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**Intended and unintended
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IFRS adoption:
A review of extant evidence
and suggestions for future
research**

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Intended and unintended consequences of mandatory IFRS adoption: A review of extant evidence and suggestions for future research

Abstract: This paper discusses empirical evidence on the economic consequences of mandatory adoption of International Financial Reporting Standards (IFRS) in the European Union (EU) and provides suggestions on how future research can add to our understanding of these effects. Based on the explicitly stated objectives of the EU's so-called 'IAS Regulation', we distinguish between intended and unintended consequences of mandatory IFRS adoption. Empirical research on the intended consequences generally fails to document an increase in the comparability or transparency of financial statements. In contrast, there is rich and almost unanimous evidence of positive effects on capital markets and at the macroeconomic level. We argue that certain research design issues are likely to contribute to this apparent mismatch in findings and we suggest areas for future research to address it. The literature investigating unintended consequences of mandatory IFRS adoption is still in its infancy. However, extant empirical evidence and insights from non-IFRS settings suggest that mandatory IFRS adoption has the potential to materially affect contractual outcomes. We conclude that both the intended and the unintended consequences deserve further scrutiny to assess the costs and benefits of mandatory IFRS adoption, which may help provide a basis for evaluating the effectiveness of the IAS Regulation. We provide specific guidance for future research in this field.

Keywords: International accounting, IFRS adoption, economic consequences, contracting, regulation, review

JEL Classification: G38, K12, K22, K34, M41, M48

Intended and unintended consequences of mandatory IFRS adoption: A review of extant evidence and suggestions for future research

1. Introduction

EU Regulation No. 1606/2002 (the IAS Regulation) requires firms listed in the European Union (EU) to prepare their consolidated accounts according to International Financial Reporting Standards (IFRS) from fiscal year 2005 onwards. The IAS Regulation is intended to help ensure a high degree of transparency and comparability of financial statements in order to improve the efficient functioning of the EU capital market (EC 2002). This paper summarizes and discusses extant empirical literature on the economic consequences of this mandatory IFRS adoption. It also provides suggestions for future research interested in understanding the impact of harmonizing financial reporting standards around the world.

Following Zeff (1978) and Holthausen and Leftwich (1983) we use the term economic consequences to denote any effects of financial reporting on firm values and on the wealth of those who make (or are affected by) decisions based on accounting information. We define economic consequences to be intended (unintended) if they can (cannot) be reconciled with the IAS Regulation's explicitly stated objectives. These objectives emphasize capital-market as well as macroeconomic effects resulting from enhanced transparency and cross-country comparability of financial reporting. However, they do not explicitly refer to the impact of financial reporting on contractual relationships. This regulatory focus arguably owes to the supranational character EU law, which exploits information externalities across jurisdictions but cannot accommodate other, country-specific roles of financial statement information. Our distinction between intended and unintended consequences therefore relates to the distinction between the information (or valuation) and contracting (or stewardship) roles of accounting.¹

We document that the rich empirical literature on the intended consequences of mandatory IFRS adoption generally fails to find an increase in the comparability or transparency of financial statements. In contrast, evidence of positive effects in capital markets and at the macroeconomic level is plentiful and almost unanimous. Since these latter effects are assumed to stem from IFRS adoption rendering financial statements more comparable and/or transparent,

¹ By referring to the (potentially positive) contracting effects of mandatory IFRS adoption as 'unintended' consequences, we do not intend to attach a negative connotation to the contracting role of financial reporting. This choice of terminology exclusively reflects the fact that an explicit reference to contracting consequences is absent from the IAS Regulation's stated objectives. Likewise, no normative connotation is attached to our relating what we call 'intended' consequences to financial reporting's information (or valuation) role.

these two sets of findings appear to be at odds. We offer two potential, non-mutually exclusive explanations for this conflict. First, extant literature tends to understate the accounting effects of mandatory IFRS adoption because it applies aggregate measures that capture only a subset of potential changes in financial reporting. Second, empirical studies could overstate the capital-market and macroeconomic effects of mandatory IFRS adoption because they are difficult to separate from the effects of concurrent changes unrelated to financial reporting. In addition to this identification problem, we show that extant evidence on the capital-market effects of mandatory IFRS adoption relies on commercial databases that suffer from a bias towards large firms. If large firms are more likely to benefit from IFRS (see, e.g., Christensen *et al.*, 2007), this bias helps explain the documented positive IFRS adoption effects.

Finally, we caution that capital-market outcomes may be consistent with both intended and unintended consequences. For example, stock market reactions to IFRS reconciliations can reflect either value-relevant information for shareholders (Horton and Serafeim, 2010) or wealth transfers between lenders and shareholders (Christensen *et al.* 2009). The latter study suggests that IFRS adoption has material effects on contractual outcomes, which is in line with insights from non-IFRS settings indicate that mandatory IFRS adoption potentially triggers unintended wealth transfers due to its influence on contracts such as compensation schemes or lending agreements. We expect the literature on unintended consequences to grow as researchers explore accounting's stewardship function in the IFRS adoption context.

This paper makes the following contributions to the accounting literature. First, we complement previous review articles on the economic consequences of financial reporting. Whereas prior papers either discuss the costs and benefits of financial reporting regulation in general (e.g., Leuz and Wysocki, 2008; Bushman and Landsman, 2010) or are confined to early (e.g., Hail and Leuz, 2007; Hail *et al.*, 2010) or selected (Pope and McLeay, 2011) evidence on the intended consequences of mandatory IFRS adoption, our study provides a comprehensive review of the current literature by introducing the useful dichotomy of intended versus unintended consequences. Furthermore, our paper complements an earlier review of the voluntary IFRS adoption literature (Soderstrom and Sun 2007). Whereas studies related to voluntary IFRS adoption provide conflicting evidence *within* the same categories of economic consequences (accounting effects, capital market effects), we find that the mandatory IFRS literature is similar *within* but inconsistent *across* categories. These different insights are likely due to research design issues idiosyncratic to each literature (e.g., self-selection at the firm-level is the less of an issue when studying reactions to mandatory changes).

Second, our analysis suggests that both intended and unintended consequences merit further scrutiny to establish a balanced view on the overall impact of mandatory IFRS adoption. Therefore, we provide suggestions for future research on two levels. On the one hand, improved research designs should enable stronger inferences about intended consequences. For example, progress is likely to come from disclosure, accounting choice and compliance studies using hand-collected data, as well as from studying smaller firms. On the other hand, the under-researched unintended consequences are a fruitful area for future inquiry. Interesting insights will likely stem from exploiting expert accounting knowledge to identify useful settings and from using actual contract data or, where absent, appropriate proxies.

Third, our study contributes to the international debate on whether harmonizing accounting standards is effective in achieving regulatory objectives. As such, it provides a potential source for assessing the effectiveness of the IAS Regulation. We base our analysis on the explicitly stated objectives of the IAS Regulation in order to evaluate research on this specific regulation rather than critique the regulator. Since these goals are consistent with the International Accounting Standards Board's (IASB) objectives and since the objectives of mandatory IFRS adoption are similar around the world (e.g., AGFRC 2002), we also draw on literature from other settings in case EU evidence is absent. Our discussion is therefore relevant beyond the EU and hopefully proves useful for both researchers and regulators.

The rest of this paper is organized as follows. Section 2 provides details on the institutional background and develops our distinction between intended and unintended economic consequences of mandatory IFRS adoption. Section 3 is a review and critique of extant evidence on the intended consequences. In section 4, we provide suggestions for future research on the intended and unintended consequences. Section 5 concludes by summarizing our findings and discussing the caveats to our analysis.

2. Institutional and conceptual background

2.1. The IAS Regulation and its objectives

After several decades of financial reporting harmonization, the European Commission introduced IFRS in 2002 (for details, see e.g. Pope and McLeay, 2011). Regulation (EC) No 1606/2002 of the European Parliament and the Council of 19 July 2002 on the application of international accounting standards (EC 2002), the so-called IAS Regulation, expresses its pursued objectives as follows (EC 2002, Art. 1):

“This Regulation has as its objective the adoption and use of international accounting standards in the Community with a view to harmonising the financial information presented by the companies ... in order to ensure a high degree of transparency and comparability of financial statements and hence an efficient functioning of the Community capital market and of the Internal Market.”

Similarly, the then European Commissioner for the Internal Market and Services stated (McCreevy, 2005):

”As users become more familiar and confident with IFRS, the cost of capital for companies using IFRS should fall. It should lead to more efficient capital allocation and greater cross-border investment, thereby promoting growth and employment in Europe.”

The following assumed causal chain emerges from these stated objectives:² The European regulator expects the harmonizing effect of mandatory IFRS adoption to increase the transparency and comparability of European financial reporting, allowing equity and debt markets to function more efficiently. This effect lowers firms’ cost of capital, improves capital allocation, and fosters cross-border investment, which in turn translates into positive effects at the macroeconomic level (e.g., increased growth and employment). We thus note two financial reporting objectives (transparency and comparability), one overarching capital market objective (efficient functioning), and two macroeconomic objectives (growth and employment). They form a causal chain with unspecified transmission mechanisms.³

These objectives are not unique to the EU regulator. Not only are they underscored by the IASB as well;⁴ they are also consistent with the objectives stated by regulators implementing IFRS in other jurisdictions. For example, the Australian Financial Reporting Council (FRC) “fully supports the Government’s view that a single set of high quality accounting standards

² The IAS Regulation mandates IFRS adoption only in the consolidated financial statements of publicly traded entities, whereas member states have an option to permit or require IFRS adoption elsewhere. Sellhorn and Gornik-Tomaszewski (2006) report considerable heterogeneity in the implementation of this option across member states, with only few countries allowing IFRS to fully replace national GAAP systems. For example, while German private firms are allowed, but not required, to prepare their consolidated accounts under IFRS, the legal-entity financial statements, on which capital maintenance regulation is based for all German corporations, must still be prepared under German GAAP.

³ Consistent with these expectations, some empirical studies find evidence of positive (negative) capital-market reactions to events that increased (decreased) the likelihood of mandatory IFRS adoption in the EU (Comprix *et al.*, 2003; Christensen *et al.*, 2007; Armstrong *et al.*, 2010).

