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The real effects of a new accounting standard: the case of IFRS 15 *Revenue from Contracts with Customers*

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International Financial Reporting Standard 15 (IFRS 15) *Revenue from Contracts with Customers* has significantly changed the philosophy of revenue recognition, not only to provide a fairer representation of corporate revenues, but also to inhibit the use of revenues for ‘earnings management’ purposes. We provide a framework to analyse the various effects of new and amended accounting standards. Changes in how companies recognise, measure, present and disclose their revenues (accounting effects) can affect how companies and their transactions are understood, both internally and externally (information effects), can change security prices (capital market effects) and can change how companies operate, and their costs and cash flows (real effects). We provide empirical evidence, based on a review of corporate annual reports, comment letters and interviews, on the effects of IFRS 15. We find evidence of accounting, information and, to a lesser extent, real effects, although, outside a few industries, IFRS 15 has had relatively little impact on the recognition and measurement of revenue.

Keywords: financial reporting; IFRS 15; revenue; accounting standards; real effects

JEL Classification: M41

1. Introduction

The introduction or amendment of accounting regulations, including financial reporting standards, may lead to changes in how entities carry on their activities. A new standard may revise the calculation of accounting numbers through amending the ways in which assets, liabilities, income and expenses are recognised and measured. As accounting numbers are used in contracts, and form the basis for determining tax liabilities, different numbers are likely to lead to different cash flows, unless contracts are written in such a way as to ignore subsequent accounting changes (this is sometimes referred to as ‘frozen GAAP’ – see, for example, Leftwich 1981; Christensen and Nikolaev 2017).

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However, changes in accounting regulations may also lead entities to revise the ways in which they operate. Changing how certain transactions are accounted for may make these transactions appear more, or less, attractive to those outside the entity. This is particularly the case where the transactions were originally selected and structured so that they would be accounted for in ways that were, at the time, seen to be favourable to the entity involved. The impact of a revised standard may also be experienced at a more 'micro' level, as entities change the detailed structure of their transactions and contracts both to comply more easily with the newly introduced provisions and to maintain an attractive appearance under the new rules. The information required by the new form of accounting may even change how management regard the operations of the entity, leading them to realise that past economic decisions were sub-optimal. Where a change in an accounting rule or standard gives rise to changes in how an entity operates or affects its cash flows, we can say that the accounting change has 'real effects'. Although we consider that real effects arise at the level of the individual entity, the combined impact of such real effects across all entities, which may affect the economy as a whole, could be described as the 'economic consequences' (Zeff 1978) of an accounting change.

In May 2014, the International Accounting Standards Board (IASB) published International Financial Reporting Standard 15 *Revenue from Contracts with Customers* (IFRS 15 – IASB 2014). At the same time, the Financial Accounting Standards Board (FASB) published Accounting Standards Classification Topic 606 (ASC 606 – FASB 2014), with the same title. These standards were the result of a development process extending over twelve years, intended to replace, in the IASB's case, a brief and outdated revenue recognition standard, and in the FASB's case, over 100 separate guidelines for recognising revenue. The revenue number in the income statement represents the 'top line' in the same way that profit after tax (earnings) is the 'bottom line'. The revenue number is an overall indication of what an entity has achieved in a period, in terms of selling goods and providing services. Because recognition of revenue is usually associated with recognition of expenses, such as cost of sales, revenue and earnings are intimately linked. If an entity seeks to report higher earnings, one way of achieving this is to increase reported revenue. As we discuss in section 3.1 below, the call for a new revenue standard was stimulated not only by a sense that existing standards provided inadequate guidance for entities entering the twenty-first century, but also by fears, evidenced in some cases by financial scandals, that entities were able to engage in 'earnings management' through recognising revenues earlier (or in exceptional cases later) than more conventional accounting practice would accept. A new revenue accounting standard, therefore, would at the same time give clearer guidance on revenue recognition for all entities with contracts with customers and reduce the potential for earnings management.

Entities have been required to apply IFRS 15 for accounting periods beginning on or after 1 January 2018 (although earlier adoption was possible). The standard replaced International Accounting Standard 18 *Revenue* (IAS 18 – IASB 1993b), which had first been issued in 1981, as well as International Accounting Standard 11 *Construction Contracts* (IAS11 – IASB 1993a), which had first been issued in 1979. Both these standards were last substantially revised in 1993. While IAS 18 required revenues to be recognised when the risks and rewards of ownership of goods had been substantially transferred from seller to buyer, IFRS 15 has adopted a 'performance obligation' approach, where revenue is recognised as and when an entity performs obligations included in a contract with a customer. Entities should therefore review their contracts to identify the performance obligations that the contracts impose on the entity. Such a review provides entities with the opportunity of changing how they structure contracts, and in extreme cases to make substantial modifications to their business models. In other words, the new revenue accounting standard may lead to *real effects*.

The aim of this paper is to provide a framework for understanding the effects of a change in accounting regulations, which would generally take the form of new or amended legislation, or

new or amended standards, and to apply this framework to analyse a specific example of a new accounting standard. The framework includes accounting, information, capital market and real effects, but in the present paper we do not address whether the adoption of IFRS 15 has had any effects on capital markets, for example changes to security prices, concentrating instead on accounting, information and real effects. We chose IFRS 15 because it affects all active entities that sell goods or provide services, and so the implementation of IFRS 15 is likely to reveal a wide range of effects. Our contribution is twofold. First, our framework could be used in other studies of the effects of accounting change, ensuring that future researchers consider the wide range of potential effects. Second, through our example study of IFRS 15, we show how entities have addressed the impact of a new financial reporting standard. We conclude that IFRS 15 has led to much effort in implementing the standard, but that, in terms of the impact on reported revenue in the income statement, the new standard has not generated significant changes in the accounting numbers for the majority of companies.

We begin by briefly discussing the existing literature on real effects of accounting, and we provide a framework setting out the different types of effect that a new accounting requirement may induce. We show how direct accounting effects of applying a new standard can induce additional effects, which we classify as information effects, capital market effects and real effects, and that these additional effects can themselves induce indirect accounting effects. We then consider the history of the concept of 'revenue' in financial reporting, with a focus on the UK, the USA and the international standard-setting context. This is followed by a discussion of our empirical findings, based on an examination of annual reports prepared by the largest European companies, comment letters submitted to the IASB during the development process leading to IFRS 15, and a small number of interviews. The final section sets out some conclusions.

2. Accounting changes and real effects

2.1. *The real effects concept*

It has long been recognised that entities pay regard to accounting requirements when structuring their transactions, and even when deciding which transactions to undertake. Accounting numbers may be used for regulatory and contractual purposes, and changes in how accounting numbers are determined will have an impact on cash flows that depend on particular laws and other regulations using specific accounting numbers, as well as cash flows that are set by contracts. As early as 1972, Ball (1972, p. 1) noted that:

The distinction between real and accounting effects on income is far from being clear, since changes in accounting techniques can be *responses* to real variables (such as changes in expected future inventory prices, or the firm moving into a new industry), and they can also *induce* real effects (such as changes in taxable income).

Ball uses the term 'real effects' in a restricted sense, the implication of the phrase 'changes in taxable income' being that an accounting change can alter the amount of profit subject to tax and therefore can lead to the entity paying a different amount of tax from its liability under the old accounting rules. However, the notion of 'real effects' has gradually expanded to embrace changes that an entity makes to how it carries out its activities.

Zeff (1978, p. 56) was among the first to point out that the standard-setting process in the USA in the 1960s and 1970s was increasingly being influenced by 'individuals and groups that had rarely shown any interest in the setting of accounting standards', who 'began to invoke arguments other than those which have traditionally been employed in accounting discussions'. These arguments were not related to the technical characteristics of a proposed accounting standard, but

rather the possibility that the standard would have a detrimental impact on both individual businesses and the wider economy and society. Zeff (1978, p. 59) observed that such external pressure arose in particular in the context of accounting for marketable equity securities, leases, and oil and gas exploration and drilling costs.

More recently, Kanodia and Sapa (2016, p. 624, emphasis in original) have set out what they describe as the ‘*real effects hypothesis*’. This states that:

[T]he measurement and disclosure rules that govern the functioning of accounting systems – which economic transactions are measured and which are not measured, how they are measured and aggregated, what is disclosed to capital markets and how frequently such disclosures are made – have significant effects on the *real* decisions that firms make.

These authors argue that the notion of providing decision-useful information to investors and the principle of ‘representational faithfulness’ may be ‘insufficient guides to standard setting’ (Kanodia and Sapa 2016, p. 624), because they do not necessarily reflect the extent to which accounting requirements may lead entities to change what they do. To more critical accounting scholars, the recognition that accounting changes can have real effects is hardly a novelty: classic discussions such as that of Ruth Hines (1988) already pointed out how financial reporting is not a simple mirror of an externally given ‘reality’, but helps to construct the very ‘reality’ that it claims to represent.

The notion of studying real effects of financial reporting provisions has been increasingly advocated, particularly over the past 10–15 years. For example, Leuz and Wysocki (2016, p. 530, emphasis in original) call for ‘researchers to examine non-traditional disclosure and reporting settings, especially to learn about the *real effects* of disclosure mandates’. They define real effects as ‘situations in which the disclosing person or reporting entity changes its behavior in the real economy (e.g. investment, use of resources, consumption) as a result of the disclosure mandate’. An indicator of how little attention was given to real effects in past accounting research is the review of empirical research on accounting choice undertaken by Fields et al. (2001). This paper does not mention the expression ‘real effects’, and, in her comment on the paper, Jennifer Francis (2001, p. 311) observes that ‘the motivation for a real decision [one with cash flow implications] may be unrelated to the accounting outcome’, suggesting that exploring for real effects may be unproductive. This negativity did not stop scholars such as Chandra Kanodia from discussing, over many decades, how disclosure of accounting information may affect not just security prices but also corporate production-investment decisions (Kanodia 1980; see also Kanodia and Mukherji 1996; Kanodia 2006), but perhaps the difficulty of observing corporate decisions and actions, as compared to variables such as security prices, acted as a deterrent to extensive work on real effects.

