

## **Revisiting Pay-performance Sensitivity around IFRS Adoption in** Europe

## The Dominant Role of Germany

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# Revisiting pay-performance sensitivity around IFRS adoption in Europe: the dominant role of Germany

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In this study, we investigate the effect of IFRS adoption on pay-performance sensitivity (PPS) in the European Economic Area (EEA) and show that the documented positive effect is driven by one country: Germany. In pooled country tests, we explore the effect of individual institutional attributes and find that differences between IFRS and local GAAP, as well as proxies for different types of enforcement, moderate the IFRS effect. However, these findings are contingent on including Germany in the sample. This raises the possibility that the studied institutional attributes proxy for Germany, and that it is the unique combination of institutional attributes in Germany that explains the increase in PPS at the time of IFRS adoption. Our findings suggest that researchers should be careful when generalising results from multi-country studies or attributing the IFRS effects to individual institutional variables.

**Keywords:** executive compensation; IFRS adoption; Pay-performance sensitivity; Institutional attributes

#### 1. Introduction

The consensus is that International Financial Reporting Standards (IFRS) constitute high-quality standards that potentially improve transparency, comparability, and hence informativeness of financial statements (Ball et al. 2015). The assumption about high-quality earnings has led researchers to predict a positive IFRS effect in a contractual setting (Ozkan et al. 2012, Wu and Zhang 2019). However, there are reasons why financial statements prepared under IFRS may be less useful for executive compensation contracts than local Generally Accepted Accounting Principles (GAAP). IFRS leave managers with substantial discretion in choosing accounting methods and making estimates (Ball et al. 2015, Ball 2006, 2016, Nobes 2006). Due to the increased use of fair value accounting under IFRS, earnings also incorporate market-wide

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price changes through fluctuations in asset values, resulting in a potential decrease in the signal-to-noise ratio for earnings (DeFond et al. 2020, Voulgaris et al. 2014, Watts 2006).

Prior literature shows mixed results regarding the effect of adopting IFRS on the role of accounting in executive compensation. For example, Ozkan et al. (2012) find that the usefulness of financial statements for executive compensation increases following mandatory IFRS adoption by a sample of countries from the European Economic Area (EEA), and the results are more pronounced in countries where the difference between IFRS and local GAAP (IFRS-LGAAP difference) is large. Meanwhile, Voulgaris et al. (2014) find a decrease in the weight of earnings-based performance measures in CEO compensation contracts in the UK (a country with a small IFRS-LGAAP difference). While the design of local GAAP is a relevant component of the institutional environment, prior literature has emphasised the importance of other aspects of the institutional environment in the context of IFRS adoption, including enforcement (Ball et al. 2003, Christensen et al. 2013, Leuz 2010).

In our study, we set out to uncover country-level differences in the effects of IFRS adoption in a contractual setting. We examine pay-performance sensitivity (PPS) in the EEA during the years 2002–2008 (a period that covers three years up to and after mandatory IFRS adoption) and present evidence that the observed effects of IFRS adoption on PPS are indeed countryspecific. In particular, we find that the positive IFRS adoption effect in countries with a large IFRS-LGAAP difference is driven by one country: Germany. However, we caution against the conclusion that IFRS-LGAAP difference alone explains the IFRS adoption effect for two reasons: 1) countries with similar or larger IFRS-LGAAP differences did not experience a positive effect, and 2) other concurrent changes in Germany took place around the time of IFRS adoption, making it difficult to isolate the effect of any individual factor.

Our empirical analysis consists of three parts. First, we perform pooled country tests, including replication of results of Ozkan et al. (2012), to ensure comparability with prior research. We draw a sample of 10,939 observations from 16 EEA countries and split observations into two groups based on IFRS-LGAAP difference (*GAAPdiff*, as developed by Bae et al. 2008<sup>2</sup>). We find a positive effect of IFRS on PPS when the difference between IFRS and local GAAP is large, which agrees with Ozkan et al. (2012).

Second, we carry out a country-level analysis of the five countries in our sample for which the largest number of observations are available (77% of the total observations). The most salient finding is that the effect of IFRS on PPS is positive *only* in the case of Germany and that removing Germany from the pooled sample yields nonsignificant results for the large IFRS-LGAAP difference group. We also note that France and Italy have similar *GAAPdiff* values as Germany but did not experience a positive effect. This leads us to conclude that IFRS-LGAAP difference offers an incomplete explanation for mixed IFRS adoption effects.

Third, in pooled country tests that include the effect of pre-adoption levels of enforcement, and changes in enforcement concurrent with IFRS adoption, we show that enforcement, whether defined broadly or narrowly<sup>3</sup>: 1) moderate the IFRS effect, 2) often subsume the effect of IFRS-LGAAP differences, and 3) that the findings 1 and 2 depend on the inclusion of Germany in the sample.

<sup>&</sup>lt;sup>2</sup>Our *GAAPdiff* measure is equivalent to *gaapdiff2* in Bae et al. (2008). Special thanks to Dr. Michael Welker for providing the data on this measure.

 $<sup>{}^{3}</sup>We$  adopt the following measures: changes in financial reporting enforcement, a measure developed by Brown et al. (2014); the level of pre-existing public and private enforcement in an equity market context (La Porta et al. 2006); legal enforcement (La Porta et al. 1998); a binary indicator for financial reporting enforcement change suggested by Christensen et al. (2013); a composite index of the institutional environment based on a measure recently developed by Isidro et al. (2020); and pre-adoption disclosure quality (Bushman et al. 2004).

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This suggests that the studied institutional attributes proxy for Germany and that it is the unique combination of institutional attributes that explains the increase in PPS at the time of IFRS adoption.

Specifically, Germany was characterised by a low pre-existing equity market orientation, which affected both accounting standards and the strength of legal protection for shareholders. Further, the country experienced a substantial change towards an equity market orientation (including changes in enforcement) simultaneously with IFRS adoption.<sup>4</sup> While the former implies room for improvement of earnings quality (and usefulness from a capital market perspective), the latter suggests that the potential for improvement was realised. A pre-existing weak equity market orientation in financial reporting is evidenced by low disclosure quality (Bushman et al. 2004), low reporting transparency (Leuz 2010), and by a subsequent large IFRS-LGAAP difference (Bae et al. 2008).<sup>5</sup> Consistent with expectations, prior research has documented comparatively low value relevance of earnings under German GAAP (Harris et al. 1994), and that switching from German to US GAAP signals an increased commitment to transparency (Leuz and Verrecchia 2000). A low equity market orientation in Germany in the pre-IFRS adoption period was also evidenced by a low level of 'public enforcement' (which was intended to protect shareholders, La Porta et al. 2006) and enforcement of accounting standards (Brown et al. 2014). Enforcement related to financial reporting was strengthened by the passing of several laws in 2004.<sup>6</sup> This partly explains the increase in enforcement levels in Germany documented by Brown et al. (2014) and Christensen et al. (2013). Consistent with these changes having real effects, Ernstberger et al. (2012) provide evidence of reduced earnings management following increased enforcement, while Hitz et al. (2012) show that enforcement actions after 2005 led to market reactions. Notably, a key characteristic of Germany, which enables regulatory effectiveness and ensures that new laws are implemented as intended, is its strong legal system and rule of law. On this measure, Germany is ranked higher than, for example, France and Italy (based on rankings in Isidro et al. 2020, Kaufmann et al. 2008, La Porta et al. 1998).

Finally, von Werder (2011) points to a strengthening of corporate governance regulation by six laws passed between October 2004 and September 2006, and issuance of a first-ever corporate governance code in 2002 (DCGK 2002). The Code—as a part of the concerted effort to increase shareholder orientation and protection—advocates that firms compensate boards of directors using performance-based payment (DCGK 2002, von Werder et al. 2005).

Since it is likely that executive directors are already being compensated with a variable pay, the Code is most likely to affect non-executive directors. To investigate this possibility, we perform an additional analysis in which we separate executive directors from non-executive directors—noting that the sampling filter used in the main analysis, which is designed to achieve comparability with the samples used in prior literature (e.g. Ozkan et al. 2012), retains certain types of non-executive directors. Specifically, the exclusion of only *independent* directors leaves directors who are employed by, or otherwise related to, the firm but who do not hold senior managerial positions. We find that there is no positive effect of IFRS adoption on executive directors' compensation. Instead, the positive effect is only found for non-executive

<sup>&</sup>lt;sup>4</sup>In a 2002 commentary on the ongoing change in German financial reporting for listed firms, the late professor Walther Busse von Colbe called it a *Paradigmawechsel*, i.e. a paradigm shift (Busse von Colbe 2002, 172).

<sup>&</sup>lt;sup>5</sup>Specifically, a weak equity market focus in German GAAP manifests as lower asset values and higher provisions (Flower and Ebbers 2002, Ordelheide and Pfaff 1994, Radebaugh et al. 1995).

<sup>&</sup>lt;sup>6</sup>These were *Bilanzkontrollgesetz*, which created a two-tier system of enforcement; *Abschlussprüferaufsichtsgesetz*, which created oversight of auditors; and *Bilanzrechtsreformgesetz*, which made auditor independence requirements more stringent (Ernstberger et al. 2012).

directors, which constitutes indirect evidence that compensation schemes changed primarily for this group, consistent with new recommendations in the German corporate governance code.

This study contributes to the literature by showing that, in a contractual setting, the observed effects of IFRS adoption on PPS are country-specific, which has implications for future research. In particular, we find that a positive effect of IFRS adoption in the EEA is only observed in Germany. We suggest that future studies would benefit from considering the institutional diversity across countries, including corporate governance structures, when planning the empirical research design. This is relevant given that prior studies cite and extend findings in Ozkan et al. (2012) without discussing the potential effect of different sample compositions. For example, 81% of observations in DeFond et al. (2020) come from Australia, South Africa, and the UK—three countries that are not included in Ozkan et al. (2012)—while Germany constitutes less than 2% of the observations. Similarly, 1% of the sample in Wu and Zhang (2019) is from Germany, while over 60% is from the UK.

Overall, we recommend caution when generalising the average adoption effects of IFRS to regional or global samples, and even more so when the samples are highly skewed and unrepresentative of the whole population.<sup>7</sup> Unless samples are homogeneous in terms of institutional factors, conclusions that are likely to depend on the sample composition would have potentially poor external validity.

#### 2. Background

Optimal managerial compensation contracts enable boards of directors to incentivise management to act in the interest of shareholders even when managers' actions cannot be directly observed (Bushman and Smith 2001, Lambert 2001). The optimality of such contracts depends on the choice of the performance measure, which, in turn, is determined by how strongly it is linked to (and thus signals) the managers' actions (Holmström 1979, Lambert 1983, 2001, Voulgaris et al. 2014). Paul (1992) and Core (2020) suggest that the use of accounting earnings as a performance measure strengthens the link between a manager's performance and pay as compared to equity-based compensation, by potentially mitigating market-related noise outside the manager's control.

Whether the use of earnings for contractual purposes increases or decreases with IFRS adoption depends on the perceived change in their signal-to-noise ratio. This, in turn, depends on the institutional setting, including the nature of pre-existing local GAAP and various enforcement mechanisms (Brown 2011, Christensen et al. 2013, Ozkan et al. 2012). Conclusions based on the *average effect* of IFRS adoption in multi-country studies are, therefore, potentially problematic when countries are heterogeneous with respect to institutional environment and samples are skewed toward certain countries.

#### 2.1. IFRS in a contractual setting

A large number of empirical studies find positive capital market implications of IFRS adoption, indicating increased usefulness in a valuation setting (Daske et al. 2008, De George et al. 2016, Horton and Serafeim 2010, Li 2010). The assumption about high-quality earnings has also led researchers to predict a positive IFRS effect in a contractual setting (Ozkan et al. 2012, Wu and Zhang 2019). However, there are two main reasons why financial statements prepared under IFRS may be less useful in drawing up compensation contracts, namely, increased

<sup>&</sup>lt;sup>7</sup>Pope and McLeay (2011) also argue that 'there is much information yet to be discovered by trying to better understand the world behind the observed average effects' (pp. 261-262).

managerial flexibility, and increased market noise in the accounting numbers (cf. Dutta and Zhang 2002, Kothari et al. 2010, Watts 2006).