⁴ The IASB’s objectives are delineated in its Preface to IFRS, including: “to develop ... a single set of high quality ... financial reporting standards [that] ... require high quality, transparent and comparable information in ... financial reporting to help investors, other participants in the various capital markets of the world and other users of financial information make economic decisions” (IFRSF 2010b, para. 6 (a)).

... will greatly facilitate cross-border comparisons by investors, reduce the cost of capital, and assist Australian companies wishing to raise capital or list overseas” (AGFRC 2002).

With respect to the enforcement of IFRS, the IAS Regulation established a coordinating and supervisory role for the Committee of European Securities Regulators (CESR).⁵ CESR’s Standard No. 1 (March 2003) lays out the requirements that EU member states ought to implement to meet their obligation to install an effective enforcement mechanism. CESR (2007) states that 21 member states had at least partially implemented Standard No. 1 by 2006, 24 by 2007, and 27 were projected to do so by 2008. At the same time, the CESR (2007) report documents a substantial degree of variation in the application of the Standard No. 1 criteria, and thus in institutional designs across member states. Today, ESMA (CESR’s successor) coordinates these country-specific enforcement institutions to ensure consistent interpretation and application of IFRS. To that end, ESMA maintains a common European database of enforcement cases and decisions, and organizes the periodic European Enforcers’ Coordination Sessions (EECS) (for details, see e.g. Ernstberger *et al.*, 2012a).

Empirically isolating the effects of the IAS Regulation is challenging because mandatory IFRS adoption in the EU coincided with a bundle of concurrent legal acts that had similar objectives. In the wake of IFRS adoption and the harmonization of enforcement institutions, several EU countries enacted legislation pertaining to securities regulation, reporting, and governance. Although many of these initiatives stemmed from EU legislation, the timing of their implementation at the country level varied. For example, EU Directives often contain options allowing for implementation differences at the member state level. Accordingly, Christensen *et al.* (2012) document heterogeneity in the timing of the implementation for the Market Abuse Directive of January 2003 (Directive 2003/6/EC) and the Transparency Directive of December 2004 (Directive 2004/109/EC). Moreover, they find that capital-market effects (liquidity, cost of capital) attributable to these initiatives vary at the country level depending on the overall degree of enforcement quality. In a single-country context, Ernstberger *et al.* (2012b) document the concurrent efforts in Germany to install an enforcement mechanism and legislation that implements various EU requirements to strengthen auditor independence and auditor oversight, finding evidence of ensuing decreases in earnings management and liquidity for affected firms.

⁵ At the beginning of 2011, CESR was replaced by ESMA, the European Securities and Markets Authority.

2.2. Economic consequences

The impact of financial reporting is typically discussed in terms of economic consequences, a concept introduced by Zeff (1978: 56) as “the impact of accounting reports on the decision-making behaviour of business, government, unions, investors and creditors.” In a similar vein, Holthausen and Leftwich (1983: 77) view accounting as having economic consequences “if changes in the rules used to calculate accounting numbers alter the distribution of firms’ cash flows, or the wealth of parties who use those numbers for contracting or decision making.” We follow these definitions and use the term economic consequences to denote any effects of financial reporting on firm values and on the wealth of those who make decisions based on accounting information or are affected by such decisions.

Financial reporting can trigger economic consequences through its information (valuation) and contracting (stewardship) roles.⁶ The first fundamental role is to provide current and potential investors with decision-useful information on a company’s business activities (e.g., IFRSF 2010a, para. OB2). Under this *information role*, financial reporting helps investors derive less noisy and/or less biased predictions of future cash flows, thus potentially affecting firm values by influencing the information set of current and potential investors.

The second fundamental role of financial reporting is to enable the firm’s stakeholders to hold management accountable for the resources entrusted to it (e.g., IFRSF 2010a, Introduction). Consistent with this stewardship function, contracts between the firm and its stakeholders are frequently based on financial accounting numbers. These contracts are either set at the firm level (individual contracts) or determined for multiple firms, e.g., by means of regulation at the jurisdictional level or through collective private arrangements (collective contracts). Individual contracts include performance-based management compensation plans to mitigate shareholder-manager conflicts (e.g., Jensen and Meckling, 1976; Healy, 1985) and lending agreements that contain financial covenants to mitigate conflicts between lenders and shareholders (e.g., Smith and Warner, 1979; Leftwich, 1983). Examples of collective contracts include dividend payout restrictions tied to accounting income (e.g., Leuz *et al.*, 1998) and the determination of taxable income based on financial statements (e.g., Shackelford and Shevlin, 2001). Focusing on this *contracting role*, positive accounting theory emphasizes that financial reporting, and especially accounting choices, affect contractual outcomes (e.g.,

⁶ The information (contracting) role of financial reporting can also be referred to as the *ex-ante (ex-post)* role, which is primarily intended to address adverse selection (moral hazard) problems (e.g., Beyer et al. 2010).

Watts and Zimmermann, 1986; Holthausen and Leftwich, 1983). These outcomes affect stakeholders' decisions, which in turn influence firm values.

It has long been acknowledged that the two fundamental roles of financial reporting are not necessarily compatible with each other. Indeed, recent research suggests that the information role of accounting information is negatively related to its contracting role. For example, Gassen (2008) shows that stewardship-related demand for and properties of accounting information vary inversely with the valuation usefulness of that information. In a similar vein, N. Li (2010) documents that debt contracts tend to exclude transitory components from US GAAP earnings in order to increase contracting usefulness. To the extent that US GAAP earnings primarily reflect accounting's information role, these adjustments are indicative of incompatibilities between the two roles of accounting.

2.3. Intended versus unintended consequences

This paper takes the view that the economic consequences of any regulation potentially fall into two categories: those that relate to the explicitly stated objectives of the regulator, and those that do not.⁷ Where economic consequences speak to the degree of achievement of the stated objectives, we label them intended consequences, or main effects, whereas we think of the other category as unintended consequences, or side effects.⁸ This dichotomy is consistent with regulators being able to anticipate possible side effects, but any regulation potentially has consequences other than those touted by the regulator.⁹

This paper is interested in research on the economic consequences of the European IAS Regulation. As discussed in section 2.1, the regulation's explicitly stated objectives include financial reporting effects (transparency and comparability) as well as overarching capital market and macroeconomic effects (efficient markets, growth and employment). We thus

⁷ Academic research in accounting has a long tradition of informing regulatory debates by assessing *ex post* the effectiveness of regulatory changes (e.g., Pope and McLeay, 2011; Fülbier *et al.*, 2009). The usefulness of such research hinges on the extent to which the phenomena studied reflect the objectives of the regulation under analysis. Considering regulators' explicit statements made within the regulatory context on which research evidence is being provided represents an effective way for researchers to discern these objectives.

⁸ This dichotomy is distinct from the separation of direct and indirect effects. In the context of the IAS Regulation, direct effects are those relating to the Regulation's accounting objectives (transparency and comparability). In contrast, effects relating to the Regulation's capital market and macroeconomic objectives can be viewed as indirect. In our dichotomy, both sets of effects would be viewed as intended.

⁹ For example, although Regulation Fair Disclosure (Reg FD) was "designed to promote the full and fair disclosure of information by issuers" (SEC 2000) in order to stamp out selective disclosure, research by Arya *et al.* (2005: 243) suggests potential "unintended consequences", including "herding among analysts [that could] leave investors worse off". However, this does not imply that the SEC did not anticipate and consider such effects.

label these effects the intended consequences of mandatory IFRS adoption, whereas we define all other effects as unintended. While this dichotomy is not identical to a categorization of economic consequences into benefits and costs, we expect that the intended consequences primarily have the character of benefits (e.g., increases in firm value) that stem from financial reporting's enhanced transparency and comparability.¹⁰ We consider the intended/unintended dichotomy useful for assessing whether the IAS Regulation was effective in achieving the explicitly stated objectives and to what extent it had side effects unrelated to these objectives. We therefore organize our review of extant literature around this dichotomy.¹¹

2.4. Supranational nature of the IAS Regulation

The introduction of IFRS in the EU as well as concurrent governance, reporting and securities regulation efforts represent supranational regulation, i.e. an attempt to converge or harmonize heterogeneous institutional and cultural environments. The EU regulator thus faces a higher-level version of the well-known problem of aggregating individual preferences into a societal welfare function (e.g. Demski, 1973). The variation in individual preferences is especially high at the supranational level due to variation in member states' preferences. The EU regulator's introduction of member state options can be seen as an attempt to reconcile these preferences. Accordingly, Leuz (2010: 233) points out that higher-level (supranational) regulation generates benefits from standardization and exploits (informational) network externalities, while regulation at a lower level (member states) "allows more fine-tuning to needs of firms and investors, and hence avoids the problems of a one-size-fits-all-approach".

EU member states have traditionally used accounting data for heterogeneous purposes such as taxation, payout restrictions, or informing capital providers. The IAS Regulation is aimed explicitly at increasing the transparency and comparability of financial statements for listed firms. Its two-level approach – to mandate IFRS application for consolidated accounts of listed firms, while leaving extension to legal-entity accounts and/or non-listed firms at member states' discretion – can be viewed as the outcome of a trade-off between heterogeneity at the country level and supranational objectives at the community level.

¹⁰ Naturally, research could show that mandatory IFRS adoption *fails to increase*, or even *decreases*, transparency or comparability. A related example from the Chinese context is provided by He *et al.* (2011).

¹¹ Doing so requires judgment calls in several instances, including (1) when a paper addresses both sets of consequences, (2) when a paper uses intermediate constructs claimed to relate to the ultimate consequences of interest (e.g. papers addressing information asymmetry effects that proxy for cost of capital effects), (3) when the empirical metrics used measure the consequences of interest imperfectly, and (4) when high-level (e.g. macroeconomic) consequences variables are used and the transmission mechanisms causing the observed effects remain unclear.