Nonetheless, a growing literature is addressing the impact not just of disclosures but also of changes in accounting regulations and practices on corporate decisions. For example, Barth et al. (2017) have looked at how the quality of integrated reporting in South African companies may enhance the companies’ stock market value not only through providing better information for capital markets but also by improving investment efficiency – which they see as a ‘real effects channel’ for enhancing corporate value. Ernstberger et al. (2017) suggest that the introduction of a European Union requirement for listed companies to provide quarterly ‘interim management statements’ has led to an increase in what they call (following Roychowdhury 2006) ‘real activities manipulations’, such as changing production levels and varying expenditure on research and development or on selling, general and administrative expenses. These commercial effects have been identified as methods by which companies can engage in ‘real earnings management’ (see, for example, Healy and Wahlen 1999), and Bereskin et al. (2018) have suggested that real

earnings management can have measurable real effects on the level of innovation: companies that managed reported earnings by spending less on research and development ultimately filed fewer patents. Although in one sense the result was unsurprising, the research demonstrated that reducing research and development spending was more likely to be driven by the earnings management motive than by other economic and commercial considerations. Additionally, there is evidence of real effects that benefit employees: Christensen et al. (2017) find that mine-related injuries decreased after the introduction of mandatory disclosure about mine safety records in financial reports.

Studies of real effects rarely address specific changes in accounting regulations and standards. An exception to the general lack of work in this field is the study by Dou et al. (2018), who investigate the real effects of a change in US accounting standards effective in 2010 relating to accounting by banks for securitisations and the consolidation of variable interest entities. They found that the requirement to recognise substantial securitised assets (about US\$800 billion) on balance sheets affected banks' mortgage approval rates: banks recognising greater amounts of 'new' securitised assets tended to show larger decreases in mortgage approvals. Arguably, the accounting change in question was a requirement for additional disclosure, rather than one that affected the measurement of assets, liabilities, income and expense, and much ongoing work in the area of real effects still focuses on disclosure rather than measurement: for example, Dou and Zou (2019) examine whether US banks' disclosure of the geographical distribution of small business lending has an impact on lending policies (as measured by the proportion of non-performing loans to small businesses). This means that there is a need for studies that examine how accounting regulation changes that require different measurement methods to be adopted, rather than simply mandating additional disclosures, can have real effects. The existence and nature of such effects could be examined at a 'macro' level, by identifying variables that could be used as evidence for real effects (this is the approach of Barth et al. 2017), but also at the 'micro' level, by attempting to identify real effects in specific entities. In this paper, we adopt a mainly 'micro' approach, using a range of evidence to probe for real effects. However, before turning to the subject matter of this paper, the new revenue accounting standard, we set out a framework for understanding the various effects of a change in an accounting regulation.

2.2. *Effects of a new or amended accounting standard*

Although we refer to accounting standards in this section, our analysis would apply to any change in accounting regulation, for example, changes in legislation relating to corporate reporting. A new or amended accounting standard (hereafter 'new standard' for simplicity) can have various effects. Figure 1 shows how such effects may be classified and how the different categories are related to each other. We will use the classification throughout this paper in order to structure our discussion of the various effects of a specific new accounting standard.

A new accounting standard necessarily leads to accounting effects [A]. These include changes in recognition [A.1], measurement [A.2], presentation [A.3] and disclosures [A.4]. A new standard may require items previously not included in the financial statements to be recognised [A.1], for example a leasing standard may require certain leases previously kept off-balance sheet to be accounted for as assets and liabilities. In some situations, a new standard may determine that certain items, such as deferred costs, are no longer to be recognised. In itself, recognition of a new item will require that item to be measured, but a new standard may change the basis on which particular items already included in the financial statements are measured [A.2]. For example, a standard might require entities to measure a specific asset at fair value, where previously the required measurement basis was historical cost. A new standard may change the way in which certain items are presented [A.3], for example, items previously included

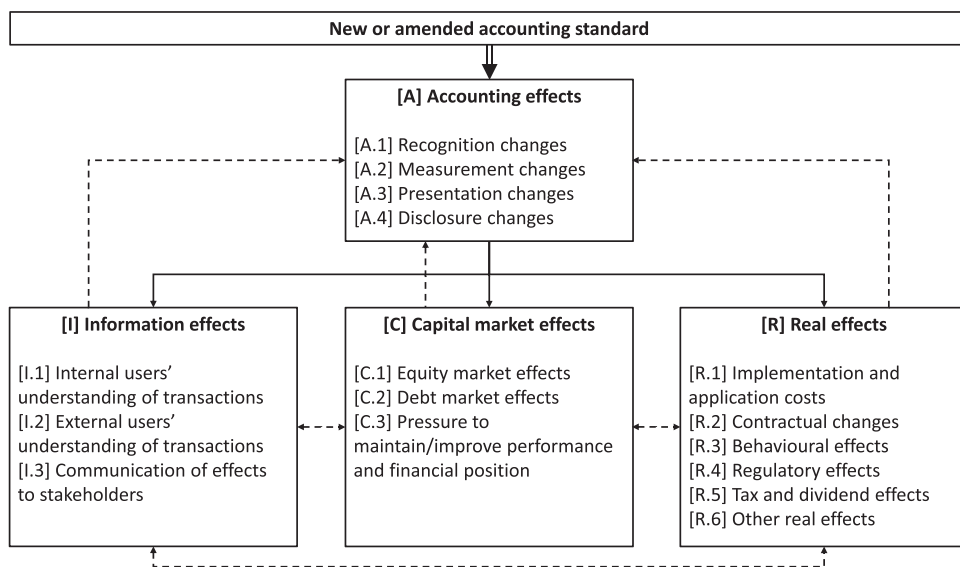


Figure 1. Effects of a new or amended accounting standard. Note: This figure shows the effects of a new or amended accounting standard. The double arrow represents direct accounting effects. The solid single arrows represent primary additional effects. The dashed single arrows represent secondary additional effects. The dashed single arrows going into [A] represent indirect accounting effects.

in other comprehensive income may be moved into profit or loss. Many changes in recognition and measurement are associated with additional or changed disclosure requirements, and new disclosures are often the result of legislation rather than accounting standards [A.4]. Disclosure could relate to new statements (for example, a cash flow statement) or to specific items. A new standard may not lead to all of these changes. For example, an increase in disclosures need not be associated with recognition, measurement or presentation changes. These accounting effects are regarded as *direct* effects of the standard. In Figure 1, we represent the direct accounting effects of a new standard using a double arrow.

The direct accounting effects of a new standard can induce various additional effects, which we refer to as *primary* additional effects. We classify these as information effects [I], capital market effects [C] and real effects [R]. The induction of these various effects is represented as solid single arrows in Figure 1. Regarding information effects [I], first, the new standard might lead internal users of accounting information to a better understanding of transactions [I.1]. This can happen because the commercial implications of a transaction are more appropriately reflected in the accounting numbers. For example, managers may come to realise that the rights and obligations arising from a particular transaction are more extensive and complex than they had previously thought. Changes in financial reporting as a consequence of adopting a new standard may also enhance (but could impair) how external users understand transactions [I.2]. If the accounting effects [A] are significant, management might communicate the effects to stakeholders [I.3], possibly before the publication of financial information under the new standard.

Regarding capital market effects [C], first, the accounting effects [A] may impact both equity markets [C.1] and debt markets [C.2]. In equity markets, share prices may change because the disclosure of additional information leads investors to revise their expectations of the amounts, timing and uncertainty of future cash flows, or because new numbers suggest that previous estimates of corporate value are no longer tenable. New accounting information following adoption

of a new standard may also affect bid-ask spreads and trading volume. In debt markets, new accounting information may change perceptions of risk, and therefore borrowing costs and the pricing of credit default swaps may change. Managers face pressures to maintain or improve corporate performance and financial position [C.3], and changes in accounting numbers that are used by investors and lenders to assess managerial performance may induce further effects (see ‘secondary additional effects’ below).

Real effects [R] are those effects that change how an entity undertakes its operations or that affect its cash flows. First, a new standard is likely to result in both implementation and ongoing application costs [R.1], and for some new standards these costs may be substantial for specific entities. On the other hand, a new standard could reduce costs through simplifying recognition and measurement or reducing disclosure. We consider that the need to use resources for implementation is a real effect because it involves the allocation of resources to a use that many managers and stakeholders would consider to be unproductive. This is consistent with the definition of real effects provided by Leuz and Wysocki (2016) quoted above. Second, if the new standard results in accounting effects that managers consider to be undesirable because of how accounting numbers are used in contracts, the entity may amend its contracts [R.2]. For example, a new standard might affect accounting-related debt covenants and any resulting problem can be solved by amending the debt contract. Third, if a new standard results in undesirable accounting outcomes because of certain business practices, which cannot be solved by changing contracts, a company may change its behaviour [R.3]. This may mean withdrawing from certain activities or, less dramatically, modifying how the business operates.

Changes in accounting numbers and disclosures could have regulatory effects [R.4], for example, an entity may come under fresh scrutiny from regulators, or avoid previous regulation, because its reported revenues or profits are higher (or lower) as a result of an accounting change, and this brings the entity inside (or takes it outside) the domain of particular regulators. Where tax liabilities and the scope for dividend payments depend on reported profits or on other accounting numbers, changes in these figures may lead to a different tax liability and may restrict, or enable, dividend payments [R.5]. Finally, there may be other real effects [R.6]. For example, where accounting numbers are used in contracts, such as remuneration contracts, that have cash flow implications, changes in entity cash flows may also be considered as real effects of the new accounting standard.

In addition to the primary additional effects, there are likely to be secondary additional effects. These are represented as dashed single arrows in Figure 1. First, information effects [I], capital market effects [C] and real effects [R] may feed back into accounting effects [A]. For example, fears that external users such as competitors may gain advantage from more detailed knowledge of a company’s operations [I.2] may influence the accounting disclosures ultimately included in an entity’s financial statements [A.4]. Pressures to improve performance [C.3] may result in changes in the accounting numbers [A.1 and A.2]. Behavioural changes, such as discontinuing certain activities [R.3] will result in changes in the accounting numbers [A.1 and A.2]. Therefore, a new standard can induce both direct and indirect accounting effects [A]. Moreover, there may be indirect effects between [I], [C] and [R]. For example, a better understanding of transactions on the part of investors [I.2] may cause share prices to change [C.1] and a better understanding of transactions on the part of entity [I.1] may lead the entity to revise contracts [R.2] and change its behaviour [R.3].

3. The new revenue accounting standard

3.1. *The road to the new standard*

3.1.1. *The UK’s road*

To older British accountants, the word ‘revenue’, to refer to sales or turnover, is an innovation. The *Oxford English Dictionary* (OED 2011) notes that the word ‘revenue’ has ‘senses relating

to income', and defines revenue as 'the return, yield or profit of any land, property or other important source of income', as 'income, specifically that deriving from property, possessions, trade or investment', as 'an amount of money regularly accruing to a person', and as 'the annual income of a government, state, etc., from which public expenses are met'. The word 'revenue' was often found in the expression 'revenue account', which was distinguished from the capital account in a double-account system of financial reporting.