First, IFRS leave managers with a fairly wide choice of accounting methods and substantial discretion in making estimates (Ball et al. 2015, Ball 2006, 2016, Capkun et al. 2016). For example, Capkun et al. (2016) find that nearly a third of the standards were revised between 2003 and 2005, and these revisions and the additional standards issued during this period led to greater flexibility in accounting estimates on average. IFRS also introduce uncertainties in measurement due to the increased use of fair value accounting (i.e. when fair value estimates are based on level 3 or level 2 inputs). While the purpose of applying discretion or judgment is to allow managers to communicate their private information to outsiders, it also provides opportunities for manager to manage earnings. This is especially problematic in a contractual setting as it may reduce the ability of earnings to act as an objective signal about the underlying performance of the manager (Ball et al. 2015, Beneish 2001, Shivakumar 2013). Second, because of the use of fair values, earnings become more sensitive to market-wide price changes (noise) through fluctuations in asset values. The result is a potential decrease in the signal-to-noise ratio for earnings (Bushman and Indjejikian 1993, Voulgaris et al. 2014).

#### 2.2. The impact of the institutional environment

Prior studies find that the effect of IFRS adoption could be confounded by institutional attributes unrelated to IFRS (Christensen et al. 2013, Daske et al. 2008). In the following sections, we discuss two features of the institutional environment that might affect the usefulness of IFRS for contractual purposes: 1) differences between IFRS and pre-existing local GAAP (Bae et al. 2008) and 2) institutional changes at the time of IFRS adoption (Christensen et al. 2013, ICAEW 2015).

#### 2.2.1. Differences between IFRS and pre-existing local GAAP

The existing research recognises differences in countries' institutional environments, and the influence of the institutional environment on the financial reporting process (Brown et al. 2014, Leuz 2010). Shareholder-oriented countries, such as those of English legal origin (e.g. the UK and Ireland) tend to have a strong protection of investor rights and widespread share ownership (La Porta et al. 1998). As such, they rely on public disclosure to resolve information asymmetries (De George et al. 2016) and report more timely earnings due to faster incorporation of economic losses (Ball et al. 2000). Such countries typically demonstrate a higher quality of disclosures and demonstrate a smaller difference between local GAAP and IFRS.<sup>8</sup> By contrast, countries of French (e.g. France and Italy) and German legal origin (e.g. Austria and Germany) traditionally focus on the interests of creditors or other stakeholders (Nobes and Parker 2006). In these countries, pre-existing local GAAP differ much more from IFRS; tax rules have a significant impact on the financial statements, and accounts are generally prepared for the benefit of creditors (Flower and Ebbers 2002, Nobes and Parker 2006). The result is a prudent valuation of assets and an overstatement of provisions. Companies report less timely earnings due to slower incorporation of losses (Ball et al. 2000) and are less transparent about their financial position to external stakeholders. Their governance model relies instead on private communications to resolve agency problems. Consistent with this line of reasoning, Ali and Hwang (2000) find that the value relevance of financial accounting is higher in

<sup>&</sup>lt;sup>8</sup>See, for example, rankings by Center for International Financial Accounting Research (CIFAR) in Bushman et al. (2004), La Porta et al. (1998) and Bae et al. (2008).

common law countries (including those of English legal origin) than in code law countries (including those of French and German legal origin).

#### 2.2.2. Broader institutional changes at the time of IFRS adoption

Concurrent with IFRS adoption, regulators in the EU were engaged in initiatives to strengthen the institutional setting with respect to financial markets. Pursuant to the Financial Services Action Plan (FSAP) communicated in 1998 (EU Commission 1998), continuous efforts were made to 'establish a single market in wholesale financial services, to make retail markets open and secure and strengthen the rules on prudential supervision'. By 2005, ten progress reports had been published in reference to the FSAP, and the next phase of 'European capital market integration<sup>9</sup> was under way with the issuance of a Commission White Paper on Financial Services Policy focusing on the period 2005-2010 (EU Commission 2005). This included increased regulatory public supervision of auditors in Europe, with the imposition of stricter disciplinary sanctions and reinforcing auditor independence and codes of ethics (Dewing and Russell 2004). The movement towards a single set of financial statements for listed companies was also followed up with the requirement that member states take measures to ensure compliance with IFRS. The EU suggested that the Committee of European Securities Regulators (CESR) should guide and coordinate enforcement activities and, over time, harmonise these activities in the member states. CESR issued two voluntary standards in 2003 (CESR No. 1 and 2).<sup>10</sup> Despite the EU's effort to strengthen the regulatory public supervision of auditors and enforce the rules of financial reporting, empirical research reveals substantial variations in both these aspects within the EU (Brown et al. 2014, Christensen et al. 2013, Johansen et al. 2020).

In addition to regulatory changes at the EU level, some EU countries took the initiative to strengthen their corporate governance code around the time of the adoption of IFRS. For example, Germany issued a new corporate governance code (DCGK 2002) that recommended the inclusion of performance-related pay in supervisory board members' compensation.

In summary, not only do countries differ with respect to their pre-existing local GAAP, they also made concurrent changes to the broader institutional environment at the time of IFRS adoption. This makes it difficult to disentangle the effect of IFRS and other institutional attributes. For example, while France, Germany, and Italy all had a stakeholder-oriented focus with similar differences between local GAAP and IFRS, they differed in other respects. Germany, in the pre-IFRS adoption period, had a less stringent system for enforcing financial reporting but changed the enforcement to make it more stringent around the time of adopting IFRS. Meanwhile, the pre-IFRS adoption level of enforcement was comparatively stricter in Italy and France. Therefore, these countries did not make any changes to their enforcement systems when adopting IFRS. (Brown et al. 2014).

#### 2.3. Sample composition and operationalisations in prior research

A unique mix of institutional attributes in each country makes empirical findings sensitive to the choice of sample. This has bearing on the generalisability of results across extant studies. Table 1 provides a summary of the sample composition in six studies examining the impact of IFRS in a contractual setting. It illustrates the variation in sample composition and may explain why IFRS adoption shows a positive effect in certain studies (DeFond et al. 2020, Ozkan et al. 2012, Wu

<sup>&</sup>lt;sup>9</sup>See summary on https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3A124210.

<sup>&</sup>lt;sup>10</sup>CESR's activities were later taken over by the European Securities and Markets Authority (ESMA).

	Wu and Zhang $(2009)^2$	Ozkan et al. $(2012)^1$	Voulgaris et al. $(2014)^1$	Ball et al. $(2015)^2$	Wu and Zhang $(2019)^2$	DeFond et al. $(2020)^1$
Australia				6.7%		41.1%
Austria	6.0%	0.4%			0.1%	0.01%
Belgium	4.0%	4.1%		3.4%	2.3%	0.2%
Denmark	5.5%	1.2%		0.5%	0.4%	0.1%
Finland	3.5%	0.6%		2.3%	0.4%	1.2%
France	11.0%	27.4%		19.0%	9.9%	5.0%
Germany	44.0%	26.1%		6.7%	1.1%	1.7%
Greece		0.2%			0.7%	
Hong Kong				1.4%		0.1%
Iceland						0.1%
Ireland		5.3%		1.8%		1.6%
Israel				2.4%		
Italy	2.0%	11.9%		3.7%	1.1%	0.8%
Luxembourg		0.3%		2.2%	0.04%	
Netherlands	0.5%	9.1%		4.3%	3.8%	2.4%
New				0.9%		
Zealand						
Norway		4.0%		6.0%	3.5%	2.7%
Philippines				0.9%		0.1%
Poland						0.3%
Portugal		0.1%		0.9%	0.4%	0.03%
Singapore				1.3%		
Slovenia						0.1%
South Africa				1.1%		9.4%
Spain		3.9%		3.0%	2.1%	0.6%
Sweden	3.50%	5.7%		2.6%	8.3%	2.2%
Switzerland	20.00%			3.4%	0.7%	0.2%
UK			100%	25.6%	65.4%	30.5%

Table 1. Sample composition in studies examining the impact of IFRS in a contractual setting

Notes: This table illustrates the sample composition in studies examining the impact of IFRS in a contractual setting. <sup>1</sup>Director-year observations by country.

<sup>2</sup>Firm-year observations by country.

and Zhang 2009, 2019) and a negative effect in others (Ball et al. 2015, DeFond et al. 2020, Voulgaris et al. 2014).<sup>11</sup>

Studies that focus on a single country do not face the challenge of institutional heterogeneity (e.g. Chen and Tang 2017, Voulgaris et al. 2014). However, in multi-country studies, researchers must often rely on institutional indices. Bae et al. (2008) present one such measure to capture the difference between IFRS and local GAAP (IFRS-LGAAP difference). The researchers derived two indices (*gaapdiff1*, which is judgment-based, and the more comprehensive *gaapdiff2*, which is calculated using a mechanical approach) from Nobes (2001), who carried out a survey of partners in global accounting firms, comparing local GAAP with International Accounting Standards (IAS). Notably, both Ozkan et al. (2012) and Wu and Zhang (2019)

<sup>&</sup>lt;sup>11</sup>DeFond et al. (2020) make a distinction between high fair value and low fair value (FV) firms. On average, high FV firms experience a negative IFRS effect while low FV firms experience a positive IFRS effect.

find the expected effects of IFRS adoption only for countries with large IFRS-LGAAP differences.

While the measure offers useful insights, the IFRS-LGAAP difference is only one aspect of the institutional environment. We argue that attributing the findings in Ozkan et al. (2012) and Wu and Zhang (2019) to IFRS-LGAAP differences is potentially problematic. The effect of IFRS adoption is likely determined by a mix of institutional attributes in a country, including the legal environment and the level of and changes in financial reporting enforcement.

#### 3. Research design

Based on the above arguments, we expect the effect of IFRS on PPS to be country-specific and that a country-level analysis, along with tests using country-specific institutional variables, would be able to provide further insights on this effect. For ease of comparison with and to extend prior related studies, we adopt a similar model specification and sample selection procedure as Ozkan et al. (2012). Pooled country tests, along with tests of IFRS-LGAAP difference, serve as a point of departure.

#### 3.1. Model specification and variables

To test the effect of the adoption of IFRS on the perceived usefulness of earnings in executive compensation contracts, we measure the sensitivity of pay to performance. Prior literature demonstrates that empirical models of PPS have a long history (see Coughlan and Schmidt 1985, Jensen and Murphy 1990, and review by Bushman and Smith 2001). The basic idea of PPS is that if boards making compensation decisions consider a performance measure to be of high quality and have a high signal-to-noise ratio, relatively more weight should be placed on that measure. A high (low) PPS consequently follows if the performance measure is a good (poor) reflection of underlying performance.

In our case, PPS captures the association between the change in an executive's total cash compensation and accounting-based performance. We apply the following regression specification (cf. Ozkan et al. 2012) to the full sample as well as to subsamples of firms based on whether they are classified as having a small or large difference between local GAAP and IFRS:

$$\begin{split} \Delta Comp_{i,j,t} &= \alpha_0 + \beta_1 \Delta PROA_{j,t} + \beta_2 IFRS_{j,t} + \beta_3 \Delta PROA_{j,t} \times IFRS_{j,t} + \alpha_1 Ret_{j,t} \\ &+ \alpha_2 Ret_{j,t} \times IFRS_{j,t} + \alpha_3 Size_{j,t} + \alpha_4 BM_{j,t} + \alpha_5 CEO_{i,j,t} \\ &+ \alpha_6 Age_{i,j,t} + \alpha_7 dTimeinrole_{i,j,t} + \varepsilon_{i,j,t} \end{split}$$

(Model 1)

where:

 $\triangle Comp_{i,j,t}$  is the change in the natural logarithm of total cash compensation, which consists of salary plus bonuses for executive *i* of firm *j*, from year *t*-1 to year *t*;

 $\Delta PROA_{j,t}$  is the change in pre-tax income scaled by total assets for firm j from year t-1 to t;<sup>12</sup>

<sup>&</sup>lt;sup>12</sup>Ozkan et al. (2012) suggest using pre-tax income, as tax rates differ amongst countries and are beyond the control of executives. In untabulated robustness tests, we perform all analyses on net (after-tax) income, as well as on operating earnings (defined as EBIT, Earnings Before Interest and Taxes). All inferences remain robust, although the association between changes in these performance measures and changes in compensation is consistently weaker than in the main tests (using pretax income).

