

Observations on measuring the differences between domestic accounting standards and IAS: A reply

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Observations on measuring the differences between domestic accounting standards and IAS: A reply

Abstract

In the commentary that precedes this reply, Nobes makes several comments on our article published in this Journal (Ding et al., 2007). In our reply, we start with the key issue raised: the comment on the distinction between accounting practices (de facto) and accounting regulations (de jure). We then discuss the IAS bias in the “GAAP 2001” study, before presenting our reply on the endogeneity issue and on the robustness check for the “divergence” score. We conclude with a discussion of the separate dimensions of absence vs. divergence.

Key words

International accounting differences; institutional factors; IAS, absence, divergence

In his comment on Ding, Hope, Jeanjean, and Stolowy (henceforth DHJS) (2007), Nobes includes a very critical review of the “GAAP 2001” study led by himself (Nobes, 2001), revealing the real reasons why international auditing firms participated in the “GAAP 2001” study and some of the problems faced during the data collection. This inside information, divulged for the first time in his comment and unknown to us during the preparation of our article, is certainly very valuable for researchers wanting to use the “GAAP 2001” study directly or referring to our “absence” and “divergence” scores. However, we do not think that the objective Nobes reveals as underlying his survey (“*to focus the attention of regulators in any particular country on improving accounting rules rather than on attacking the audit profession*”, § 2.1) reduces the validity of the results. Nobes also recognizes that “*as long as there are no systematic biases in the [“GAAP 2001” study] data, it might be reasonable to use them for research. ... I am not aware of any such national bias in GAAP 2001*” (§ 2.1).

In our reply, we start with the key issue raised: the comment on the distinction between accounting practices (*de facto*) and accounting regulations (*de jure*). We then discuss the IAS bias in the “GAAP 2001” study, before presenting our reply on the endogeneity issue and on the robustness check for the “divergence” score. We conclude with a discussion of the separate dimensions of absence vs. divergence.

1. *De jure vs. de facto*

The *de jure vs. de facto* debate is the central issue in Nobes’ comment (in sections 2.2, 3.2 and 3.3). As Nobes wrote, “GAAP 2001” does not suffer from the problem of mixing differences in the rules (*de jure* differences) with differences in practices (*de facto* differences). “*It records only de jure differences between national and IAS rules*” (§ 2.2). Therefore, our article explored international accounting differences at the level of *regulation only*.

Nobes rightly points out that *de jure* differences do not necessarily always drive the corresponding *de facto* differences. We totally agree with this point and have even studied it in previous publications.

First, a *de jure* international divergence on one specific accounting issue does not always lead to a corresponding *de facto* divergence. We studied R&D accounting in France (Ding et al., 2004) and found that although French GAAP allowed companies to capitalize their R&D expenses long before the adoption of IAS/IFRS in 2005, very few French firms chose this option; although there is a clear *de jure* divergence between France (allowing R&D capitalization) and the U.S. (prohibiting R&D capitalization), the *de facto* divergence between the two countries is in fact marginal.

Second, as Nobes says, “if a nation’s rules do not require a particular item to be disclosed but companies often disclose it in practice, then this “absence” of a rule should perhaps be ignored” (§ 2.2). Here again, we take France as an example. For a very long time, the cash flow statement was not compulsory in France (absence). However, in 1998, 78% of the 100 largest French firms included it in their published financial statements (Ding et al., 2003).

We believe it is important to conduct studies on international accounting differences solely at the regulation level, as we did in DHJS (2007). These studies advance understanding of the underlying factors that drive the action taken by national accounting standard-setters: Why do they leave some accounting areas without regulation (measured by absence)? Why do they sometimes propose accounting solutions that are different from IAS (measured by divergence)?

Note also that in section 4 of DHJS (2007), we explore the implications of absence and divergence (*de jure* measures) for earnings management and stock price synchronicity (*de facto* measures). Precisely because “GAAP 2001” does not suffer from the problem of mixing *de jure* and *de facto* measures, the section 4 research design is “clean”: left-hand side variables are *de facto* while right-hand side variables are *de jure*.

