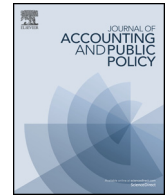




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IPOs and IFRS in European exchange-regulated markets: A research note[☆]

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ABSTRACT

This research note aims to enrich our understanding of reporting incentives of firms listed in European exchange-regulated markets. Many initial public offerings (IPOs) in Europe are within exchange-regulated markets where firms are allowed to choose between local GAAP and IFRS. Therefore, this research note describes the regulatory environment and investigates the choice to voluntarily adopt IFRS within European exchange-regulated markets. Overall, less than 20% of the firms voluntarily adopt IFRS and voluntary IFRS adoption upon IPO is positively associated with firm size, foreign firms, stocks offered to institutional investors prior to the IPO, and a future migration to an EU-regulated market.

1. Introduction

Regulation 2002/1606/EC (European Commission, 2002) requires publicly listed European firms to prepare their consolidated financial statements in accordance with IFRS only if they are listed in an EU-regulated market. Hence, this does not apply to exchange-regulated markets (2002/1606/EC, Article 4) and firms can choose between local GAAP and IFRS.¹

Generally, the literature finds positive capital market effects of IFRS adoption (see Brüggemann et al. (2013) for a review). In turn, this leads to the question why the vast majority of firms did not voluntarily adopt IFRS (Christensen, 2012). This study contributes to the question to what extent and why firms voluntarily adopt IFRS in an unexplored setting. Prior evidence of voluntary IFRS adoption cannot be generalized to the exchange-regulated markets because firms that perform an IPO in the exchange-regulated markets are different from firms that perform an IPO in a EU-regulated market: They are more likely to be owned by private investors prior to the IPO, place relatively few shares within the IPO, and are smaller than their counterparts from EU-regulated markets. Therefore, the aim of this research note is to describe the regulatory environment and to investigate (i) the ratio of voluntary adopters and (ii) the determinants of voluntary adoption of IFRS in the European exchange-regulated markets of Amsterdam, Brussels, Lisbon, Frankfurt, and Paris. To the best of my knowledge, this research note is the first to examine voluntary IFRS adoption of public firms after IFRS became mandatory for most European public firms in 2005.

First, I find that overall less than 20% of the firms listed in these exchange-regulated markets voluntarily adopt IFRS. Although the

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¹ The notable exception is the Alternative Investment Market of the London Stock Exchange that requires IFRS since 2007.

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Table 1
European exchange-regulated markets that allow voluntary IFRS adoption.

Original segment	Founded	Stock exchange	Current status / Current segment	Listed Equities [*]
AIM Italia	06/22/2009	Borsa Italiana	AIM Italia (merger of AIM Italia with MAC markets on 3/1/2012)	26
Entry Standard	10/25/2005	Frankfurt Stock Exchange	Scale (replaced by the market segment 'Scale' on 3/1/2017)	187
Euro MTF	07/10/2005	Bourse Luxembourg	Euro MTF (no change)	260
m:access	07/01/2005	Munich Stock Exchange	M:access (no change)	51
Alternext Amsterdam	05/17/2005	New York Stock Exchange	Shut down at the end of 2014	2
Alternext Brussels	05/17/2005	New York Stock Exchange	Euronext Growth (renamed on 05/17/2017)	10
Alternext Lisbon	05/17/2005	New York Stock Exchange	Euronext Growth (renamed on 05/17/2017)	5
Alternext Paris	05/17/2005	New York Stock Exchange	Euronext Growth (renamed on 05/17/2017)	145
Third market		Vienna Stock Exchange	Third market (no change)	4

The table contains European exchange-regulated markets that allow listed firms to choose between IFRS and local GAAP.

* As of July 2014.

majority did not adopt IFRS, 20% is higher than voluntary adoption among private firms. [André et al. \(2012\)](#) find that only 3.4% of UK private firms adopt voluntarily, and [Bassemir \(2018\)](#) finds that 9.7% of German private firms voluntarily adopt IFRS. This suggests that capital market incentives in exchange-regulated markets result in a higher adoption rate compared to private firms.

Second, in line with prior literature, bigger and foreign firms are more likely to adopt IFRS voluntarily ([Dumontier and Raffournier, 1998](#); [Cuijpers and Buijink, 2005](#); [Gassen and Sellhorn, 2006](#); [Wu and Zhang, 2009](#); [André et al., 2012](#); [Bassemir, 2018](#)). In addition, I find that firms are more likely to adopt IFRS if firms sell their stocks to institutional investors prior to the IPO and if firms are planning to migrate into an EU-regulated market.