In an early accounting textbook, *Advanced Accounting*, Lawrence Dicksee, the first accounting professor at a British university, discusses revenue only in the context of the distinction between capital and revenue: '[I]t is hardly overstating the case to say that most of the errors of principle that are perpetrated in practice arise from the lack of ability, or lack of desire, to strictly discriminate between Capital and Revenue items' (Dicksee 1903, p. 3). He defines 'revenue receipts' as:

[T]hose which properly arise out of the business operations of the undertaking – i.e. earnings. Unless the business is upon a cash basis there will, however, always be some discrepancy between the actual earnings and the receipts in respect thereof, and the proper item to credit to Revenue Account will be the true earnings for the period, rather than the actual receipts in cash. (Dicksee 1903, p. 7)

Dicksee provides no guidance, either in the chapter on capital and revenue, or elsewhere, on what 'actual' or 'true' earnings might be, suggesting that British accountants at the beginning of the twentieth century had an unproblematic notion of what constituted sales revenues. This may be because the relatively recent Sale of Goods Act 1893 had codified English law on commercial transactions, and provided a default set of conditions that specified the point in time when a sale could be deemed to take place. These conditions emphasised the transfer of 'property' in goods, usually evidenced by possession of the goods passing from the seller to the buyer. Although the Sale of Goods Act has been amended over the years, its core legal principles still largely apply in the UK.

This lack of interest continued until the 1960s, when financial scandals involving the recognition and measurement of sales revenues drew attention to the issue. For example, the Rolls Razor Company Limited, which imported cheap domestic appliances and sold them on extended credit terms, was criticised following its collapse in 1964 for recognising sales revenue in full on delivery of appliances, where there was a substantial exposure to credit default on the part of customers, and not recognising liabilities for customer claims and rejections because of the poor quality of the machines being sold. The company's chairman, John Bloom, was subsequently fined £30,000 under false accounting charges (Benson 1989, p. 143). The Rolls Razor scandal prompted the Institute of Chartered Accountants in England and Wales (ICAEW) to issue a Recommendation on Accounting Principles on *Hire Purchase, Credit Sale and Rental Transactions* (N23 – ICAEW 1964). Suppliers of goods on hire purchase and instalment sale terms were recommended to split the sales proceeds between the sale of the item and interest income arising over the period of the transaction, and to make appropriate adjustments (as expenses rather than as deductions from the sales proceeds) to take account of credit risks and bad debts.

British companies were required to disclose an amount for sales revenue, described as 'turnover', for the first time by the Companies Act 1967, but no definition of turnover was provided in the Act. Companies were required to state how the amount of turnover was determined, but there was no consistency of practice. An example of a definition of turnover appears in the financial statements of Rolls-Royce Limited for the year ended 31 December 1969:

Sales at invoice value to external customers, and in the case of uncompleted contracts, the estimated sales value of actual deliveries or work done on development contracts. (Quoted in ICAEW 1971, p. 23)

Interestingly, the turnover figure was included in a note headed 'Revenue from all sources', which also included royalties, management fees and income from unquoted investments.

Although the application of the Sale of Goods Act 1893 meant that determining when a sale took place, at which point revenue would be recognised, was normally uncontroversial, a law case in 1976 (*Aluminium Industrie Vaassen B.V. v. Romalpa Aluminium Limited* [1976] 1 WLR 676 – the 'Romalpa case') raised the issue of how to account for sales where physical possession of goods was transferred to the buyer, but the seller retained legal title to the goods until they were paid for, and could recover possession of the goods if the buyer did not pay for them. The ICAEW issued an Accounting Recommendation in October 1976, stating that 'the commercial substance of the transaction should take precedence over its legal form where they conflict' (ICAEW 1976, para. 4). The ICAEW noted that recognising revenue from transactions where legal title did not pass on transfer of the goods themselves was already standard practice in hire purchase transactions, where legal ownership was transferred only after all payments had been made by the buyer. Subsequent reviews of the Romalpa case (for example, De Lacy 1995) have concluded that the significance of the case both legally and for financial reporting has been minimal, but the case illustrates how by the 1970s accountants in the UK were already regarding transfer of legal title in goods as neither necessary or sufficient for recognising revenue from the sale of those goods.

The Companies Act 1981 brought into effect the requirements of the then European Community's Fourth Directive on Company Law (EC 1978), which specified standard formats for the presentation of company financial statements. The formats for the profit and loss account specified disclosure of 'net turnover', so British companies continued to use the turnover term in their financial statements. Article 28 of the Fourth Directive defined 'net turnover' as comprising:

[T]he amounts derived from the sale of products and the provision of services falling within the company's ordinary activities, after deduction of sales rebates and of value added tax and other taxes directly linked to the turnover.

This definition was included, in modified form ('trade discounts' replacing 'sales rebates') in the Companies Act 1981 and in subsequent UK companies legislation.

The Accounting Standards Board (ASB) commented on revenue in its *Statement of Principles for Financial Reporting* (ASB 1999). The *Statement of Principles* used the term 'gains' for 'all forms of income and revenue as well as all recognised gains (realised and unrealised) on non-revenue items' (ASB 1999, chapter 4). As 'gains' include 'revenue', it would seem natural to include a definition of 'revenue', but no such definition was provided. Gains were defined as 'increases in ownership interest not resulting from contributions from owners' (ASB 1999, para. 4.39). Recognition of a gain, in particular revenue, was linked with the occurrence of the 'critical event', which was defined as 'the point in an operating cycle at which there will usually be sufficient evidence that the gain exists and it will usually be possible to measure that gain with sufficient reliability' (ASB 1999, para. 5.33). The definition merely restated the generic recognition criteria for any element of financial statements. Some further clarification was provided: carrying out all obligations under an agreement except for a few minor acts of performance would imply that the critical event had occurred; the critical event would not usually have occurred if there was a significant likelihood that the buyer would reject the goods or

services; and a contract performed in stages might involve a series of critical events, among which the expected gain would have to be allocated.

The British accounting standard setters did not produce a statement of standard accounting practice or a financial reporting standard on revenue until 2003, and even then this was in the form of an application note to a more general standard (Financial Reporting Standard 5 *Accounting for the substance of transactions* – ASB 1994). However, by 2003, countries in the European Union, including the UK, were preparing to adopt IFRS for the consolidated financial statements of public interest entities. Standard setters in the UK focused on companies that were not covered by of the new IFRS requirement, producing the omnibus Financial Reporting Standard 102: *The Financial Reporting Standard Applicable in the UK and Republic of Ireland*. The most recent version of this (FRC 2018) substantially incorporates IAS 18, which means that, as at early 2020, UK and International GAAP differ in the area of accounting for revenue.

3.1.2. *The USA's road*

North American accountants were more likely than their British counterparts to use the word 'revenue' to refer to sales. William Paton, one of the earliest US academic accounting theorists, conceptualised the business entity as consisting of 'properties' and 'equities', and saw revenue as the conversion of properties, represented by 'the effective cost of purchased commodities and services' (Paton 1922, p. 146), into equities. Paton distinguished between 'gross revenue', which was the amount of sales, and 'net revenue', which was the increase in equities that arose through a sales transaction, and was equal to the amount receivable from customers less the cost of the properties involved in the sale.

Paton devoted an entire chapter of his book *Accounting Theory* (Paton 1922) to discussing revenue. He noted that, in most of his previous discussion, he had assumed that the main problem of corporate accounting was 'expense determination and apportionment', and that 'the assignment of revenue credits to the particular accounting period can be readily accomplished by means of ordinary bookkeeping' (Paton 1922, p. 443). However, he demonstrated that this view of revenue determination as straightforward was misconceived, by asking 'What is a satisfactory test or evidence of revenue? When is revenue realized?' (Paton 1922, p. 444). Paton rejected the view that the key event for recognising revenue is the securing of a customer's order as evidenced by a contract with the customer (Paton 1922, p. 453), but proposed that revenue may be recognised when there is an enforceable right to receive payment from the customer: this would normally arise when goods are delivered (Paton 1922, p. 455). Paton was prepared to accept recognition of interim revenue in the case of long-term processes (the example he gives is building a ship – Paton 1922, p. 461) extending over several accounting periods, but adoption of a 'percentage of completion' approach was, to Paton, the exception rather than the rule.

Paton did not offer a clear definition of revenue, but he linked revenue recognition closely to realisation. He carried this view forward into *An Introduction to Corporate Accounting Standards*, which he wrote with A.C. Littleton for the American Accounting Association (Paton and Littleton 1940). Zeff (2018) has suggested that Paton was the main author of the monograph's chapter on revenue. Revenue was defined as 'the product of the enterprise, measured by the amount of new assets received from customers', and a distinction was drawn between earned revenue, created 'by the entire process of operation, by the totality of business effort', and realised revenue, which results from 'conversion of product into cash or other valid assets' (Paton and Littleton 1940, p. 46). There is still some equivocation about whether revenue is a gross or net concept, although the authors tend to use the word 'income' to describe net revenues after deduction of all expenses. The authors do not provide an explicit rationale for disclosing a revenue

figure in the first place, with their emphasis falling on cost determination. The monograph advocates a matching approach, with the aim of determining ‘income’ (profit) for the period. The ideas of Paton and Littleton were to be highly influential in providing a framework for subsequent conceptual thinking about financial reporting in the USA until the late 1960s, and even beyond.

In the USA, the late 1960s saw a series of scandals where companies would use generally accepted accounting principles (GAAP) creatively, and often inappropriately, to boost revenues. The staunch critic of US financial reporting Abraham Briloff (1972, 1976) discusses cases such as National Student Marketing Corporation (which inflated revenues from marketing and market research contracts by using a percentage of completion method that strictly applied only to government-funded construction contracts), Telex and Memorex (which reported revenues in respect of assets that they had constructed and planned to sell to finance companies to be leased out, but where the transfer did not actually take place by the end of the financial year), Liberty Equities (which sold options to buy land to a company connected to the chief executive officer on the last day of the financial year, and subsequently reacquired the options through a related party), and Stirling Homex (which recognised revenues when construction of modular housing units was completed and specific units assigned to particular contracts, even when payment was not due until delivery and installation of the units). Scandals such as these formed part of the background that led to the establishment of the FASB in 1973 (Previts and Merino 1998, pp. 365–366).

One of the early projects of the FASB was the development of a conceptual framework for financial reporting, and in 1980, a statement on the ‘elements’ of financial statements of business enterprises (SFAC 3 – FASB 1980) was published. One of the elements, the building blocks of the balance sheet and income statement, was revenues, defined as:

[I]nflows or other enhancements of assets of an entity or settlements of its liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or other activities that constitute the entity’s ongoing major or central operations. (FASB 1980, para. 63).