IFRS<sub>i,t</sub> is an indicator variable that is set to '1' for firms that have implemented IFRS, and '0' for others. Specifically, we retain the observations pertaining to firms with IFRS in the 2006-2008 period and exclude the observations of firms with IFRS in the 2002–2004 period, i.e. voluntary adopters;

*Ret*<sub>i,t</sub> is the annual stock return for firm *j* in fiscal year *t*;

Size<sub>i,t</sub> is the natural logarithm of the market value of equity (in millions of euros) for firm *j* in year t. Previous studies provide evidence that firm size is positively associated with pay;<sup>13</sup>

 $BM_{i,t}$  is the natural logarithm of the ratio of the book value of equity to the market value of equity for firm *j* in year *t*. Core et al. (1999) and Albuquerque (2009) find a positive relationship between pay and a firm's investment opportunities as inversely proxied by the book-to-market ratio:<sup>14</sup>

 $CEO_{i,i,t}$  is an indicator variable that is set to '1' if director *i* is the chief executive officer and '0' otherwise. CEOs are in general expected to be paid better than other directors<sup>15</sup> and be more likely to have their pay tied to performance.

Age<sub>i,i,t</sub> is the natural logarithm of the age of director *i* in firm *j* in year *t*. For example, Hallock (1997) finds that compensation increases at a declining rate with the CEO's age.

 $dTimeinrole_{i,i,t}$  is an indicator variable that is set to '1' if director i in firm j has been in that position for less than two years at the end of year t, and '0' otherwise. Ceteris paribus, a director who has been appointed during year t-1 is likely to receive less than a full year's compensation in year t-1, and as a result, the change in annual compensation in year t may become inflated. Additionally, country, year, and industry fixed effects are included in the model.

While all director-specific data is obtained from BoardEx, accounting data is obtained from Datastream/Worldscope and market returns are obtained from Capital IQ. The coefficients of interest in Model 1 are  $\beta_1$  and  $\beta_3$ . A significantly positive  $\beta_1$  suggests that accounting earnings prior to the adoption of IFRS (i.e. based on local GAAP) are positively associated with executive pay. A significantly positive (negative)  $\beta_3$  is consistent with IFRS adoption increasing (decreasing) the PPS.

We finally note that the interaction term  $\alpha_2 Ret_{i,t} \times IFRS_{i,t}$  is included to reflect the fact that post-IFRS adoption, a shift may occur between earnings- and market-based performance measures in determining managerial pay. The omission of such a variable, if relevant, would bias the estimation of  $\beta_1$  and  $\beta_3$ .

#### Sample description 3.2.

Our initial dataset consists of all unique director observations in BoardEx<sup>16</sup> filtered on year (2002-2008), country (listed firms in the EEA), payment data (available salary or bonus data, which is the minimum requirement for calculating total cash payment), director type (independent directors are excluded), and firm identifier (available ISIN numbers). The initial sample comprised 27,894

<sup>&</sup>lt;sup>13</sup>See Kaplan (1994) on Japanese data, Conyon and Murphy (2000) on UK and US data, Brunello et al. (2001) on Italian data, Zhou (2000) on Canadian data, and Haid and Yurtoglu (2006) on German data. Since we use the change in compensation as the dependent variable and not the level of compensation, the impact of size (on the change in compensation) is, however, potentially less clear.

<sup>&</sup>lt;sup>14</sup>Core et al. (1999) use the market-to-book ratio. Albuquerque (2009) uses the ratio of market value of all assets to book value of total assets as a proxy for investment opportunities (which Albuquerque defines as growth opportunities in the study). <sup>15</sup>We note that since we use the change in compensation as the dependent variable, the impact of *CEO* is less

clear.

<sup>&</sup>lt;sup>16</sup>For benchmarking with previous studies, we use a BoardEx file from 2014. Subsequently, BoardEx has retroactively changed the sample for the years 2002-2008 and shifted the focus of data coverage more onto the UK than on the rest of Europe.

director-year observations (1,170 unique firms). The final sample of 10,939 observations is obtained after we make a number of data requirements. We drop observations for which we do not have two consecutive director-years of data (for calculating the changes in compensation) or company-specific accounting or market data. We also eliminate observations if the annual cash compensation is less than 10,000 euros, the year is 2005, observations are related to voluntary adopters (applicable to the 2002–2004 period), or director-specific (age and tenure) data is missing.<sup>17</sup> Table 2, Panel A, shows our sample selection procedure.

We note several similarities and differences between our sample and the sample selected by Ozkan et al. (2012). Our initial sample is smaller than theirs, which we attribute to our requirement that there is a firm identifier and that BoardEx is continuously changing retroactively (we use a file from 2014). We require a firm identifier (ISIN) to correctly identify the country of incorporation using Capital IQ (which has better coverage than BoardEx). However, our final samples are comparable. When excluding the UK from our final sample, we have 10,204 observations; the equivalent figure in Ozkan et al. (2012) is 11,056.<sup>18</sup>

Panel B of Table 2 shows the country-wise distribution of the final sample. The top five countries by the number of observations (France, Germany, Italy, the Netherlands, and the UK) account for 77% of the director-year observations. Because of their substantial impact on the results, much of the analysis was focussed on these countries. Panel C of Table 2 reveals that the number of unique firms and director-year observations increase monotonically from 2002 to 2008 due to increasing number of firms covered over that period by BoardEx.

Table 3 presents summary statistics of the variables. The Table shows that the mean value of the underlying logarithmised compensation variable is 5.2. The mean change in the logarithm of total cash compensation,  $\triangle Comp$ , is 0.148. The mean change in *PROA* ( $\triangle PROA$ ), at -0.003, is close to zero. As expected, because compensation data are more commonly available for large firms, the sample consist primarily of large firms. The mean and median value of *Size* is 7.8, and the underlying mean (median) market value is 9,479 (2,411) million euros. The mean and median values of the logarithmised book-to-market ratio are -0.64 and -0.62, respectively. Finally, 18 per cent of the director-year observations pertain to CEOs, the average age of directors is 55 years, and they have been in their current positions for 5.2 years on average.

#### 4. Results

We begin empirical tests with pooled country tests (Section 4.1), followed by country-level tests for the five largest countries in the sample (Section 4.2). Results from country-level tests raise the possibility of country-specific institutional effects, which are investigated in section 4.3.

#### 4.1. Pooled country tests

As the starting point for our analysis, we consider Model 1 (Table 4, Panel A) and a benchmark PPS model (excluding IFRS variables). Regression results from the benchmark model indicate

<sup>&</sup>lt;sup>17</sup>Observations from 2005 are excluded because firms may have needed time to adjust their compensation contracts after adopting IFRS (Ozkan et al. 2012). There may also be effects of IFRS that occur only in the transition year (Ozkan et al. 2012, Voulgaris et al. 2014). The voluntary adopters of IFRS (2002–2004) are likely to differ from the mandatory adopters. Further, as shown by Capkun et al. (2016), the set of IFRS standards that were applicable in 2005 differed from the earlier versions of IFRS.

<sup>&</sup>lt;sup>18</sup>Table 1 in Ozkan et al. (2012), which shows their sample selection procedure, does not consider data requirements on control variables and therefore shows a larger final sample, with 13,505 firm-year observations and 892 unique firms; our corresponding figures, excluding the UK, are 12,831 and 835.

#### Table 2. Sample selection and breakdown

### Panel A: Sample selection

Steps:	Observations	Unique firms	Firm- years	Unique directors
The initial dataset of unique (dependent) director-year observations between 2002 and 2008 for which there is a firm identifier and any Salary <i>or</i> Bonus data in the BoardEx database for sample countries:	27,894	1,170	5,474	9,203
After removing observations for which change in compensation cannot be calculated:	19,887	1,081	4,615	7,012
After removing observations without required company-specific accounting and market data:	16,479	875	3,669	5,850
After removing observations for 2005:	14,176	874	3,173	5,706
After removing observations where annual cash compensation $< 10,000$ EUR:	13,570	868	3,141	5,469
After removing observations for which there is no accounting standard data or IFRS is adopted early:	12,675	852	2,986	5,282
After removing observations for which age and tenure data is missing (final sample):	10,939	830	2,915	4,439

Panel B: Country breakdown

		Dire	ctor-years		Unique firms			
	All	%	Pre-IFRS	IFRS	All	Pre-IFRS	IFRS	
Austria	64	1	8	56	6	1	6	
Belgium	251	2	23	228	36	5	36	
Denmark	67	1	3	64	9	2	8	
Finland	85	1	10	75	21	4	20	
France	3,250	30	1296	1954	221	129	215	
Germany	2,408	22	320	2088	125	16	123	
Greece	10	0	3	7	3	1	2	
Ireland	571	5	278	293	37	29	32	
Italy	1,030	9	301	729	76	36	73	
Luxembourg	2	0	2	0	1	1	0	
Netherlands	995	9	404	591	80	52	76	
Norway	404	4	71	333	60	23	56	
Poland	20	0	0	20	1	0	1	
Portugal	9	0	1	8	3	1	3	
Spain	379	3	123	256	29	13	28	
Sweden	660	6	357	303	90	85	77	
UK	734	7	375	359	32	22	32	
Total	10,939	100	3,575	7,364	830	420	788	

 $\square$ 

(Continued)

Table 2. Continued.

#### Panel C: Year breakdown

	All	Unique directors	Unique firms
2002	942	366	53
2003	1,236	419	69
2004	1,397	472	99
2006	2,166	867	158
2007	2,554	1006	206
2008	2,644	1309	245
Total	10,939	4,439	830

Notes: This table illustrates the sample selection and breakdown. Panel A presents the steps in the sample selection, including the number of director-year observations, unique firms, and unique directors. Panels B and C present the breakdown of the sample by country and year, respectively.

Regression variables:	Ν	Mean	Std. Dev.	Min.	Median	Max.
ΔComp	10,939	0.148	0.424	-0.653	0.065	1.278
ΔPROA	10,939	-0.003	0.043	-0.109	0	0.083
Ret	10,939	-0.021	0.371	-0.662	0.005	0.706
Size	10,939	7.807	1.858	4.458	7.789	10.86
BM	10,939	-0.642	0.632	-1.895	-0.623	0.473
CEO	10,939	0.178	0.383	0	0	1
Age	10,939	3.995	0.175	2.996	4.007	4.533
Dtimeinrole	10,939	0.255	0.436	0	0	1
Other descriptive statistics:						
Market value (MEUR)	10,939	9,479	14,591	86	2,411	52,045
Age (years)	10,939	55.1	8.6	40	55	71
Tenure (years)	10,939	5.2	4.9	0.7	3.8	14.9
Total Salary and Bonus (TEUR)	10,939	489	623	15	191	2,178
Logarithm of Total Salary and Bonus	10,939	5.211	1.572	2.708	5.252	7.686

#### Table 3. Summary statistics

Notes: This table provides summary statistics for the variables used in the regressions (upper half of the table, variables in italics) and other descriptive statistics (lower half of the table) relating to the underlying variables used to calculate the regression variables. All variables are winsorized at the 5th and 95th percentile.