Overall, this research note increases our understanding of the voluntary IFRS adoption rate and the determinants of voluntarily adopting IFRS in the relatively unexplored setting of European exchange-regulated markets. These firms are often included in publicly available databases, but their structure and reporting incentives are different from firms of the main markets. For example, as of April 1st 2015 over 25% of the firms at the Frankfurt Stock Exchange were listed in the exchange-regulated Entry Standard Segment. These firms are included in the Worldscope database, but most of them are still using German GAAP.

The remainder of the paper is organized as follows. In Section 2, I provide details about the differences between exchange-regulated markets and EU-regulated markets. In Section 3, I develop the hypotheses. In Section 4, I describe the sample and the research design. Section 5 presents the results and Section 6 concludes.

2. Exchange-regulated markets

Most exchanges in Europe have different market segments. Each market segment is either an EU-regulated market or it is regulated by the exchanges. Directive 93/22/EEC ([European Commission, 1993](#)) provides a definition of EU-regulated markets. A EU-regulated market complies “with all reporting and transparency requirements laid down pursuant to Articles 20 and 21” (e.g. reporting prices every 20 min) and it “appears on the list”. The latter requirement means that a market is EU-regulated if it is recognized as such by the respective authority. In a nutshell, stock exchanges can opt for an EU-regulated market or an exchange-regulated market. The responsible authorities are usually the Ministries of Finance or Economy of the respective EU member state. [Table 1](#) lists exchange-regulated markets within the EU that permit IFRS and local GAAP. Interestingly, most of them were founded in 2005, directly after IFRS became mandatory for firms listed in EU-regulated markets. Recently, some market segments were reorganized or renamed (column “Current status/Current segment”). The remainder of this research note refers to the original segment names where the IPOs took place (column “Original segment”).

So far, only little research has been conducted on the exchange-regulated markets in Europe. [Vismara et al. \(2012\)](#) show that the performance (measured as buy-and-hold returns) in these secondary markets is worse than in the main markets. This result is consistent with the findings of [Gerakos et al. \(2013\)](#). They provide evidence that the performance of firms listed in the Alternative Investment Market (AIM) is worse compared to firms of EU-regulated markets of the London Stock Exchange. A survey of the German Equities Institute ([Deutsches Aktieninstitut](#)) shows that 70% of the respondents are not satisfied with the liquidity of their shares in the Entry Standard Segment of the Frankfurt Stock Exchange. Furthermore, 70% agree with the statement that the use of local GAAP is an advantage of this market segment. However, the survey is only based on 22 responses (of 117 questionnaires).

When firms decide to list their shares on an exchange, they face the tradeoff of costs and benefits associated with this decision. On the one hand, exchange-regulated markets are less costly since they have lower disclosure requirements and lower fees. On the other hand, these markets have lower liquidity, which in turn is associated with higher cost of capital (e.g. [Botosan and Plumlee, 2002](#); [Lambert et al., 2007](#)). Thus, since firms balance costs and benefits, cross-sectional differences in firm characteristics will determine the choice of the market segment.

To gain a better understanding of which firms choose to list in exchange-regulated markets, I first investigate the determinants of performing an IPO in exchange-regulated markets in comparison to EU-regulated markets of the Frankfurt Stock Exchange. Approximately half of 166 investigated firms that performed an IPO on the Frankfurt Stock Exchange between 2005 and 2013 choose to list in the exchange-regulated market (Entry market) and the other half did not.² Generally, firms are different among almost all dimensions. I elaborate below.

Exchange-regulated markets have lower freefloat requirements. Thus, if firms want to place only relatively few shares within the

² Summary statistics are provided in Panel A of [Table A1](#) in the Appendix A.

IPO to keep control of the firm, they might be inclined to perform the IPO within an exchange-regulated market. This might be especially the case for smaller companies and for family owned companies, since the owners often have social ties to their company. Consequently, family owners are more likely to keep control of the firm after the IPO and the degree of dilution is lower. In line with these arguments, I find that firms that perform an IPO in the exchange-regulated markets (i) are smaller, (ii) are more often family owned prior to the admission (63.7% vs. 32.7% family ownership), and (iii) the freefloat after admission is less (36.7% vs. 62.5% of shares). These differences are statistically significant and are displayed in Panel B of Table A2 in the Appendix.³

In sum, the findings indicate that firms are more likely to perform an IPO in an exchange-regulated market when they are owned by family investors, offer relatively fewer shares compared to existing shares, and when they are smaller. Thus, the results show that these firms are systematically different from firms listed in major European exchanges. This in turn indicates that prior literature on voluntary IFRS adoption cannot be generalized to exchange-regulated markets.

