1992, the majority of firms (53) provided a statement of any kind, but did not disclose any line items that are typically *not* provided elsewhere in the annual report (CFS4=1). Only eight firms provided such items (CFS4=2). In 1994, the former group was still the largest, but the latter was already second (36). By 1996, the majority of firms (66) published a cash flow statement containing line items typically providing additional information. However, there were still many firms (27) disclosing cash flow statements that do not provide additional information (CFS4=1).

The format variables also reveal drastic changes. In 1992, more than 90% of the firms used the "old" sources and uses format. By 1996, more than 80% has switched to the "new" operating, investing and financing format. The development of the funds definition, however, is somewhat different. In 1992, already 70% of the firms that disclosed a cash flow statement with separate funds change used a narrow definition. This proportion increased only moderately to more than 96% by 1996.

Using the combined variables (CFS5 and CFS6) indicating whether a firm publishes an "international" cash flow statement,[18] I find that in 1992 most sample firms (75) did not even provide a cash flow statement with funds change. Of the few that did, the vast majority (23) followed HFA 1978 or at least did not apply an international standard. In 1994, about half of the firms still did not provide a cash flow statement with funds change (49), but of those that did only 18 followed HFA 1978 while twice as many applied an international standard. In 1996, most firms (73) disclose a cash flow statement in line with international standards (CFS5=2) and for the first time these firms represent the largest of all three groups. Twelve firms disclose a cash flow statement that is not in line with international standards and HFA 1995, and 18 firms do not provide a cash flow statement with funds change.

Table 3a summarizes the different adoption strategies based on my classification in section 4. The table exhibits a "classic" adoption pattern. The sample consists of 5 *trendsetters*, 31 *early adopters*, and 37 *late followers* based on CFS5. The distribution is similar using CFS6. However, there are 4 firms in 1994 and 8 firms in 1996 whose changes towards an international cash flow statement are more "cosmetic" in nature as they fail to satisfy the additional-information criterion imposed by CFS6.

	CFS5	CFS6

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[18] Recall that most firms do not indicate which standard they follow and that for this reason the classification is an approximation only. See section 5.1 for details.

Trendsetter	5	5
Early adopter	31	27
Late follower	37	33
Waiting (any other CFS)	12	20
Waiting (no CFS)	18	18

Table 3a: Adoption strategies

Table 3b provides more details on the adoption of international cash flow statements. Panel A shows the adoption pattern for firms without cash flow statements in 1992: 21 of those firms adopted international statements in 1994 and only 5 chose non-international statements, of which 4 switched to international statements in 1996. However, most firms (31) in panel A waited until 1996 and then adopted an international (28) as opposed to a non-international statement (3). The adoption pattern of firms with non-international cash flow statements in 1992 is somewhat different (panel B). In this group, most firms (10) already switched to an international statement in 1994 while only 5 firms waited until 1996. However, there were also 8 firms that still published a non-international statement in 1996.

Comparing the proportion of early adopters and late followers in each group (panel A and B), it seems that the trend towards international cash flow statement first more strongly influenced firms already publishing a cash flow statements. Firms without cash flow statement appear more strongly influenced by the events from 1994 to 1996. In summary, the evidence suggests that German firms are influenced in their disclosure choices by international standards and professional recommendations as well as the increasing harmonization among them. Moreover, based on the adoption histories, it seems not unlikely that the new professional recommendation HFA 1995 played an important role for the *widespread* adoption of international statements prior to a mandatory disclosure requirement.

Panel A: Firms without cash flow statement in 1992 (CFS5_92=0)					
		CFS5_94			
		=0	=1	=2	Total
	=0	18	0	0	18
CFS5_96	=1	3	1	0	4
	=2	28	4	21	53
	Total	49	5	21	75
Panel B: Firms with non-international cash flow statement in 1992 (CFS5_92=1)					
		CFS5_94			
		=0	=1	=2	Total
	=0	0	0	0	0
CFS5_96	=1	0	8	0	8
	=2	0	5	10	15
	Total	0	13	10	23
Panel C: Firms with international cash flow statement in 1992 (CFS5_92=2)					
		CFS5_94			
		=0	=1	=2	Total
	=0	0	0	0	0
CFS5_96	=1	0	0	0	0
	=2	0	0	5	5
	Total	0	0	5	5

Table 3b: Adoption histories (based on CFS5)

Table 4 presents the adoption pattern for international cash flow statements in each of the 6 major industry sectors.[19] The table reveals that the adoption pattern is fairly homogenous across industries. All industries except engineering had an "industry leader" in 1992. Each industry exhibits a strong movement towards international cash flow statements between 1992 and 1996. That is, in 1992, the largest group in each industry still comprises firms without any cash flow statement (with funds change). But, by 1996, this group consists of firms with international statements, which have become the standard in all industries. However, the shift occurred slightly earlier in some industries than in others. While in industries 1 to 3 the largest group comprises already by 1994 firms providing an international cash flow statement, it still consists of firms without a cash flow statement in industries 4 to 6.

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[19] See Table A2 in the appendix for an industry classification.

	CFS5	ID1 Automotives	ID2 Construction	ID3 Chemicals & Pharmaceuticals	ID4 Retail & Consumer	ID5 Engineering	ID6 Regulated industries
1992	= 0	3	9	8	26	21	8
	= 1	3	2	5	4	7	2
	= 2	1	1	1	1	0	1
1994	= 0	2	4	5	18	13	7
	= 1	2	3	3	5	4	1
	= 2	3	5	6	8	11	3
1996	= 0	0	3	3	6	4	2
	= 1	2	1	3	4	2	0
	= 2	5	8	8	21	22	9
		7	12	14	31	28	11

Table 4: Adoption of international cash flow statements by industry (based on CFS5)

6. Determinants of Voluntary Cash Flow Statements

6.1. Hypotheses and Model Specification

The following hypotheses on the cross-sectional determinants of voluntary cash flow statements is not based on a particular model, but on a survey of the extant analytical and empirical literature with a focus on prior research pertaining to cash flow statements:[20]

The firm's auditor is generally expected to have some influence on the firm's disclosure policy. In particular, "big six" auditors are likely to encourage internationally accepted accounting and disclosure standards as part of their competitive strategy (e.g., Wagenhofer, 1996, p. 41). Thus, I hypothesize that firms with a "big six" auditor are more likely to publish voluntary and in particular international cash flow statements. However, Bauer and Schader (1996) do not find a significant association in their analysis of voluntary cash flow statements by Austrian firms. To test this hypothesis, I use a dummy (BSIX) which is equal to one if the firms has a "big six" auditor in the respective year.