This concepts statement had little to say about revenue, beyond noting that revenue is usually recognised when goods are delivered or services performed, but may also be recognised when cash is received, when production is completed, or as production progresses. Further consideration of revenue recognition was deferred to the statement on recognition and measurement (SFAC 5 – FASB 1984).

That statement drew a distinction between ‘earnings’ (which the statement suggested were equivalent to the previously used term ‘net income’), and ‘comprehensive income’. Revenue was regarded as a component of earnings, from which expenses were deducted. The statement provided criteria for recognising revenues: they needed to be *realised* or *realisable*, and they needed to be *earned*. Realisation involved exchange of goods or services for cash or for claims to cash, while revenue was realisable if goods or services were exchanged for assets that could be readily convertible into cash or claims to cash. Revenues were earned if ‘the entity has substantially accomplished what it must do to be entitled to the benefits represented by the revenues’ (FASB 1980, para. 83). A few points of guidance on revenue recognition were included, covering issues such as the percentage of completion method, recognition of services or rights to use assets continuously over time, and recognition of revenue in exceptional cases when production is complete even though the customer has not taken possession of the goods (FASB 1980, para. 84).

However, this conceptual guidance was not enough for US companies, and further pronouncements on recognising revenue for specific transactions or for particular industries were made by the FASB, the American Institute of Certified Public Accountants (AICPA) and industry bodies. It was estimated that there were over 100 different pronouncements on revenue recognition in US GAAP by the time the new revenue accounting standard was published (Trainer 2019). Even

before this, US regulators were concerned that there were significant problems with revenue recognition. For example, Arthur Levitt, the Chairman of the Securities and Exchange Commission (SEC), expressed concern over earnings management, specifically referring to ‘premature recognition of revenue’ as an ‘accounting gimmick’ and an ‘illusion’ (Levitt 1998). Levitt’s criticism was supported by Lynn E. Turner, the SEC’s Chief Accountant. Turner (1998) noted that ‘the number of reported instances of companies’ improperly booking revenues has become an embarrassment to all of the accounting profession’. He gave a list of situations where he thought that revenues had been recognised prematurely:

Delivery of the product to the end user’s site has not occurred.

Agreements have not yet been accepted and executed by the customer.

The seller has to complete remaining obligations, such as installation or training.

The customer unilaterally can terminate or cancel the agreement.

‘Just in time’ arrangements exist, with [free on board] delivery terms, and revenue is recognized prior to arrival at the delivery destination.

Upfront fees are recognized immediately upon receipt notwithstanding an agreement to provide services, discounts or products during an ensuing membership period. (Turner 1998)

The concern of Levitt and Turner was based on recurrent interventions by the SEC, which required many US companies to restate their financial statements. Dechow et al. (2011, p. 29) analysed the 2,261 Accounting and Auditing Enforcement Releases issued by the SEC from May 1982 to June 2005. The SEC had identified accounting misstatements in the case of 676 companies, of which 54% related to misstated revenue. Concern over the volume of detailed, and sometimes contradictory, guidance on revenue recognition prompted the FASB to consider developing a comprehensive revenue recognition standard, firmly grounded in sound principles. However, as noted below, the FASB would not develop a new revenue standard on its own.

3.1.3. *The international road*

The International Accounting Standards Committee (IASC) initially considered accounting for construction contracts, issuing IAS 11 in 1979. This standard allowed, and from 1993 required, the use of the percentage of completion method for such contracts where certain conditions were met. The IASC was at this time engaged in an active programme of standard-setting, addressing various complex accounting problems, and the revenue standard IAS 18, issued in 1982, was relatively straightforward, taking up only 12 pages of text (not including illustrative examples). IAS 11 and IAS 18 were updated as part of the Comparability Project undertaken by the IASC in the late 1980s, to make its standards more attractive to international security market regulators (Camferman and Zeff 2015, pp. 11–12; Roberts et al. 1996). As amended by the Comparability Project and by subsequent small changes, IAS 18’s definition of revenue was:

[T]he gross inflow of economic benefits during the period arising in the course of the ordinary activities of an entity when those inflows result in increases in equity, other than increases relating to contributions from equity participants. (IASC 1993b, para. 7).

This definition is an adaptation of the definition of ‘income’ in the IASC’s *Framework for the Preparation and Presentation of Financial Statements* (IASC 1989), with revenue being considered as income arising in the course of the entity’s ‘ordinary activities’. Barker (2010) has questioned whether the definition of income provided by the IASC (and subsequently adopted by the IASB in its *Conceptual Framework for Financial Reporting – IASB 2018*) is appropriate, and Nobes (2012) has extended this critique to definitions of revenue. Barker’s view is that

income should be regarded simply as an increase in equity (excluding contributions from equity participants) rather than as an increase in assets or a decrease in liabilities that results in an increase in equity, while Nobes suggests that a literal application of the definitions of income and revenue would lead to double-counting of revenue in some cases and omissions of revenue in other cases.

IAS 18 set out two sets of conditions, one for the sale of goods and the other for the rendering of services, for revenue to be recognised. The key condition for recognising revenue from the sale of goods was that ‘the entity has transferred to the buyer the significant risks and rewards of ownership of the goods’, reinforced by a requirement that ‘the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold’ (IASC 1993b, para. 14 (a) and (b)). For services, the wording was largely the same as for construction contracts under IAS 11, referring to the percentage of completion method. This approach was justified as providing ‘useful information on the extent of service activity and performance during a period’ (IASC 1993b, para. 21). The standard also covered interest, royalties and dividends as types of revenue, and required disclosure of ‘the amount of each significant category of revenue recognised during the period’ (IASC 1993b, para. 35 (b)).

IAS 18 was a ‘principles-based’ standard rather than one setting out a collection of detailed rules, and the IASC (and subsequently the IASB) largely resisted demands to provide more detailed guidance, beyond a few illustrative examples. None of these addressed clearly the issue of how to recognise revenue from complex contracts in which goods and services were bundled together. It was not unusual for companies attempting to apply IAS 18 to look for guidance to the increasing number of ‘rules-based’ provisions for revenue recognition in the USA (Camfferman and Zeff 2015, p. 355). As already noted, by the beginning of the 2000s, the FASB was minded to undertake a major review of revenue recognition, which was announced in 2002 (Camfferman and Zeff 2015, p. 133). The IASC had been restructured as the IASB with effect from January 2001 (Camfferman and Zeff 2015, p. 18), and it also decided to adopt a project on accounting for revenue, announced in July 2002 (Camfferman and Zeff 2015, p. 133). Against the background of the Sarbanes-Oxley Act of 2002, a US legislative reaction to the Enron scandal (see, for example, Hart 2009), the FASB and the IASB decided to work more closely together, with the aspiration of converging the different sets of financial reporting requirements in the USA and internationally. This was formalised in the ‘Norwalk Agreement’, a memorandum of understanding between the FASB and IASB to work towards ‘bringing their respective standards into compatibility with each other’ (Camfferman and Zeff 2015, p. 76).

One of the joint projects specifically endorsed by the Norwalk Agreement was the project on revenue. This continued to be endorsed in a further memorandum of understanding issued in 2006 (Camfferman and Zeff 2015, p. 338). However, a major source of concern was the underlying philosophy to be adopted. A standard that was consistent with the ‘asset-liability’ basis of financial reporting implied by both FASB’s Conceptual Framework (FASB 1980) and IASB’s (adopted from IASC) *Framework for the Preparation and Presentation of Financial Statements* (IASC 1989), and that used fair value measurement as far as possible, appeared to lead entities to recognise profits on contracts as soon as they were agreed, irrespective of notions of ‘realisation’ and ‘earning’ of revenues (Camfferman and Zeff 2015, pp. 356–357; see also Wüstemann and Kierzek 2005). Two groups, each advocating a different solution for revenue recognition, came to be known as the ‘space cadets’ (who supported the pervasive use of fair values in revenue recognition) and the ‘dinosaurs’ (who supported an approach involving allocation of the total consideration to different aspects of a contract). A compromise involving the latter approach, with some fair value remeasurement in the case of onerous contracts, was ultimately to form the basis of a joint discussion paper *Preliminary Views on Revenue Recognition in Contracts with Customers* (FASB 2008).

This discussion paper was revolutionary from the US perspective, because it attempted to provide a single model for the recognition of revenue, which would apply across the whole range of entities. The broad principles set out in the discussion paper were to be modified by two subsequent exposure drafts, published in June 2010 (IASB 2010) and November 2011 (IASB 2011), with the final standards IFRS 15 (IASB 2014) and ASC 606 (FASB 2014) being issued in May 2014 (Camfferman and Zeff 2015, p. 576). Following comments from companies, a long transition period was allowed, with IFRS 15 originally being mandatory for accounting periods beginning on or after 1 January 2017, but subsequent pressure led the IASB to extend the implementation date to 1 January 2018. The broad requirements of IFRS 15 (there are some variations between this document and the text of ASC 606, particularly as regards the definition of revenue) are set out in the next section.

3.2. IFRS 15 and its potential real effects

IFRS 15 is a much longer document than IAS 11 and IAS 18 combined, extending over some 80 pages (not including the basis for conclusions and illustrative examples). Revenue is defined as ‘income arising in the course of an entity’s ordinary activities’ (IASB 2014, Appendix), with income being defined in the same terms as the IASB’s then conceptual framework (based on the 1989 *Framework* – IASC 1989). The broad principle is that:

[A]n entity recognises revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. (IASB 2014, para IN7).

This involves a five-step approach to revenue recognition, and each of the five steps has the potential to generate real effects.

First, it is necessary to identify the contract with a customer, and this may involve combining several separate legal agreements into one contract or splitting a single agreement into several contracts for recognition purposes. Business contracts are likely to be written to achieve commercial goals, rather than to fit an accounting standard. However, at the margin, businesses may seek to align the form of their legal agreements to the way in which these agreements are identified for the purposes of IFRS 15, by rewriting standard terms and conditions of operation.

Second, businesses must identify the performance obligations – the promises to transfer distinct goods or services to a customer – that are undertaken because of the contract. In some cases, a business may take on obligations to a customer associated with a contract that in the past would have been regarded as promotional or marketing activities. For example, a salesperson may have had the discretion to offer incentives, such as a ‘free’ maintenance agreement, to encourage a customer to buy goods. In the past, the costs resulting from this incentive might have been recognised only as incurred, or at best as a provision for the expected costs of fulfilling the maintenance agreement. The implementation of IFRS 15 may encourage businesses to review what they provide customers so that distinct performance obligations may be more easily identified and taken into consideration when contracts are negotiated and accounted for.