3. Voluntary IFRS adoption

Regulation 2002/1606/EC requires firms listed in EU-regulated markets to adopt IFRS and member states have the option to require, permit, or prohibit the use of IFRS for consolidated and unconsolidated accounts for unlisted firms and firms listed in exchange-regulated markets. The countries of this study permit the use of IFRS for firms that are not listed in an EU-regulated market (see André (2017) for an overview).⁴ Thus, firms can choose between IFRS and the respective local GAAP.

Most IPOs in this sample took place in Germany and France. In Germany, the 2009 Accounting Law Modernization Act (Bilanzrechtsmodernisierungsgesetz, BilMoG) included some elements of IFRS, but accounting regulation is still influenced by national traditions (Fülbier et al., 2017). In France, IFRS only had minor influence on local accounting regulation (Le Manh, 2017). Thus, local GAAP and IFRS remain different and firms can strategically choose one or the other accounting system.⁵

To the best of my knowledge, there is no study investigating voluntary adoption of IFRS in exchange-regulated markets. Thus, the aim of this study is to better understand to what extent and why firms that perform an IPO in exchange-regulated markets (do not) voluntarily adopt IFRS.

3.1. Voluntary IFRS adoption rate

Prior literature on voluntary IFRS adoption in Europe can be divided into three different categories. (1) The sample period ends before the proposal of the European Commission in February 2001 to mandate IAS from 2005 on (sample period until 2000). (2) Studies on public firms that include the time period after the announcement of the European Commission but before IAS became mandatory (sample period until 2004). (3) Studies on *private* firms after IAS became mandatory in 2005 (sample period starting after 2005).

- (1) Dumontier and Raffournier (1998) investigate 133 Swiss firms in 1994 and find that 38% of the firms voluntarily adopt IFRS. Cuijpers and Buijinks' (2005) sample includes European listed firms in 1999 and they find that only 6.4% voluntarily adopt IFRS. Francis et al. (2008) show that 49% of their sample firms (private SMEs from 56 countries) voluntarily adopt IFRS.
- (2) Gassen and Sellhorn (2006) find that more than 50% of German public firms voluntarily adopted IFRS between 1998 and 2004. Wu and Zhang (2009) show that approximately 20% of large Continental European firms voluntarily adopted IFRS between 1998 and 2004. Prior literature provides potential reasons for these high rates. First, these studies include German firms that listed in the market segment “Neuer Markt”, which required applying IFRS. This means that the adoption is strongly correlated with other capital market decisions. Second, some firms might adopt IFRS in anticipation of the mandatory adoption in 2005. Thus, these firms can also be considered as early adopters.
- (3) A few studies investigate voluntary IFRS adoption of private firms and find that the adoption rate is relatively low. André et al. (2012) show that only 3.41% of their sample of UK unlisted firms voluntarily adopt IFRS. Bassemir (2018) finds that 9.7% of German private firms voluntarily adopt IFRS. Thus, voluntary adoption rates are very low among private firms even after 2005.

3.2. Determinants of voluntary IFRS adoption

My study includes determinants based on prior literature and some determinants that are specific to IPOs or the exchange-regulated markets. I elaborate below.

Private Placements: When firms perform an IPO, they often also sell shares to institutional investors (qualified investors) prior to the IPO, a so called private placement.⁶ Article 2 of Directive 2003/71/EC (European Commission, 2003) defines and gives examples of qualified investors (e.g. credit institutions, investment firms, and insurance companies). Therefore, I investigate over and above prior literature whether firms are more likely to voluntarily adopt IFRS if they want to sell their shares to more sophisticated (institutional) investors.

³ Multivariate results are displayed in Table A2 of the Appendix A.

⁴ For detailed country-specific description of the institutional setting please refer to the 2017 Issues 1 and 2 of *Accounting in Europe*.

⁵ A few IPOs of the sample are in Belgium, Portugal, and the Netherlands. Whereas there is little influence of IFRS on Belgium GAAP (Jorisson, 2017), Portugal had a major accounting reform in 2009 and Portuguese GAAP is close to IFRS (Isidro and Pais, 2017). Similarly, there are only minor differences between Dutch GAAP and IFRS (Brouwer and Hoogendoorn, 2017).