A listing at a foreign exchange presumably increases shareholdings of foreign investors and hence the demand for information (e.g., Meek and Gray, 1989).[21] Moreover, I expect German

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[20] See also Lang and Lundholm (1993) for this approach.

[21] A foreign exchange may also demand cash flow statements and other disclosures as part of its listing requirements (e.g., NYSE). However, my sample contains only one firm (Daimler Benz) that is forced to provide a cash flow statement due to its listing choice since 1993. Dropping this firm has virtually no effect on the results. In addition, there are seven firms in the sample that have adopted financial statements

firms to face competitive pressures in the foreign capital market if the other (domestic) firms generally provide cash flow statements. Given that cash flow statements are fairly widespread in many countries, I predict that a listing at a foreign stock exchange is positively associated with voluntary and in particular internationally accepted cash flow statements. Several prior studies report international listing effects (e.g., Cooke, 1989; Meek et al., 1995). Thus, I use a dummy variable accounting for a firm's foreign listing status (FORLIST).

Similarly, multinational firms face a different demand for disclosures than firms that generate most of its business domestically (e.g., Gray and Radebaugh, 1984) and hence are more likely to provide cash flow statements voluntarily. While Schneider (1985) reports a significant positive (univariate) association with cash flow statement disclosures, Leuz (1999) finds that the percentage of sales generated outside Germany does not have a significant association in a multiple regression once industry effects are accounted for. For this reason, the variable is not included in the model.[22]

Diamond (1985) shows that firms have an incentive to provide information voluntarily to preempt costly private information acquisition. Given that at least some investors trade based on privately acquired information, trading volume is a proxy for information cost savings and more generally capital-market benefits that are generated by voluntary disclosures (see also Scott, 1994).[23] Thus, I hypothesize that trading volume is positively associated with the disclosure of cash flow statements.[24] To avoid size-related collinearities with other variables, I use share turnover, which is a scaled measure of trading volume, i.e., annual trading volume in all market segments at the main exchange divided by the total number of all shares outstanding. Due to the skewness of share turnover (LN_TV), I use its natural logarithm.

Jensen and Meckling (1976) argue that agency costs are likely to increase as the level of outside equity rises and hence the concentration of ownership decreases. Firms may reduce the agency costs by providing additional information. Therefore, voluntary disclosures are likely to increase with the firm's free float (Leftwich et al., 1981). Moreover, information cost

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according to IAS or US GAAP by 1996. For these firms, cash flow statements are also no longer voluntary. However, eliminating these firms does also not materially affect my results.

[22] A factor analysis (as in section 6.3) reveals that the variable clusters with the foreign listing dummy and has a positive factor loading as one would expected. Thus, collinearities may be responsible for the insignificance. Note that including the variable in the model has no material effect on the coefficients or significance levels of the other variables.

[23] Note that cash flow statements may also provide cost savings even if they provide no additional information. See Gebhardt (1984).

savings generated by voluntary disclosures decrease in the number of shareholders and hence in the concentration of ownership (Diamond, 1985). In addition, large shareholders are presumably less reliant on the annual report as information source because they generally have access to other information channels (e.g., board of directors). For these reasons, I hypothesize that voluntary cash flow statements and the dispersion of ownership are positively associated. Prior studies generally support this hypothesis (e.g., Schneider, 1985; Scott, 1994). I measure the dispersion of ownership by the free float (FFLOAT) defined as the percentage of voting shares widely held and known to be available for free trading.

Similarly, voluntary disclosures are often hypothesized to be positively associated with leverage as debt-related agency problems are likely to increase with leverage. Again, the idea is that voluntary disclosures enhance monitoring (e.g., Leftwich, 1981). However, in Germany, public debt agreements are rare. For bank debt agreements, there are other means than the annual report to effectively communicate information for monitoring purposes. But to equity investors (and other users) cash flow statements provide - at least in principle - valuable information about the firm's cash generating ability and financial situation, which is particularly useful for highly levered firms. That is, this information becomes more important as leverage increases. On the other hand, leverage is likely to be inversely related to information cost savings because a higher leverage implies ceteris paribus less outside equity. The latter suggests a negative association. Thus, the relationship between leverage and voluntary cash flow statements is not obvious a priori. Not surprisingly, many studies report insignificant results for leverage (e.g., Schneider, 1985; Wagenhofer, 1990b). I measure leverage (LEVER) as ratio of total liabilities (including provisions) to total assets.

In principle, more profitable firms are expected to disclose information voluntarily in order to distinguish themselves from less profitable firms. But as this information may be useful to competitors, the capital-market benefits may be outweighed by the proprietary costs, in particular for "moderately" profitable firms (e.g., Verrecchia, 1983; Wagenhofer, 1990a) While this suggests on average a positive relationship, extant models show that the relationship between voluntary disclosures and profitability is complex and depends, for instance, on the type of competition (e.g., Verrecchia, 1990; Ewert and Wagenhofer, 1992; Feltham et al., 1992). Moreover, for long-run disclosure *policy* choices, where the firm commits to the disclosure irrespective of particular future realizations, a negative association

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[24] Note, however, that the causal relationship is not obvious. Voluntary disclosures may reduce information

with profitability seems more likely if the proprietary costs of the disclosure are substantial (see also Harris, 1998; Leuz, 1999). However, cash flow statements may not reveal much proprietary information given that ample information about the firm's profitability is already publicly available. Moreover, the initial adoption is likely to be positively associated with profitability.[25] Previous studies produce mixed results. They generally find a negative association although it is often not significant (e.g., Schneider, 1985; Wagenhofer, 1990b; Harris, 1998). Thus, I follow the extant literature and predict a negative association, but note that it may be weak for voluntary cash flow statements (see also Leuz, 1999). I use as the sales margin (PROF) as proxy which is defined as the ratio of operating income to total revenues.

The firm's capital intensity is a proxy for its financing needs.[26] Prior research shows that voluntary disclosures and security offerings are positively associated (e.g., Lang and Lundholm, 1993 and 1997). Thus, I hypothesize that ceteris paribus capital-intensive firms are more likely to provide voluntary cash flow statements. I measure capital intensity (LTA) as the ratio of long-term assets over total assets.