These two layers of regulatory outcomes of the IAS Regulation articulate with our distinction of intended versus unintended consequences. First, for the mandatory supranational part of the regulation, intended consequences are defined by the stated information (transparency and comparability) objectives. Unintended consequences from applying IFRS universally to the consolidated accounts of listed firms can thus result from financial data being used for *other* than information purposes, e.g. the contracting uses laid out above. Second, at the level of additional voluntary adoption of IFRS by member states, the objectives pursued may be different and would potentially include contracting contexts. For instance, while one member state may expect information benefits in the equity and credit markets for non-listed firms that apply IFRS, another may opt to prohibit use of IFRS for these firms due to strong links between financial accounting and taxation.

Taken together, the supranational character of EU law-making, which trades off EU-wide goals with the diverse objectives of the member states, predicts different sets of intended and unintended consequences of the IAS Regulation at the supranational and the member state levels. In this review, we focus on mandatory IFRS adoption and, thus, on the supranational level, arguing that intended consequences are largely expected from information uses of financial reporting, while unintended consequences primarily stem from contracting uses.¹²

3. Review and discussion of research on the economic consequences of mandatory IFRS adoption

This section reviews and discusses empirical studies on the economic consequences of mandatory IFRS adoption.¹³ We start by introducing the theoretical reasoning underlying these studies (section 3.1), continue with a summary of the empirical literature (section 3.2) and conclude by discussing common research design issues (section 3.3).

3.1. Theoretical background

The empirical studies reviewed in this section are motivated by the assumption that mandating IFRS has the potential to improve (transparency objective in section 2.1) and/or harmonize (comparability objective in section 2.1) financial reporting practices across countries. Studies on capital-market or macroeconomic effects moreover assume that improved and/or

¹² The two uses of financial reporting interact where, for example, improvements along the information dimension enhance financial reporting's efficiency in contracting settings (e.g., Beyer *et al.*, 2010).

¹³ We focus this section on the intended consequences. The scarce extant literature on the unintended consequences is discussed in the context of our suggestions for future research (section 4.2).

harmonized reporting practices yield positive user responses that lead to higher firm values on average. It is debatable whether these assumptions are justified.

Since accounting regimes generally provide firms with reporting discretion,¹⁴ recent research concludes that reporting practices are to a large extent determined by firms' reporting incentives (e.g., Ball *et al.*, 2000; Burgstahler *et al.*, 2006). These incentives are shaped by *jurisdiction-level* institutional factors such as legal systems, enforcement regimes, and capital-market forces, as well as by *firm-level* compensation and financing arrangements, ownership structures, and governance mechanisms. Hence, the impact of IFRS adoption on reporting practices is likely to be limited if a firm's institutional environment and firm-level incentives remain unchanged (e.g., Ball, 2006; Soderstrom and Sun, 2007; Hail *et al.*, 2010).

Even if reporting practices become more transparent and/or comparable subsequent to IFRS adoption, the economic consequences of such improvements are unclear *ex ante*. Theoretical models show that the directional impact of high-quality accounting information on the cost of capital is ambiguous (e.g., Lambert *et al.*, 2007). This finding may help explain why empirical evidence on the relation between financial reporting properties and the cost of capital is inconclusive (for an overview, see Leuz and Wysocki, 2008). Similarly, it is unclear whether more comparable financial statements enhance cross-border investment if underinvestment in foreign equities is due to behavioural biases or rational tendencies to invest in geographically proximate countries (e.g., Beneish and Yohn, 2008; for a theoretical model on the effects of accounting harmonization in equity markets, see Barth *et al.*, 1999).

This discussion shows that prior research does not necessarily support the assumption that mandatory IFRS adoption yields more transparent and/or comparable financial reports and, even if it does, that it will necessarily trigger positive economic consequences. It is important to keep this caveat in mind when interpreting the empirical evidence discussed next.

3.2. Empirical evidence¹⁵

In line with the framework of IFRS adoption objectives introduced in section 2.1, we distinguish three types of effects: financial reporting effects, capital-market effects, and macroeconomic effects. While financial reporting effects reflect the immediate impact of the

¹⁴ It is not clear whether IFRS provide financial statement preparers with more or less discretion than other sets of accounting standards. Rather, any set of accounting standards inevitably requires preparers to exercise reporting discretion and make subjective judgments (e.g., Leuz, 2006; Nobes, 2006).

¹⁵ We present a subset of studies in tabulated form. To keep the size of the tables manageable, we restrict them to cross-country studies and, where possible, published papers. In the narrative, we also refer to closely related studies that are not included in the tables. We caution that our selection is necessarily subjective.

change in standards on properties of financial statements, capital-market and macroeconomic effects relate to financial statement users' responses to mandatory IFRS adoption.

3.2.1. Financial reporting effects

Table 1 summarizes empirical evidence on the financial reporting effects of mandatory IFRS adoption which we group into three categories: compliance and accounting choice studies (Panel A), studies analyzing the properties of accounting numbers (Panel B), and value relevance studies (Panel C).¹⁶

Compliance and accounting choice studies

Panel A of Table 1 shows that empirical evidence on compliance with IFRS requirements and accounting choices under IFRS is limited, and that sample sizes are relatively small, presumably because appropriate data need to be hand-collected. Glaum *et al.* (2010) and Verriest *et al.* (2011) provide evidence of substantial non-compliance with IFRS disclosure requirements in the adoption year. Both studies also find that country- and/or firm-level incentives determine the degree of compliance. Similar evidence is presented by Cascino and Gassen (2011) for a sample of German and Italian firms. Kvaal and Nobes (2010) find substantial cross-country variation in IFRS policy choices in the adoption year, which is largely determined by pre-IFRS national reporting practices. In a follow-up study, Kvaal and Nobes (2011) confirm that these country-specific patterns persist several years after mandatory IFRS adoption. These results are in line with those from non-academic surveys (e.g., KPMG and von Keitz, 2006; Ernst & Young, 2007) and call into question whether IFRS adoption alone facilitates the comparability of financial statements across countries.

Accounting properties studies

The research summarized in Panel B of Table 1 relates to the effect of mandatory IFRS on properties of accounting numbers. Studies analyzing common earnings properties such as earnings smoothing, conditional conservatism or discretionary accruals find that mandatory IFRS adoption either has no significant impact (Atwood *et al.*, 2011) or even a negative effect (Ahmed *et al.*, 2012; Callao and Jarne, 2010). These results resonate in earnings management studies such as Jeanjean and Stolowy (2008) and Capkun *et al.* (2011) as well as in single-industry studies (e.g., Gebhardt and Novotny-Farkas, 2011, for the banking sector).

¹⁶ We categorize value relevance studies with the literature on accounting effects, but acknowledge that changes in value relevance around mandatory IFRS adoption may also reflect capital-market effects, e.g., in the form of IFRS-induced changes in the market value of equity.

Studies examining comparability provide mixed evidence. Cascino and Gassen (2011) show that the cross-country comparability of financial statements increases following mandatory IFRS adoption provided that compliance incentives are strong. Lang *et al.* (2010) find that earnings comparability decreases and earnings comovement increases post-IFRS. However, the increase in earnings comovement coincides with negative effects on firms' information environments. Liao *et al.* (2011) show that French and German IFRS earnings and book values are comparably priced in the first IFRS year, but later become less comparable. Taken together, these results are inconsistent with mandatory IFRS adoption significantly enhancing the transparency or comparability of financial statements.

Value relevance studies

Panel C of Table 1 presents empirical evidence on the impact of mandatory IFRS adoption on the value relevance of accounting numbers in equity and debt markets. Aharony *et al.* (2010) find that the equity value relevance of three accounting items that are particularly important under IFRS increases following the introduction of IFRS. Barth *et al.* (2011) provide evidence that the difference between local GAAP net income and restated IFRS net income is associated with stock prices and returns. The evidence related to value relevance in debt markets is less clear. While Bhat *et al.* (2011) find no impact of mandatory IFRS adoption on the sensitivity of credit default swap spreads to accounting information, Wu and Zhang (2009b) show that credit ratings are more sensitive to accounting information post-IFRS provided that legal enforcement is strong. The latter result is consistent with Florou *et al.* (2010). Overall, these findings provide some evidence of increasing value relevance following mandatory IFRS adoption, especially in equity markets.

3.2.2. Capital-market effects

Table 2 summarizes empirical evidence on capital-market effects of mandatory IFRS adoption. This research area can be classified into two broad categories: studies that directly analyze economic consequences in capital markets using measures that are strongly associated with firm values (Panel A), and studies providing indirect evidence by examining capital-market perceptions of accounting quality (Panel B).

Direct evidence on economic consequences in capital markets

Panel A of Table 2 illustrates that the first set of studies find nearly unanimous support for capital-market benefits following mandatory IFRS adoption. Specifically, the evidence is consistent with mandatory IFRS adoption increasing stock market liquidity (Daske *et al.*,

2008, see also Muller *et al.*, 2011), decreasing the cost of equity capital (S. Li, 2010), increasing cross-border equity investments by mutual funds (DeFond *et al.*, 2011; see also Yu, 2009) as well as by individual investors (Brüggemann *et al.*, 2011), increasing equity investments by institutional investors (Florou and Pope, 2011), decreasing the cost of public debt (Florou and Kosi, 2011) and increasing firm-level capital investment efficiency (Schleicher *et al.*, 2010; see also Biddle *et al.*, 2011). Although many of these effects are confined to a subset of firms with appropriate country institutions (such as a strong legal enforcement system), these findings support the expectation that mandatory IFRS adoption has the potential to yield direct capital-market benefits.

Indirect evidence on economic consequences in capital markets

The second set of studies uses proxies for the quality of financial statement information as perceived by capital-market participants. These perceptions, in turn, are assumed to influence firm values. Panel B of Table 2 shows that empirical evidence on these indirect capital-market effects also almost unanimously supports a beneficial impact of mandatory IFRS adoption. Specifically, mandatory IFRS adoption increases the information content of earnings announcements (Landsman *et al.*, 2011), increases cross-border information transfers from earnings announcements (Kim and Li, 2011; see also Wang, 2011), increases stock price synchronicity in the longer run (Beuselinck *et al.*, 2010) and enhances the quality of analysts' information environment in general (Byard *et al.*, 2011; Horton *et al.*, 2011; see also Panaretou *et al.*, 2011) and foreign analysts in particular (Tan *et al.*, 2011). Again, some of these effects are confined to firms from countries with appropriate supporting institutions such as a strong legal enforcement. In summary, these results provide evidence consistent with mandatory IFRS adoption leading to indirect capital-market benefits.