⁶ The following quote illustrates the information, which is given upon a listing at the Paris Alternext market segment. “Admission on Alternext 2,543,318 existing shares representing the outstanding capital of ASTELLIA. This admission takes place after a Private Placement of MC 10 subscribed by qualified investors (MC 8 from a capital increase)” (admission of Astellia on 12/17/2007).

Internationally diversified investors may prefer to buy shares of companies that prepare their financial statement in accordance with IFRS, not local GAAP. Accordingly, IFRS makes it less costly to manage their portfolio and to decide between investment opportunities. This argument is in line with the finding of Florou and Pope (2012), who show that after mandatory IFRS adoption institutional ownership increases for adopters more than for non-adopters. In contrast, non-institutional investors are often under-diversified (e.g. Goetzmann and Kumar, 2008) and might benefit to a lower extent from IFRS. *Placement* is coded one if a company offers its stocks to institutional investors prior to the listing. I expect a positive correlation between *Placement* and voluntary IFRS adoption.

Upgrade to a regulated market: Another reason to voluntarily adopt IFRS is the anticipation of a future admission to an EU-regulated market. As mentioned above, IFRS is mandatory in EU-regulated markets. Thus, firms that use the exchange-regulated markets as an intermediate step to list in an EU-regulated market have a higher incentive to voluntarily adopt IFRS. Similarly, Bassemir (2018) finds that private firms are more likely to voluntarily adopt IFRS if they plan an IPO. I expect firms that upgrade to voluntarily adopt IFRS.

Family ownership: I include *Fam_own*, which is the percentage of private/family ownership (in contrast to institutional ownership) prior to the admission. It is calculated as shares held by private/family investors divided by total shares.

Size: Larger firms are more complex which in turn is likely to increase demand for more information. Prior literature consistently finds that bigger firms are more likely to adopt IFRS voluntarily (Dumontier and Raffournier, 1998; Cuijpers and Buijink, 2005; Gassen and Sellhorn, 2006; Francis et al., 2008; Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018). I measure *Size* as the natural logarithm of total assets prior to the IPO and expect to find a positive coefficient.

Ownership dispersion: Firms with a more dispersed ownership structure have different reporting incentives than closely held firms. They might benefit more from disclosure to reduce information asymmetries between managers and non-controlling owners. Therefore, I expect that firms with higher ownership dispersion are more likely to voluntarily adopt IFRS (Gassen and Sellhorn, 2006; Wu and Zhang, 2009). *Freefloat* measures the number of offered shares relative to the existing shares. *Freefloat* can be divided into shares from a capital increase (*Newshares*) and shares that are offered by the existing shareholders (*Disposal*).

International exposure: Prior literature consistently finds that firms with more international exposure are more likely to voluntarily adopt IFRS (Dumontier and Raffournier, 1998; Cuijpers and Buijink, 2005; Gassen and Sellhorn, 2006; Francis et al., 2008; Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018). I also expect foreign firms (*Foreign*) to voluntarily adopt IFRS. Similarly, firms might be more likely to voluntarily adopt IFRS within an exchange-regulated market because the majority of the investor base is international. Therefore, I include a dummy variable that is coded one if the majority of investors after the IPO is international (*Int investors*).

Audit quality: Bigger audit firms might be more experienced with IFRS and capital market regulation. In line with prior literature (André et al., 2012; Bassemir, 2018), I expect to find a positive relation between bigger audit firms and voluntary IFRS adoption. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors in the respective country and zero otherwise. In addition to the Big4 international auditing firms (Deloitte, EY, KPMG, and PWC), I consider BDO in Germany and Mazars in France to belong to the dominating auditing firms in the respective country.

Profitability: I include return on assets (*ROA*) to control for profitability and it is calculated as earnings before interest and tax (EBIT) divided by total assets. More profitable firms might have the resources to increase voluntary reporting and voluntarily adopt IFRS. However, prior literature generally does not find statistically significant results (e.g. Dumontier and Raffournier, 1998; Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018).

Leverage: Firms with external financing needs might voluntarily adopt IFRS in order to mitigate adverse selection problems with non-relationship borrowers. In line with this, prior literature finds that firms with more leverage are more likely to adopt IFRS voluntarily (Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018). Thus, I include *Leverage*, the ratio of non-equity to total assets, and expect to find a positive coefficient.

Proprietary information: Firms might have proprietary information that they do not want to reveal. Such firms might choose low disclosure regulations and do not voluntarily adopt IFRS. I include the number of patents as reported by the Orbis database to proxy for proprietary information (*#Patents*) and expect to find a negative coefficient.