Third, it is necessary to determine the transaction price, and this causes particular difficulties where part of the consideration involved in a contract is variable. Variable consideration can include standard commercial practices such as ‘discounts, rebates, refunds, credits, price concessions, incentives, performance bonuses, penalties or other similar items’ (IASB 2014, para. 51), and reflecting such items in the determination of revenue may involve making estimates and judgements. For example, a company with a policy of giving performance rebates to customers whose purchases exceed a given target may have to reduce the amount of revenue for the expected

rebates rather than including the rebates in cost of sales. Businesses may decide to amend contracts to reduce the measurement uncertainty involved in estimating variable consideration. The transaction price is net of amounts collected on behalf of third parties. The example provided for this is ‘some sales taxes’ (IASB 2014, para. 47), but there will be situations, particularly where the business is an intermediary, where the amounts collected on behalf of third parties could be considerable. It may be more transparent to restructure transactions so that the customer pays the ultimate supplier of a good or service directly, so that the revenue of the business does not need to be adjusted. A contract where some or all of the customer’s payments are deferred may imply that there is a significant financing component in the contract, requiring deferred payments to be included at their discounted present value, and the discount treated as finance income rather than revenue (IASB 2014, paras. 60–65). Companies that, in the past, offered deferred payment terms as a contract incentive may seek to replace such terms by another structure that avoids splitting the transaction price between revenue and financial income.

Fourth, the transaction price must be allocated to each performance obligation on the basis of the relative ‘stand-alone selling prices’ of each distinct good or service promised in the contract. In some cases, determination of stand-alone selling prices may be a complex process, and businesses may decide no longer to include obligations in contracts where they need to estimate stand-alone selling prices, or to change their operations so that stand-alone selling prices can be observed rather than estimated.

Finally, revenue is recognised when an obligation is satisfied. In many cases, deciding whether an obligation has been satisfied will be straightforward, but there will be transactions at the margin where the precise point of satisfaction is not clear (this was a problem with previous revenue recognition standards). Businesses may decide to reduce any degree of uncertainty by amending contracts (or their commercial practices) to include a definite point at which an obligation may be considered to be satisfied. A particular issue relates to whether obligations are satisfied over time, rather than at a specific point of time. IFRS 15’s criteria for determining whether performance obligations are satisfied over time are rather arcane (IASB 2014, para. 35), but they appear to reduce the ability of companies to use the percentage of completion method.

As well as the five-step process, IFRS 15 has brought in criteria limiting companies’ ability to treat costs incurred in fulfilling contracts as assets (IASB 2014, para. 95), and requires companies to recognise the incremental costs of obtaining a contract as an asset if the company expects to recover the costs (IASB 2014, para. 91). It may be easier for a company to measure such costs if obtaining and fulfilling contracts are undertaken for a fee by an external party rather than internally. Finally, IFRS 15 has greatly extended the scope of disclosure (IASB 2018, paras. 110–129), and complying with the increased disclosure will require companies to establish, or enhance, their accounting information systems to provide the necessary information. At the margin, companies may decide that particularly complex contracts with customers create more problems in terms of accounting than they provide commercial benefits, encouraging greater simplicity in how the business operates. We therefore expected that the introduction of IFRS 15 would not only have direct accounting effects, but also real effects in terms of how the business operates, cash flow changes, and implementation and application costs. Evidence as to the actual impact of IFRS 15 is set out in the next section.

4. Empirical evidence

In this section we provide empirical evidence on accounting effects [A], information effects [I] and real effects [R] following the introduction of IFRS 15. Capital market effects [C] of accounting are beyond the scope of the present study. Our evidence is mainly based on corporate annual reports, comment letters and interviews. We discuss only those effects shown in [Figure 1](#) for

which we have found empirical evidence. Our analysis of all of the effects is in the following sequence: we provide any evidence first from annual reports, then from comment letters and finally from our interviews.

4.1. Data sources

4.1.1. Annual reports

Annual reports include information on the effects of new accounting standards and they are arguably the most objective source of information. We analyse the effects of IFRS 15 on a sample of the largest European companies. Specifically, we use the STOXX Europe 50 companies as shown on the index's component factsheet as at 31 December 2018. The list of constituent companies also includes country and industry data. Table 1 shows the country and industry distribution. Our sample includes nine countries: Belgium (BE), Switzerland (CH), Germany (DE), Denmark (DK), Spain (ES), France (FR), United Kingdom (GB), Italy (IT) and the Netherlands (NL). Industry is according to the 'supersector' as reported by STOXX. Our sample includes companies from 14 different industries. Our analysis includes data for 48 instead of 50 companies because we excluded two constituents of the index: ABB (Switzerland) because it used US GAAP and Unilever NV (Netherlands) because its consolidated financial statements are the same as those for Unilever plc (UK), also a constituent of the index.

Our sample companies adopted IFRS 15 in the accounting period ending on 31 December 2018 or nearest after, except for Siemens, which adopted IFRS 15 in the period ending on 30 September 2018. For simplicity, we refer to all these annual reports as '2018' reports. Any 'prior year' data relate to the period before the implementation of IFRS 15. We downloaded the annual reports from the corporate websites. Specifically, we used the English language reports that include the financial statements and notes. For most companies, this is described as the 'annual report', or the

Table 1. Country and industry distribution of STOXX Europe 50 companies in 2018.

	BE	CH	DE	DK	ES	FR	GB	IT	NL	TOTAL
Automobiles & parts	–	–	1	–	–	–	–	–	–	1
Banks	–	1	–	–	2	1	3	1	1	9
Basic resources	–	–	–	–	–	–	2	–	–	2
Chemicals	–	–	1	–	–	1	–	–	–	2
Construction & materials	–	–	–	–	–	1	–	–	–	1
Food & beverage	1	1	–	–	–	–	1	–	–	3
Health care	–	2	1	1	–	1	2	–	–	7
Industrial goods & services	–	–	1	–	–	3	–	–	–	4
Insurance	–	1	1	–	–	1	1	–	–	4
Oil & gas	–	–	–	–	–	1	2	1	–	4
Personal & household goods	–	–	–	–	–	2	3	–	–	5
Technology	–	–	1	–	–	–	–	–	1	2
Telecommunications	–	–	1	–	1	–	1	–	–	3
Utilities	–	–	–	–	–	–	1	–	–	1
TOTAL	1	5	7	1	3	11	16	2	2	48

Note: This table shows the country and industry distribution of STOXX Europe 50 companies at 31 December 2018. The countries are Belgium (BE), Switzerland (CH), Germany (DE), Denmark (DK), Spain (ES), France (FR), United Kingdom (GB), Italy (IT) and the Netherlands (NL). Industry is according to the 'supersector' as reported by STOXX. The table includes data for 48 instead of 50 companies because we excluded two companies: ABB (Switzerland) because it used US GAAP and Unilever NV (Netherlands) because there is also Unilever plc (UK). All data are from the STOXX Europe 50 'Component Information' factsheet (https://www.stoxx.com/document/Indices/Factsheets_Components/2018/December/SX5GR.pdf, Accessed on 14 October 2019).

‘financial report’. For a few companies, the only English language report containing the financial statements and notes is a Form 20-F prepared for filing with the Securities and Exchange Commission in the USA. For most French companies, we use the ‘registration document’ (or ‘reference document’). All accounting data are hand-collected from these reports.

4.1.2. *Comment letters*

Comment letters on Exposure Drafts (ED) are documents which are likely to include information on anticipated effects. However, some of the information in comment letters may not be objective because the main purpose of these documents is to influence the standard setting process. We analyse those comment letters on the IASB’s revised ED/2011/6 (published on 14 November 2011 – IASB 2011) which were submitted by our STOXX Europe 50 companies. Specifically, we analyse 12 comment letters from the following companies: EADS (now Airbus), Barclays, BP, Daimler, Deutsche Telekom, HSBC, Nestlé, Roche, SAP, Siemens, Telefónica and Vodafone.

The IASB states that it is ‘not seeking specific comments on all matters in this exposure draft’ (IASB 2011, p. 14) but all companies except one (Barclays) include additional comments beyond the specific questions asked in the ED. Some of these additional comments are about anticipated effects. In our analysis regarding disclosure changes [A.4], we only consider general comments and not the answers to Question 5 of the ED about disclosures in interim financial reports.

4.1.3. *Interviews*

Interviews let us ask experts about the effects of implementing IFRS 15. This allows us to gain insights beyond what is available in publicly available documents such as annual reports and comment letters. We conducted three semi-structured telephone interviews, each lasting between 30 and 50 min. We interviewed a preparer (the chief accounting officer of a FTSE 250 company), an advisor (a partner at a Big-4 firm) and an auditor (a partner at another Big-4 firm). While the preparer’s current employer was not heavily impacted by IFRS 15, the previous employer (a FTSE 100 company) was.

4.2. *Direct accounting effects*

Our first empirical analysis is on the direct accounting effects [A] of implementing IFRS 15. As described in Section 3.2, the new standard resulted in significant changes in revenue accounting. We jointly analyse recognition and measurement changes [A.1 and A.2] via changes in reported numbers. Additionally, we analyse disclosure changes [A.4].

Before analysing the accounting effects [A], we provide some evidence on the importance of revenue. We do this by investigating the extent to which revenue is a key audit matter (KAM). The audit reports of all of our sample companies include details on KAM. Table 2, Panel A reports our findings. First, there are 4.35 KAM on average, ranging from 2 to 7. Second, revenue accounting is an important KAM. Roughly half (48%) of our sample companies have at least one KAM related to revenue. However, it does not appear that this is driven by the implementation of IFRS 15 because all companies that have a KAM related to revenue in 2018 also have one in the prior year. Third, the implementation of IFRS 15 is only important in the audit of some companies. Just 17% of companies have a KAM which specifically mentions the implementation of IFRS 15 and only 8% of companies have a KAM which includes ‘IFRS 15’ in the heading. The analysis of KAM suggests that the importance of IFRS 15 varies by industry: all telecommunication companies, all technology companies and most (3 out of 4) of the industrial

goods and services companies have a KAM that specifically mentions the implementation of IFRS 15; in contrast, none of the companies from other industries have such a KAM.

4.2.1. Recognition and measurement changes [A.1 and A.2]

Table 2, Panel B reports our findings on recognition and measurement changes [A.1 and A.2] in the annual reports of our STOXX Europe 50 companies. We do this by analysing changes in three reported numbers: the effect on the opening balance of retained earnings, the difference in revenue under IFRS 15 compared to IAS 11/18, and the difference in profit under IFRS 15 compared to IAS 11/18. Most numbers relate to the year 2018 but when a company chose retrospective application of IFRS 15 then the numbers relate to either 2016 or 2017. Untabulated findings show that only 25% of companies chose retrospective application. The effects are minor for most companies, but significant for a few companies from particular industries. Almost half of the sample companies (48%) state that the effect of IFRS 15 is overall not material. Additionally, the analyses below imply that there are further companies where the change in numbers is not material, although they do not provide a statement confirming this.