3.2.3. Macroeconomic effects

Table 3 summarizes empirical evidence on the macroeconomic effects of mandatory IFRS adoption. Beneish *et al.* (2010) find that mandatory IFRS adoption increases foreign debt investment, but not foreign equity investment. In contrast, Amiram (2009) provides evidence that foreign equity investment increases post-IFRS and that this effect is stronger in countries with low corruption and strong investor protection. The latter result is consistent with Khurana and Michas (2011) and Shima and Gordon (2011) who focus on US portfolio investment in foreign equity. Chen *et al.* (2011) and Márquez-Ramos (2011) show that foreign direct investment increases following mandatory IFRS adoption and that the size of this ef-

fect depends on country institutions such as pre-adoption IFRS conformity. Taken together, extant evidence generally supports the notion that mandatory IFRS adoption yields macroeconomic benefits.

3.3. Discussion of research design issues

3.3.1. Conflicting findings

Our review of the extant empirical evidence on the economic consequences of mandatory IFRS adoption yields two main insights. First, the financial reporting effects of mandatory IFRS adoption seem to be limited as non-compliance is substantial, national accounting choice patterns remain and earnings transparency and comparability metrics typically do not change or even deteriorate. Second, there is plentiful and almost unanimous evidence that the mandatory introduction of IFRS coincides with capital-market and macroeconomic benefits. To the extent that capital-market and macroeconomic benefits are thought to be achieved through IFRS making financial statements more transparent and/or comparable, these two sets of research findings appear to be at odds (see section 2.1).

This disagreement stands in sharp contrast to the empirical evidence on the economic consequences of voluntary IFRS adoption reviewed by Soderstrom and Sun (2007). For example, while Barth *et al.* (2008) provide evidence of improving accounting properties following voluntary IFRS adoption, van Tendeloo and Vanstraelen (2005) find opposite results. Leuz and Verrecchia (2000) document lower bid-ask spreads and higher trading volume for voluntary adopters, suggesting that the cost of equity capital decreases after the switch to IFRS. In contrast, Daske (2006) does not find a decrease in the implied cost of equity capital around voluntary IFRS adoption. Soderstrom and Sun (2007) point out that research design issues such as self-selection, omitted variables problems and mis-specified regression models are likely to contribute to these mixed findings.

We conclude that whereas empirical studies related to voluntary IFRS adoption provide conflicting evidence *within* the same categories of economic consequences (financial reporting effects, capital market effects), the mandatory IFRS literature is similar *within* but inconsistent *across* categories. Hence, the literature on mandatory IFRS adoption is likely to suffer from different research design issues than empirical studies related to voluntary IFRS adoption. We offer two non-mutually exclusive explanations for the disagreement in research findings on the economic consequences of mandatory IFRS adoption.

3.3.2. Understated financial reporting effects

Whereas the limited impact of mandatory IFRS adoption on financial reporting outcomes is not inconsistent with the notion that incentives dominate accounting standards in this regard (see section 3.2), a potential alternative explanation is that the literature understates the financial reporting effects of mandatory IFRS adoption by failing to apply measures that are relevant to financial statement users. Our review shows that most studies on IFRS financial reporting effects follow prior literature in using contentious ‘earnings quality’ metrics that rely on aggregate numbers retrieved from commercial databases. Financial statement users are certainly also interested in information beyond such aggregate numbers. Yet, empirical evidence on how such information (e.g., additional disclosures) changes following mandatory IFRS adoption is scarce. We conclude that extant evidence on the financial reporting effects of mandatory IFRS adoption is in line with prior literature but that more insights on the impact beyond aggregate numbers is warranted (see also section 4.1).

3.3.3. Overstated capital-market effects

The second potential explanation for the inconsistency in research findings is that the literature overstates the capital-market and macroeconomic effects of mandatory IFRS adoption. Since the IFRS mandate applies to most public firms in the EU, self-selection at the firm-level is less of an issue compared to the literature on voluntary IFRS adoption.¹⁷ However, introducing IFRS at *one* point in time for all firms causes a different identification problem, namely the challenge of disentangling the potential impact of mandatory IFRS adoption from other concurrent changes that influence the outcome under study. These concurrent changes either affect financial statements as well (e.g., the introduction of more rigid enforcement mechanisms; see section 2.1 for details) or are outside the realm of financial reporting (e.g., the implementation of the Market Abuse Directive, see again section 2.1 for details). Only concurrent changes with no impact on financial reports have the potential to explain the contradictory results from mandatory IFRS adoption studies finding capital-market but no financial reporting effects. If these accounting-unrelated regulatory changes are not appropriately controlled for in the research design, the results suffer from low internal validity and cannot be solely attributed to mandatory IFRS adoption.

¹⁷ Note that firms can potentially select to avoid the IFRS mandate, for example by delisting from the stock exchange or by switching to an unofficial trading segment where EU regulation does not apply. For evidence on increased delisting activity around the introduction of IFRS, see Vulcheva (2009). More subtly, firms could restructure their activities to avoid or dampen the anticipated impact of individual IFRS. For evidence from Dutch preference share buy-backs and restructurings, see de Jong *et al.* (2006).

The studies reviewed in section 3.2 typically attempt to circumvent the identification problem by implementing a difference-in-differences design using control groups of firms not concurrently subject to mandatory IFRS adoption. While certainly better than having no benchmark, this approach relies on the strong assumption that these control firms reflect the counterfactual, i.e. what would have happened to adopting firms in the absence of adoption.

Most studies also report cross-sectional heterogeneity in the IFRS effect related to country-level institutional factors (e.g., a rule of law variable to proxy for the strength of the legal enforcement system). This strategy would allow evaluating the internal validity if the variation in the IFRS effect could be predicted unambiguously. However, this is typically not the case. While institutional factors certainly contribute to the quality of financial reporting in general (e.g., Leuz *et al.*, 2003), it is less clear whether and how they are associated with changes in reporting practices following mandatory IFRS adoption (e.g., Holthausen, 2009). Hence, present evidence on cross-sectional heterogeneity in the IFRS effect is mainly descriptive. We conclude that extant literature on the capital-market and macroeconomic effects of mandatory IFRS adoption suffers from an identification problem, suggesting that caution is necessary in interpreting the results. However, this status quo also offers opportunities for future research, which we discuss in section 4.1.

In addition to the identification problem, the empirical literature on capital-market effects of mandatory IFRS adoption faces the challenge of having to deal with potentially biased samples. The CESR (2007) review of the implementation and enforcement of IFRS in the EU reports that, based on information provided by national enforcement institutions across Europe, a total of 5,323 equity issuers met the requirements of the IAS Regulation and consequently had to prepare consolidated IFRS accounts for the fiscal year 2005. Table 4 compares this precise estimate of the actual population of IFRS adopters with the sample sizes used in four representative cross-country studies discussed in the previous section (Daske *et al.*, 2008; DeFond *et al.*, 2011; Landsman *et al.*, 2011; Byard *et al.*, 2011). This comparison illustrates that sample sizes in most academic studies are substantially smaller than the actual number of IFRS adopters. The main reason for this gap is that commercial database coverage outside the US suffers from a systematic bias towards large companies (e.g., Garcia Lara *et al.*, 2006). Empirical studies provide strong evidence that large companies are more likely to switch to IFRS voluntarily (see, e.g., Cuijpers and Buijink, 2005), suggesting that these firms expect net benefits from IFRS. Consistent with this notion, Christensen *et al.* (2007) estimate a proxy for a firm's willingness to adopt IFRS based on firm size as a major determinant.

They further show that this proxy predicts cross-sectional variation in the immediate and long-run stock market response to events related to the EU's decision to require IFRS. Taken together, these findings suggest that the database bias towards large companies potentially distorts research findings by overstating the positive effects of mandatory IFRS adoption.

Finally, it is important to separate the source of an economic consequence from the empirical construct used to measure it. Specifically, capital-market outcomes potentially reflect economic consequences that stem from the information *or* contracting roles of financial reporting. For example, Horton and Serafeim (2010) as well as Christensen *et al.* (2009) observe significant stock market reactions to IFRS reconciliations in the UK. However, the two papers provide opposite interpretations of this phenomenon. While Horton and Serafeim (2010) argue that their evidence is consistent with IFRS reconciliations containing value-relevant information for shareholders, Christensen *et al.* (2009) claim that the stock market reactions reflect wealth transfers between lenders and shareholders. They (p. 1168) conclude that “failure to consider accounting’s debt-contracting role risks attributing IFRS reconciliation market reactions to information about a given firm’s future operating cash flows rather than information about the likelihood of violating covenants. This, in turn, means that one of the costs of mandatory IFRS (i.e., the effect on existing contracts) may be incorrectly identified as a benefit.” Rather than commenting on the relative merits of these conflicting positions, we stress that a lesson for future research on mandatory IFRS adoption is that observed capital-market outcomes require further analysis to ascertain whether the underlying cause is more consistent with an information explanation (i.e., an intended consequence according to our definition) or a contracting explanation (i.e., an unintended consequence).

4. Avenues for future IFRS adoption research

4.1. Intended consequences

Extant results of the literature on intended consequences reviewed in section 3 could simply be artefacts of the short history of mandatory IFRS adoption reflecting a combination of idiosyncratic, transitory effects of first-time adoption and low statistical power due to relatively short analysis periods and resulting small numbers of observations.¹⁸ For this reason, an easily available research opportunity lies in the re-examination of potential IFRS effects using longer time series (e.g., Kvaal and Nobes, 2011 on accounting choice).

¹⁸ Tables 1-3 show that the average mandatory IFRS adoption paper covers two to three (and a maximum of four) post-adoption years, if the transition year (2005 for most firms) is not counted.