Growth: Growth opportunities might influence the decision to adopt IFRS. Therefore, I include the market-to-book ratio (*MTB*) as a proxy for growth opportunities and expect to find a positive coefficient.

4. Data and research design

4.1. Data

The sample consists of listings in the European exchange-regulated markets of Amsterdam, Brussels, Lisbon, Frankfurt, and Paris between 2005 and 2013. I limit the sample to IPOs as this gives me a unique opportunity to observe information from the prospectus that would not be available otherwise. In total, I found 251 new admissions in the exchange-regulated markets. Due to data availability (missing prospectus or missing capital market data) the sample reduces to 219 firms, 85 from the Entry Standard Segment and 134 from the Alternext markets in Amsterdam, Brussels, Lisbon, and Paris.

The data consists of IPOs and direct listings. Within an IPO (206 firms), firms raise new capital (199 firms), frequently offer shares of the existing shareholders (112 firms), or both (105 firms). Direct listings are only the admission to a market without capital raised (13 firms). The sample does not include dual listings (cross-listings) from other markets or down listings from EU-regulated markets since the incentive to voluntarily adopt IFRS might be different.

The sample includes firms that offered shares within a private placement in form of a capital increase to qualified investors only prior to a listing. Panel A of Table 2 shows that 99 out of 100 firms with a private placement also performed an IPO in form of raising new capital and/or offering new shares.

Table 2
Sample description.

Panel A: IPOs and Private Placements			
	IPO = 0	IPO = 1	Sum
Placement = 0	12	107	119
Placement = 1	1	99	100
Sum	13	206	219

Panel B: IPO and IFRS in exchange-regulated markets						
	Amsterdam	Brussels	Frankfurt	Lisbon	Paris	Sum
IFRS = 0	0	6	64	2	105	181
IFRS = 1	1	2	21	0	18	42
Sum	1	8	85	2	123	219

Panel C: IFRS adoption per year				
Year	IFRS = 0	IFRS = 1	Total	IFRS%
2005	11	1	12	8.33
2006	76	10	86	11.63
2007	47	15	62	24.19
2008	5	6	11	54.55
2009	1	1	2	50.00
2010	13	6	19	31.58
2011	11	0	11	0.00
2012	8	2	10	20.00
2013	5	1	6	16.66
Total	177	42	219	19.18

Placement is coded one if the company offers stocks only to institutional investors prior to the listing. *IPO* is coded on if the company offered either new shares within the listing, existing shares, or both. *IFRS* is coded one if the company voluntarily adopted the International Financial Reporting Standards (IFRS) in the year of their admission to the exchange-regulated market and zero otherwise.

The data is manually collected and mostly stems from issued prospectuses and financial statements. Data is also gathered from the Frankfurt Stock Exchange, German Federal Financial Advisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), the German Federal Gazette, the New York Stock Exchange, and from the respective companies. Only data based on the ownership structure after the admission (*Int_investors*) and the number of patents (*#Patents*) is gathered from the Orbis database.

4.2. Research design

The model estimates a cross-sectional logistic regression where the dependent variable is coded one if the company voluntarily adopts full IFRS in the IPO prospectus and zero otherwise (*Vol_IFRS*).⁷ The model includes fixed effects for time and industry and standard errors are clustered at the industry level.⁸

$$\begin{aligned} \text{prob}(\text{Vol_IFRS}) = \text{logit}(\beta_0 + \beta_1 * \text{Placement} + \beta_2 * \text{Upgrade} + \beta_3 * \text{Fam_own} + \\ \beta_4 * \text{Size} + \beta_5 * \text{Freefloat} + \beta_6 * \text{Foreign} + \beta_7 * \text{Big5} +) \\ \beta_8 * \text{Leverage} + \beta_9 * \text{Int_investors} + \beta_{10} * \text{\#Patents} + \\ \beta_{11} * \text{MTB} + FE) \end{aligned} \quad (1)$$

5. Results

5.1. Voluntary IFRS adoption rate

Panel B of Table 2 shows the distribution of firms that voluntarily adopt IFRS for firms that performed their IPO in an exchange-regulated market of Amsterdam, Brussels, Lisbon, Frankfurt, or Paris. Most firms, and almost all voluntary IFRS adopters, are either listed in the Entry Standard Segment of the Frankfurt Stock Exchange or in the Alternext Market in Paris. Table 2 shows that only 42 out of 219 firms in my sample voluntarily adopt IFRS (19.2%).