Definitions of regression variables:

 $\Delta Comp_t$  = the change in the natural logarithm of total cash compensation, which consists of salary plus bonuses for director *i* of firm *j*, from year *t*-1 to year *t*;

 $\Delta PROA_{j,t}$  = the change in pre-tax income scaled by total assets for firm *j* from year *t*-1 to *t*;

 $IFRS_{j,t}$  = an indicator variable that is set to '1' for firms with IFRS, and '0' otherwise;

 $Ret_{j,t}$  = the annual stock return for firm *j* in fiscal year *t*;

 $Size_{j,t}$  = the natural logarithm of the market value of equity (millions of euros) for firm *j* in year *t*;

 $BM_{j,t}$  = the natural logarithm of the ratio of the book value of equity to the market value of equity for firm j in year t;

 $CEO_{i,j,t}$  = an indicator variable that is set to '1' if the director is the chief executive officer, and '0' otherwise;

 $Age_{i,j,t}$  = the natural logarithm of the age of director *i* in firm *j* in year *t*;

 $dTimeinrole_{i,j,t} =$  an indicator variable that is set to '1' if director *i* in firm *j* has been in that position for less than two years as of the end of year *t*, and '0' otherwise.

that the association between  $\triangle PROA$  and  $\triangle Comp$  is positive and significant (coeff.: 0.406, t-stat.: 3.68) which is consistent with the compensation-relevance of accounting-based measures. When applying Model 1 to the full sample, we fail to establish an effect of IFRS on PPS, as the  $\triangle PROA*IFRS$  coefficient is insignificant (coeff.: 0.185, t-stat.: 0.79). We repeat these tests excluding the UK and the results we obtain are comparable with those obtained by Ozkan et al. (2012) (not tabulated). This yields a  $\triangle PROA*IFRS$  coefficient of 0.232 with a t-statistic of 0.93 (the corresponding coefficient in Ozkan et al. (2012) was weakly (and positively) significant, see their Table 3, Model II).

We use the *GAAPdiff* measure from Bae et al. (2008) to partition the sample based on whether the IFRS-LGAAP differences are small or large (Panel B of Table 4). One of the main findings in Ozkan et al. (2012) was a strong and significantly positive effect of the 2005 IFRS introduction in EEA countries with large differences between pre-adoption local GAAP and IFRS (see their Table 3, Panel B). The coefficient on  $\Delta PROA*IFRS$  for the large IFRS-LGAAP difference sample is 2.041 (t-stat.: 3.51, 4,007 observations), while the coefficient for the small IFRS-LGAAP difference sample is weakly negative (coeff.: -0.457, t-stat.: -1.78, 6,932 observations).<sup>19</sup> Using a sample that excludes the UK for comparison purposes, which reduces the

<sup>&</sup>lt;sup>19</sup>The results in Ozkan et al. (2012) are based on a similar sample size of 4,339 observations in the large IFRS-LGAAP difference subsample and 6,717 observations in the small IFRS-LGAAP difference subsample.

#### Panel A: Pooled sample tests

	Benchmark	model	Moo	del 1	
	Coeff.	t-stat.	Coeff.	t-stat.	
ΔPROA	0.406***	3.68	0.274	1.41	
IFRS			-0.108***	-5.61	
<b>APROA×IFRS</b>			0.185	0.79	
Ret	0.096***	5.79	0.150***	5.68	
RetxIFRS			-0.085**	-2.53	
Size	0.003	0.96	0.003	1.06	
BM	0.024***	2.87	0.022**	2.55	
CEO	0.027***	2.62	0.027***	2.62	
Age	-0.174***	-7.31	-0.173***	-7.27	
DTimeinrole	0.211***	19.00	0.211***	19.01	
Intercept	0.754***	6.99	0.755***	7.00	
Adj. R <sup>2</sup>	0.090		0.090		
N	10,939		10,939		
Panel B: IFRS-LGAAP of	lifference subsample tests				
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	Small IFRS-LGAA	AP difference	Large IFRS-LC	BAAP difference	Test of difference i	n coefficients
	Coeff.	t-stat.	Coeff.	t-stat.	Diff.	z-stat.
ΔPROA	0.605***	3	-0.957*	-1.82	1.563***	2.79
IFRS	-0.068***	-3.24	-0.259***	-4.89	0.191***	3.37
<b>APROA×IFRS</b>	-0.457*	-1.78	2.041***	3.51	-2.50***	-3.95
Ret	0.098***	3.45	0.401***	4.98	-0.303***	-3.57
RetxIFRS	-0.044	-1.13	-0.361***	-4.15	0.317***	3.34
Size	0	0.01	0.009*	1.74	-0.009	-1.47
BM	0.021**	2.07	0.004	0.22	0.018	0.91
CEO	0.016	1.43	0.062**	2.44	-0.046	-1.68
Age	-0.175***	-6.03	-0.163***	-3.99	-0.012	-0.24
DTimeinrole	0.190***	13.87	0.247***	13.1	-0.057**	-2.46
Intercept	0.812***	6.7	0.706***	3.9		
Adj. R <sup>2</sup>	0.074		0.116			
N	6,932		4,007			

Notes: \*\*\*, \*\*, and \* denote p-values of 0.01, 0.05, and 0.1 (two-tailed), respectively.

This table presents regression results of Model 1 as well as a 'benchmark model'. The benchmark model shows results from a basic model of PPS whereas Model 1 includes the effect of IFRS adoption on the PPS. Pooled tests using the full sample are shown in Panel A, while tests on subsamples are shown in Panel B (Model 1 only). The *Small IFRS-LGAAP difference* (*Large IFRS-LGAAP difference*) subsample consists of observations belonging to countries with a small (large) difference between local GAAP and IFRS based on Bae et al. (2008). The two rightmost columns of Panel B present tests of differences in estimated coefficients for the two subsamples. See Section 3 for complete variable definitions.

size of the small IFRS-LGAAP subsample, yields a qualitatively similar coefficient on  $\triangle PROA*IFRS$  (coeff.: -0.460, t-stat.: -1.65) and a difference of -2.497 (z-stat: -3.88) between coefficients (untabulated), which further confirms the empirical findings in Ozkan et al. (2012).

#### 4.2. Country-level analysis of PPS and IFRS adoption

To investigate country-specific effects of IFRS adoption, we begin by performing country-level tests that focus on the five largest countries by the number of observations in our sample (i.e. France, Germany, Italy, the Netherlands, and the UK). Table 5 presents the results. These indicate substantial heterogeneity in the adoption effect across countries. The effects are most prominent in Germany and the Netherlands. The IFRS adoption effect on PPS is positive in Germany (coeff: 3.953, t-stat.: 6.03) and negative in the Netherlands (coeff.: -2.673, t-stat.: -3.72). The coefficient of  $\Delta PROA*IFRS$  for France, Italy, and the UK is, in each case, negative but statistically nonsignificant. These results suggest that generalising across countries, even within the EEA, is not trivial.

Next, given the differences amongst the results for the five dominant countries, we consider their *GAAPdiff* scores and potential influence on the outcomes of our pooled country tests. Table 6 presents, for the two IFRS-LGAAP difference subsamples, the number of observations and *GAAPdiff* scores by country. A low *GAAPdiff* score for the UK is attributable to the goal congruence of IFRS and UK GAAP, i.e. reporting for capital markets. A low score is also observed in the case of the Netherlands, consistent with the country being more similar to the UK (and Ireland) than to other continental European countries in its shareholder orientation of IFRS-LGAAP difference, France, Germany, and Italy are in the medium to high range of differences among sample countries, with France placed in the small *GAAPdiff* subsample, and Germany and Italy in the large *GAAPdiff* subsample.

The main finding presented in Table 4 is a positive and significant IFRS effect in the large IFRS-LGAAP difference subsample. It may be observed that Germany and Italy dominate this subsample by their number of observations. Of the two countries, only Germany exhibits significant and positive results in country-specific tests. We, therefore, test the sensitivity of the findings to the exclusion of Germany to investigate whether the results are driven by this country alone.

When Germany is excluded from the sample and pooled country tests from Panel B of Table 4 are repeated, the coefficient of  $\Delta PROA*IFRS$  for the large IFRS-LGAAP difference subsample became nonsignificant (coeff.: -0.733, t-stat.: -0.77, N = 1,599, see Table 7). The difference between coefficients of  $\Delta PROA*IFRS$  for the large and small *GAAPdiff* subsamples is 0.276 (t-stat.: 0.28).<sup>20</sup> To alleviate the skewness in sample size between the subsamples, we also recalibrate the samples based on new observed median *GAAPdiff* scores. This places the three countries with the same *GAAPdiff* score (France, Belgium, and Denmark) into the large IFRS-LGAAP difference group. Untabulated results confirm the findings regarding a nonsignificant IFRS effect in the large IFRS-LGAAP difference sample (coeff.: -0.216, t-stat.: -0.53, N = 5,167).

We, thus, make two main observations: first, when Germany is excluded from the sample, we cannot confirm that countries with a large IFRS-LGAAP difference experienced a positive IFRS effect on PPS. Second, countries with IFRS-LGAAP differences similar to Germany, that is,

<sup>&</sup>lt;sup>20</sup>In addition, untabulated results show that excluding any other country has no impact on the observed positive coefficient of  $\triangle PROA*IFRS$  for the large *GAAPdiff* sample reported in Table 4, Panel B.

	France		Italy		Netherla	Netherlands Germany		ny	UK	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
∆PROA	0.392	1.09	1.792	1.63	2.549***	4.24	-2.766***	-4.65	0.226	0.44
IFRS	0.009	0.25	-0.063	-0.82	-0.056	-1.02	-0.553***	-6.65	-0.173***	-3.06
<b>APROA×IFRS</b>	-0.125	-0.26	-1.256	-0.94	-2.673***	-3.72	3.953***	6.03	-1.019	-1.45
Ret	0.057	1.12	0.269**	2.15	0.024	0.39	0.653***	4.88	0.05	0.75
RetxIFRS	-0.018	-0.25	-0.223	-1.46	0.108	1.31	-0.523***	-3.77	0.146	1.23
Size	0.005	0.97	-0.009	-0.52	-0.012	-0.95	0.004	0.68	-0.009	-0.26
BM	0.040**	2.33	0.042	1.24	0.004	0.15	0.027	1.33	-0.058	-1.42
CEO	0.014	0.8	0.128***	2.64	-0.038	-1.47	0.049	1.27	0.01	0.33
Age	-0.158***	-3.77	-0.216***	-3.21	-0.122*	-1.66	-0.112*	-1.89	-0.184	-1.59
DTimeinrole	0.185***	8.99	0.175***	4.23	0.265***	8.79	0.308***	12.91	0.313***	7.42
Intercept	0.736***	4.3	1.000***	3.45	0.239	0.76	0.970***	3.7	0.767	1.4
Adjusted R-sq.	0.058		0.063		0.194		0.192		0.229	
N	3,250		1,030		995		2,408		734	

Table 5. IFRS adoption and pay-performance sensitivity by country

Notes: \*\*\*<sup>\*</sup> \*\*, and \* denote *p*-values of 0.01, 0.05, and 0.1 (two-tailed), respectively. This table illustrates the IFRS effect on the PPS (Model 1) for the five largest countries in our sample based on the number of observations. See Section 3 for complete variable definitions.

	Small IFRS-LC difference	GAAP		Large IFRS-LGAAP difference		
Country	GAAP diff score	n	Country	GAAP diff score	n	
France	10	3,250	Germany	11	2,408	
Belgium	10	251	Italy	12	1,030	
Denmark	10	67	Finland	14	85	
Sweden	7	660	Spain	15	379	
Netherlands	6	995	Portugal	15	9	
Norway	6	404	Greece	16	10	
Ireland	0	571	Austria	17	64	
UK	0	734	Poland	18	20	
			Luxembourg	20	2	
Total		6,932	Total		4,007	

Table 6. IFRS-LGAAP difference and observations by country

Notes: This table shows the number of observations by country, along with the *GAAPdiff* score of each country (Bae et al. 2008).

Table 7. IFRS adoption and pay-performance sensitivity: IFRS-LGAAP difference subsample tests without Germany

	Small IFRS- differer	LGAAP nce	Large IFRS- differer	LGAAP nce	Test of difference in coefficients	
	Coeff.	t-stat.	Coeff.	t-stat.	Diff.	z-stat.
<b>APROA</b>	0.605***	3	1.199	1.55	-0.594	-0.75
IFRS	-0.068***	-3.24	-0.081	-1.25	0.013	0.19
<i>∆PROA×IFRS</i>	-0.457*	-1.78	-0.733	-0.77	0.276	0.28
Ret	0.098***	3.45	0.233**	2.42	-0.135	-1.36
RetxIFRS	-0.044	-1.13	-0.224**	-1.96	0.180	1.51
Size	0.000	0.01	-0.001	-0.1	0.001	0.10
BM	0.021**	2.07	-0.033	-1.18	0.054	1.83
CEO	0.016	1.43	0.074**	2.23	-0.058	1.69
Age	-0.175***	-6.03	-0.215***	-3.77	0.040	0.64
DTimeinrole	0.190***	13.87	0.182***	6.03	0.008	0.23
Intercept	0.812***	6.7	0.866***	3.49		
Adj. $R^2$	0.074		0.061			
N	6,932		1,599		8,531	

Notes: \*\*\*, \*\*, and \* denote p-values of 0.01, 0.05, and 0.1 (two-tailed), respectively.