Finally, our approach is consistent with Hail and Leuz (2006) who explain that, while studying the international cost of equity capital, they refrain from using variables that capture disclosure practice, because their study focuses on the role of legal institutions and disclosure regulation.

2. An IAS bias

In the “GAAP 2001” study, the only reference point for comparisons was IAS. This certainly introduces an IAS bias (Nobes, § 2.3), especially when a country has a more developed accounting system than IAS. In DHJS’ article, this limitation was noted: *“Regarding absence, it is important to point out that our underlying assumption is that IAS cover a more comprehensive list of accounting issues than DAS in most countries included in our study. However, it is possible that in some countries with a highly developed accounting system, DAS cover certain accounting issues which are absent from IAS. For example, the requirements for goodwill impairment tests in SFAS 141 were not included in IAS in 2001 (FASB, 2001). Meanwhile, it is quite unlikely that a country would on one side develop its DAS on some advanced issues absent in IAS while on the other side leave some gaps on basic issues. Consequently, although our absence index does not measure the superiority of DAS over IAS, we argue that a weak score [i.e. a high number] on absence reflects the lack of comprehensiveness of these countries’ accounting standards relative to IAS”* (Ding et al., 2007, p. 34). Additionally, it is often presumed that only one country, the U.S., is likely to have more comprehensive DAS than IAS, and yet excluding the U.S. from our sample does not change our findings (Ding et al., 2007, p. 21).

3. Endogeneity issue

In his comment, Nobes questions the causality link we suggest between the importance of the accounting profession and accounting differences. There is a potential endogeneity problem here. A two-stage regression is necessary to test it, but this is not possible in a country-based study with only 30 observations.

As Nobes mentions at the beginning of his comment, the “GAAP 2001” study covered 62 countries. Accordingly, when we started our study, we computed the divergence and absence scores for all 62 countries (see Table 1). However, when we ran our determinants and consequences regressions, we had to reduce the number of countries to just 30 because of the constraints of country-based data for several variables. Future research could take advantage of the full sample.

Insert Table 1 About Here

4. Robustness check on divergence score

In section 3.2, Nobes points out that DHJS “*add categories 3 and 4 together, despite the attempt in GAAP 2001 to suggest that category 4 items were of less widespread practical importance. This might constitute a further systematic bias because, for example, many of the abstruse points of US divergence (see 2.5 above) were deliberately put into category 4. Future researchers could calculate whether their results are robust to, for example, a double weighting of category 3 items compared to category 4 items*”.

Following Nobes’ suggestion, we conducted robustness checks. From the categories “C Inconsistencies that could lead to differences for many enterprises” (hereafter “Major divergence”) and “D Differences in some enterprises” (hereafter “Minor divergence”), we created the variable “New divergence”: $(2 * \text{Major divergence} + \text{Minor divergence}) * 2/3$.¹

In a first step consisting of analysis of the determinants of divergence, we replicate Table 3, Panel C, Model 2 of DHJS (2007) with the new variable in the following stepwise regression:

$$\begin{aligned} \text{New divergence} = & \alpha_0 + \alpha_1 \text{Legal tradition} + \alpha_2 \text{Ownership concentration} \\ & + \alpha_3 \text{Economic development} + \alpha_4 \text{Importance of the accounting profession} \\ & + \alpha_5 \text{Importance of equity market} + \varepsilon_1 \end{aligned}$$

Table 2 reports the results published earlier and the results with the new divergence variable. The results are qualitatively similar.

Insert Table 2 About Here

¹ We multiply the weighted sum of “Major divergence” and “Minor divergence” by 2/3, because we do not want this variable to be overweighted in the regressions which included both the absence and divergence variables.