However, the discussion in section 3.3 indicates that the causes of the apparent conflict across types of mandatory IFRS adoption effects are more systematic. We specifically suggest three areas for future research to address this mismatch. First, we know little about how mandatory IFRS adoption affects financial statements beyond the aggregate numbers retrieved from commercial databases. Evidence on whether firms actually comply with, and how they make accounting choices within, the restrictions of IFRS is also limited. It is therefore still to a large extent an open question whether financial statements have become more transparent and comparable following mandatory IFRS adoption, *as measured by detailed financial reporting outcomes*. To address this important issue, we advocate more disclosure, compliance and accounting choice studies that rely on manually collected and thus finer data. Such datasets, if sufficiently large, could also help validate existing aggregate measures, for example by documenting the extent to which common cross-country comparability metrics are explained by actual accounting choices.

Second, we encourage researchers to develop more convincing identification strategies when analyzing capital-market or macroeconomic effects of mandatory IFRS adoption. The challenge is to disentangle a potential IFRS effect from other concurrent changes that may or may not affect financial reporting. These different forces are difficult to separate in cross-country studies. Focusing on more specific settings (e.g., a single country or trading segment) is likely to be a useful starting point for better understanding and controlling for contemporaneous non-IFRS effects, and should thus increase the internal validity of results.

Another strategy to deal with the identification problem is to confirm internal validity by analyzing whether the potential IFRS effect varies in the cross-section according to theory-based predictions. For example, future research could directly link potential capital-market effects of mandatory IFRS adoption to changes in reporting practices at the firm level. The underlying assumption of this approach is that capital-market reactions stem from mandatory IFRS adoption having a material impact on financial statements. Potential proxies for such changes in reporting practices include the difference between local GAAP and IFRS earnings as reported in the reconciliation statements of the first IFRS report, or changes in firm-specific earnings management scores around IFRS adoption.¹⁹ As a second approach, we suggest relating potential capital-market effects to proxies for firm-level benefits of manda-

¹⁹ Recent empirical studies have started to use reconciliation data to evaluate cross-sectional differences in the capital-market effects of mandatory IFRS adoption (e.g., Horton *et al.*, 2011). Changes in firm-specific earnings management scores, in contrast, have so far only been used in the context of voluntary IFRS adoption (Daske *et al.*, 2011).

tory IFRS adoption. Christensen *et al.* (2007), for example, estimate these benefits with a counterfactual proxy for a company's willingness to adopt IFRS. This proxy is based on characteristics of German voluntary IFRS adopters and applied to companies in the UK where voluntary IFRS adoption was not allowed. Future research could apply a similar method to other settings to evaluate whether potential IFRS effects are indeed positively associated with expected benefits. Alternatively, proxies for the benefits of IFRS adoption could be based on firm-specific stock market reactions to events that changed the likelihood of mandatory IFRS introduction in Europe (for a review of this literature, see Soderstrom and Sun, 2007).

Finally, we suggest addressing the potential sample bias in extant evidence on the capital-market effects of mandatory IFRS adoption. As our analysis of the current literature shows, this stream of research relies on commercial databases that suffer from a systematic bias towards large companies. We therefore encourage researchers to manually gather data on smaller companies and evaluate whether these experienced systematically different capital-market reactions to mandatory IFRS adoption than their larger counterparts.

4.2. Unintended consequences

We define unintended consequences as those absent from the IAS Regulation's explicitly stated objectives (section 2.3).²⁰ These unintended consequences which relate largely to the contracting uses of IFRS financial statements have received little research attention so far. We structure our suggestions in this section around these contracting uses distinguishing between compensation schemes, lending agreements, dividend payouts, taxation, and other regulatory restrictions. Related extant evidence is still scarce and discussed along the way.

Compensation schemes

Compensation schemes commonly have elements based on accounting-based performance metrics in order to align managers' and shareholders' interests. In equilibrium, they can be thought of as efficient responses to an agency problem. If performance metrics are based on GAAP in force at the date of calculation ('rolling GAAP'), changes in accounting rules such as the mandatory adoption of IFRS will affect contractual outcomes (i.e., bonuses). This

²⁰ The early announcement of the IAS Regulation in 2002 enabled managers to act opportunistically in anticipation of certain IFRS effects. Wang and Welker (2011) provide the only related empirical evidence we are aware of. They find that firms with larger IFRS-induced decreases in net income are more likely to issue equity, and issue a larger volume of equity, during the three years leading up to mandatory IFRS adoption. These results are consistent with management exploiting private information about the effects of mandatory IFRS adoption to decrease the cost of equity financing at the expense of outside investors.

change in GAAP will therefore change the efficiency of GAAP in resolving the agency conflict upsetting the previously existing equilibrium and affecting the distribution of wealth between managers and shareholders if compensation plans are not adjusted.²¹ Attempts to restore the equilibrium can include managers engaging in potentially value-decreasing investment and financing decisions (Holthausen and Leftwich, 1983) and costly renegotiation of compensation schemes (in anticipation of and/or subsequent to the change in GAAP). We argue that any repercussions of mandatory IFRS adoption on accounting-based compensation schemes in our definition represent unintended consequences.

Future research could analyze empirically the extent to which these effects occur. First, if equilibriums are upset by the mandatory adoption of IFRS and corresponding adjustments are made, the pervasiveness and content of accounting-based compensation arrangements should change. For a sample of listed UK firms, Voulgaris *et al.* (2011) collect data on compensation contracts for period around mandatory IFRS adoption (2002-2009). They document a significant decline in the weight placed on accounting-based measures (earnings per share) as opposed to market-based measures following mandatory IFRS adoption.

Second, to the extent disrupted equilibriums are not restored through appropriate countermeasures, we should observe changes in the association of accounting amounts with management compensation amounts. To our knowledge, Chen and Tang (2009) provide the only corresponding empirical study so far.²² Using a sample of 70 property firms from Hong Kong, they show that the gains (but not losses) from revaluation of investment property are positively associated with executive cash compensation after mandatory IFRS adoption, but not before. These effects increase in the severity of agency problems between managers and shareholders (e.g., for firms with lower founding family ownership). Since revaluation income did not affect profit before IFRS adoption, these results suggest that compensation contracts have not been adjusted to offset the change in accounting rules. Hence, managers benefited from mandatory IFRS adoption by receiving higher salaries – which from the perspective of shareholders may represent a potentially costly side-effect of regulation.

Third, further repercussions could ensue for the efficiency of GAAP as a basis for management compensation. For example, Wu and Zhang (2010) provide evidence that the sensi-

²¹ Defining accounting-based performance metrics instead in terms of ‘fixed GAAP’ represents a (potentially costly) way of insulating compensation arrangements from the effects of such changes in GAAP.

²² Using voluntary adoption data, Wu and Zhang (2009a) show that adoption of IFRS or US-GAAP is associated with increases in the sensitivities of CEO turnover and employee layoffs to accounting earnings.

tivity of CEO turnover to the accounting performance of foreign peers increased following mandatory IFRS adoption. These results indicate that increased cross-country comparability made accounting information better-suited for assessing manager performance for compensation purposes in the context of relative performance evaluation.

Evidence of an opposite effect is provided by Voulgaris *et al.* (2011), who attribute the decline in accounting-based compensation contracts post-IFRS to the increased noise in earnings. They argue that, e.g. due to fair value accounting and ensuing earnings volatility, IFRS earnings are less useful for compensation contracts, because market noise in earnings reduces its usefulness as an indicator of management performance or effort. In line with this conjecture, they find that the signal-to-noise ratio of earnings is negatively associated with the use of accounting earnings for management compensation post-IFRS. For the specific setting of Canadian workers' compensation boards, Rixon and Faseruk (2009) conclude that IFRS adoption "will likely introduce challenges in providing stakeholders with information that will enable them to evaluate performance and accountability" (p. 26). Studies (summarized in section 3.2) assessing the effect of IFRS adoption on certain financial reporting properties will also speak indirectly to this issue to the extent that the properties analyzed (e.g. smoothness) are unambiguous in their suitability for performance measurement. Furthermore, any changes in the relative weights of accounting-based versus stock-based or option-based components within executive compensation packages may be indicative of this effect. Future research could further explore the appropriateness of IFRS information for performance measurement directly.

Finally, mandatory IFRS adoption could affect the choice of certain compensation arrangements such as pension plans. Dixon and Monk (2009) discuss the effects of IFRS adoption on the use of defined benefit pension plans. They argue that the volatility effects of fair value accounting for pension plans under IFRS set incentives for firms to move towards arrangements that transfer the retirement-income risk to the individual. For the Netherlands, Swinkels (2011) corroborates this finding empirically. The literature reviewed by Kiosse and Peasnell (2009) provides evidence consistent with accounting rules affecting the allocation of pension plan assets (for IFRS in the UK: Amir *et al.*, 2010) as well as firms' decisions to fund (for IFRS in Germany: Stadler and Lobe, 2010), terminate, freeze, curtail or convert their defined benefit plans. The authors conclude that "accounting matters, though perhaps not as much as is sometimes claimed" (Kiosse and Peasnell, 2009: 264).

Lending agreements

Accounting-based debt covenants in corporate lending agreements serve to deter managers from taking actions that benefit shareholders at the expense of lenders (e.g., Jensen and Meckling, 1976; Watts and Zimmerman, 1986). Such actions include the payment of liquidating dividends to shareholders or substitution of low-risk for high-risk investments. Breach of the covenant, for example exceeding (falling short of) a maximum (minimum) leverage (interest coverage) ratio, triggers default upon which the lender can terminate the agreement, renegotiate interest rates, seize additional collateral and/or take similar action (e.g., Smith and Warner, 1979). Hence, changes in accounting rules such as mandatory adoption of IFRS can result in wealth transfers between lenders and shareholders if accounting amounts and/or covenant thresholds are not adjusted leading to an upset of the previous equilibrium (Holthausen and Leftwich, 1983). Since such adjustments are costly, debt covenants often include provisions that determine how to deal with future accounting rule changes by mandating to use either rolling GAAP or GAAP in force when the contract was set up (fixed/frozen GAAP) (e.g., Leftwich, 1983; Citron, 1992).