Details of the three numbers analysed are: First, ΔRE is the change of the opening balance of retained earnings divided by the corresponding opening balance of shareholders' equity. Second, ΔR is the difference in revenue between IFRS 15 and IAS 11/18 divided by the IFRS 15 revenue. Third, ΔP is the difference in profit between IFRS 15 and IAS 11/18 divided by the IFRS 15 revenue. We do not use profit as a deflator because it has undesirable properties (e.g. it can be small and therefore it may be unclear whether a high ΔP is because of a large difference in profit between IFRS 15 and IAS 11/18 or a small IFRS 15 profit). For ΔRE , most companies disclose the required numbers. For 14 companies, we set ΔRE to zero because they do not disclose a number but state that the effect of IFRS 15 is not material. For ΔR and ΔP , most companies do not disclose the required numbers. For companies without disclosure, we assume that the effect is not material and set ΔR and ΔP to zero. When we calculate the mean, median, minimum and maximum, we use absolute values for the change/difference, that is, we do not consider the sign of the effect (though this is done in the last three columns of Table 2).

Regarding the effect on retained earnings as a percentage of shareholders' equity (ΔRE), the average absolute change is 1.88% but the median change is only 0.05%. The three telecommunication companies have large positive adjustments (5.79%, 3.63% and 3.03% for Deutsche Telekom, Vodafone and Telefónica, respectively) and Airbus and Safran have large negative adjustments (57.31% and 11.55%, respectively). When we exclude Airbus, the average ΔRE is 0.70%. For Airbus, a significant reason for the reduction is that certain 'revenue and production costs relative to the manufacture of aircraft are recognised at a point in time (e.g. upon delivery of the aircraft to the customer)', instead of being recognised in stages over the period of manufacture (Financial Statements 2018, p. 18). Additionally, the relatively high ΔRE for Airbus is because its opening balance of shareholders' equity is relatively low. Only 13% of our sample companies experience a ΔRE adjustment above 1%. The number of companies with a negative adjustment to retained earnings (20) is larger than the number of companies with a positive adjustment (11) – see columns '# $\Delta < 0$ ' and '# $\Delta > 0$ ' in Table 2. Our sample includes 13 financial companies (banks and insurance, see Table 1), where the revenue standard may be expected to have a more limited impact, because most of the income of financial companies does not fall within the scope of IFRS 15. If we exclude these companies, we find that only 17% of our non-financial companies experience a ΔRE adjustment above 1%.

Regarding the difference in revenue between IFRS 15 and IAS 11/18 as a percentage of IFRS 15 revenue (ΔR), the average absolute difference is 0.72%. Only 13% of our sample companies and 17% of our non-financial companies experience a ΔR adjustment above 1%. Ten companies show a lower revenue figure under IFRS 15 than under IAS 11/18, against five companies with a

Table 2. Accounting effects of implementing IFRS 15 in STOXX Europe 50 companies in 2018.

	Mean	Median	Min	Max	# $\Delta > 0$	# $\Delta = 0$	# $\Delta < 0$
<i>Panel A: Key audit matters (KAM)</i>							
# KAM	4.35	4	2	7			
KAM about revenue	48%						
KAM about revenue prior year	50%						
KAM includes implementation of IFRS 15	17%						
KAM with 'IFRS 15' in the heading	8%						
<i>Panel B: Recognition and measurement changes [A.1 and A.2]</i>							
Company reports that effect is not material	48%						
Δ retained earnings / shareholders' equity [Δ RE]	1.88%	0.05%	0%	57.31%	11	17	20
Δ RE excluding the company Airbus	0.70%	0.05%	0%	11.55%	11	17	19
Effect (Δ RE) >1%	13%						
Effect (Δ RE) >1% excluding financial companies	17%						
Δ revenue / revenue [Δ R]	0.72%	0%	0%	13.12%	5	33	10
Effect (Δ R) >1%	13%						
Effect (Δ R) >1% excluding financial companies	17%						
Δ profit / revenue [Δ P]	0.16%	0%	0%	1.61%	4	38	6
Effect (Δ P) >1%	8%						
Effect (Δ P) >1% excluding financial companies	11%						
<i>Panel C: Disclosure changes [A.4]</i>							
# pages revenue note	0.89	0.75	0	6			
# pages revenue note prior year	0.46	0.25	0	1.75			
Δ pages revenue note	0.43	0	-0.25	5	21	26	1*
Separate revenue note	38%						
Separate revenue note prior year	25%						

Note: This table reports the accounting effects of implementing IFRS 15 in STOXX Europe 50 companies in 2018. Panel A reports information on key audit matters (KAM). Panel B reports information on recognition and measurement changes [A.1 and A.2] via changes in reported numbers. Panel C reports information on disclosure changes [A.4]. All data are hand-collected from annual reports. The results are based on 48 companies, as described in the note to Table 1. Our sample companies adopted IFRS 15 in the accounting period ending on 31 December 2018 or nearest after, except for Siemens (which adopted IFRS 15 in the period ending on 30 September 2018). For simplicity, we refer to all these annual reports as '2018' reports. Any 'prior year' data relate to the period before the implementation of IFRS 15. Most rows report dichotomous data, except those starting with '#' (denoting 'number of') or ' Δ ' (denoting 'change in'). Dichotomous data are coded as 1 (yes) or 0 (no) and we report the mean (as a percentage). For rows starting with '#', we report the mean, median, minimum (Min) and maximum (Max). For rows starting with ' Δ ', we report the mean, median, minimum (Min) and maximum (Max), which are presented as a percentage for ratios. Additionally, we report the number of companies for which the data increases ($\#\Delta > 0$), remains unchanged ($\#\Delta = 0$) or decreases ($\#\Delta < 0$). In Panel B, ' Δ retained earnings' is the change of the opening balance of retained earnings, 'shareholders' equity' is the corresponding opening balance of shareholders' equity, ' Δ revenue' (' Δ profit') is the difference in revenue (profit) between IFRS 15 and IAS 11/18, and 'revenue' is the IFRS 15 revenue. Most numbers relate to the year 2018 but when a company chose retrospective application of IFRS 15 then the numbers relate to either 2016 or 2017. For Δ RE, most companies disclose the required numbers. For 14 companies, we set Δ RE to zero because they do not disclose but state that the effect of IFRS 15 is not material. For Δ R and Δ P, most companies do not disclose the required numbers. For companies without disclosure, we assume that the effect is not material and set Δ R and Δ P to zero. When we calculate the mean, median, min and max we use absolute values for the change, i.e. we do not consider the sign of the effect (this is done in the last three columns). Additionally, when we calculate the mean, median, min and max we set Δ RE of GlaxoSmithKline to zero. This is because the company has Δ retained earnings of £4 m, negative shareholders' equity of £68 m and states that 'IFRS 15 did not have a material impact' (Annual Report 2018, p. 145). Financial companies are banks and insurance companies (see Table 1). In Panel C, we count the number of pages in the notes which are predominantly about revenue. Specifically, anything up to a quarter of a page is counted as 0.25, anything between a quarter and half of a page is counted as 0.5 and anything between half and three quarters of a page is counted as 0.75. In our count, we do not include the 'revenue' part of the company's general note on accounting policies. The revenue disclosure may be part of the note on segment reporting, but we only count it if it is predominantly about revenue, i.e. we do not count disclosure (e.g. in the form of a table) that reports revenue together with other numbers (such as profits or assets). Regarding the separate revenue note, banks and insurance companies usually have a note on 'fee and commission income' and such income is within the scope of IFRS 15. However, we do not score a note on 'fee and commission income' as a separate revenue note.

*This relates to Reckitt Benckiser and can be explained by a change in operating segments. The previous segments were based on geographical areas and the company disclosed additional revenue data for its business lines (which we scored as 0.25 in the 'prior year').

higher figure – see columns ‘ $\#\Delta < 0$ ’ and ‘ $\#\Delta > 0$ ’ in Table 2. The effect is largest for Airbus and National Grid, which have reductions in revenue of 13.12% and 8.22%, respectively. Airbus has already been discussed above. For National Grid, this is mainly because ‘[c]ertain pass-through revenues [...] will be recorded net of operating costs, whereas previously they were recognised gross of operating costs’ (Annual Report and Accounts 2018/19, p. 188). The effect of this is that revenues and operating costs are reduced by the same amount.

Regarding the difference in profit between IFRS 15 and IAS 11/18 as a percentage of IFRS 15 revenue (ΔP), the average absolute difference is 0.16% and the largest difference is 1.61%. Only 8% of our sample companies and 11% of our non-financial companies experience a ΔP adjustment above 1%. Six companies show a lower profit figure under IFRS 15 than under IAS 11/18 and four companies show a higher figure – see columns ‘ $\#\Delta < 0$ ’ and ‘ $\#\Delta > 0$ ’ in Table 2. This does not suggest a clear trend. Therefore, the effect of IFRS 15 on profit is overall insignificant.

Our results show that the effect on reported numbers is minor for most companies. For example, Nestlé’s 2018 opening balance of shareholders’ equity was 82,870 million Swiss Francs and its 2018 IFRS 15 revenue was 89,590 million Swiss Francs. The effects of implementing IFRS 15 were a reduction in the opening balance of returned earnings of 268 million, a reduction in revenue of 169 million and a reduction in profit of 25 million Swiss Francs. These relatively small changes are understandable when the company discloses that a main effect was that ‘a small proportion of sales (less than 0.5% of annual sales) is recognized on average 2 days later under the new standard’ (Financial Statements 2018, p. 75).

Our interviews suggest that our findings based on STOXX Europe 50 companies apply more broadly. The auditor said:

And one of the things which struck me quite a lot was actually how little impact the standard had had for many of them because actually they have quite simple businesses [...]. There are obviously a lot of exceptions to that but I would say that when you look across the board you’ve got quite a lot of businesses where there is relatively little impact [...]. And then there is relatively few where there is a really dramatic change.

The advisor also confirmed this, and additionally observed that the lack of more change was somewhat surprising:

I find it personally a little bit surprising then that we didn’t have more changes to revenue recognition when we moved to IFRS 15. [...] And I haven’t seen as many companies which accelerated revenue than I might have expected.

4.2.2. Disclosure changes [A.4]

Table 2, Panel C reports our findings on changes in disclosures [A.4] in the annual reports of our STOXX Europe 50 companies. There is clear evidence of increased disclosure following the implementation of IFRS 15.