Finally, there is a multitude of reasons why firm is likely to be positively associated with voluntary disclosures. First, the costs of producing and disseminating information are likely to be decreasing per unit of firm size. Second, the larger the firm the more investors and financial analysts are likely to be interested in the firm. Hence, firm size is also a proxy for potential cost savings in private information acquisition. Third, I expect larger firms to have more foreign investors and hence to be under more pressure to conform with international accounting practice. A positive size effect is well-documented in the literature (e.g., Schneider, 1985; Lang and Lundholm, 1993; Bauer and Schader, 1996). Thus, I hypothesize that larger firms are more likely to provide voluntary and international cash flow statements. Following previous studies, I measure firm size (LN_TA) as the natural logarithm of total assets.

The independent variables, their proxies and the databases from which they were obtained are summarized in tables A1a and A1b in the appendix. Tables A2a to A2c present the descriptive statistics for the dependent variables and tables A2d to A2f the pairwise correlations. Several of the variables are significantly correlated. For instance, the variables related to capital-

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asymmetry and hence increase liquidity-motivated trading volume. See, e.g., Healy et al. (1996).

[25] That is, the firm is more likely to commit to certain disclosures if it is currently "doing well".

[26] Capital intensity may also be a proxy for entry barriers. But as cash flow statements are not very proprietary in nature, this interpretation of the proxy is likely to be less relevant in this context.

market aspects, i.e. free float, foreign listing and trading volume, are correlated. Furthermore, size is correlated with big six auditor, free float and in particular with foreign listing. As pairwise correlations may be misleading for dichotomous variables, I also compute the variance inflation. It is well below 2 for all variables except firm size and foreign listing. In addition, I perform collinearity diagnostics according to Belsley et al. (1980). Although the tests fails the suggested criteria indicating severe collinearity,[27] they confirm a potential problem between firm size and foreign listing, particularly in 1992 and 1994. Therefore, I drop firm size from the model. Direct and indirect costs associated with the production and dissemination of cash flow statements are unlikely to be so material that size-related economies of scale in information production really matter. Thus, size is primarily a proxy for cost savings in private information acquisition. However, these cost savings are already, and more precisely, captured by other variables, notably free float and share turnover, as revealed by the pairwise correlations.[28]

In summary, I estimate multiple regressions using the following model to examine the incremental explanatory power of the variables:

$$\textit{Disclosure Variable}_{it} = \textit{Intercept}_{it} + b_1 BSIX_{it} + b_2 FORLST_{it} + b_3 LN\_TV_{it}$$
$$+ b_4 FFLOAT_{it} + b_5 LEVER_{it} + b_6 PROF_{it} + b_7 LTA_{it} + e_{it}$$

for i = 1, .., 103 and t = {1992, 1994, 1996}.

6.2.   Results

Table 5 presents binary probit regressions for cash flow statements with funds changes as separate line item (CFS2) and all three years.[29] The predicted signs are in the first column. Each subsequent column provides estimated coefficients and z-statistics (in parentheses). The regressions are estimated with quasi-maximum likelihood procedures such that the standard errors are robust to misspecifications of the underlying distribution (see White, 1982):

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[27]   That is, I do not find condition indices above 10 and two or more variables with variance proportions above 0.5 for the same eigenvalue in any year. The condition numbers, i.e., the highest condition index, is below 4 in the intercept-adjusted diagnostics. However, it exhibits substantial variance proportions for foreign listing and firm size and is substantially larger than the second highest condition index.

[28]   Including firm size generally renders the foreign listing dummy insignificant in 1992 and 1994 regressions, but does not alter any of my conclusions.

[29]   The results for CFS1 and CFS3 are not reported but are similar to those in table 5.

n=103	CFS2_92 (z-stat.)	CFS2_94 (z-stat.)	CFS2_96 (z-stat.)
Intercept	-2.256[*] (-2.186)	0.344 (0.405)	-1.111 (-1.007)
Big Six auditor (+)	0.221 (0.698)	-0.438 (-1.545)	-0.268 (-0.760)
Foreign listing (+)	0.750[*] (1.9470)	1.290[***] (3.310)	7.994[***] (7.881)
Log(turnover) (+)	0.175 (1.417)	0.294[**] (2.372)	0.378[***] (2.720)
Free float (+)	0.410 (0.589)	-0.372 (-0.685)	1.795[*] (1.859)
Leverage (?)	1.932 (1.376)	0.138 (0.138)	1.258 (0.847)
Profitability (-)	-1.452 (-0.538)	-2.743 (-0.933)	-2.584 (-0.531)
Capital intensity (+)	-0.048 (-0.049)	0.055 (0.064)	2.312[**] (2.018)
LR statistic (prob.)	21.905 (0.003)	25.889 (0.001)	31.85 (0.000)
Classification rate (naive)	79.6% (72.8%)	68.9% (52.4%)	86.4% (82.5%)

Table 5: Probit regressions for cash flow statements with separate funds change

[*] significant with $p < 0.10$ (two-sided), [**] significant with $p < 0.05$, [***] significant with $p < 0.01$

The model has significant explanatory power in all years. That is, the likelihood ratio (LR) statistic, which tests for the explanatory power of the full model and distributed chi-squared with 7 degrees of freedom, is highly significant and the within-sample classification rate is superior to the naive classification (based on the largest cell). All coefficients have the predicted signs except capital intensity in 1992, free float in 1994, and big six auditor in the last two regressions, but none of these signs is significant. In 1992, only foreign listing reaches conventional significance levels. In 1994, foreign listing and trading volume are significant. In addition to these variables, free float and capital intensity turn out significant in 1996. The high significance level of foreign listing in this year obtains because all firms with a foreign listing disclose cash flow statements, which makes the variable a perfect predictor in 25 cases and leaves 78 observations to be explained by the other variables.[30]

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[30] Re-estimating the regression for 1996 without foreign listing shows that the estimates of the other coefficients are reliable.