This table presents regression results of Model 1 when Germany is excluded from the *Large IFRS-LGAAP difference* subsample. The *Small IFRS-LGAAP difference (Large IFRS-LGAAP difference)* subsample consists of observations belonging to countries with a small (large) difference between local GAAP and IFRS based on Bae et al. (2008). The two rightmost columns present tests of differences in estimated coefficients for the two subsamples. See Section 3 for complete variable definitions.

France, and Italy, did not experience a positive effect of IFRS adoption.<sup>21</sup> Overall, this suggests that the IFRS-LGAAP difference offers an incomplete explanation for observed results and that

<sup>&</sup>lt;sup>21</sup>Bae et al. (2008) present an alternative IFRS-LGAAP difference measure, *gaapdiff1* in which the placement of France and Germany in the IFRS-LGAAP difference groups is reversed. When our *GAAPdiff* measure is substituted with *gaapdiff1*, the  $\Delta PROA*IFRS$  coefficients for both IFRS-LGAAP difference subsamples are significantly different from each other and in the opposite direction (small *gaapdiff1* subsample: coeff. 0.471, t-value = 1.62; large *gaapdiff1* subsample: coeff. -0.222, t-value = -0.55).

other institutional attributes, individually or in combination, may influence outcomes. We particularly examine country-specific enforcement, defined both broadly and narrowly.

# **4.3.** The moderating effect of other institutional attributes on the association between PPS and IFRS adoption

To investigate the moderating effect of additional institutional attributes on the association between IFRS adoption and PPS, we perform several pooled country tests on enforcementrelated measures (with and without Germany). For the analysis, we consider indices commonly employed in the literature to capture either pre-adoption conditions or institutional changes concurrent with IFRS adoption. The two types of measures are linked, as a low score on pre-existing conditions allows for larger changes. We focus on three breadths of enforcement, from the narrowest to the broadest—financial reporting, equity market, and legal enforcement.

First, we examine the moderating effect of concurrent changes in enforcement of accounting standards (*chEnforce*) on PPS and IFRS adoption. Prior studies have found a lower incidence of earnings management following increased enforcement in Germany between 2003 and 2006 (Ernstberger et al. 2012). Only countries that made concurrent changes in enforcement experienced an increase in stock market liquidity after adopting IFRS (Christensen et al. 2013). Wu and Zhang (2019) found that firms from countries with substantial concurrent changes in enforcement experienced a significant increase in the association between earnings and CEO turnover with the introduction of mandatory IFRS. Though enforcement was strengthened between 2002 and 2008 throughout the EEA, enforcement activities continued to vary amongst the countries at the time of IFRS adoption (Brown et al. 2014). We obtain a measure of the extent to which enforcement changed based on data from Brown et al. (2014). For further details, refer to the footnotes to Table 8.

Second, we obtain a broader measure of the level of pre-existing public and private enforcement in an equity market context (*PPEnf\_eq*) based on La Porta et al. (2006). The legal variables that make up this measure refer to the strength of, for example, state-funded security market regulators, disclosure regulation, and liability rules that facilitate legal enforcement in security markets. The measure is associated with well-functioning equity markets (La Porta et al. 2006). A low *PPEnf\_eq* score before IFRS adoption allows for a greater concurrent strengthening of enforcement.

Third, La Porta et al. (1998) present an even broader institutional measure that captures countries' pre-existing legal enforcement (*LegalEnf*). It reflects such aspects of the institutional environment as the rule of law and the efficiency of the judicial system. It has been shown to moderate the association between IFRS adoption and increases in equity market liquidity, reductions in the cost of capital (Daske et al. 2008, Li 2010), increases in the information content of earnings (Landsman et al. 2012), and decreases in analysts' forecast errors and dispersion (Byard et al. 2011).

To investigate the effect of each institutional attribute, we allow GAAPdiff and each additional institutional variable (*InstVar*) to interact with the  $\Delta PROA \times IFRS$ :

$$\begin{split} \Delta Comp_{i,j,t} &= \alpha_0 + \beta_0 \Delta PROA_{j,t} + \beta_1 IFRS_{j,t} + \beta_2 GAAP diff_c + \beta_3 InstVar_c \\ &+ \beta_4 \Delta PROA_{j,t} \times IFRS_{j,t} + \beta_5 \Delta PROA_{j,t} \times GAAP diff_c + \beta_6 IFRS_{j,t} \times GAAP diff_c \\ &+ \beta_7 \Delta PROA_{j,t} \times IFRS_{j,t} \times GAAP diff_c + \beta_8 \Delta PROA_{j,t} \times InstVar_c + \end{split}$$

 $\beta_9 IFRS_{j,t} \times InstVar_c + \beta_{10} \Delta PROA_{j,t} \times IFRS_{j,t} \times InstVar_c + \sum_{n=1}^7 \alpha_n Control^n + e_{i,j,t}$ 

(Model 2)

Panel /	١.	Index	values	for th	e full	sample	here e	IFRS	IGAAP	difference	subcomplex
ranei r	٩.	muex	values	101 11	ie iun	sampro	anu :	ILVQ	-LUAAF	unterence	subsamples

		Full sample $(n = 10,513)$ <sup>¶</sup>	Small IFRS-LGAAPdifference (n = 6,528) <sup>¶</sup>	Large IFRS-LGAAP difference $(n = 3,985)^{\text{\$}}$		
Main analysis	GAAP diff chEnforca	8.9	7.1	11.8		
	Enf. Level (2002)	11.7	13.6	8.7		
	Enf. Level (2005) PPEnf eq	16.3 0.48	15.4 0.59	17.7 0.31		
	LegalEnf	45.50	46.24	44.29		
Additional analysis	DiscRating	74.33	78.53	67.44		
	DchEnforce Factor1	0.40 0.69	0.26 0.71	0.63 0.66		

Panel B: Index values for the five largest countries

		France	Italy	Netherlands	Germany	UK
Main analysis	GAAPdiff	10	12	6	11	0 8
2	chEnforce	0	0	3	14	
	Enf. Level (2002)	19	19	5	5	14
	Enf. Level (2005)	19	19	8	19	22
	PPEnf eq	0.63	0.46	0.58	0.22	0.71
	LegalEnf	44.87	39.73	49.33	46.83	47.01
Additional analysis	DiscRating	78	66	74	67	85
	DchEnforce	0	0	1	1	1
	Factor1	0.473	0.082	1.092	0.953	0.687
	Legal origin	French	French	French	German	English

Notes: This table presents index values for the institutional variables employed in Model 2.

In the main analysis, we consider the following variables:

GAAP diff, the IFRS-LGAAP difference score according to Bae et al. (2008).

*chEnforce*, the magnitude of the change in financial reporting enforcement based on enforcement values by Brown et al. (2014), available for 2002 and 2005 and based on the following components: 1) Security market regulator or other body monitors financial reporting, 2) The body has the power to set accounting and auditing standards, 3) The body reviews financial statements, 4) The body provides a report about its review of financial statements, 5) The body has taken enforcement action regarding financial statements, and 6) Level of resourcing based on the number of staff employed by the securities market regulator.

PPEnf\_eq, the level of pre-existing public and private enforcement in an equity market context (Preiato et al. 2013, based on data from La Porta et al. 2006).

LegalEnf, a measure of the strength of a country's pre-existing general legal system/enforcement and the sum of the following five standardized variables in La Porta et al. (1998): Efficiency of the Judicial System, Rule of Law, Corruption, Risk of Expropriation, and Risk of Contract Repudiation.

In an additional analysis, we consider the following variables:

DiscRating, the quality of financial reporting based on CIFAR's ratings of actual annual report disclosure practices under local GAAP, obtained from Bushman et al. (2004). Based on a list of 90 items, the average disclosure incidence under local GAAP is rated by country.

DchEnforce, a dummy variable indicating whether a substantial change in enforcement took place around IFRS adoption according to Christensen et al. (2013).

Factor 1, a composite index featuring a total of 35 attributes from Isidro et al. (2020), includes Rule of Law, Political Risk and Political Stability, Corruption, Judicial Independence and Efficiency, and Creditor Rights.

<sup>¶</sup>The sample sizes deviate from the sample sizes presented in Tables 1 through 6 due to the omission of Luxembourg, Norway, and Poland, as index values were not available for all institutional variables for these countries.

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where *InstVar*<sub>c,t</sub> represents either *chEnforce*, *PPEnf\_eq* or *LegalEnf* in country *c*. All other variable definitions are as described in Section 3. The coefficients of interest are those on the interaction terms,  $\beta_7$  and  $\beta_{10}$ , for samples with and without Germany.<sup>22</sup> Based on findings in prior literature, we conjecture that the following is associated with a positive IFRS adoption effect in the EEA: 1) strengthened enforcement of accounting standards, 2) low pre-existing public and private enforcement (to the extent that changes occur at the time of adoption), and 3) strong rule of law (as strong legal enforcement is required for effective implementation of regulation). From the extent to which our conjectures hold when Germany is included in the sample, and not when Germany is excluded, it would seem that a unique combination of institutional attributes in Germany drive results.

Note that in Model 2 (unlike Model 1), three-way interactions enable the simultaneous inclusion of several factors and allow for the retention of the ordinal index values, which helps us avoid arbitrary splits on index values. While we perform two-sample tests based on a binary split on values of *GAAPdiff* in Model 1, further splitting on country-level variables reduces the sample size and, thus, the power of the test, and assumes the existence of suitable splitting points.<sup>23</sup>

Table 8 summarises the index values of the institutional variables for the whole sample, for large and small IFRS-LGAAP difference subsamples (Panel A), as well as for the largest five countries in our sample (Panel B). Panel A reveals a large (small) change in financial reporting enforcement (chEnforce) in the large (small) IFRS-LGAAP difference subsample, highlighting the potential confounding effect of these variables when considering only one measure at a time. Omitting Germany (untabulated statistics) levels out the difference in enforcement change between the two subsamples. Another difference between the IFRS-LGAAP difference subsamples is the level of public and private enforcement in equity markets in the pre-IFRS adoption period (PPEnf eq). The levels of enforcement are high and low, respectively, in the small and large IFRS-LGAAP difference subsamples. Panel B provides a country-level breakdown of the index values. The Netherlands, Germany, and the UK, which had low to medium pre-adoption enforcement levels (Enf. Level (2002)), saw a change in enforcement (chEnforce). France and Italy, which had high pre-adoption enforcement levels, did not experience such a change. The difference between the UK and Germany is also noticeable for *PPEnf eq*, where the UK had the highest score among the selected countries while Germany had the lowest. LegalEnf is similar for all the countries except Italy, which has a lower score.

Regression results of Model 2 are shown in Table 9. Model 2a, with and without Germany, confirm the prior results (see Tables 4 and 7), i.e. countries in the large *GAAPdiff* subsample appear to have an incrementally higher PPS post-IFRS adoption. This is indicated by a positive and significant coefficient on  $\Delta PROA \times IFRS \times GAAPdiff$ . Excluding Germany from the sample causes this effect to disappear.

Models 2b and 2c show the effect of a change in financial reporting enforcement, and the levels of public and private enforcement, respectively. In both models, the added variables subsume the effect of *GAAPdiff* as the coefficient on the three-way interaction variable relating to *chEnforce* and *PPEnf\_eq* ( $\beta_{10}$ ) is significant and carries the expected sign, while the coefficient

 $<sup>^{22}</sup>$ We note that coefficients of interaction variables created from two continuous (or ordinal) variables are not readily interpretable because the effects of the covariates that make up the multiplicative terms vary with the level of each of the other covariates. While marginal effects may be calculated for each of the variables at different levels of other variables, for the purpose of this discussion we limit the analysis to the *sign* of the coefficients and the corresponding significance levels.