An analysis of the quantity of disclosures requires judgement by the researcher and there are many possible ways of doing this. We adopt the following approach: we count the number of pages in the notes which are predominantly about revenue. Specifically, anything up to a quarter of a page is counted as 0.25, anything between a quarter and half of a page is counted as 0.5 and anything between half and three quarters of a page is counted as 0.75. In our count, we do not include the ‘revenue’ part of the company’s general note on accounting policies. The revenue disclosure may be part of the note on segment reporting, but we only count it if it is predominantly about revenue. That is, we do not count disclosure (for example, in the form of a table) that reports revenue together with other numbers (such as profits or assets).

For 2018, the first year under IFRS 15, the average number of pages of revenue disclosures in the notes is 0.89, ranging from 0 to 6. In the prior year, the average number of pages is 0.45, ranging from 0 to 1.75. Therefore, the amount of disclosures almost doubles. The increase in disclosure is statistically significant, based on a paired sample *t*-test (*t*-statistic = 3.49, two-tailed *p*-value = 0.001). Out of the 48 sample companies, 21 increased their disclosures, 26 are unchanged and only one has a reduction. The latter relates to Reckitt Benckiser and can be explained by a change in their operating segments following a new business unit structure. The previous segments were based on geographical areas and the company disclosed additional revenue data for its business lines (which we scored as 0.25 in the ‘prior year’). We also counted which companies have a separate revenue note. In 2018, 38% of the sample companies had a separate revenue note compared to 25% in 2017.

Qualitative disclosures by companies confirm our quantitative analysis. For example, Roche states that ‘[t]he new standard results in an increased volume of disclosure information in the Annual Financial Statements’ and that it has ‘[a]s a result of implementing IFRS 15, [...] created a new note for “Revenue” as Note 3’ (Finance Report 2018, p. 139).

In their comment letters, 8 out of the 12 companies address proposed disclosure changes [A.4]. All companies think that they are extensive and many companies use the term ‘excessive’. For example, Daimler states (Comment Letter No. 80, p. 1):

The proposed disclosure requirements are substantially more extensive and detailed than the existing requirements. The inclusion of the detailed qualitative disclosure requirements will likely increase the size of disclosures.

In our discussion above of how we have conducted our page count of disclosures, we have mentioned that revenue information is often part of the segment reporting disclosures. This issue is highlighted in the comment letter of BP, which states that they ‘are concerned that the proposed requirement to disaggregate revenue into categories will duplicate disclosures already required by IFRS 8, and so request that the Board clarify how the requirements interact with those in IFRS 8’ (Comment Letter No. 279, p. 11).

Our interviews confirm that there has been an increase in disclosure, but there is a mixed reaction about whether this represents an improvement. The auditor said:

I think if you ask most people they would say that revenue disclosures were generally poor. [...] They were very boilerplate and didn’t tell you very much. And so the intention was that IFRS 15 would give users a lot more information about the approach to recognising revenue, which I think has happened. I think we’re probably only about 60% of the way there in year one and I think year two should show some further improvement.

In contrast, the preparer thinks that ‘some of the additional disclosures [...] are a waste of time’ and providing them ‘doesn’t really add anything’.

4.3. Information effects

4.3.1. Internal users’ understanding of transactions [I.1]

Our evidence on internal users’ understanding of transactions [I.1] is based on our interviews. We asked whether the implementation of IFRS 15 was used as an opportunity by companies to fundamentally rethink their business model or was just seen as a compliance exercise. Taking the diverse evidence of our three interviewees together, we conclude that the implementation of IFRS 15 was seen by many companies as a compliance exercise but for some companies

with complicated businesses it was used to better understand their transactions. The advisor said:

I'd love to tell you I have clients that you know welcomed me and sort of see that opportunity to enhance and improve their business but that wasn't the case. Most people treated it as a pure compliance exercise and left it relatively late in the process.

The auditor's experience, focusing more on the technical side of accounting for revenue, was 'much more' of a positive approach by companies than treating it as a compliance exercise. However, the auditor, who is a revenue expert, said that this 'might reflect where I spend my time'. The preparer provided an example where the implementation of IFRS 15 has improved the understanding of transactions related to the preparer's former company which is 'quite complicated from a business perspective':

To start with it was seen to be a compliance exercise, especially by the CFO. [...] And so as we were going through, and understanding how the contracts are written, it was taken as an opportunity, especially in one division, to actually formalise what the various salespeople around the world were allowed to agree and not to agree [...] because we found that that has quite dire consequences on the accounting [...].

4.3.2. *External users' understanding of transactions [I.2]*

All three telecommunication companies argued in their comment letters that the new standard would negatively affect external users' understanding of transactions [I.2]. For example, under the heading 'Inconsistent accounting for similar transactions', Vodafone argues that IFRS 15 reduces the usefulness and comparability of accounting information (Comment Letter No. 273, p. 3):

In common with other telecom operators, Vodafone sells airtime contracts to customers through its own shops and distribution channels (the 'direct' channel') and via third party dealers (the 'indirect' channel).

Key performance indicators for users of our accounts, particularly service revenue and EBITDA, will be materially different for the same customer airtime tariffs, depending on whether customer contracts are acquired through the direct channel or the indirect channel.

Since the proportion of direct and indirect channel sales can vary significantly between operators, countries and reporting periods, we believe this will materially undermine the usefulness and comparability of telecom operators' financial statements.

Additionally, when commenting on disclosure changes [A.4], six companies link it to external users' understanding of transactions [I.2]. While the argument in most cases is that the additional disclosures do not provide useful information (that is, there is no information effect), there are also cases where companies argue that the implementation of IFRS 15 will have an impact on the wider reporting environment. For example, EADS states (Comment Letter No. 335):

We note that the collection and preparation of the data required will be an 'accounting-only' exercise that will divert our limited internal resources away from other financial reporting areas that we consider to be of more interest to users.

Regarding our interviews, the above quote of the auditor regarding the additional disclosures indicates that IFRS 15 has improved the information available to users. The auditor expects that this will be particularly relevant for regulators:

I think that IFRS 15 will give regulators a deeper understanding of companies and with that deeper understanding they will be looking at what's happening and challenging whether the accounting is correct and whether the disclosures are correct.

4.3.3. *Communication of effects to stakeholders [I.3]*

Some of our sample companies have hosted presentations about the impact of IFRS 15 in order to communicate the effects to stakeholders [I.3]. We adopted a standardised approach to identify such companies, by performing the following Google search for each of our 48 sample companies: company name 'IFRS 15' filetype:pdf. This search identified six companies with relevant 'communication' documents/presentations. Four companies (Airbus, Daimler, Safran and SAP) have documents that are exclusively about IFRS 15 (for example, Safran published a document entitled 'IFRS 15 Workshop' on 12 March 2018). Two further companies (Deutsche Telekom and Telefónica) have documents that include a detailed discussion of IFRS 15 but do not refer to the standard in the document's title.

4.4. *Real effects*

4.4.1. *Implementation and application costs [R.1]*

There is indirect evidence in annual reports that the implementation and application of IFRS 15 was costly [R.1] because it required investments in information systems and related processes. For example, as part of its description of key audit matters, Deutsche Telekom's auditor PwC states that '[t]he initial application of IFRS 15 required group-wide adjustments or implementation of systems and processes regarding the new requirements for revenue recognition' (Deutsche Telekom Annual Report 2018, p. 266).

Additionally, we analysed audit fee data from 2016 to 2018 and found one specific example of implementation costs. Vodafone discloses that the audit fees of €21 million in the year prior to the implementation of IFRS 15 (2018) include €5 m related to '[f]ees during the implementation phase of new accounting standards, notably preparations for IFRS 15 "Revenue from Contracts with Customers" in the year ended 31 March 2018' (Vodafone Annual Report 2019, p. 129).

In its comment letter, Deutsche Telekom provides details on the expected implementation and application costs [R.1] and gives an estimate of the expected costs (Comment Letter No. 215, p. 15):

Implementing the ED would require us to build a new, highly complex IT system connected to several data basis (performance obligations data base, stand-alone selling prices data base, tool for determining the transaction price etc.). Furthermore, operating this IT system would require a huge manpower with regard to permanent monitoring, data update, making assessments and estimates etc. This connection between a complex IT solution and permanent manual assistance will inevitably cause tremendous costs which we estimate to amount at least hundreds of millions of Euros.

Additionally, when commenting on disclosure changes [A.4], seven companies link it to implementation and application costs [R.1]. For example, Roche states that '[c]ollecting this data is not free; it requires internal resources to implement, and costs to maintain and audit' (Comment Letter No. 242, p. 3).

Our interviews revealed some further insights. The advisor highlights that 'changing your accounting around revenue involves a lot of people across the business in many different areas, many of whom are not accountants'. Companies would spend money on an 'impact assessment' either internally or using an advisor, 'updating their policies and the related processes and the controls' and 'really big money [...] where they identified a major change to the debits and credits' which would require them to build or buy an IT system ('accounting engine'). Regarding Deutsche Telekom's estimated cost (see above), the advisor suggested that telecommunication companies did not spend that much money: they initially worried that they would have to

‘upgrade their billing systems’ but ‘in reality, what most telcos did was they didn’t change billing systems, they left them untouched because they are so expensive, and built an accounting engine that takes information from the billing system’. Overall, the advisor’s view on implementation costs is: ‘I think a lot of companies didn’t spend that much money, but I question whether they’ve done enough work’.

The preparer mentioned that the auditors increased their fees. Additionally, in the preparer’s previous company, which was heavily impacted, the implementation of IFRS 15 constituted a ‘significant cost’ and it was ‘way more expensive than we thought’. Regarding audit, the auditor said that ‘the extra work now is much more around challenging whether the policy adopted is an appropriate policy, and certainly in year one that was a lot of extra work for people and reasonably difficult work’.

4.4.2. *Contractual changes [R.2]*

In comment letters, we found one reference to potential contractual changes [R.2], in a comment from the German software company SAP (Comment Letter No. 307, p. 21):

Changes in business practice in response to changes in accounting guidance are common in our industry as evidenced by the changes SAP experienced when it moved from German GAAP to US GAAP. One potential example for such a change in business practice is the requirement under para 35(b) (iii) of the ED that the entity must have a right to payment for performance completed to date. Current contract exit clauses may not be worded in a manner that meets the requirement of para 35(b) (iii) but an entity may be confident to have appropriate clauses in its future contracts.

SAP was clearly hinting at a need to change certain aspects of contracts to allow it to recognise the revenue from such contracts over a period of time rather than only at the end of the contract.