Table 6 presents ordered probit regressions based on CFS4, which accounts for qualitative differences across cash flow statements. Again, predicted signs are in the first column. Each subsequent column provides estimated coefficients and z-statistics (in parentheses). The regressions are estimated with quasi-maximum likelihood procedures such that the standard errors are robust to misspecifications of the underlying distribution (see White, 1982):

n=103	CFS4_92 (z-stat.)	CFS4_94 (z-stat.)	CFS4_96 (z-stat.)
Big Six auditor (+)	0.366 (1.477)	0.094 (0.382)	0.233 (0.885)
Foreign listing (+)	0.810^{**} (2.398)	1.091^{***} (3.178)	0.727^{*} (1.683)
Log(turnover) (+)	0.132 (1.333)	0.236^{***} (2.699)	0.255^{**} (2.392)
Free float (+)	-0.104 (-0.171)	-0.048 (-0.101)	1.608^{**} (2.452)
Leverage (?)	-0.148 (-0.129)	-0.242 (-0.237)	1.991^{*} (1.742)
Profitability (-)	0.540 (0.229)	-3.262 (-1.280)	-1.730 (-0.630)
Capital intensity (+)	0.278 (0.375)	1.044 (1.636)	2.317^{**} (2.496)
LR statistic (prob.)	18.988 0.008	31.669 (0.000)	43.938 (0.000)

Table 6: Ordered Probit regressions for voluntary cash flow statements

[*] significant with $p < 0.10$ (two-sided), [**] significant with $p < 0.05$, [***] significant with $p < 0.01$

The model has significant explanatory power in all years as indicated by the likelihood ratio statistic. All coefficients have the predicted signs except profitability in 1992 and free float in the first two regressions, but all the "wrong" signs are highly insignificant. Again, only foreign listing is significant in 1992. However, the big six dummy is close to conventional significance levels (p=0.140). In 1994, foreign listing and trading volume are both highly significant and capital intensity almost attains the 10% significance level. In 1996, capital intensity, free float and leverage are significant in addition to foreign listing and trading volume, which now have lower z-statistics. Interestingly, leverage is only significant for cash flow statements that are likely to reveal additional information, i.e., when CFS3 and CFS4 are

used as dependent variables. This finding is consistent with theory in the sense that cash flow information is particularly important for highly levered firms.[31]

Overall, binary and ordered regressions produce similar results. The findings are consistent with the notion that capital-market benefits (or pressures) drive voluntary cash flow statements. In 1992, only firms that face pressures in foreign capital markets provide cash flow statements. Later, firms with substantial domestic capital-market benefits (as measured by the proxies) follow.

6.3   Factor Analysis

To gain further insights about the driving forces of voluntary cash flow statements, I perform a common factor analysis. As all the variables stand for related, but unobservable (capital-market) factors, the question is whether the variables cluster in a way that is consistent with theory. That is, the identified factor pattern may facilitate the interpretation of the previous results. Moreover, the factor pattern allows the construction of factor scores, which then can be used in the regressions instead of the individual variables.

Table 7a to 7c present the factor patterns identified by principal factor analysis using adjusted squared multiple correlations (SMC) as prior communality estimates.[32] This is the simplest form of factor analysis where factors are retained based on the variation proportion criterion.[33] Due to the subjectivity involved, I refrain from any rotation methods.[34] For clarity, all factor loadings smaller than 0.5 are omitted in the table.

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[31] Both variables require that the cash flow statement has additional line items that are generally not contained elsewhere in the annual report. See also Leuz (1999) for a similar finding.

[32] I acknowledge that factor analysis can be problematic with dichotomous variables. However, the analysis is primarily used to identify variable clusters to facilitate the interpretation of previous results and hence in a more heuristic sense. Kim and Mueller (1978, p. 75) suggest that factor analysis with dummy variables can be justified in this case.

[33] Principal component analysis, which sets all prior communalities to 1 and retains components with an eigenvalue smaller than one, yields a very similar factor pattern.

[34] Note, however, that both the orthogonal and the oblique transformation yield essentially the same factor clustering and interpretation.

1992	Capital-market orientation	Financial position	Financing needs
Big six auditor			
Foreign listing	0.671		
Share turnover	0.704		
Free float	0.751		
Leverage		0.578	
Profitability			
Capital Intensity			0.547

Table 7a: Factor pattern in 1992

1994	Capital-market orientation	Financial position	Financing needs
Big six auditor			
Foreign listing	0.533		
Share turnover	0.784		
Free float	0.643		
Leverage		0.612	
Profitability		-0.572	
Capital Intensity			0.548

Table 7b: Factor pattern in 1994

1996	Capital-market orientation	Financial position	Financing needs
Big six auditor			
Foreign listing	0.506		
Share turnover	0.687		
Free float	0.653		
Leverage		0.642	
Profitability		-0.599	
Capital Intensity			0.592

Table 7c: Factor pattern in 1996

The factor pattern is very similar across the years. That is, there are always the same three factors with the same ordering. The three factors account in all cases for almost 100% of the variation. Based on the clustering of the variables the factors can be interpreted as follows: The first factor is related to the firm's capital-market orientation as it combines foreign listing, free float and share turnover variable. That is, firms with a foreign listing, widely dispersed

ownership and high trading volume are likely to be more capital-market oriented and more likely to benefit from the disclosure of cash flow statements.

The second factor is related to the firm's financial position. It combines financial leverage and profitability. Note that the factor loadings have opposite signs precisely as theory would suggest. That is, high leverage and low profitability are generally an indication of a weak financial position. Firms with a weak financial position are likely to be under more pressure to produce cash flow statements, which facilitate the assessment of the firm's cash generating ability.

The last factor is related to the firm's financing needs. The primary factor loading is the capital intensity variable. Firms with a higher proportion of long-term assets generally have higher long-term financing needs. Theory predicts that firms with larger financing needs are more forthcoming in their disclosure policy (see e.g., Lang and Lundholm, 1997).

In summary, the identified factor pattern is consistent with disclosure theory. Moreover, ordered regressions of CFS4 on factor scores constructed from the factor pattern produce results that are consistent with the findings in section 6.2. In particular, I find that the factor have positive signs as one would expect. However, in 1992, only the first factor (capital-market orientation) is highly significant. In 1994 and 1996, the other two factors (financial position and financing needs) become highly significant as well. Overall, the marginal effects of the factors and the significance levels increase over time suggesting an increasing importance of capital-market related aspects for the disclosure of German firms.

7.   Determinants of International Cash Flow Statements

7.1.   Hypotheses and Univariate Results

An important hypothesis of the paper is that voluntary cash flow statements of German firms are influenced by the developments of international reporting standards as well as German professional recommendations. However, not every firm is influenced by these developments in the same way. That is, the impact is likely to depend on firm characteristics, which are proxies for the benefits associated with an early adoption of international cash flow statements. It is the purpose of this section to analyze these cross-sectional differences.