 $<sup>^{23}</sup>$ For consistency and ease of comparison, we retain the 'small' and 'large' *GAAPdiff* categories in Model 2. However, inferences remain robust when we use an ordinal measure of *GAAPdiff* (untabulated).

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on the three-way interaction variable relating to  $GAAPdiff(\beta_7)$  is no longer significant. A positive sign on the  $\Delta PROA*IFRS*chEnforce$  interaction is consistent with prior research showing that a concurrent strengthening of the institutional environment, specifically enforcement, yields a positive IFRS adoption effect.<sup>24</sup> Meanwhile, a negative sign on the  $\Delta PROA*IFRS*PPEnf_eq$ interaction suggests greater benefits for those countries in which pre-existing GAAP was not shareholder-oriented.<sup>25</sup> Concerning *LegalEnf* (Model 2d), this measure appears to offer incremental explanatory power above and beyond the *GAAPdiff* effect, as both interaction terms ( $\Delta PROA*IFRS*GAAPdiff$  and  $\Delta PROA*IFRS*LegalEnf$ ) are positive and significant.<sup>26</sup> At first glance, this appears to indicate that it is the various types of enforcement, not the IFRS-LGAAP difference, which explains differential IFRS effects. However, the exclusion of Germany from the sample removes the effect of all these variables.

#### Alternative measures

As an additional analysis, we consider three related (substitutive) measures of the institutional environment (the measures and values are presented in Table 8 while regression results have not been tabulated). First, we consider the pre-adoption country-level disclosure rating (*DiscRating*). Disclosure rating captures the quality of disclosures under pre-existing local GAAP based on assessments of annual reports provided by the Center for International Financial Analysis and Research (CIFAR). UK GAAP had the highest disclosure rating, while German and Italian GAAP had the lowest. The index is used by La Porta et al. (1998) (based on annual reports from 1990) and by Isidro et al. (2020) (based on annual reports from 1995, following Bushman et al. 2004). *DiscRating* is not significant when *GAAPdiff* is included. Because *DiscRating* and *GAAPdiff*. Results for  $\Delta PROA*IFRS*DiscRating$  are qualitatively similar to  $\Delta PROA*IFRS*GAAPdiff$  for pooled samples with and without Germany.

Second, we use an indicator variable that reflects whether a country experienced a substantive change in enforcement (*DchEnforce*) based on Christensen et al. (2013). According to this measure, Germany, the UK, and the Netherlands all experienced a substantial change in enforcement, while France and Italy did not (cf. *chEnforce* values). Unlike tests with *chEnforce*, the three-way interaction coefficient using this dummy specification is not significant in the full sample and does not subsume the *GAAPdiff* effect. When Germany is excluded from the sample, a net *negative* effect of enforcement change appears as indicated by the coefficient sign of  $\Delta PROA*IFRS*DchEnforce$ . This is driven by the classification of the Netherlands and the UK as having experienced a substantial enforcement change. Such a change, even in combination with IFRS-LGAAP difference, is, therefore, not a reliable predictor of a positive IFRS adoption effect on PPS.

<sup>&</sup>lt;sup>24</sup>Brown et al. (2014) also develop an audit index (which captures the quality of the audit environment), and a composite measure that combines this with the enforcement index. While the audit index by itself does not significantly moderate the IFRS effect (untabulated results), the coefficient sign is positive and the composite measure produces similar results (with lower standard errors) as when we use chEnforce.

<sup>&</sup>lt;sup>25</sup>Findings pertaining to chEnforce and PPEnf\_eq are robust to including both institutional variable interactions simultaneously (untabulated). That is, each of the interactions remain significant but the GAAPdiff interaction is not.

<sup>&</sup>lt;sup>26</sup>LegalEnf is designed to capture multiple attributes of the institutional environment (including the legal environment and investor protection), meaning the simultaneous inclusion of LegalEnf, PPEnf\_eq and chEnforce is conceptually doubtful. Including all three institutional variables also raises concerns of multi-collinearity, potentially leading to unstable coefficients. However, the results pertaining to all interaction terms in models 2b through 2d remain robust with the exception of LegalEnf, which becomes insignificant.

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Finally, Isidro et al. (2020) present a broad institutional measure that captures 'a mix of economic, legal, and social variables' (p. 291). Isidro et al. (2020) suggest that country attributes and their effects should be evaluated as portfolios of interrelated attributes, and provide a composite index—their *Factor1*. It features such attributes as rule of law, political risk and political stability, corruption, judicial independence and efficiency, and creditor rights. We note that it primarily reflects the strength of the legal system and enforcement. For example, for our sample, the Pearson (Spearman) correlation between *Factor1* and *LegalEnf* is 89% (87%)<sup>27</sup>, and produces qualitatively similar results as those obtained for *LegalEnf*, i.e. the coefficients on both three-way interactions terms ( $\beta_7$  and  $\beta_{10}$ ) are significant in the pooled sample including Germany, but not when Germany is excluded from the sample.

#### 4.4. Corporate governance effects

The effect of IFRS adoption on executive compensation is likely to be related to the structure of —and concurrent changes in—corporate governance. As there is no well-established measure to capture levels or changes in corporate governance in the EEA, we carry out an indirect test of potential corporate governance effects. A corporate governance code was introduced in Germany in 2002, which recommended performance-based compensation for supervisory board members (DCGK 2002, von Werder et al. 2005).<sup>28</sup> We expect that the code has a larger effect on earnings-based compensation paid to non-executive as compared to executive board members. Though we cannot directly test whether this is due to the code, we provide indirect evidence that the code influences the main results.

In the main tests, we use the BoardEx variable 'IndividualRole' (subsequently relabelled 'BoardRole') to exclude directors referred to as 'independent' from the sample. While the term 'independent directors' is often used synonymously with external or non-executive directors, not all dependent directors are executives (examples range from the non-executive chairman to employee representatives). To study the effect of IFRS adoption on PPS for executive and non-executive directors separately, we divide the sample based on the variable 'DirectorType' in BoardEx, which labels executives as 'ED' (executive director) and non-executives as 'SD' (senior director).

Our sample of 10,939 director-years includes 5,267 ED observations and 5,672 SD observations. The number of director-years per firm-year varies substantially amongst countries, as does the relative weight of executive and non-executive directors. On average, there are about 3.8 director-years per firm-year. For three of the five largest countries (France, Italy and the Netherlands) the figure is similar, while for the UK it is 4.8 and for Germany it is 7.0. Further, while SDs constitute more than 62% of the German director-years, the corresponding figures are 50% for France and Italy, and less than 25% for the Netherlands and the UK. Reasons for these differences could be the dual board structure and the substantial employee representation on boards in Germany (one-third of the senior director-years in Germany are contributed by employee representatives).<sup>29</sup> The empirical effect is that dependent SDs are potentially more important in Germany than in other countries.

We perform separate tests of Model 1 for the two director types, both on the pooled sample and the IFRS-LGAAP difference subsamples. When we include only directors classified as ED, we do

<sup>&</sup>lt;sup>27</sup>In addition, the Pearson (Spearman) correlation between Factor1 and the commonly used Rule of Law variable developed by Kaufmann et al. (2008) is 91 (99) per cent for our sample.

<sup>&</sup>lt;sup>28</sup>Unlike, for example, the UK, Germany, and some other continental European countries have a dual board structure with separation between supervisory and management boards. Employees are represented in the supervisory board (Mallin 2013).

<sup>&</sup>lt;sup>29</sup>In the case of Germany, directors on the management board are classified as ED and directors on the supervisory board are classified as SD in BoardEx.

	Panel A: Full sample				Panel B: Sample excluding Germany				
	Model 2a	Model 2b	Model 2c	Model 2d	Model 2a	Model 2b	Model 2c	Model 2d	
IFRS ΔPROA IFRS×ΔPROA GAAPdiff IFRS×GAAPdiff IFRS×ΔPROA×GAAPdiff IFRS×ΔPROA×GAAPdiff chEnforce IFRS×chEnforce ΔPROA×chEnforce	-0.085*** 0.496** -0.476* 0.078 -0.076*** -1.136** <b>2.338</b> ***	-0.059*** 0.727*** -0.851*** 0.042 -0.016 -0.033 <b>0.698</b> 0.009*** -0.012*** -0.173***	-0.204*** -2.325** 4.094*** 0.109* -0.031 0.06 <b>0.254</b>	0.353** 6.397* -10.868** 0.125** -0.111*** -1.402** <b>2.697***</b>	-0.064*** 0.567*** -0.449* -0.004 0.011 0.852 -0.52	-0.052** 0.553** -0.408 0.019 0.009 0.84 -0.514 0.007** -0.007** 0.014	0.065 0.192 0.9 0.05 -0.019 0.921 -0.807	-0.359* -6.852* 6.561 -0.022 0.043 1.974** -1.631	
IFRS×ΔPROA×chEnforce PPEnf_eq IFRS×PPEnf_eq ΔPROA×PPEnf_eq IFRS×ΔPROA×PPEnf_eq LegalEnf		0.235***	-0.036 0.200** 4.951** - <b>8.051</b> ***	-0.003		-0.03	0.214** -0.218** 0.638 -2.333	-0.015	
IFRS×LegalEnf ΔPROA×LegalEnf IFRS×ΔPROA×LegalEnf Ret IFRS×Ret Intercept	0.152*** -0.081** 0.744***	0.151*** -0.070** 0.722***	0.151*** -0.082** 0.758***	-0.009** -0.128 <b>0.225</b> ** 0.151*** -0.081** 0.747***	0.114*** -0.052 0.829***	0.115*** -0.051 0.799***	0.120*** -0.057 0.690***	0.006 0.159* - <b>0.15</b> 0.112*** -0.05 0.871***	
Adj. $R^2$ N <sup>¶</sup>	0.094 10,513	0.098 10,513	0.095 10,513	0.095 10,513	0.071 8,105	0.071 8,105	0.071 8,105	0.071 8,105	

Table 9. Tests of the moderating effect of institutional attributes on the association between PPS and IFRS adoption

Notes: \*\*\*<sup>,</sup> \*\*, and \* denote *p*-values of 0.01, 0.05, and 0.1 (two-tailed), respectively. This table presents the regression results of Model 2. The *InstVar* shown here are those identified for the main analysis in Table 8, i.e. *chEnforce*, *PPEn\_eq*, and *LegalEnf*.

<sup>1</sup>The sample sizes deviate from the sample sizes presented in Tables 1 through 6 due to the omission of Luxembourg, Norway, and Poland, as index values were not available for all institutional variables for these countries.

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not obtain significant results (the  $\Delta PROA \times IFRS$  interaction is not significant, results are not tabulated). Results for directors classified as SD (untabulated) agree with the results in Table 4, that is, the  $\Delta PROA \times IFRS$  interaction is positive and significant for the large (but not for the small) IFRS-LGAAP difference subsample. When we look at the ED sample in each of the five large countries individually, the  $\Delta PROA \times IFRS$  interaction is not significant for Germany and is significantly negative for Italy, the Netherlands, and the UK (see Table 10, Panel A). This latter finding is consistent with a reduction in the informativeness of earnings (Ball 2006, Watts 2006). Meanwhile, for the SD sample, there is a positive IFRS effect in Germany but no significant effect in the other countries (see Table 10, Panel B). By untabulated tests, we confirm that the positive effect in Germany applies to both employee representatives and other non-executive directors. Consequently, it appears that the positive IFRS adoption effect that we identify in Section 4.1 is driven not only by Germany in general but more specifically by non-executive directors in Germany.

To ensure that the findings of no significance for the ED sample in the large *GAAPdiff* sample and Germany are not due to the reduced power of the test as the sample size decreases, we repeat the tests from the main analysis using random samples with the same number of observations as in the ED sample. In contrast to when we look at only executives, repeated random (reducedsize) samples drawn from the full sample of directors do not alter inferences.

Results are consistent with expectations based on the development of corporate governance codes in the largest countries. The German corporate governance code introduced in 2002 explicitly recommends performance-based compensation for directors on the supervisory board. While most listed firms adhere to this provision in the code after 2005, they did not implement it immediately (von Werder et al. 2005). Corporate governance codes in the other four large countries (France, Italy, the Netherlands, and the UK) explicitly recommend that non-executive directors should not receive performance-based compensation. All five countries recommend that executives should receive performance-based compensation.