In a second step consisting of analysis of the effect of absence and divergence on earnings management, we replicate Table 5, Panel C, Model 2 of DHJS (2007) with the “new divergence” variable in the following regression:

$$\begin{aligned} \text{Earnings management} = & \beta_0 + \beta_1 \text{Absence} + \beta_2 \text{New divergence} \\ & + \beta_3 \text{Investor protection} + \beta_4 \text{Legal enforcement} + \varepsilon_2 \end{aligned}$$

Table 3 reports the results published earlier and the results with the new divergence variable, applied to the full model. The results are qualitatively similar.

Insert Table 3 About Here

In a third step consisting of analysis of the effect of absence and divergence on synchronicity, we replicate Table 6, Panel C, Model 3 of DHJS (2007) with the “new divergence” variable in the following regression:

$$\begin{aligned} \text{Synchronicity} = & \mu_0 + \mu_1 \text{Absence} + \mu_2 \text{New divergence} + \mu_3 \text{Economic development} \\ & + \mu_4 \text{Logarithm of geographical size} + \mu_5 \text{Variance in GDP growth} \\ & + \mu_6 \text{Logarithm of number of listed stocks} + \mu_7 \text{Industry Herfindahl index} \\ & + \mu_8 \text{Country Herfindahl index} + \mu_9 \text{Good government index} + \varepsilon_4 \end{aligned}$$

Table 4 reports the results published earlier and the results with the new divergence variable, applied to the full model. The results are qualitatively similar.

Insert Table 4 About Here

5. Separate dimensions

As mentioned previously, Nobes refers to the *de jure* vs. *de facto* difference to discuss the relevance of the absence/divergence distinction. Our article was exclusively based on “GAAP 2001”, i.e., on *de jure* differences.

We believe these two dimensions represent two distinctive attitudes by accounting standard-setters towards regulation on a specific accounting issue: “Absence” (the national

standard-setter does not cover this accounting issue) implies this accounting issue is not important enough in this specific jurisdiction, and/or is beyond the standard-setter's competence; while "divergence" (the national standard-setter covers this accounting issue, and takes a different approach from IAS) means this issue is important in this country (it is covered) and the standard-setter is competent and confident enough to adopt a non-IAS approach. "Divergence" may also indicate that the national GAAP covered a particular issue before it was covered by IAS.

In addition, we find a low, insignificant correlation between these absence and divergence variables both in our 30-country sample and in the full (62-country) sample.

6. Conclusion

In conclusion, although the "GAAP 2001" study was originally designed for professional uses and chose IAS as its reference point, it is still valuable for academic research due to its lack of national bias. Also, to the best of our knowledge, it is still the most recent available large-scale study on *de jure* international accounting differences covering 62 countries. The two dimensions of difference (absence and divergence) analyzed by the "GAAP 2001" study considerably enriched the international accounting literature.

There are several avenues of exploration for future research: first, as pointed out by Nobes, "*in the context of DHJS, it would be worth discussing whether good quality reporting needs good quality regulation or whether good reporting can develop without good regulation if a strong equity market demands it*" (§ 2.2). Second, we believe that numerous efforts have been made in the area of international accounting harmonization since 2001. The "GAAP 2001" study provides a snapshot of the distance between IAS and national GAAP in each of the 62 countries in the year 2001. It would be very interesting to see if currently, greater economic benefits of harmonization efforts are to be observed in countries that registered a greater distance between IAS and national GAAP in the 2001.