The majority of sample firms adopts an "international" cash flow statement during the period considered. As noted in section 5.2, it is the timing of the adoption that distinguishes firms. However, as international cash flow statements are generally viewed as more informative

(e.g., Haller and Jakoby, 1994; Mansch et al., 1995),[35] I expect similar associations between the timing of the adoption and the independent variables as hypothesized in section 6.1. That is, I hypothesize that firms adopting international cash flow statements earlier are more likely to have a big six auditor, a foreign listing, a higher percentage of sales generated abroad, higher trading volume, free float, and capital intensity. As noted in section 6.1, the association with leverage is not obvious and the timing of voluntary cash flow statements is more likely to be positively associated with profitability. That is, firms are more likely to make the decision when they have "good news".

These hypotheses are analyzed based on the classification of disclosure strategies introduced in section 5.2 using CFS6. The following variable distinguishes between trendsetters, early adopters, late followers and waiting firms: CLASS={0, 1, 2, 3}, where 3 indicates a trendsetter, 2 an early adopter, 1 a late follower and 0 a waiting firm (see also table 3a). Table 8 presents the univariate results in 1996. Predicted signs are in the first column. The (two-sided) p-values in parentheses stem from a nonparametric Kruskal-Wallis test indicating whether the medians of the four groups are statistically different:[36]

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[35] This view is supported by the high correlation between cash flow statements with at least one additional line item generally not provided elsewhere in the annual report (CFS3=1) and cash flow statements that conform with the international format and funds definition (CFS5=2). As noted in section 5.2, there are only few "international" cash flow statements that fail the additional line item criterion.

[36] I have created similar classification variables in 1992 and 1994: CLASS92 = {0, 1}, where 1 indicates a trendsetter; CLASS94 = {0, 1, 2}, where 2 indicates a trendsetter and 1 an early adopter. Using these variables and the independent variables in the respective years yields analogous results to those reported below.

Variables	CLASS	No. Firms	Mean	Median
Big six auditor	=0	38	0.553	-
(+)	=1	33	0.727	-
	=2	27	0.667	-
	=3	5	0.800	-
Foreign listing	=0	38	0.079	-
(+)	=1	33	0.212	-
	=2	27	0.444	-
	=3	5	0.600	-
Sales abroad	=0	38	0.394	0.344
(+)	=1	33	0.345	0.289
(p=0.799)	=2	27	0.428	0.482
	=3	5	0.350	0.428
Share turnover	=0	38	1.106	0.666
(+)	=1	33	1.480	1.463
(p=0.007)	=2	27	2.042	2.058
	=3	5	1.759	1.839
Free float	=0	38	0.256	0.235
(+)	=1	33	0.457	0.439
(p=0.001)	=2	27	0.505	0.499
	=3	5	0.527	0.626
Leverage	=0	38	0.685	0.707
(?)	=1	33	0.738	0.740
(p=0.443)	=2	27	0.725	0.744
	=3	5	0.689	0.614
Profitability	=0	38	0.038	0.026
(+)	=1	33	0.034	0.031
(p=0.318)	=2	27	0.038	0.029
	=3	5	0.064	0.066
Capital intensity	=0	38	0.416	0.394
(+)	=1	33	0.498	0.509
(p=0.071)	=2	27	0.453	0.445
	=3	5	0.577	0.555
Firm size	=0	38	5359	1255
(+)	=1	33	6383	1704
(p=0.0001)	=2	27	14823	6702
	=3	5	47018	49448

Table 8: Univariate results for the different disclosure strategies (CLASS)

The medians (and the means) of the four groups exhibit an ordering that is generally consistent with the hypothesized sign. That is, while the ordering is not always perfect, the expected trend prevails in all cases. Moreover, the differences in the medians are statistically significant for share turnover, free float, capital intensity and firm size. The results are very

similar using a classification based on CFS5. Thus, the univariate results generally support my hypotheses, but as always have to be interpreted cautiously.

7.2 Multivariate Results

In this section, I examine the incremental explanatory power of the variables with respect to the decision to adopt an international cash flow statement. Table 9 presents ordered probit regressions based on the model specified in section 6.1 using CFS6 as dependent variable.[37] As before, the predicted signs are in the first column. Each subsequent column provides estimated coefficients and z-statistics (in parentheses). The regressions are estimated with quasi-maximum likelihood procedures such that the standard errors are robust to misspecifications of the underlying distribution (see White, 1982):

n=103	CFS6_92 (z-stat.)	CFS6_94 (z-stat.)	CFS6_96 (z-stat.)
Big Six auditor (+)	0.136 (0.469)	-0.304 (-1.183)	-0.047 (-0.166)
Foreign listing (+)	0.776** (2.052)	1.048*** (3.212)	0.459 (1.110)
Log(turnover) (+)	0.192 (1.536)	0.270*** (2.625)	0.301*** (2.961)
Free float (+)	0.1253 (0.209)	-0.195 (-0.411)	1.245** (2.015)
Leverage (?)	1.393 (0.990)	0.083 (0.090)	1.801 (1.398)
Profitability (-)	-0.722 (-0.238)	-1.097 (-0.442)	0.188 (0.056)
Capital intensity (+)	0.306 (0.339)	0.219 (0.286)	2.048** (2.410)
LR statistic (prob.)	20.1 (0.005)	26.4 (0.000)	37.85 (0.000)

Table 9: Ordered probit regressions for international cash flow statements (CFS6)

* significant with $p < 0.10$ (two-sided), ** significant with $p < 0.05$, *** significant with $p < 0.01$

The model has significant explanatory power in every year as indicated by the likelihood ratio statistic. All coefficients have the predicted signs except free float in 1994 and big six auditor in the last two regressions. But again, all these unexpected signs are highly insignificant. Overall, the results are very similar to those reported in table 6. In 1992, only foreign listing is

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[37] The results using CFS5 are similar.

significant. In 1994, foreign listing and trading volume are the only significant variables and in 1996 trading volume, free float and capital intensity exhibit significant positive associations.

As noted in section 5.1, firms do not switch back once they have adopted an international cash flow statement. This fact, however, is not accounted for in the three regressions in table 9. To address this issue, I re-estimate the above regressions using only those firms that have *not* adopted an international cash flow statement at the previous point in time. That is, in 1994, I discard firms that already provided an international statement in 1992. Firms that switch to an international cash flow statement in the respective year *or* firms that provide such a statement for the first time are coded as one; all others receive a zero. These binary probit regressions (not reported) yield results similar to those reported in table 9. However, the overall significance levels of these regressions, i.e., the LR statistics, are somewhat lower due to the smaller sample size.