#### 4.5 Sensitivity tests and econometric considerations

In BoardEx, more data is available for the post-IFRS adoption period (2006–2008) than for the pre- IFRS adoption period (2002–2004). For example, Panel C of Table 2 shows that the sample includes 69 unique firms in 2003 compared to 206 unique firms in 2007. To investigate whether increases in the sample size over time affect the results, we test Model 1 holding the sample of unique firms constant over time. Results are robust both for the large *GAAPdiff* subsample and for Germany alone. For the large *GAAPdiff* subsample, the coefficient of  $\Delta PROA_{j,t} \times IFRS_{j,t}$  increases from 2.04 to 3.37 (t-stat.: 4.07). Even with a substantial decrease in observations for Germany (from 2,408 to 643), results for the Germany-only sample also remains robust (the corresponding coefficient increases from 3.95 to 6.57, t-stat.: 5.88).

As further sensitivity analysis (untabulated), we consider additional econometric variations. In the main analysis, we winsorise all variables at the 5th and 95th percentiles to enable comparisons with Ozkan et al. (2012). Winsorising at the 1st and 99th percentiles leaves the results generally unchanged. All country-level tests lead to the same inferences. We also investigate the effect of adding to the model additional variables commonly used to capture the corporate governance of firms, such as the number of independent board members, the percentage of freely floating shares, and whether the auditor is from a Big Four firm. While board independence is negatively associated with  $\Delta Comp$ , it does not influence the coefficient of  $\Delta PROA \times IFRS$ . Results are also robust to the inclusion of the Free Float and Big Four variables. Furthermore, applying a full (director) fixed effects model does not significantly alter any of the results (either for pooled samples, or subsamples based on IFRS-LGAAP difference, or country-level tests).

Panel A: Executiv	e directors (E	D)								
	France		Italy		Netherlands		Germany		UK	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
ΔPROA	-0.099	-0.11	1.64	1.38	1.678**	2.4	0.732	0.14	0.131	0.27
IFRS	-0.121	-1.64	-0.314	-1.43	-0.145	-1.52	-1.532	-1.59	-0.296***	-2.85
<b>APROAxIFRS</b>	0.279	0.28	-3.362*	-1.85	-2.044**	-2.3	-0.133	-0.02	-1.435*	-1.72
Adi. $R^2$	0.051		0.066		0.129		0.223		0.238	
N	1,657		515		769		907		558	
Panel B: Non-exe	cutive director	rs (SD)								
	France		Italy		Netherlands		Germany		UK	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
<b>APROA</b>	-0.071	-0.13	0.693	0.38	-0.405	-0.36	-3.278***	-5.37	0.493	0.38
IFRS	0.034	0.60	-0.025	-0.23	-0.021	-0.15	-0.550***	-6.23	-0.012	-0.12
<b>APROAxIFRS</b>	0.431	0.59	.0392	0.18	0.180	0.14	4.587***	6.45	0.152	0.10
Adj. $R^2$	0.056		0.087		0.275		0.171		0.325	
N	1,593		515		226		1,501		176	

Table 10. IFRS adoption and pay-performance sensitivity by country, separated by executive and non-executive dependent directors

Notes: \*\*\*, \*\*, and \* denote *p*-values of 0.01, 0.05, and 0.1 (two-tailed), respectively.

This table replicates results from Table 5—i.e. it illustrates the IFRS effect on the pay-performance sensitivity (Model 1) for the five largest countries in our sample based on the number of observations. Panels A and B illustrate, respectively, the extent to which results are sensitive to the inclusion of executive and non-executive dependent directors. All control variables are omitted from the table for the sake of brevity.

To the extent that regression residuals are correlated across clusters (e.g. firms or years), the use of clustered standard errors is recommended for panel data (Petersen 2009). Without clustering, the estimated significance levels of coefficients may be overstated or understated. In the main analysis, we follow Ozkan et al. (2012) and use heteroscedasticity-robust standard errors.<sup>30</sup> To test the sensitivity of results to the alternative treatment of standard errors, we cluster on firms. To the extent that firms have consistent compensation policies, residuals could be correlated for observations within firms for all their directors over time (the same clustering method is used by DeFond et al. 2020). With firm clusters, the *ΔPROAxIFRS* coefficient becomes insignificant in the large GAAPdiff subsample (t-stat.: 1.25). Meanwhile, the positive coefficient for Germany, and the negative coefficient for the Netherlands, remain significant (t-stat.: 2.05 and -2.30, respectively). Results confirm the findings from the main analysis, namely, the positive IFRS effect in the large *GAAPdiff* subsample is amplified because of the large influence of a relatively small number of German firms.

#### 4.6. Discussion of results

Based on the above analysis, we draw several inferences. The sensitivity of the main results to the presence of Germany (as shown in section 4.2) is equally applicable in tests that consider the moderating effect of other institutional (enforcement) variables. Including additional proxies for the institutional environment might remedy a form of 'correlated omitted variables bias' in the full sample; however, while such institutional variables appear to have a moderating effect on IFRS adoption and PPS, often subsuming the IFRS-LGAAP difference effect, their effects are not robust to the exclusion of Germany from the sample. Furthermore, the positive IFRS adoption effect in Germany is limited to the subsample of non-executive dependent directors.

Germany's unique institutional environment appears to explain its positive IFRS adoption effect. Although this cannot be empirically confirmed, we suggest that the effect is attributable to Germany's low pre-existing shareholder orientation manifest in the design of accounting standards, weak equity market enforcement, and boards that were ineffective at protecting the interests of shareholders (Enriques and Volpin 2007). A low pre-existing shareholder orientation allowed fundamental changes to take place, and—as noted in Section 1—Germany made a concerted effort to increase the attractiveness of its equity markets to international investors (see also Enriques and Volpin 2007, Nowak 2004). More or less contemporaneously with IFRS adoption, Germany strengthened its enforcement of accounting standards (Brown et al. 2014), modified its corporate governance regulation (von Werder 2011), and increased the shareholder focus of supervisory boards (DCGK 2002). The success of these efforts was facilitated by a strong legal system (Isidro et al. 2020, La Porta et al. 1998). Our results point to a unique combination of factors in Germany that is not found in any other (large) country in the EEA. Furthermore, the changes towards increased shareholder orientation affected non-executive directors more than executive directors.

#### 5. Concluding remarks

In this paper, we revisit the effect of IFRS adoption on PPS in the EEA and find a positive effect only in one country, namely, Germany. In other countries, there is either a negative effect or no effect of IFRS. Therefore, whether and how IFRS affects the contractual use of financial

<sup>&</sup>lt;sup>30</sup>Ozkan et al. (2012) state that they use double-clustered standard errors by the panel variables (directors and years), which is, in fact, equivalent to heteroscedasticity-robust (and no clustering of) standard errors.

statements, appears to be country-specific. However, disentangling the effects of different institutional attributes is complex in the European setting as the attributes are interrelated. As highlighted by Isidro et al. (2020), 'changes in policies are often implemented as a package of interventions rather than isolated changes [...] the EU adoption of IFRS is just one element of a set of initiatives to promote transparency in European markets' (p. 298). The limited number of countries in the EEA produces insufficient variation in institutional outcomes to isolate the effects of individual variables. An apparent effect of, for example, IFRS-LGAAP difference or enforcement, may, therefore, simply proxy for a unique German institutional environment.

Our study has implications for the literature, specifically, the generalisability of results from multi-country studies may be limited if the findings are driven by individual countries, each with its unique mix of institutional attributes. Country-specific effects are particularly problematic in multi-country studies where inferences are based on average outcomes. This is a relevant consideration, given that recent studies, such as Wu and Zhang (2019) and DeFond et al. (2020), relate to and build on Ozkan et al. (2012), though fundamental differences in the samples make the findings difficult to compare. Results in Ozkan et al. (2012) are driven by Germany, a country that is essentially absent from the samples in Wu and Zhang (2019) and DeFond et al. (2020) (see Table 1).

We believe a way forward is to do more country-level studies (see, e.g. Voulgaris et al. 2014). This allows researchers to better understand the effect in each country, and identify the situations in which the findings may be generalised to other countries. Finally, our findings—that a single country is driving the effect of IFRS in a contractual setting—could motivate further research in a valuation setting. For example, Christensen et al. (2013) observe that improvements in liquidity around the time of IFRS adoption are concentrated to six countries, of which Germany and the UK make up more than half the observations in the sample. Since the UK had a small IFRS-LGAAP difference and strong enforcement before IFRS adoption, investigating the effect of Germany on the observed improvements in liquidity may be of interest.

As a final remark, we highlight a practical implication for German regulators: the shift to an equity market orientation in the 2000s appears to have been successful, at least in a contractual setting.

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#### References

- Albuquerque, A, 2009. Peer firms in relative performance evaluation. *Journal of Accounting and Economics*, 48 (1), 69–89. doi:10.1016/j.jacceco.2009.04.001.
- Ali, A., and Hwang, L.-S, 2000. Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research*, 38 (1), 1–21. doi:10.2307/2672920.
- Bae, K.-H., Tan, H., and Welker, M, 2008. International GAAP differences: The impact on foreign analysts. *The Accounting Review*, 83 (3), 593–628. doi:10.2308/accr.2008.83.3.593.
- Ball, R., 2006. International Financial Reporting Standards (IFRS): pros and cons for investors. Accounting and Business Research, 36 (Suppl.), 5–27. doi:10.1080/00014788.2006.9730040.
- Ball, R, 2016. IFRS 10 years later. Accounting and Business Research, 46 (5), 545–571. doi:10.1080/00014788.2016.1182710.
- Ball, R., Kothari, S. P., and Robin, A, 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, 29 (1), 1–51. doi:10.1016/S0165-4101 (00)00012-4.
- Ball, R., Li, X., and Shivakumar, L, 2015. Contractibility and transparency of financial statement information prepared under IFRS: evidence from debt contracts around IFRS adoption. *Journal of Accounting Research*, 53 (5), 915–963. doi:10.1111/1475-679X.12095.
- Ball, R., Robin, A., and Wu, J. S, 2003. Incentives versus standards: properties of accounting income in four east Asian countries. *Journal of Accounting and Economics*, 36 (1–3), 235–270. doi:10.1016/j.jacceco. 2003.10.003.
- Beneish, M. D, 2001. Earnings management: A perspective. *Managerial Finance*, 27 (12), 3–17. doi:10. 1108/03074350110767411.
- Brown, P, 2011. International Financial Reporting Standards: What are the benefits? Accounting and Business Research, 41 (3), 269–285. doi:10.1080/00014788.2011.569054.
- Brown, P., Preiato, J., and Tarca, A, 2014. Measuring country differences in enforcement of accounting standards: An audit and enforcement proxy. *Journal of Business Finance & Accounting*, 41 (1–2), 1–52. doi:10.1111/jbfa.12066.
- Brunello, G., Graziano, C., and Parigi, B, 2001. Executive compensation and firm performance in Italy. *International Journal of Industrial Organization*, 19 (1–2), 133–161. doi:10.1016/S0167-7187 (99)00026-0.
- Bushman, R. M., and Indjejikian, R. J, 1993. Accounting income, stock price, and managerial compensation. *Journal of Accounting and Economics*, 16 (1–3), 3–23. doi:10.1016/0165-4101(93)90003-X.
- Bushman, R. M., and Smith, A. J, 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32 (1–3), 237–333. doi:10.1016/S0165-4101(01)00027-1.
- Bushman, R. M., Piotroski, J. D., and Smith, A. J, 2004. What determines corporate transparency? *Journal of Accounting Research*, 42 (2), 207–252. doi:10.1111/j.1475-679X.2004.00136.x.
- Busse von Colbe, W. B., 2002. Entwicklungsperspektiven der Rechnungslegung in Deutschland. Schmalenbachs Zeitschrift für Betriebswirtschaftliche Forschung, 54 (2), 159–172. doi:10.1007/ BF03371624.
- Byard, D., Li, Y., and Yu, Y. 2011. The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research*, 49 (1), 69–96. doi:10.1111/j.1475-679X.2010. 00390.x.
- Capkun, V., Collins, D., and Jeanjean, T, 2016. The effect of IAS/IFRS adoption on earnings management (smoothing): A closer look at competing explanations. *Journal of Accounting and Public Policy*, 35 (4), 352–394. doi:10.1016/j.jaccpubpol.2016.04.002.
- Chen, K. C. W., and Tang, F. 2017. Post-IFRS revaluation adjustments and executive compensation. *Contemporary Accounting Research*, 34 (2), 1210–1231. doi:10.1111/1911-3846.12285.
- Christensen, H. B., Hail, L., and Leuz, C, 2013. Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics*, 56 (2–3), 147–177. doi:10.1016/j.jacceco.2013.10.007.
- Conyon, M. J., and Murphy, K. J, 2000. The prince and the pauper? CEO pay in the United States and United Kingdom. *The Economic Journal*, 110 (467), 640–671. doi:10.1111/1468-0297.00577.
- Core, J. E, 2020. The real effects of financial reporting on pay and incentives. *Accounting and Business Research*, 50 (5), 448–469. doi:10.1080/00014788.2020.1770931.
- Core, J. E., Holthausen, R. W., and Larcker, D. F, 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51 (3), 371–406. doi:10.1016/ S0304-405X(98)00058-0.
- Coughlan, A. T., and Schmidt, R. M, 1985. Executive compensation, management turnover, and firm performance. *Journal of Accounting and Economics*, 7 (1–3), 43–66. doi:10.1016/0165-4101(85)90027-8.