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Table 1 Absence and divergence (full sample – 62 countries)

Country	Country code (World Bank)	Absence Measurement	Absence Disclosure	Absence (see DHJS (2007) - Table 1)	Major Divergence	Minor Divergence	Divergence (see DHJS (2007) - Table 1)	Conformity	Total
Argentina	ARG	34	13	47	24	9	33	31	111
Australia	AUS	19	3	22	16	5	21	68	111
Austria	AUT	17	17	34	30	6	36	41	111
Belgium	BEL	12	10	22	22	10	32	57	111
Brazil	BRA	24	12	36	21	2	23	52	111
Bulgaria	BUL	14	11	25	10	2	12	74	111
Canada	CAN	0	4	4	21	4	25	82	111
Chile	CHL	17	14	31	25	3	28	52	111
China	CHN	17	6	23	17	2	19	69	111
Cyprus	CYP	0	0	0	0	0	0	111	111
Czech Republic	CZE	29	15	44	15	5	20	47	111
Denmark	DNK	18	13	31	14	7	21	59	111
Egypt	EGY	12	10	22	22	1	23	66	111
Estonia	EST	24	4	28	9	1	10	73	111
Finland	FIN	11	11	22	28	3	31	58	111
France	FRA	13	8	21	26	8	34	56	111
Germany	DEU	9	9	18	30	8	38	55	111
Greece	GRC	22	18	40	27	1	28	43	111
Hong Kong, China	HKG	12	2	14	13	2	15	82	111
Hungary	HUN	24	16	40	18	8	26	45	111
Iceland	ISL	21	8	29	21	2	23	59	111
India	IND	14	4	18	19	0	19	74	111
Indonesia	IDN	7	5	12	10	2	12	87	111
Iran	IRN	23	8	31	10	2	12	68	111
Ireland	IRL	0	0	0	29	5	34	77	111
Israel	ISR	6	9	15	11	7	18	78	111
Italy	ITA	18	9	27	27	10	37	47	111
Japan	JPN	13	5	18	21	1	22	71	111
Kenya	KEN	0	0	0	0	0	0	111	111
Latvia	LVA	36	15	51	11	4	15	45	111
Lithuania	LTU	50	14	64	9	0	9	38	111
Luxembourg	LUX	37	17	54	17	0	17	40	111
Malaysia	MYS	24	6	30	13	0	13	68	111
Mexico	MEX	0	0	0	11	7	18	93	111
Morocco	MAR	43	13	56	10	2	12	43	111
Netherlands	NLD	8	2	10	8	17	25	76	111
New Zealand	NZL	17	6	23	13	7	20	68	111
Norway	NOR	4	3	7	7	10	17	87	111
Pakistan	PAK	25	2	27	12	2	14	70	111
Peru	PER	0	1	1	5	7	12	98	111
Philippines	PHL	22	2	24	12	2	14	73	111
Poland	POL	18	5	23	24	6	30	58	111
Portugal	PRT	21	8	29	16	6	22	60	111
Romania	ROM	0	0	0	0	0	0	111	111
Russian Federation	RUS	30	8	38	20	9	29	44	111
Saudi Arabia	SAU	50	9	59	7	1	8	44	111
Singapore	SGP	3	1	4	14	0	14	93	111
Slovak Republic	SVK	28	14	42	17	1	18	51	111
Slovenia	SVN	25	15	40	31	0	31	40	111
South Africa	ZAF	6	1	7	1	0	1	103	111
South Korea	KOR	10	5	15	8	3	11	85	111
Spain	ESP	10	18	28	27	2	29	54	111
Sweden	SWE	5	5	10	16	10	26	75	111
Switzerland	CHE	27	15	42	22	0	22	47	111
Taiwan	TWN	16	3	19	13	10	23	69	111
Thailand	THA	23	6	29	7	0	7	75	111
Tunisia	TUN	23	15	38	7	0	7	66	111
Turkey	TUR	35	12	47	14	10	24	40	111
Ukraine	URK	21	10	31	10	0	10	70	111
United Kingdom	GBR	0	0	0	27	8	35	76	111
United States	USA	2	4	6	11	12	23	82	111
Venezuela	VEN	35	6	41	12	2	14	56	111