Prior literature that investigates voluntary adoption in public firms finds higher voluntary IFRS adoption rates. However, the findings of Gassen and Sellhorn (2006) and Wu and Zhang (2009) include German firms that listed in the market segment “Neuer Markt”, which

⁷ Voluntary adopters also use IFRS in the following annual report.

⁸ The results are robust to including country-fixed effects.

Table 3
Summary statistics.

	N	Mean	Sd	Min	P25	Median	P75	Max
<i>Vol_IFRS</i>	219	0.192	0.395	0.000	0.000	0.000	0.000	1.000
<i>Placement</i>	219	0.457	0.499	0.000	0.000	0.000	1.000	1.000
<i>Upgrade</i>	219	0.037	0.188	0.000	0.000	0.000	0.000	1.000
<i>Fam_own</i>	219	0.609	0.361	0.000	0.262	0.675	1.000	1.000
<i>Size</i>	219	9.241	1.203	6.244	8.349	9.192	10.089	14.426
<i>Freefloat</i>	219	0.373	0.288	0.000	0.198	0.333	0.468	2.120
<i>Newshares</i>	219	0.291	0.256	0.000	0.134	0.257	0.375	2.120
<i>Disposal</i>	219	0.082	0.157	0.000	0.000	0.010	0.111	1.000
<i>Foreign</i>	219	0.064	0.245	0.000	0.000	0.000	0.000	1.000
<i>Big5</i>	219	0.397	0.458	0.000	0.000	0.000	1.000	1.000
<i>ROA</i>	219	0.000	0.392	-3.081	0.009	0.046	0.142	1.024
<i>Leverage</i>	219	0.601	0.280	0.000	0.426	0.627	0.789	1.867
<i>Int_investors</i>	219	0.178	0.383	0.000	0.000	0.000	0.000	1.000
<i>#Patents</i>	219	3.607	6.990	0.000	0.000	1.000	4.000	58.000
<i>MTB</i>	219	18.093	29.242	-26.367	4.53	8.39	19.949	176.556

The table reports summary statistics of firms that performed an IPO in the exchange-regulated markets of Amsterdam, Brussels, Lisbon, Frankfurt, and Paris. *Vol_IFRS* is coded one if the company voluntarily adopted the International Financial Reporting Standards (IFRS) in the year of their admission to the exchange-regulated market and zero otherwise. *Placement* is coded one if the company offers stocks only to institutional investors prior to the listing. *Upgrade* is coded one if the company switched to an EU-regulated market at some point after the listing in the exchange-regulated market. *Fam_own* is the percentage of ownership from private/family investors prior to the IPO. *Size* is the natural logarithm of total assets (in thousand Euros). *Freefloat* is the number of all shares that are offered upon IPO deflated by the number of shares prior to the listing. *Newshares* is the ratio of newly issued stocks to existing stocks. *Disposal* is the number of shares that are offered by existing shareholders deflated by the number of shares prior to the IPO. *Foreign* is coded one if the company is located in a country outside its listed exchange-regulated market. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors. *ROA* is return on assets. *Leverage* is the ratio of non-equity to total assets. *Int_investors* is a dummy variable that equals one if the majority of shareholders are non-domestic. *#Patents* is the number of patents. *MTB* is the market to book ratio.

required applying IFRS. Thus, the decision to voluntarily adopt IFRS is correlated with the decision to list on this market segment. Francis et al. (2008) also report a higher ratio of voluntary adopters. Their results are, however, based on a self-reported survey and the authors acknowledge that the results could be influenced by firms that apply some international reporting standards, but not full IFRS.

The adoption rate of around 20% is high compared to the adoption rate identified within private firms (André et al., 2012; Bassemir, 2018). This suggests that capital market incentives in exchange-regulated markets result in a higher adoption rate. A unique incentive within the exchange-regulated markets is, for example, a future upgrade into a regulated market. Furthermore, the sample includes foreign firm, which have a higher likelihood to adopt IFRS voluntarily. The majority of firms, however, does not voluntarily adopt IFRS.