- Daske, H., Hail, L., Leuz, C., and Verdi, R, 2008. Mandatory IFRS reporting around the world: early evidence on the economic consequences. *Journal of Accounting Research*, 46 (5), 1085–1142. doi:10.1111/j.1475-679X.2008.00306.x.
- DCGK, 2002. Regierungskommission: Deutscher Corporate Governance Kodex [Government commission: German Corporate Governance Code]. Düsseldorf. https://www.dcgk.de/en/code/archive.html (accessed 17/1/2022), November 7.
- De George, E. T., Li, X., and Shivakumar, L., 2016. A review of the IFRS adoption literature. *Review of Accounting Studies*, 21 (3), 898–1004. doi:10.1007/s11142-016-9363-1.
- DeFond, M., Hu, J., Hung, M., and Li, S, 2020. The effect of fair value accounting on the performance evaluation role of earnings. *Journal of Accounting and Economics*, 70 (2–3), doi:10.1016/j.jacceco. 2020.101341. PubMed: 101341.
- Dewing, I. P., and Russell, P. O, 2004. Accounting, auditing and corporate governance of European listed countries: EU policy developments before and after Enron. JCMS: Journal of Common Market Studies, 42 (2), 289–319. doi:10.1111/j.1468-5965.2004.00489.x.
- Dutta, S., and Zhang, X, 2002. Revenue recognition in a multiperiod agency setting. *Journal of Accounting Research*, 40 (1), 67–83. doi:10.1111/1475-679X.00039.
- Enriques, L., and Volpin, P, 2007. Corporate governance reforms in continental Europe. *Journal of Economic Perspectives*, 21 (1), 117–140. doi:10.1257/jep.21.1.117.
- Ernstberger, J., Stich, M., and Vogler, O, 2012. Economic consequences of accounting enforcement reforms: The case of Germany. *European Accounting Review*, 21 (2), 217–251. doi:10.1080/ 09638180.2011.628096.
- EU Commission, 1998. Financial services: building a framework for action. *Communication from the Commission*. COM/98/625 final, 28 October 1998.
- EU Commission, 2005. White Paper on Financial Services Policy 2005-2010. *COM/2005/0629 final, 1 December 2005*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52005DC0629.
- Flower, J., and Ebbers, G., 2002. Global Financial Reporting. Palgrave.
- Haid, A., and Yurtoglu, B. B., 2006. Ownership Structure and Executive Compensation in Germany [Working paper]. https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=948926. Universität Erlangen-Nürnberg, Germany.
- Hallock, K. F, 1997. Reciprocally interlocking boards of directors and executive compensation. *The Journal* of Financial and Quantitative Analysis, 32 (3), 331–344. doi:10.2307/2331203.
- Harris, T. S., Lang, M., and Möller, H. P, 1994. The value relevance of German accounting measures: An empirical analysis. *Journal of Accounting Research*, 32 (2), 187–209. doi:10.2307/2491281.
- Hitz, J. M., Ernstberger, J., and Stich, M, 2012. Enforcement of accounting standards in Europe: Capitalmarket-based evidence for the two-tier mechanism in Germany. *European Accounting Review*, 21 (2), 253–281. doi:10.1080/09638180.2011.641727.
- Holmström, B, 1979. Moral hazard and observability. *The Bell Journal of Economics*, 10 (1), 74–91. doi:10. 2307/3003320.
- Horton, J., and Serafeim, G, 2010. Market reaction to and valuation of IFRS reconciliation adjustments: First evidence from the UK. *Review of Accounting Studies*, 15 (4), 725–751. doi:10.1007/s11142-009-9108-5.
- ICAEW, 2015. The Effects of IFRS Adoption in EU: A Review of Empirical Research. Institute of Chartered Accountants in England and Wales.
- Isidro, H., Nanda, D., and Wysocki, P. D, 2020. On the relation between financial reporting quality and country attributes: Research challenges and opportunities. *The Accounting Review*, 95 (3), 279–314. doi:10.2308/accr-52607.
- Jensen, M. C., and Murphy, K. J, 1990. Performance pay and top-management incentives. Journal of Political Economy, 98 (2), 225–264. doi:10.1086/261677.
- Johansen, T. R., Olsen, C. A., and Plenborg, T, 2020. European financial reporting enforcement: An analysis of practice and indices. *Financial Reporting*, 1 (6), 248–274. https://doi.org/10.3280/FR2020-001003.
- Kaplan, S. N, 1994. Top executive rewards and firm performance: A comparison of Japan and the United States. *Journal of Political Economy*, 102 (3), 510–546. doi:10.1086/261944.
- Kaufmann, D., Kraay, A., and Mastruzzi, M., 2008. Governance matters VII: Aggregate and individual governance indicators 1996–2007. World Bank. http://info.worldbank.org/governance/wgi/pdf/ governancemattersvii.pdf. (accessed 17/1/2022).
- Kothari, S. P., Ramanna, K., and Skinner, D. J, 2010. Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics*, 50 (2–3), 246–286. doi:10.1016/j. jacceco.2010.09.003.

- La Porta, R., Lopez-de-silanes, F., and Shleifer, A., 2006. What works in securities laws? *The Journal of Finance*, 61 (1), 1–32. doi:10.1111/j.1540-6261.2006.00828.x.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R., 1998. Law and finance. *Journal of Political Economy*, 106 (6), 1113–1155. doi:10.1086/250042.
- Lambert, R. A, 1983. Long-term contracts and moral hazard. *The Bell Journal of Economics*, 14 (2), 441–452. doi:10.2307/3003645.
- Lambert, R. A, 2001. Contracting theory and accounting. *Journal of Accounting and Economics*, 32 (1–3), 3–87. doi:10.1016/S0165-4101(01)00037-4.
- Landsman, W. R., Maydew, E. L., and Thornock, J. R, 2012. The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics*, 53 (1–2), 34–54. doi:10.1016/j.jacceco.2011.04.002.
- Leuz, C, 2010. Different approaches to corporate reporting regulation: How jurisdictions differ and why. *Accounting and Business Research*, 40 (3), 229–256. doi:10.1080/00014788.2010.9663398.
- Leuz, C., and Verrecchia, R. E, 2000. The economic consequences of increased disclosure. Journal of Accounting Research, 38 (Suppl.), 91–124. doi:10.2307/2672910.
- Li, S, 2010. Does mandatory adoption of International Financial Reporting Standards in the European Union reduce the cost of equity capital? *The Accounting Review*, 85 (2), 607–636. doi:10.2308/accr. 2010.85.2.607.
- Mallin, C, 2013. Corporate Governance (Fourth edn.). Oxford: Oxford University Press.
- Nobes, C., 2001. GAAP 2001: A survey of national accounting rules benchmarked against International Accounting Standards. Andersen, BDO, Deloitte Touche Tohmatso, Ernst & Young. Grant Thornton, KPMG and PricewaterhouseCoopers.
- Nobes, C, 2006. The survival of international differences under IFRS: towards a research agenda. *Accounting and Business Research*, 36 (3), 233–245. doi:10.1080/00014788.2006.9730023.
- Nobes, C., and Parker, R, 2006. *Comparative International Accounting (Ninth edn.)*. Englewood Cliffs, NJ: Prentice Hall.
- Nowak, E. (2004). Investor protection and capital market regulation in Germany. In J. Krahnen & R. Schmidt (Eds.), *The German Financial System*, 425–449. Oxford University Press. doi:10.1093/ 0199253161.003.0013
- Ordelheide, D., and Pfaff, D, 1994. European Financial Reporting: Germany. Routledge.
- Ozkan, N., Singer, Z. V. I., and You, H, 2012. Mandatory IFRS adoption and the contractual usefulness of accounting information in executive compensation. *Journal of Accounting Research*, 50 (4), 1077– 1107. doi:10.1111/j.1475-679X.2012.00453.x.
- Paul, J. M, 1992. On the efficiency of stock-based compensation. *Review of Financial Studies*, 5 (3), 471– 502. doi:10.1093/rfs/5.3.471.
- Petersen, M. A, 2009. Estimating standard errors in finance panel data sets: comparing approaches. *Review of Financial Studies*, 22 (1), 435–480. doi:10.1093/rfs/hhn053.
- Pope, P. F., and McLeay, S. J, 2011. The European IFRS experiment: objectives, research challenges and some early evidence. *Accounting and Business Research*, 41 (3), 233–266. doi:10.1080/00014788. 2011.575002.
- Preiato, J., Brown, P., and Tarca, A., 2013. Mandatory IFRS and properties of analysts' forecasts: How much does enforcement matter? [Working paper]. https://pdfs.semanticscholar.org/10ce/ 400858c4a2a175d960752221e8167832f62e.pdf.
- Radebaugh, L. H., Gebhardt, G., and Gray, S. J. 1995. Foreign stock exchange listings: A case study of Daimler-Benz. *Journal of International Financial Management & Accounting*, 6 (2), 158–192. doi:10.1111/j.1467-646X.1995.tb00055.x.
- Shivakumar, L, 2013. The role of financial reporting in debt contracting and in stewardship. *Accounting and Business Research*, 43 (4), 362–383. doi:10.1080/00014788.2013.785683.
- von Werder, A. V., 2011. Neue Entwicklungen der Corporate Governance in Deutschland. Schmalenbachs Zeitschrift für Betriebswirtschaftliche Forschung, 63 (1), 48–62. doi:10.1007/BF03372843.
- von Werder, A. V., Talaulicar, T., and Kolat, G. L., 2005. Compliance with the German corporate governance code: An empirical analysis of the compliance statements by German listed companies. *Corporate Governance*, 13 (2), 178–187. doi:10.1111/j.1467-8683.2005.00416.x.
- Voulgaris, G., Stathopoulos, K., and Walker, M, 2014. IFRS and the use of accounting-based performance measures in executive pay. *The International Journal of Accounting*, 49 (4), 479–514. doi:10.1016/j. intacc.2014.10.001.
- Watts, R. L, 2006. What has the invisible hand achieved? Accounting and Business Research, 36 (Suppl.), 51–61. doi:10.1080/00014788.2006.9730046.

- Wu, J. S., and Zhang, I. X, 2009. The voluntary adoption of internationally recognized accounting standards and firm internal performance evaluation. *The Accounting Review*, 84 (4), 1281–1309. doi:10.2308/ accr.2009.84.4.1281.
- Wu, J. S., and Zhang, I. X, 2019. Mandatory IFRS adoption and the role of accounting earnings in CEO turnover. *Contemporary Accounting Research*, 36 (1), 168–197. doi:10.1111/1911-3846.12428.
- Zhou, X, 2000. CEO pay, firm size, and corporate performance: evidence from Canada. *Canadian Journal* of *Economics/Revue Canadienne d'Economique*, 33 (1), 213–251. doi:10.1111/0008-4085.00013.