8.   Summary and Conclusions

This paper studies the determinants of voluntary and international cash flow statements for a sample of 103 large German firms at three different points in time. It covers a period of major changes in the disclosure of cash flow statements by German firms: In 1992, the majority of sample firms did not provide cash flow (or even simple funds flow) statements. This situation has completely changed only 4 years later. In 1996, most sample firms disclose cash flow statements in line with international reporting practice. This strong trend towards international cash flow statements seems to be influenced by the international standards for cash flow statements as well as the German professional recommendation HFA 1995.

Looking at the adoption history in detail reveals that the trend towards international cash flow statements first more strongly influenced firms already publishing a cash flow statements. Firms without cash flow statement appear more strongly influenced by the events from 1994 to 1996, e.g., the professional recommendation HFA 1995. Overall, voluntary disclosures of "international" cash flow statements follow a "classic" adoption pattern over time: In the beginning, there are only a few trendsetters, then the number of firms is steadily increasing. This adoption pattern is fairly homogeneous across industries, although there are some industries where firms have switched slightly earlier (like automotives and chemicals & pharmaceuticals).

Across all regressions, the cross-sectional determinants seem to be fairly stable, although their relative importance changes over time. In 1992, voluntary cash flow statements are provided primarily by firms that listed at foreign exchanges. In 1994, foreign listing and trading volume have significant positive associations with voluntary cash flow statements. In 1996, the explanatory power of the listing status decreases and trading volume, free float and capital intensity exhibit significant positive associations. These results are in line with the idea that capital market pressures drive voluntary disclosures of cash flow statements and that the firms that move first are those that face the largest capital-market pressures (or have the largest benefits). Considering that firms generally do not take their disclosure decision back, the regressions suggest the following adoption pattern: firms with foreign listings move first because they face the greatest pressures in the *foreign* capital markets. Later, firms with high trading volume, large free float and high capital intensity follow. These firms are likely to have relatively large benefits in the *domestic* capital market.

A subsequent factor analysis confirms the importance of capital-market related aspects. The identified factor pattern is stable across the three points in time and consists of three factors: the firm's capital-market orientation, its financial position and its financing needs. Subsequent regressions using factor scores constructed from this factor pattern produce results that are consistent with previous findings. In 1992, only the firm's capital-market orientation is significant, while in 1994 and 1996 all three factors have significant positive associations.

The regressions suggest similar determinants for the adoption of international cash flow statements, I find that firms with foreign listing, higher trading volume, free float, and capital intensity are more likely to adopt international statements early. Again, these findings are generally consistent with the idea that capital-market benefits drive voluntary disclosures.

Finally, as the majority of large firms across all industry sectors already provides international cash flow statements by 1996, it seems that in this case regulation follows industry practice (and not the other way around). Ironically, such a pattern is often claimed to be typical for "common law" countries as opposed to "code law" country like Germany.

Appendix

Table A1a: Description of Independent Variables

Independent Variable	Proxy	Data Base
"Big Six" auditor	Dummy: "Big Six" auditor = 1	Worldscope (AUDITOR)
Listing status	Dummy: Foreign listing = 1	Hoppenstedt
Trading volume[1] Log(share turnover)	Yearly trading volume (in shares) in all market segments at the main exchange divided by total number of all voting and non-voting shares outstanding at the fiscal year end	Kapitalmarktdatenbank, Universität Karlsruhe (TRADING VOLUME); Bloomberg (CH3)
Business abroad[2]	Percentage of total revenues generated outside of Germany	Bloomberg (DES); Worldscope
Ownership[3]	Free float: Percentage of voting shares widely held and known to be available for free trading	Hoppenstedt
Leverage	Total liabilities (including contingencies) divided by total assets	Bloomberg (CH3)
Profitability[4]	Operating income divided by net sales	Bloomberg (CH2)
Capital Intensity	Non-current assets divided by total assets	Bloomberg (CH3)
Size[5]	Book value of total assets (in mill. DM)	Bloomberg (CH3)

[1] Yearly trading volume is divided by the number of voting and non-voting shares outstanding to avoid size-related collinearities with other variables.

[2] This variable is not used in the multiple regressions. For 7 firms, only sales generated outside Europe are available. Note also that firms may not report sales generated abroad in a consistent fashion. Where several classifications are offered, I consistently choose sales by customer location.

[3] The free float variable is as an inverse proxy for the concentration of ownership. That is, a low percentage of voting shares available for trading ("Streubesitz") implies that one or several shareholders hold large blocks of shares (>5%).

[4] Operating income is defined as earnings before taxes, interest and extraordinary items.

[5] This variable is not used in the multiple regressions due to collinearity problems in the years 1992 and 1994.

Table A1b: Industry Classification

Industry	Dummy	Number of Firms
Automotives	ID1	7
Construction	ID2	12
Chemicals & Pharmaceuticals	ID3	14
Retail & Consumer Goods (incl. Breweries and Textiles)	ID4	31
Mechanical and Electrical Engineering & Machinery; Steel & Metals	ID5	28
Utilities & Telecoms; Transport (Regulated industries)	ID6	11

Firms listed at the Frankfurt Stock Exchange are classified based on the Composite DAX industry classification. It distinguishes the following non-financial industries: Automotives, Construction, Chemicals & Pharmaceuticals, Holding Companies, Electricals, Breweries, Transport, Mechanical Engineering & Machinery, Paper, Utilities & Telecoms, Steel & Metals, Textils, Retail & Consumer Goods. These industries are further aggregated into 6 major sectors as shown in the above table. Sample firms classified as holding companies (AGIV, IVG) are reclassified based on the company description in Hoppenstedt and the primary SIC code in the Worldscope database. The only sample firm belonging to the paper industry (Herlitz) is reclassified as Retail & Consumer Goods. Sample

firms not listed at the Frankfurt Stock Exchange are classified based on the Hoppenstedt Börsenforum classification which is similar to the Composite DAX classification.