Table 2

Determinants of divergence

Table 3 - Panel C - Model 2 (Ding et al., 2007)	Divergence		Replication with New divergence	
	coef.	p	coef.	p
Importance of equity market	-0.728	0.000	-0.912	0.000
Importance of accounting profession	0.019	0.068	0.027	0.052
Economic development	8.032	0.000	8.513	0.002
Constant	-41.640	0.030	-38.988	0.109
Number of observations	30		30	
F	11.698		9.650	
Prob>F	0.000		0.000	
R-square	0.605		0.552	
Adjusted R-square	0.559		0.500	

New model:

$$\begin{aligned}
 \text{New divergence} = & \alpha_0 + \alpha_1 \text{Legal tradition} + \alpha_2 \text{Ownership concentration} \\
 & + \alpha_3 \text{Economic development} + \alpha_4 \text{Importance of the accounting profession} \\
 & + \alpha_5 \text{Importance of equity market} + \varepsilon_1
 \end{aligned}$$

Definition of variables:

Absence: Our measure representing the absence of DAS compared to IAS.

Divergence: Our measure representing the divergence between DAS and IAS.

New divergence: (2 * Major divergence + Minor divergence) * 2/3.

Importance of equity market: Measured as the mean rank across three variables used in La Porta et al. (1997): (1) the ratio of the aggregate stock market capitalization held by minority shareholders to gross national product, (2) the number of listed domestic firms relative to the population, and (3) the number of IPOs relative to the population. Each variable is ranked such that higher scores indicate greater importance of the stock market. Source: Leuz et al. (2003).

Importance of the accounting profession: The development level of the accounting profession in each country is measured by the density of public accountants/auditors per 100,000 inhabitants. Source: IFAC 2002 membership statistics in February 2003 (www.ifac.org) - Population data: U.S. Census Bureau World Population <http://www.census.gov/ipc/www/world.html>.

Economic development: Proxied by the natural logarithm of GDP per capita, i.e., the GDP in US\$ adjusted to purchasing power parity, divided by the country's population Source: World Bank: World Development Indicators database, online version (data from 2001).

Table 3

Consequences of absence and divergence on earnings management

Table 5 - Panel C - Model 2 (Ding et al., 2007)	Divergence		Replication with New divergence	
	coef.	p	coef.	p
Absence	0.295	0.009	0.287	0.011
Divergence/New divergence	0.037	0.777	0.058	0.523
Investor protection	-1.870	0.018	-1.845	0.015
Legal enforcement	-0.637	0.366	-0.699	0.288
Constant	20.636	0.010	20.489	0.009
Number of observations	30		30	
F	7.938		7.593	
Prob>F	0.000		0.000	
R-square	0.472		0.476	
Adjusted R-square	0.387		0.392	

New model:

$$\text{Earnings management} = \beta_0 + \beta_1 \text{Absence} + \beta_2 \text{New divergence} \\ + \beta_3 \text{Investor protection} + \beta_4 \text{Legal enforcement} + \varepsilon_2$$

Definition of variables:

Earnings management: Aggregate earnings management score computed as the average rank across four measures, two based on discretion in earnings and two based on earnings smoothing. EM1 is the country's median ratio of the firm-level standard deviations of operating income and operating cash flow (both scaled by lagged total assets). Cash flow from operations is equal to operating income minus accruals, where accruals are calculated as: $(\Delta \text{total current assets} - \Delta \text{cash}) - (\Delta \text{total current liabilities} - \Delta \text{short-term debt} - \Delta \text{taxes payable}) - \text{depreciation expense}$. EM2 is the country's median Spearman correlation between the change in accruals and the change in cash flow from operations (both scaled by lagged total assets). EM3 is the country's median ratio of the absolute value of accruals and the absolute value of the cash flow from operations. EM4 is the number of "small profits" divided by the number of "small losses" for each country. A firm-year observation is classified as a small profit if net earnings (scaled by lagged total assets) are in the range (0, 0.01). A firm-year observation is classified as a small loss if net earnings (scaled by lagged total assets) are in the range (-0.01, 0). Source: Leuz et al. (2003).

Absence: Our measure representing the absence of DAS compared to IAS.