Accounting-based debt covenants raise research questions similar to those discussed in the previous compensation context. First, if contracting equilibriums are disrupted by mandatory adoption of IFRS (consistent with covenants being based on rolling GAAP) and corrective adjustments are made, the frequency and design of accounting-based covenants should change. For example, renegotiations of covenant thresholds may be observed.

Second, if covenants are based on rolling GAAP and are not adjusted following IFRS adoption, we should observe changes in outcomes, i.e. a redistribution of wealth between lenders and shareholders. Ormrod and Taylor (2004) predict this effect for the UK because debt covenants in this market are typically based on rolling GAAP. Christensen *et al.* (2009) provide empirical evidence in line with this prediction. Their analysis based on a sample of 137 UK firms proceeds in two steps. First, they show that reconciliations between earnings under IFRS and UK GAAP for 2004 predict future IFRS earnings. Since rolling GAAP is prevalent in UK debt contracts, IFRS reconciliations contain information on the likelihood of covenant violations. Specifically, a positive difference between IFRS and UK-GAAP earnings reduces the likelihood of covenant violations, and vice versa. In the second step, Christensen *et al.* (2009) find that the reconciliation difference between IFRS and UK-GAAP earnings is positively related to abnormal equity returns on the announcement day suggesting that the stock market did not anticipate the impact of IFRS on earnings. This effect is more pro-

nounced among companies that are expected to have greater contracting and monitoring costs (e.g., smaller firms and firms with lower interest cover). Taken together, Christensen *et al.* (2009) provide indirect evidence that mandatory IFRS adoption leads to wealth transfers between lenders and shareholders through its impact on debt covenants. We are not aware of any other study that explicitly examines the effect of IFRS adoption on lending agreements.²³

Third, researchers could analyze whether the association between relevant ratios and the occurrence of covenant violations changes as a result of mandatory IFRS adoption, which would be consistent with the accounting change affecting contractual outcomes.

Two challenges contribute to the evident gap in the literature on the unintended consequences of mandatory IFRS adoption on compensation schemes and lending agreements. First, it is difficult to obtain information on the relevant contractual arrangements. For example, publicly available data on lending agreements is very limited in the EU. Christensen *et al.* (2009) therefore use financial statement data to construct proxy variables (e.g., firm size, interest coverage) for the existence of covenants and the likelihood and costs of covenant violation. We suggest researchers to follow a similar strategy in case the data at hand do not allow for direct tests. The second challenge is that some unintended consequences of mandatory IFRS adoption may only apply to specific settings and, thus, are difficult to identify in a large-sample analysis. We encourage researchers to gain and exploit expert knowledge about such settings. While this strategy may not always lead to insights that extend easily to more general settings, it has the potential to provide important small-sample or case study evidence of high internal validity (e.g., de Jong *et al.*, 2006).

Dividend payouts

Unintended consequences of mandatory IFRS adoption may also stem from the interrelation of accounting earnings and dividend payouts. For example, according to the EU's second Company Law Directive's (Capital Directive²⁴) "balance sheet test", the maximum amount of distributable profit of EU corporations is restricted to accumulated accounting earnings. These accounting earnings have traditionally been calculated in companies' unconsolidated,

²³ De Jong *et al.* (2006) provide evidence that firms incur costs to alter their financing structures in an effort to avoid certain predictable effects of IFRS adoption on their financial statement ratios, including those assumed to be used in debt covenants.

²⁴ Second Council Directive 77/91/EEC of 13 December 1976 on coordination of safeguards which, for the protection of the interests of members and others, are required by member states of companies within the meaning of the second paragraph of Article 58 of the Treaty, in respect of the formation of public limited liability companies and the maintenance and alteration of their capital, with a view to making such safeguards equivalent, Official Journal L 026, 31/01/1977: 1-13.

legal-entity financial statements under domestic accounting rules. However, group earnings may be viewed as a *de facto* basis for distributable income because owners of the parent primarily observe the (IFRS) group accounts rather than the parent's legal-entity financial statements.²⁵ As a result, they may claim a portion of group earnings as dividends, possibly because group earnings are perceived as a better performance indicator than the parent firm's unconsolidated earnings. In addition, some investors may be unaware that the parent firm's unconsolidated earnings commonly serve as the legal basis for dividend payouts. In both scenarios, IFRS adoption in the group accounts is likely to influence investors' dividend claims, which in turn may affect firms' dividend policies.

We are not aware of empirical research that explores these issues directly in the context of mandatory IFRS adoption. However, Goncharov and van Triest (2011b) show how a large profit, recorded due to IFRS-style fair value gains by Russian energy giant United Energy System (UES), resulted in an omission of dividends. Due to the required use of accounting earnings to calculate mandatory minimum preferred dividends, UES saw itself under pressure to pay preferred dividends on large unrealized fair value gains. The only option to avoid this payment was to set dividends to zero for *all* its shareholders, common and preferred. This case study suggests that IFRS adoption could interact with legal requirements to cause unintended wealth redistributions if it is too costly or impossible to contract around it.

Goncharov and van Triest (2011a) follow up with large-sample evidence on whether upward fair-value adjustments of financial assets lead to increased dividend payouts resulting in the distribution of unrealized earnings. Contrary to concerns commonly voiced by regulators, the evidence suggests that upward-revaluing firms actually *decrease* dividend payouts. The authors discuss two possible explanations for this finding. First, managers may use a large increase in transitory earnings to opportunistically reduce dividends, which are typically thought of as a certain fraction of persistent earnings. This explanation is consistent with wealth transfers occurring between managers and shareholders. Second, fair value gains may be correlated with an unobservable response by managers to high growth. Growth could be perceived as unsustainable and dividends are reduced towards a certain percentage of expected persistent earnings, or high growth expectations lead to expanded investment which in turn reduces free cash flow. Goncharov and van Triest (2011a) are unable to empirically distinguish between these conflicting explanations. However, their findings suggest that more

²⁵ Pellens *et al.* (2003) report German survey evidence broadly consistent with this notion.

frequent use of fair value as a measurement basis has the potential to increase the proportion of transitory earnings (see also Hitz, 2007) and thus upsets longstanding relations between accounting earnings and dividends. To the extent that a switch from domestic accounting standards to IFRS typically increases the importance of fair value accounting, mandatory IFRS adoption may therefore cause changes in dividend policies.

Taxation

The mandatory adoption of IFRS potentially also affects firms' income tax situation, either directly or through its impact on financial accounting where taxation is based on it. EU member states have traditionally linked income tax accounting to financial accounting, albeit to a varying degree, and no EU country mandates completely separate tax books. Typically, tax law anchors the determination base on the financial statements of the legal entity, and sets out adjustments to reported financial accounting income. For example, the German "authoritativeness principle" (*Maßgeblichkeitsprinzip*; section 5 of the German Income Tax Code), prescribes that accounting profit calculated according to German domestic GAAP be the determination base for company taxation, unless specific tax rules require otherwise (Schanz and Schanz, 2010). Similarly, in the UK, Section 103 of the Finance Act 2002 requires profits for taxation to be computed in accordance with domestic GAAP, and Section 74 of the Taxes Act 1998 sets out detailed adjustments for expenses not deductible in calculating taxable income (Endres *et al.*, 2007). Nonetheless, the strength of this book-tax link varies. In some countries, such as Germany, this link effectively leads to a convergence of financial accounting and tax accounting, whereas in other countries, such as Norway, Poland, and the Netherlands, financial accounts and tax accounts remain distinct.

The role of IFRS in determining accounting income, which in turn is linked to taxation, again varies across member states.²⁶ Only Cyprus and Malta mandate IFRS accounting exclusively, whereas Slovakia restricts application of IFRS in single-entity accounts to banks, insurance companies, and very large corporations. Whereas, few countries (Estonia, Ireland, and Slovenia) allow the use of IFRS instead of domestic GAAP as the tax determination base, the majority restrict determination of accounting income for tax purposes to domestic GAAP. However, in some countries including the UK, domestic GAAP are broadly in line with IFRS, while in others, such as Germany, differences remain despite convergence efforts.

²⁶ See, for example, Sellhorn and Gornik-Tomaszewski (2006); for an overview of EU member states' rules for the determination of corporate taxable income and the relevance of IFRS therein, see Endres *et al.* (2007: 159-168).

The most direct effect of mandatory IFRS adoption on income taxes would be observed where tax rules continue to refer to publicly traded firms' consolidated financial statements after IFRS adoption. However, the influence of tax accounting on consolidated financial statements is limited (Gee *et al.*, 2010), and there is currently no EU member state that mandates income tax calculation based on publicly traded firms' consolidated IFRS income. Nevertheless, subtler links do exist where national tax law explicitly refers to IFRS financial statements. One pertinent example is the interest deduction ceiling rule (*Zinsschranke*) introduced as part of the German Corporate Tax Reform Act of 2008 (Blaufus and Lorenz, 2009). This rule limits the amount of tax-deductible net interest expense to 30% of earnings before interest, taxes, depreciation and amortization (EBITDA). The reference to IFRS occurs by means of an escape clause: The interest deduction ceiling does not apply if the firm is part of a consolidated group and its leverage ratio is higher than or equal to the group's leverage ratio. The leverage ratios are measured based on consolidated IFRS financial statements. As a result, the interest deduction ceiling rule may trigger incentives to manage IFRS leverage ratios, leading to potentially distorted operating, investing, and financing decisions.

Taken together, the role of financial accounting in shaping the determination base for company taxation varies substantially between EU member states, and so does the role of IFRS for taxation. In any event, as taxation is usually based on single-entity accounts, no direct side effects can be expected from mandatory IFRS adoption. Rather, taxation issues potentially emerge where member states went beyond the mandate of the IAS Regulation and extended IFRS to single-entity accounts. One obvious path for future research is to explore the IFRS-taxation link in more detail and identify cases where IFRS adoption (or changes in IFRS) directly bear on taxation and, consequently, create (unintended) reporting and investment incentives. Another avenue would be to investigate circumstances where tax incentives have a reverse impact on consolidated IFRS accounts, potentially impairing the extent to which these serve their intended purpose of transparency and comparability.