Table A2a: Descriptive Statistics of Independent Variables in 1992

1992	Big Six Auditor	Foreign Listing	Sales Abroad	Share Turnover	Free Float	Financial Leverage	Operating Margin	Capital Intensity	Firm Size
Mean	0.495	0.204	0.317	0.889	0.396	0.698	0.039	0.446	8071
Median	0.000	0.000	0.375	0.629	0.369	0.717	0.031	0.415	1762
Maximum	1.000	1.000	0.834	5.715	1.000	0.913	0.268	0.890	86151
Minimum	0.000	0.000	0.000	0.001	0.000	0.169	-0.235	0.074	147
Std. Dev.	0.502	0.405	0.254	0.965	0.290	0.119	0.055	0.181	16022

Table A2b: Descriptive Statistics of Independent Variables in 1994

1994	Big Six Auditor	Foreign Listing	Sales Abroad	Share Turnover	Free Float	Financial Leverage	Operating Margin	Capital Intensity	Firm Size
Mean	0.563	0.233	0.345	1.194	0.436	0.711	0.041	0.456	8934
Median	1.000	0.000	0.337	0.901	0.400	0.730	0.031	0.444	1880
Maximum	1.000	1.000	0.840	5.407	1.000	1.414	0.237	0.867	93536
Minimum	0.000	0.000	0.000	0.002	0.000	0.293	-0.084	0.060	196
Std. Dev.	0.498	0.425	0.271	1.038	0.287	0.138	0.047	0.174	17738

Table A2c: Descriptive Statistics of Independent Variables in 1996

1996	Big Six Auditor	Foreign Listing	Sales Abroad	Share Turnover	Free Float	Financial Leverage	Operating Margin	Capital Intensity	Firm Size
Mean	0.650	0.243	0.385	1.503	0.399	0.713	0.038	0.460	10190
Median	1.000	0.000	0.458	1.415	0.388	0.732	0.031	0.459	2152
Maximum	1.000	1.000	0.862	5.035	1.000	0.957	0.244	0.820	98700
Minimum	0.000	0.000	0.000	0.004	0.000	0.343	-0.174	0.046	289
Std. Dev.	0.479	0.431	0.279	1.160	0.283	0.129	0.050	0.175	20377

Table A2d: Pairwise Pearson Correlations in 1992

1992	BSIX92	FORLST92	BUSAB92	LN_TV92	FFLOAT92	LEVER92	PROF92	LTA92
BSIX92	1.000							
FORLIST92	0.222*	1.000						
BUSAB92	0.241*	0.266*	1.000					
LN_TV92	0.281*	0.377*	0.300*	1.000				
FFLOAT92	0.098	0.560*	0.105*	0.496*	1.000			
LEVER92	0.005	0.078	-0.042	-0.042	0.085	1.000		
PROF92	-0.052	-0.031	-0.127	0.119	-0.014	-0.330*	1.000	
LTA92	0.064	-0.016	-0.290	-0.241*	-0.004	0.227*	0.179	1.000
LN_TA92	0.393*	0.673*	0.288*	0.382*	0.441*	0.320*	-0.181	0.205*

Note: Asterisks indicate pairwise correlations with p-values (two-sided) smaller than 0.05.

Table A2e: Pairwise Pearson Correlations in 1994

1994	BSIX94	FORLST94	BUSAB94	LN_TV94	FFLOAT94	LEVER94	PROF94	LTA94
BSIX94	1.000							
FORLIST94	0.254*	1.000						
BUSAB94	0.105	0.189	1.000					
LN_TV94	0.209*	0.344*	0.367*	1.000				
FFLOAT94	0.070	0.375*	0.099	0.489*	1.000			
LEVER94	0.135	0.063	-0.083	-0.092	-0.041	1.000		
PROF94	-0.135	-0.058	-0.036	-0.014	-0.038	-0.417*	1.000	
LTA94	0.094	0.059	-0.324*	-0.325*	-0.066	0.092	0.145	1.000
LN_TA94	0.370*	0.721*	0.189*	0.315*	0.363*	0.169	-0.202*	0.181

Note: Asterisks indicate pairwise correlations with p-values (two-sided) smaller than 0.05.

Table A2f: Pairwise Pearson Correlations in 1996

1996	BSIX96	FORLST96	BUSAB96	LN_TV96	FFLOAT96	LEVER96	PROF96	LTA96
BSIX96	1.000							
FORLIST96	0.273*	1.000						
BUSAB96	0.186*	0.278*	1.000					
LN_TV96	0.191	0.295*	0.396*	1.000				
FFLOAT96	0.156	0.446*	0.236*	0.512*	1.000			
LEVER96	-0.028	-0.027	-0.130	-0.181	-0.030	1.000		
PROF96	-0.008	0.128	0.081	0.121	0.111	-0.562*	1.000	
LTA96	0.111	0.096	-0.295*	-0.311*	-0.083	0.180	0.104	1.000
LN_TA96	0.359*	0.714*	0.264*	0.255*	0.402*	0.191	-0.004	0.250*

Note: Asterisks indicate pairwise correlations with p-values (two-sided) smaller than 0.05.

References

Adler, Düring, and Schmaltz (1997), Rechnungslegung und Prüfung der Unternehmen, Kommentar, 6th edition, Stuttgart, Teilband 2.

Bauer, A. and Schader, H. (1996), Darstellung der Finanzlage im Jahresabschluß - Eine empirische Untersuchung, Journal für Betriebswirtschaft, Vol. 46, p. 89-99.

Belsley, D., Kuh, E. and Welsch, R. (1980), Regression Diagnostics, Identifying Influential Data and Sources of Collinearity, New York et al. (Wiley & Sons).

Berndsen, H. (1979), Unternehmenspublizität, Kiel.

Budde, W. and Karig, K. (1990), Beck'scher Bilanzkommentar, W. Budde et al. (eds), 2nd edition, München (Beck).

Busse von Colbe, W. (1981), Kapital- und Finanzflußrechnung, in: Handwörterbuch des Rechnungswesens, E. Kosiol (ed.), 2nd edition, Stuttgart, Sp. 891-901.

Busse von Colbe, W. (1990), Funds Flow Statement, in: Handbook of German Business Management, E. Grochla et al. (eds), Stuttgart, Volume 1, Sp. 1000-1016.

Chmielewicz, K. and Caspari, B. (1985), Zur Problematik von Finanzierungsrechnungen, DBW, Vol. 45, pp. 156-169.

Cooke, T. (1989), Disclosure in the corporate annual reports of Swedish companies, Accounting and Business Research, Vol. 19, p. 113-124.

Diamond, D. (1985), Optimal release of information by firms, Journal of Finance, Vol. 40 (September), p. 1071-1094.

Ewert, R. and Wagenhofer, A. (1992), Unternehmenspublizität und Konkurrenzwirkungen, Zeitschrift für Betriebswirtschaft, Vol. 62 (3), p. 297-324.

Feltham, G., Gigler, F. and Hughes, J. (1992), The effects of line-of-business reporting on competition in oligopoly settings, Contemporary Accounting Research, Vol. 9 (Fall), p. 1-23.