Divergence: Our measure representing the divergence between DAS and IAS.

New divergence: $(2 * \text{Major divergence} + \text{Minor divergence}) * 2/3$.

Investor protection: Anti-director rights index created by La Porta et al. (1998): aggregate measure of minority shareholder rights and ranges from zero to five. Source: Leuz et al. (2003).

Legal enforcement: Equals the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. All three variables range from zero to ten. Source: Leuz et al. (2003).

Table 4

Consequences of absence and divergence on synchronicity

Table 6 - Panel C - Model 3 (Ding et al., 2007)	Divergence		Replication with New divergence	
	coef.	p	coef.	p
Absence	0.003	0.113	0.003	0.122
Divergence/New divergence	-0.003	0.023	-0.003	0.033
Economic development	0.029	0.424	0.029	0.423
Logarithm of geographical size	-0.002	0.593	-0.002	0.545
Variance in GDP growth	46.017	0.010	43.611	0.013
Log. of number of listed stocks	0.017	0.221	0.014	0.303
Industry Herfindahl index	0.139	0.610	0.181	0.501
Country Herfindahl index	-0.269	0.652	-0.378	0.540
Good government index	-0.008	0.361	-0.008	0.304
Constant	-0.027	0.936	-0.002	0.995
Number of observations	30		30	
F	5.840		7.098	
Prob>F	0.000		0.000	
R-square	0.561		0.558	
Adjusted R-square	0.363		0.360	

New model:

$$\begin{aligned}
\text{Synchronicity} = & \mu_0 + \mu_1 \text{Absence} + \mu_2 \text{New divergence} + \mu_3 \text{Economic development} \\
& + \mu_4 \text{Logarithm of geographical size} + \mu_5 \text{Variance in GDP growth} \\
& + \mu_6 \text{Logarithm of number of listed stocks} + \mu_7 \text{Industry Herfindahl index} \\
& + \mu_8 \text{Country Herfindahl index} + \mu_9 \text{Good government index} + \varepsilon_4
\end{aligned}$$

Definition of variables:

Synchronicity: Index which represents the degree to which stocks in a country move together. Stock prices are more likely to move together when there is less credible firm-specific information available for the pricing of individual stocks.

Stock price synchronicity is calculated as the fraction of stocks that move in the same direction in country j:

$$f_j = \frac{1}{T} \sum_t \frac{\max[n_{jt}^{\text{up}}, n_{jt}^{\text{down}}]}{n_{jt}^{\text{up}} + n_{jt}^{\text{down}}} = \frac{1}{T} \sum_t f_{jt} \text{ . Source: Morck et al. (2000).}$$

Absence: Our measure representing the absence of DAS compared to IAS.

Divergence: Our measure representing the divergence between DAS and IAS.

New divergence: (2 * Major divergence + Minor divergence) * 2/3.

Logarithm of geographical size: In square kilometers. It represents country size. Source: World Bank (2000).

Variance in GDP growth: To measure macroeconomic instability, Morck et al. (2000) use the variance of per capita GDP growth for each country, with per capita GDP measured in nominal U.S. dollars estimated from 1990 to 1994. We apply the same measure for the period 1990-1999 as published by the World Bank (2000). Source: Morck et al. (2000).

Logarithm of number of listed stocks: Because higher synchronicity might simply reflect fewer traded stocks, Morck et al. (2000) control for this effect by using the logarithm of the number of listed stocks. Source: Morck et al. (2000).

Herfindahl Index: The Herfindahl Index measures the degree of concentration in an industry or in a country and is computed by squaring the market-share of the firms, and then summing those squares. Industry Herfindahl index of country j: $H_j = \sum_k h_{k,j}^2$ where $h_{k,j}$ is the combined value of the sales of all country j firms in industry k as a percentage of those of all country j firms. Source: Morck et al. (2000).

Good government index: Measure of how well a country protects private property rights. Source: Morck et al. (2000).