Other regulation

Regulatory actions that hinge on accounting data occur in various industries and with different objectives (Watts and Zimmerman, 1978). For instance, bank regulation requires banks to maintain minimum levels of equity in relation to total assets in order to restrict default risk of financial institutions and thus provide stability to the financial system. In rate-regulated industries (e.g., electricity utilities) regulators attempt to restrict monopoly profits to protect consumers' interests and contribute to overall economic welfare. Rate regulation is typically

based on accounting data, for example, through restricting reported profitability to “acceptable” levels. Finally, accounting information is also used in the regulation of trade flows. For example, the United States International Trade Commission officially considers the profitability of an industry as reflected in the published financial statements to determine import relief actions such as tariff increases or quota reductions (Jones, 1991).

These examples demonstrate that mandatory IFRS adoption has the potential to induce unintended consequences if regulators pursue costly adjustments of contracts or review processes when accounting rules change. In the absence of such adjustments, firms have incentives to manage IFRS financial statements opportunistically to avoid (yield) unfavourable (favourable) regulatory actions. For instance, IFRS currently do not provide industry-specific accounting guidance. Given increased demand for such guidance, however, the IASB’s (currently paused) project on “Rate-Regulated Activities” could affect rate regulation in IFRS-adopting jurisdictions, triggering costly revision processes. This expectation is illustrated by the recent proposal issued by the Canadian Accounting Standards Board (AcSB) to grant regulated entities an option to postpone mandatory IFRS adoption from 2011 to 2013 (AcSB, 2010). Similar concerns also exist in the US where the introduction of IFRS is currently contemplated (e.g., PricewaterhouseCoopers, 2008).

With respect to financial-sector regulation, a report by the Committee of European Banking Supervisors (CEBS, 2007) documents material impacts of the transition from domestic GAAP to IFRS on banks’ equity capital, mostly related to first-time application effects (pertaining, for example, to IAS 19 on employee benefits or to IAS 40 on investment property assets). These effects, in turn, had to be addressed at the banking supervision level via specific adjustments to regulatory capital. Such IFRS-related adjustments to banks’ reported equity, notably with respect to financial instruments (in particular to equity securities categorized as available-for-sale), continue to be of high significance for the calculation of regulatory capital. Whereas these adjustments are harmonized at the European level by concurrent CEBS guidance, they are supplemented by varying adjustments at the country level (CEBS, 2007). Bushman and Landsman (2010) provide a specific example from Spain where mandatory IFRS adoption may have resulted in unintended effects on regulatory capital requirements for banks. Spanish banks were forced to switch from dynamic provisioning mandated by domestic GAAP to an incurred loan-loss provisioning model prescribed by IAS 39. Bushman and Landsman (2010: 25-6) point out that “to the extent that Spanish banks’ movement away from a dynamic provisioning model affects their ability to assess their own

capital needs, Spanish bank regulators cannot rely as heavily on the bank's internal risk assessment and therefore have to expend more resources to make their own assessment of each member bank's risk profile" (see also Barth and Landsman, 2010: 17-18). Similar scenarios in other countries and/or industries are conceivable. However, we are not aware of any research evidence that empirically documents the interrelation between mandatory IFRS adoption and regulatory actions.

5. Conclusion

In this paper, we discuss extant empirical literature and provide suggestions for future research on the economic consequences of mandatory IFRS adoption in the EU. Our analysis yields two main findings. First, there is conflicting evidence on whether the stated objectives of the IAS Regulation have been achieved. On the one hand, empirical research on these intended consequences of mandatory IFRS adoption generally fails to find an increase in the comparability or transparency of financial statements. On the other hand, there is plenty and almost unanimous evidence of positive effects in capital markets and at the macroeconomic level. We argue that certain research design issues are likely to contribute to this apparent mismatch, and we provide guidance for future research on how to reconcile these conflicting results. The second main finding is that there is very little evidence on economic consequences unrelated to the stated regulatory objectives. These unintended consequences of mandatory IFRS adoption are potentially material given that the supranational character of the IAS Regulation trades off community-wide goals with the diverse objectives of member states. We provide specific advice for future research interested in these effects.

Our study thus contributes to the accounting literature in several ways. First, we review and critique new evidence on the intended and unintended consequences of mandatory IFRS adoption. Second, we provide specific suggestions for improvement of applied research designs in order to enhance inferences from these findings. Third, we identify unintended consequences, or 'side effects', of mandatory IFRS adoption as a fruitful area for future inquiry. Finally, we provide a potential basis for an ex-post assessment of the extent to which the objectives of the IAS Regulation have been met.

While the literature on mandatory IFRS adoption has developed rapidly over the past five years, it still is relatively immature, which implies several caveats. First, many of the studies reviewed here represent unpublished work. It is an open question to what extent these papers will end up making substantial contributions to the literature. Second, most of these papers

rely on short time series. At least some of the documented economic consequences are likely to change as preparers, users and auditors of financial statements move up the learning curve. Third, during the first few years under IFRS, accounting numbers are likely to be tainted by the effect of IFRS 1 (First-time adoption of IFRS). While IFRS 1 generally requires firms to apply IFRS retrospectively (i.e., as if they had always been doing so), it provides for several mandatory exceptions and voluntary exemptions from this principle. As a result, the transition to IFRS represents a structural break in the time series of firms' accounting numbers that will take several years to wash out. Fourth, whether this paper provides an appropriate basis for assessing the effectiveness of the IAS Regulation depends on the extent to which regulators view the measures used in the summarized literature as consistent with their objectives.

While these caveats urge caution in interpreting extant evidence, we believe that this is the appropriate time to evaluate what we know and, more importantly, what we do not know about the economic consequences of mandatory IFRS adoption. We will consider ourselves successful if this paper will stimulate further research to complement our knowledge about the costs and benefits of implementing IFRS as the global financial reporting language.

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TABLE 1

Empirical evidence on financial reporting effects

Panel A: Compliance and accounting choice studies

Study	Sample details				Main findings		
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	Summary	Consistent with IAS Regulation objectives?
Glaum <i>et al.</i> (2010)	IFRS mandatory	273	17	2005	Compliance with IFRS disclosure requirements	Substantial non-compliance; country- and firm-level incentives determine degree of non-compliance	No
	voluntary	84					
	No adoption	0	0				
Verriest <i>et al.</i> (2011)	IFRS mandatory	223	15	2005	Compliance with IFRS disclosure requirements	Substantial non-compliance; firms with strong corporate governance are more likely to comply	No
	voluntary	0					
	No adoption	0	0				
Kvaal and Nobes (2010)	IFRS mandatory	~215	5	2005	IFRS policy choices	Substantial variation in IFRS policy choices across countries; variation is determined by pre-IFRS national reporting practices	No
	voluntary	~15					
	No adoption	0	0				

Panel B: Accounting properties studies

Study	Sample details				Main findings			
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	IFRS effect		Consistent with IAS Regulation objectives?
						Average	Cross-sectional variation	
Ahmed <i>et al.</i> (2012)	IFRS mandatory	1,631	20	2002 - 2007	Earnings transparency (earnings smoothing, earnings targeting, conditional conservatism)	Decrease	Effect is stronger for firms from countries with strong legal enforcement.	No
	voluntary	0						
	No adoption	1,631	15					
Atwood <i>et al.</i> (2011)	IFRS mandatory	~2,000	25	2002 - 2008	Earnings transparency (earnings persistence, relation current earnings to future cash flows)	None	Not tested.	No
	voluntary	0						
	No adoption	~5,000	8					
Callao and Jarne (2010)	IFRS mandatory	1,408	11	2003 - 2006	Earnings transparency (discretionary accruals)	Decrease	No systematic variation across countries.	No
	voluntary	0						
	No adoption	0	0					

(continued)

TABLE 1 (continued)

Cascino and Gassen (2011)	IFRS mandatory	2,155	14	2001 - 2008	Earnings comparability	None	Effect is confined to firms with strong compliance incentives.	Yes (contingent)
	voluntary	0						
	No adoption	7,693						
Lang <i>et al.</i> (2010)	IFRS mandatory	1,317	26	2001 - 2008	Earnings comparability:	Decrease	Not tested.	No
	voluntary	0			Earnings comovement:	Increase		
	No adoption	1,395			20			

Panel C: Value relevance studies

Study	Sample details				Main findings			Consistent with IAS Regulation objectives?
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	IFRS effect		
						Average	Cross-sectional variation	
Aharony <i>et al.</i> (2010)	IFRS mandatory	2,298	14	2003 - 2005	Equity value relevance of goodwill, R&D expenses and revaluation of PPE	Increase	Effect is stronger for firms in countries with larger differences in local GAAP relative to IFRS.	Yes
	voluntary	0						
	No adoption	0						
Barth <i>et al.</i> (2011)	IFRS mandatory	1,203	15	2004	Equity value relevance of differences between local GAAP net income and restated IFRS net income	Increase	Effect differs between financial and non-financial firms and across country groups.	Yes
	voluntary	0						
	No adoption	0						
Bhat <i>et al.</i> (2011)	IFRS mandatory	155	17	2003 - 2008	Sensitivity of CDS spreads to accounting information	None	No systematic variation across countries.	No
	voluntary	0						
	No adoption	279						
Wu and Zhang (2009b)	IFRS mandatory	~200	25	1990 - 2007	Sensitivity of credit ratings to accounting information	None	Effect is confined to voluntary adoptions and mandatory adoptions in countries with strong legal enforcement.	Yes (contingent)
	voluntary	~100						
	No adoption	0						

This table summarizes selected empirical evidence on the financial reporting effects of mandatory IFRS adoption. Panel A focuses on compliance and accounting choice studies. Panel B is dedicated to studies that analyze the properties of accounting numbers. Panel C reviews value relevance studies. For each study, the table presents details on the sample, lists the key outcome variables, describes the main findings and indicates whether these findings are consistent with the objectives of the IAS Regulation. The tilde (~) denotes estimated sample sizes when the precise number of sample firms was not retrievable from the respective study. In Panel A, we define that the main findings of substantial non-compliance and variation of accounting policy choices are not consistent with the objectives of the IAS Regulation. In Panels B and C, we define the findings of a study (not) to be consistent with the IAS Regulation objectives if they imply that earnings transparency, earnings comparability or value relevance increases (decreases or is unaffected) on average. If the IFRS effect is confined to a subset of firms we define the results to be contingently consistent with the IAS Regulation objectives.