Our interviews provide further evidence that IFRS 15 led to contractual changes [R.2]. However, these changes were not fundamental but rather at the margin. The preparer said:

I think if you sell products, it does not really change very much. But as soon as you get into anything that’s long-term contracts or different performance obligations in one contract, you can get unintended consequences. And I know in [former company] when we were looking into our long-term contracts, [...] basically, we reviewed all the contracts and as we revised the contracts, we’re making sure that the wording was sufficient that it meant that we could still effectively account for it in the same way, even though the terminology changed.

Additionally, the advisor suggested that ‘there were some examples where, you know, this was an opportunity to put more control around contracting discipline and pricing discipline, and companies did take advantage of that because it made it easier to apply the standard’.

4.4.3. *Behavioural effects [R.3]*

In annual reports, the disclosures of effects of IFRS 15 are usually about direct accounting effects [A] and not about behavioural effects [R.3]. However, SAP provides one example of an expected change in business practices in its Annual Report 2017, that is, in the year before the initial adoption of IFRS 15 (p. 160):

The most notable revenue impact relates to the accounting for options for the purchase of additional copies of already licensed on-premise software where those options provide a material

right to the customer (Material Right Additional Copy Options). Under our previous policies, we adhered to the guidance under previous U.S. GAAP to not account for these options. In contrast, IFRS 15 provides that such options are accounted for as a separate performance obligation. The transaction price portion allocated to a Material Right Additional Copy Option is recognized in software revenue upon exercise or forfeiture of the option, which will usually be later than the timing under our previous policies. [...] We currently estimate that our business practices will change in the light of this new accounting policy in a way that Material Right Additional Copy Options are only provided rarely.

In our sample of comment letters, we have found one clear reference to potential behavioural effects [R.3]. This comes from Vodafone and relates to the quote about [I.2] above. Under the heading ‘A cost accounting model that is likely to drive changes to sales and remuneration structures’ Vodafone states (Comment Letter No. 273, p. 7):

We do not believe that it is appropriate that the proposed standard should mandate the recognition of the incremental costs of acquiring a contract as an asset.

The proposals will incentivise entities to sell goods and services through third parties for the following reasons:

- Fixed costs incurred by third parties, such as salaries and property-related overheads can be reimbursed by the entity through the payment of incremental commissions that can be recognised as an asset, whereas such costs incurred by an entity in its own sales channels will be expensed as incurred;
- Assuming such assets are classified as intangible assets, the charge will ultimately be realised as amortisation and thus EBITDA will depend on the mix of sales channel used and usefulness and comparability of this key measure will be significantly reduced; and
- Entities will have increased scope to manage reported profits through altering sales structures.

Entities will also be compelled to redesign remuneration structures.

Our interviews confirm that IFRS 15 led to behavioural effects [R.3] but these were considered to be at the margin. There were no examples of fundamental changes to how businesses operate. However, in relation to the quotation from the preparer in sub-section 4.3.1, the preparer confirmed that the work in relation to IFRS 15 did change what the salespeople were allowed to do, especially regarding add-ons to contracts. The advisor provided some further explanation about this:

The accountants aren’t going to say you can’t do it, but they’ll say, well, if you do it we’re going to have to do some accounting for it. Or there will be a debate around, well, could we achieve the same aim without giving something away for free by providing some other attractive incentive to the customer whatever that is that doesn’t have the same accounting impact. [...] I’m giving a type of discount that basically is a deduction of revenue and therefore doesn’t need to be tracked separately.

4.4.4. *Regulatory effects [R.4]*

In its comment letter, Telefónica provides an example of potential regulatory effects [R.4] (Comment Letter No. 159, p. 15):

[I]n many countries, the prices of different telecom services are regulated by establishing maximum prices. Any alteration of revenue allocated to different performance obligations could result in contradictions with applicable law and/or reporting requirements to regulators. (e.g. Universal Service Obligation)

4.4.5. *Tax and dividend effects [R.5] and other real effects [R.6]*

In its comment letter, Telefónica also provides an example of a potential tax effect [R.5] (Comment Letter No. 159, p. 15):

In some countries, the different telecom services are taxed at different VAT rates. Any alteration of revenue allocated to different performance obligations could result in higher or lower taxes than currently.

In our interviews, the auditor made the following general comment about tax effects [R.5] and other real effects [R.6]:

It's just the classic thing that accountants say to just warn people of traps they might otherwise fall into. If you are a contract manufacturer and you've got quite a long lead time and you find that you previously recognised revenue on delivery of goods and now you recognise some revenue as you make them, then you're bringing revenue forward. And if you bring revenue forward, you typically bring profit forward. As you're bringing profit forward, you typically pay tax earlier. And also if you've got bonus schemes that are predicated on hitting similar profit targets you might find that you suddenly go from something that look quite stretching to something that you're bound to meet. So it's rather less about should we do business differently but rather more about are there other sort of knock-on effects that we might need to make tweaks to. Setting profit targets for bonus schemes and that sort of thing.

4.5. *Indirect accounting effects*

In our analysis of comment letters, we have found one example of a potential indirect accounting effect. It is included in the above quote of Vodafone about behaviour changes [R.3], where the company suggests that '[e]ntities will have increased scope to manage reported profits through altering sales structures' (Comment Letter No. 273, p. 7).

4.6. *Other findings*

Our interviews provided additional insights that are separate from the effects of IFRS 15 discussed above. First, according to the auditor, IFRS 15 has been useful in dealing with difficult revenue questions, not only in IFRS contexts but more generally:

[T]he standard has been a really helpful tool. And to give you an illustration of that, we, obviously, auditors, have a lot of companies that don't apply IFRS, they apply UK GAAP, FRS 102, which is more aligned to IAS 18 than to IFRS 15. So when we get revenue questions under FRS 102 we usually think about them through an IFRS 15 lens first. [...] So I think amongst the sort of revenue experts, I would say that the standard's been really helpful and is much appreciated.

Second, there are mixed opinions on whether the standard has improved revenue accounting. The auditor has a very positive opinion about IFRS 15, as can be seen by the above quote. Additionally, the auditor said that IAS 18 'just left people inventing their own accounting policies' and that 'we saw a lot of diversity as a result'. The advisor was more ambivalent. The advisor thought that the old IAS 18 was 'too brief and too broad'. Regarding IFRS 15, the advisor thought that 'the model they put together works' but 'there were a number of key judgements in there which create challenges [...] in terms of practical implementation'. This meant that the advisor was 'not convinced yet [...] that we got to that sort of consistency that was intended here'. Additionally, the advisor questioned whether 'what was required for the amount of financial change' was 'worth the effort'. The preparer saw both advantages and disadvantages of IFRS 15 because 'there are some areas where it's improved because it's more detailed and gives you more guidance to follow, but it's a lot more complicated'.

5. Conclusions

We have provided evidence on the accounting, information and real effects of IFRS 15 based on corporate annual reports, comment letters and interviews. Our analysis of the largest European companies shows that the impact of the standard on accounting numbers was minimal for most companies, except in a few industries (most notably telecommunications). On the other hand, disclosures have generally increased. With respect to information effects, there was limited evidence that companies would take the opportunity of the introduction of IFRS 15 to undertake an intensive review of their business.

Table 3. Summary of the empirical evidence on the effects of IFRS 15.

Effect	Evidence	Impact	Section
<i>[A] Accounting effects</i>			
[A.1] Recognition changes	AR + I	Joint impact of [A.1] and [A.2]: minor for most companies; significant for some	Section 4.2
[A.2] Measurement changes	AR + I	Joint impact of [A.1] and [A.2]: minor for most companies; significant for some	Section 4.2
[A.3] Presentation changes	N/A		
[A.4] Disclosure changes	AR + CL + I	Increase for many companies	Section 4.2
<i>[I] Information effects</i>			
[I.1] Internal users' understanding of transactions	I	Yes for complicated contracts	Section 4.3
[I.2] External users' understanding of transactions	CL + I	Possible impact	Section 4.3
[I.3] Communication of effects to stakeholders	O	Important for some companies	Section 4.3
<i>[C] Capital market effects</i>			
[C.1] Equity market effects	Not investigated		
[C.2] Debt market effects	Not investigated		
[C.3] Pressure to maintain/improve performance and financial position	Not investigated		
<i>[R] Real effects</i>			
[R.1] Implementation and application costs	AR + CL + I	Significant; large for telecommunication companies	Section 4.4
[R.2] Contractual changes	CL + I	At the margin for some companies	Section 4.4
[R.3] Behavioural effects	AR + CL + I	At the margin for some companies	Section 4.4
[R.4] Regulatory effects	CL	Possible impact for regulated companies	Section 4.4
[R.5] Tax and dividend effects	CL + I	Possible impact	Section 4.4
[R.6] Other real effects	I	Possible impact	Section 4.4

Note: This table shows a summary of the empirical evidence on the effects of IFRS 15. The column 'Effect' lists the possible effects (see Figure 1). The column 'Evidence' reports where we have obtained evidence from: AR = annual reports, CL = comment letters, I = interviews, O = other. One effect does not apply to IFRS 15 [A.3] and therefore we record 'N/A'. Additionally, we record 'Not investigated' for [C] capital market effects because these are outside the scope of this paper. The column 'Impact' provides a summary of our findings. The column 'Section' shows which section of the paper provides details.

Regarding real effects, in some cases, the introduction of IFRS 15 has involved substantial costs relating to the development of additional computer software, to track transactions and identify when obligations under contracts with customers have been performed. Some companies would take IFRS 15 into account when drafting new contracts, but would not disturb existing contracts. Furthermore, some companies have chosen to make changes to their business operations so that they map onto the requirements of IFRS 15 more closely. This has been a particular issue for industries where contracts involve complex bundles of provisions, often including both goods and services. IFRS 15 has certainly led to real effects, but for most companies, it appears that these arise at the margin rather than representing significant restructuring of core operations. Table 3 summarises our findings by reference to the various effects that we refer to in our framework in Figure 1.

We did not investigate how far the adoption of IFRS 15 has changed the ways in which users such as analysts interpret revenue information, and this would provide opportunities for future research. A limitation of the present study is that only three interviews were undertaken, involving preparers and their advisors. It would be informative to undertake both surveys of and interviews with financial analysts and other users, as well as value relevance and other quantitative studies to assess how far IFRS 15 has enhanced users' understanding of companies' activities and overall business model. The present study examines only the first year of implementing a new accounting standard. Longer-term studies, both interview-based and quantitative, are desirable. We have investigated the real effects of a single new standard. The more general framework that we have developed in this paper could be used to examine other new or amended standards, which may reveal a wider range of real effects.

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