5.2. Determinants of voluntary IFRS adoption

Table 3 provides the summary statistics of the sample. 45.7% of the firms perform a private placement prior to the IPO. Only 3.7% of the firms upgraded to an EU-regulated market after the admission to an exchange-regulated market and 6.4% of the firms are listed outside of the country where they are headquartered (*Foreign*). The mean of family ownership (*Fam_own*) is 60.9% and it ranges from zero to one, meaning that some firms are completely privately held and some firms are completely held by institutional investors prior to the IPO. *Freefloat* has a mean of 37.3%. The relatively low ratio of Big 5 auditor (39.7%) is explained by the fact that firms listed in exchange-regulated markets are smaller compared to firms listed in EU-regulated markets.⁹

Pearson and Spearman's rank correlations are provided in Table 4. Voluntary IFRS adoption is significantly positive (P-Value < 1%) correlated with the proxy for private placements (*Placement*) and with a future upgrade into an EU-regulated market (P-Value < 5%). Furthermore, it is negatively correlated with family ownership (*Fam_own*). *Foreign* and *Size* are significantly (at least at the 1% level) correlated with voluntary IFRS adoption. Private placements (*Placement*) are not only correlated with voluntary IFRS adoption, but also positively correlated with *Size* and *Foreign*. Thus, mostly larger and foreign firms sell shares to institutional investors prior to the IPO.

The multivariate results are displayed in Table 5. The independent variable is voluntary adoption of IFRS. I find that only the coefficients of private placement (*Placement*), a future upgrade to an EU-regulated market (*Upgrade*), *Size* and *Foreign* are statistically significant and in line with the expectations outlined above. The marginal effects of the coefficients are 0.14 (*Placement*), 0.37 (*Upgrade*), 0.06 (*Size*) and 0.37 (*Foreign*). Thus, these determinants are also economically significant. Whereas prior literature does not investigate private placements or a future upgrade to a regulated market, the positive coefficients of *Foreign* and *Size* are in line with prior literature (Dumontier and Raffournier, 1998; Cuijpers and Buijink, 2005; Gassen and Sellhorn, 2006; Francis et al., 2008; Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018). The signs of the other coefficients are in all but one case in line with the predictions, but not statistically significant. In contrast to my expectation and prior literature (Wu and Zhang, 2009; André et al., 2012; Bassemir, 2018), the coefficient of *Leverage* is negative. However, the result is not statistically significant. The results stay

⁹ Prior literature shows that the clients of Non-Big4 auditors are smaller than clients of Big4 auditors (e.g. Lawrence et al., 2011)

Table 4
Correlations.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) <i>Vol_IFRS</i>		0.25	0.15	-0.11	0.16	-0.01	0.02	-0.04	0.35	0.01	0.03	-0.05	0.08	-0.07	0.03
(2) <i>Placement</i>	0.25		0.11	-0.01	0.04	0.09	0.16	-0.10	0.25	-0.11	-0.08	0.02	0.08	-0.03	0.14
(3) <i>Upgrade</i>	0.15	0.11		-0.09	-0.06	0.07	-0.01	0.14	0.05	-0.02	0.05	-0.07	0.10	-0.03	0.05
(4) <i>Fam_own</i>	-0.11	-0.00	-0.07		0.05	-0.00	0.01	-0.02	-0.03	-0.20	0.19	0.09	-0.10	-0.04	0.13
(5) <i>Size</i>	0.18	0.07	-0.06	0.07		-0.15	-0.16	-0.01	0.08	0.06	0.21	0.11	-0.02	-0.11	-0.36
(6) <i>Freefloat</i>	-0.07	0.07	0.08	0.03	-0.13		0.84	0.47	-0.11	-0.02	-0.02	-0.02	0.06	0.03	0.00
(7) <i>Newshares</i>	-0.05	0.20	0.02	0.02	-0.13	0.83		-0.09	-0.04	0.00	-0.10	-0.02	-0.01	0.02	-0.03
(8) <i>Disposal</i>	-0.09	-0.16	0.05	0.18	0.04	0.44	0.01		-0.13	-0.03	0.11	-0.01	0.12	0.02	0.05
(9) <i>Foreign</i>	0.35	0.25	0.05	0.02	0.08	-0.13	-0.04	-0.23		0.03	0.04	0.06	0.02	-0.11	-0.03
(10) <i>Big5</i>	0.01	-0.11	-0.02	-0.21	0.05	-0.05	-0.05	-0.09	0.03		-0.10	-0.01	0.09	0.03	-0.02
(11) <i>ROA</i>	0.03	-0.12	0.08	0.23	-0.11	-0.06	-0.12	0.17	0.08	-0.11		-0.13	0.01	-0.05	-0.17
(12) <i>Leverage</i>	-0.03	0.00	-0.05	0.12	0.18	0.06	0.09	0.06	0.03	-0.06	-0.15		0.02	0.01	0.20
(13) <i>Int_investors</i>	0.08	0.08	0.10	-0.11	-0.03	0.04	-0.02	0.01	0.02	0.09	-0.05	0.01		0.19	0.06
(14) <i>#Patents</i>	-0.15	-0.02	0.00	-0.02	-0.13	0.07	0.05	0.15	-0.15	0.11	-0.04	0.00	0.20		0.09
(15) <i>MTB</i>	-0.03	0.04	0.10	-0.04	-0.46	0.12	0.11	0.13	-0.07	-0.10	0.09	0.29	0.08	0.15	