TABLE 2

Empirical evidence on capital-market effects

Panel A: Direct evidence

Study	Sample details				Main findings			
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	IFRS effect		Consistent with IAS Regulation objectives?
						Average	Cross-sectional variation	
Daske <i>et al.</i> (2008)	IFRS mandatory voluntary No adoption	~3,100 ~650 ~17,500	26 25	2001 - 2005	Stock market liquidity: Cost of equity capital: Tobin's Q:	Increase Mixed Mixed	Positive effects are confined to firms from countries with strong legal enforcement and institutions that provide strong reporting incentives.	Yes (contingent)
S. Li (2010)	IFRS mandatory voluntary No adoption	~1,000 ~80 0	18 0	1995 - 2006	Cost of equity capital	Decrease	Effect is confined to firms from countries with strong legal enforcement	Yes (contingent)
DeFond <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	1,365 0 7,630	14 10	2003 - 2007 (w/o 2005)	Cross-border equity investments by international mutual funds	Increase	Effect is confined to firms from countries with strong implementation credibility that experience relatively large increases in accounting standards uniformity.	Yes (contingent)
Brüggemann <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	1,693 132 3,812	20 11	2001 - 2007	Cross-border equity investments by German individual investors	Increase	Effect is not associated with country institutions such as the strength of legal enforcement.	Yes
Florou and Pope (2011)	IFRS mandatory voluntary No adoption	~2,200 ~500 ~7,000	24 21	2003 - 2006	Equity investments by international institutional investors	Increase	Effect is confined to firms from countries with strong legal enforcement and with larger differences between local GAAP and IFRS.	Yes (contingent)
Florou and Kosi (2011)	IFRS mandatory voluntary No adoption	~379 ~187 ~3,613	23 20	1999 - 2008	Public bond issues: Bond yield spreads:	Increase Decrease	Effects are confined to firms that seek public bond financing in foreign countries with strong legal enforcement.	Yes (contingent)
Schleicher <i>et al.</i> (2010)	IFRS mandatory voluntary No adoption	~700 0 0	6 0	2000 - 2007	Firm-level capital investment efficiency	Increase	Effect is stronger for small firms from insider economies.	Yes

TABLE 2 (continued)

Panel B: Indirect evidence

Study	Sample details				Main findings			
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	IFRS effect		Consistent with IAS Regulation objectives?
						Average	Cross-sectional variation	
Landsman <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	~2,000 0 ~4,000	16 11	2002 - 2007	Information content of earnings announcements	Increase	Effect is stronger for firms from countries with strong legal enforcement.	Yes
Kim and Li (2011)	IFRS mandatory voluntary No adoption	760 199 0	20 0	2002 - 2008 (w/o 2005)	Cross-border information transfers from earnings announcements	None	Effect is confined to announcer-nonannouncer pairs where both firms are from countries with strong legal enforcement.	Yes (contingent)
Beuselinck <i>et al.</i> (2010)	IFRS mandatory voluntary No adoption	1,904 0 0	14 0	2003 - 2007	Stock return synchronicity	Decrease at adoption, then increase	Effect is stronger for firms in countries with larger differences in local GAAP relative to IFRS.	Yes
Byard <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	1,168 250 0	20 0	2003 - 2006	Quality of analysts' information environment	None	Effect is confined to firms from countries with strong legal enforcement and with larger differences between local GAAP and IFRS.	Yes (contingent)
Horton <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	2,235 635 5,254	25 21	2001 - 2007	Quality of analysts' information environment	Increase	Effect is stronger for firms with larger differences between pre-adoption accounting treatments and IFRS.	Yes
Tan <i>et al.</i> (2011)	IFRS mandatory voluntary No adoption	2,679 601 0	25 0	2001 - 2007	Quality of foreign analysts' information environment	Increase	Effect is stronger for firms from countries with larger differences between local GAAP and IFRS.	Yes

This table summarizes selected empirical evidence on the capital-market effects of mandatory IFRS adoption. Panel A focuses on studies that directly analyze economic consequences in capital markets. Panel B is dedicated to studies that provide indirect evidence by examining capital-market perceptions of the quality of financial statement information. For each study, the table presents details on the sample, lists the key outcome variables, describes the main findings and indicates whether these findings are consistent with the objectives of the IAS Regulation. The tilde (~) denotes estimated sample sizes when the precise number of sample firms was not retrievable from the respective study. We define the findings of a study to be consistent with the IAS Regulation objectives if they imply that capital-market benefits materialize on average. If the IFRS effect is confined to a subset of firms we define the results to be contingently consistent with the IAS Regulation objectives, regardless of the sign of the average IFRS effect.

TABLE 3*Empirical evidence on macroeconomic effects*

Study	Sample details				Main findings			
	Adoption type	# Firms	# Countries	Fiscal year(s)	Outcome variables	IFRS effect		Consistent with IAS Regulation objectives?
						Average	Cross-sectional variation	
Amiram (2009)	IFRS mandatory	-	60	1997, 2001 - 2006	Foreign equity investment	Increase	Effect is stronger in countries with low corruption and strong investor protection or if investor country also uses IFRS.	Yes
	voluntary	-						
	No adoption	-	45					
Beneish <i>et al.</i> (2010)	IFRS mandatory	-	17	2003 - 2007	Foreign equity investment:	None	Only non-adopting countries increase debt investment into adopting countries.	No
	voluntary	-			Foreign debt investment:	Increase		Yes
	No adoption	-	12					
Chen <i>et al.</i> (2011)	IFRS mandatory	-	23	2000 - 2005	Foreign direct investment	Increase	Effect is stronger in countries with lower pre-adoption IFRS conformity or if partner countries have different accounting traditions.	Yes
	voluntary	-						
	No adoption	-	7					
Márquez-Ramos (2011)	IFRS mandatory	-	27	2002 - 2007	Foreign direct investment:	Increase	Foreign direct investment effect is stronger in countries with medium and high uncertainty aversion.	Yes
	voluntary	-			Trade in goods:	None		No
	No adoption	-	8					

This table summarizes selected empirical evidence on the macroeconomic effects of mandatory IFRS adoption. For each study, the table presents details on the sample, lists the key outcome variables, describes the main findings and indicates whether these findings are consistent with the objectives of the IAS Regulation. We define the findings of a study (not) to be consistent with the IAS Regulation objectives if they imply that macroeconomic benefits exist (do not exist) on average.

TABLE 4*Sample size comparison*

Country	Year of EU accession	CESR (2007)	Daske <i>et al.</i> (2008)	DeFond <i>et al.</i> (2011)	Landsman <i>et al.</i> (2011)	Byard <i>et al.</i> (2011)
Austria	1995	72	17	9	0	16
Belgium	1957	144	56	31	41	46
Denmark	1973	140	62	39	45	43
Finland	1995	135	99	74	53	57
France	1957	680	370	251	205	197
Germany	1957	768	216	89	73	120
Greece	1981	356	150	48	58	37
Ireland	1973	43	36	21	0	24
Italy	1957	288	79	159	43	96
Luxembourg	1957	35	13	0	0	5
Netherlands	1957	165	129	69	77	54
Portugal	1986	50	37	21	0	14
Spain	1986	190	91	48	75	69
Sweden	1995	350	168	155	93	71
United Kingdom	1973	953	418	351	516	400
Bulgaria	2007	369	0	0	0	0
Cyprus	2004	141	0	0	0	0
Czech Republic	2004	66	5	0	0	3
Estonia	2004	16	0	0	0	0
Hungary	2004	34	3	0	0	8
Latvia	2004	13	0	0	0	0
Lithuania	2004	43	0	0	0	0
Malta	2004	15	0	0	0	0
Poland	2004	197	55	0	0	11
Romania	2007	0	0	0	0	0
Slovakia	2004	0	0	0	0	0
Slovenia	2004	60	0	0	0	0
	1957-1995	4,369	1,941	1,365	1,279	1,249
Total	2004-2007	954	63	0	0	22
	1957-2007	5,323	2,004	1,365	1,279	1,271

This table compares the number of IFRS adopters in the 27 EU countries as identified by the Committee of European Securities Regulators (CESR) with the sample sizes of five academic studies. CESR (2007) reports the number of equity issuers that were admitted to trading on a regulated market and prepared a consolidated IFRS account in fiscal year 2005. These numbers are based on information provided by national enforcement institutions across Europe. Daske *et al.* (2008) consider all companies during fiscal years 2001–2005 “that have sufficient financial data from Worldscope and price/volume data from Datastream to estimate (...) Model 3 for Zero Returns” (see their table 1). The sample of mandatory IFRS adopters in Daske *et al.* (2008) is confined to firms with fiscal year end in December 2005. The number of voluntary IFRS adopters analyzed by Daske *et al.* (2008) is not directly retrievable from their tables and therefore not considered here. DeFond *et al.* (2011) analyze mandatory IFRS adopters that are covered in the TFS international mutual fund database and have sufficient data in Compustat Global (stock performance, accounting standards followed) and IBES (analyst following) for fiscal years 2003-2004 and 2006-2007. Countries with few public firms are excluded from their sample. Landsman *et al.* (2011) focus on mandatory IFRS adopters and require IBES earnings announcement dates as well as returns and volume data from Datastream to be available. They also impose size (Total Assets > US\$ 100MM) and liquidity restrictions (proportion of zero return days < 80%) and delete countries with less than 150 firm-years. In this table, we present the composition of their sample for fiscal year 2005. Byard *et al.* (2011) select all voluntary and mandatory IFRS adopters covered in IBES that have data both before and after IFRS adoption (sample period: fiscal years 2003-2006).

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