Gebhardt, G. (1984), Kapitalflußrechnungen als Mittel zur Darstellung der Finanzlage, Die Wirtschaftsprüfung, Vol. 37 (18), p. 481-491.

Goebel, A. and Fuchs, M. (1995), Die Anwendung der International Accounting Standards in den Konzernabschlüssen deutscher Kapitalgesellschaften, Der Betrieb, Vol. 48, Heft 31, p. 1521 -1527.

Görges, T. and Schulte, J. (1994), Publizitätspolitik börsennotierter Teilkonzerne - Eine empirische Untersuchung, Die Wirtschaftsprüfung, Vol. 47 (17), p. 561-574.

Gray, S. and Radebaugh, L. (1984), International Segment Disclosures by US and UK Multinational Enterprises: A Descriptive Study, Journal of Accounting Research, Vol. 22 (Spring), p. 351-360.

Haller, A. and Jakoby, S. (1994), Verbreitung und Entwicklungsstand der Finanzierungsrechnung in Deutschland - Eine empirische Analyse, Der Betrieb, Vol. 47 (13), p. 641-649.

Harris, M. (1998), The Association between Competition and Managers' Business Segment Reporting Decisions, Journal of Accounting Research, Vol. 36, Spring, p. 111-128.

Healy, P., Palepu, K. and Sweeney, A. (1996), Do firms benefit from expanded voluntary disclosure?, working paper, MIT Sloan School and Harvard Business School.

IdW (1978), Stellungnahme HFA 1/1978: Die Kapitalflußrechnung als Ergänzung des Jahresabschlusses, Die Wirtschaftsprüfung, Vol. 31, No. 7, pp. 207-208.

IdW/SG (1995), Die Kapitalflußrechnung als Ergänzung des Jahres- und Konzernabschlusses, Gemeinsame Stellungnahme HFA 1/1995 des Hauptfachausschusses und des Arbeitskreises "Finanzierungsrechnung" der Schmalenbach-Gesellschaft/Deutsche Gesellschaft für Betriebswirtschaft e.V., Die Wirtschaftsprüfung, Vol. 48, No. 6, pp. 210-213.

Jakoby, S., Maier, J. and Schmechel, T. (1999), Internationalisierung der Publizitätspraxis bei Kapitalflußrechnungen – Eine empirische Untersuchung der DAX-Unternehmen für den Zeitraum 1988 bis 1997, Die Wirtschaftsprüfung, Vol. 52, No. 6, pp. 225-238.

Jensen, M. and Meckling, W. (1976), Theory of the Firm, Managerial Behavior, Agency Costs, and Ownership Structure, Journal of Financial Economics, Vol. 3, p. 305-360.

Kim, J. and Mueller, C. (1978), Factor Analysis, Statistical Methods and Practical Issues, Sage University Papers, No. 14.

Lang, M. and Lundholm, R. (1993), Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures, Journal of Accounting Research, Vol. 31, No. 2, p. 246-271.

Lang, M. and Lundholm, R. (1997), Voluntary Disclosure During Equity Offerings: Reducing Information Asymmetry or Hyping the Stock?, working paper, University of Michigan.

Leftwich , R., Watts, R. and Zimmerman, J. (1981), Voluntary corporate disclosure: The case of interim reporting, Journal of Accounting Research, Vol. 19, Supplement, p. 50-77.

Leuz, C. (1999), Voluntary Disclosure of Cash Flow Statements and Business Segment Data in Germany, working paper, JW-Goethe Universität Frankfurt.

Mansch, H., Stolberg, K. and von Wysocki, K. (1995), Die Kapitalflußrechnung als Ergänzung des Jahres- und Konzernabschlusses, Die Wirtschaftsprüfung, Vol. 48 (6), p. 185-203.

Meek, G. and Gray, S. (1989), Globalization of stock markets and foreign listing requirements: voluntary disclosures by continental European companies listed on the London Stock Exchange, Journal of International Business Studies, Vol. 20 (2), p. 315-336.

Meek, G., Roberts, C. and Gray, S. (1995), Factors influencing voluntary annual report disclosures by US, UK and Continental European multinational corporations, Journal of International Business Studies, Vol. 26 (3), p. 555-572.

Schneider, P. (1985), Finanzwirtschaftliche Nebenrechnungen, Frankfurt et al.

Schülen, W. (1992), Angaben zur Gewinn- und Verlustrechnung, in: Beck'sches Handbuch der Rechnungslegung, Castan, E. et al. (eds), München, Band I, B 425.

Schulte, K. and Müller, S. (1994), Berichterstattung über die Finanzlage in den Geschäftsberichten deutscher Aktiengesellschaften – eine empirische Untersuchung, Die Aktiengesellschaft, Vol. 39, No. 12, December, pp. 540-559.

Scott, T. (1994), Incentives and disincentives for financial disclosure: Voluntary disclosure of defined benefit pension plan information by Canadian firms, Accounting Review, Vol. 69 (1), p. 26-43.

Serfling, K. and Marx, M. (1991), Die Bedeutung der Richtlinie SFAS No. 95 für die Praxis der Kapitalflußrechnung, Die Wirtschaftsprüfung, Vol. 44, No. 12, pp. 345-350.

Stahn, F. (1996), Zum praktischen Entwicklungsstand der Konzern-Kapitalflußrechnung in Deutschland, Die Wirtschaftsprüfung, Vol. 49 (18), p.649-657.

Stahn, F. (1997), Die Kapitalflußrechnung in der aktuellen Berichterstattung deutscher Konzerne, Betriebsberater, p. 1991-1996.

Verrecchia, R. (1983), Discretionary disclosure, Journal of Accounting and Economics, Vol. 5, p. 179-194.

Verrecchia, R. (1990), Information Quality and Discretionary Disclosure, Journal of Accounting and Economics, Vol. 12, p. 365-380.

Wagenhofer, A. (1990a), Voluntary disclosure with a strategic opponent, Journal of Accounting and Economics, Vol. 12, p. 341-363.

Wagenhofer, A. (1990b), Informationspolitik im Jahresabschluß, Heidelberg (Physica).

Wallace, O., Choudhury, M. and Pendlebury, M. (1997), Cash Flow Statements: An International Comparison of Regulatory Positions, International Journal of Accounting, Vol. 32, No. 1, pp. 1-22.

White, H. (1982), Maximum Likelihood Estimation of Misspecified Models, Econometrica, Vol. 50, January, p. 1-25.