The table provides Spearman's rank correlations below the diagonal and Pearson correlations above the diagonal. *Vol_IFRS* is coded one if the company voluntarily adopted the International Financial Reporting Standards (IFRS) in the year of their admission to the exchange-regulated market and zero otherwise. *Placement* is coded one if the company offers stocks only to institutional investors prior to the listing. *Upgrade* is coded one if the company switched to an EU-regulated market at some point after the listing in the exchange-regulated market. *Fam_own* is the percentage of ownership from private/family investors prior to the IPO. *Size* is the natural logarithm of total assets (in thousand Euros). *Freefloat* is the number of all shares that are offered upon IPO deflated by the number of shares prior to the listing. *Newshares* is the ratio of newly issued stocks to existing stocks. *Disposal* is the number of shares that are offered by existing shareholders deflated by the number of shares prior to the IPO. *Foreign* is coded one if the company is located in a country outside its listed exchange-regulated market. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors. *ROA* is return on assets. *Leverage* is the ratio of non-equity to total assets. *Int_investors* is a dummy variable that equals one if the majority of shareholders are non-domestic. *#Patents* is the number of patents. *MTB* is the market to book ratio. Significance at the 1% level is displayed in bold.

Table 5
Voluntary adoption of IFRS.

Dependent variable	Pred.	Model 1		Model 2	
		Coef.	SE	Coef.	SE
<i>Vol_IFRS</i>	Sign				
<i>Placement</i>	+	1.335***	(0.385)	1.349***	(0.420)
<i>Upgrade</i>	+	2.081***	(0.468)	2.068***	(0.461)
<i>Fam_own</i>	-	-0.681	(0.847)	-0.679	(0.845)
<i>Size</i>	+	0.595**	(0.241)	0.592***	(0.226)
<i>Freefloat</i>	+	0.677	(0.429)		
<i>Newshares</i>	+			0.609	(0.793)
<i>Disposal</i>	+			0.840	(1.052)
<i>Foreign</i>	+	2.598**	(0.999)	2.152**	(0.994)
<i>Big5</i>	+	0.166	(0.478)	0.166	(0.473)
<i>ROA</i>	+	0.596	(0.695)	0.594	(0.694)
<i>Leverage</i>	+	-0.748	(0.706)	-0.753	(0.716)
<i>Int_investors</i>	+	0.205	(0.817)	0.189	(0.883)
<i>#Patents</i>	-	-0.023	(0.672)	-0.023	(0.055)
<i>MTB</i>	+	0.011	(0.007)	0.011	(0.007)
Time & Industry FE		Yes		Yes	
Pseudo R-squared		0.2925		0.2926	
N		219		219	

The table provides the results of the logistic regression of voluntarily adopting IFRS in European exchange-regulated markets. *Vol_IFRS* is coded one if the company voluntarily adopted the International Financial Reporting Standards (IFRS) in the year of their admission to the exchange-regulated market and zero otherwise. *Placement* is coded one if the company offers stocks only to institutional investors prior to the listing. *Upgrade* is coded one if the company switched to an EU-regulated market at some point after the listing in the exchange-regulated market. *Fam_own* is the percentage of ownership from private/family investors prior to the IPO. *Size* is the natural logarithm of total assets (in thousand Euros). *Freefloat* is the number of all shares that are offered upon IPO deflated by the number of shares prior to the listing. *Newshares* is the ratio of newly issued stocks to existing stocks. *Disposal* is the number of shares that are offered by existing shareholders deflated by the number of shares prior to the IPO. *Foreign* is coded one if the company is located in a country outside its listed exchange-regulated market. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors. *ROA* is return on assets. *Leverage* is the ratio of non-equity to total assets. *Int_investors* is a dummy variable that equals one if the majority of shareholders are non-domestic. *MTB* is the market to book ratio. Standard errors are clustered at the industry level and are provided within the brackets next to the coefficients. ***/**/* marks significance at the 1/5/10% level.

qualitatively the same if *Freefloat* is divided into its sub-parts *Newshares* and *Disposal* (Model 2).

Overall, firms are more likely to voluntarily adopt IFRS if firms are bigger, want to sell stocks to institutional investors, if firms use the exchange-regulated markets as an intermediary step to a listing in an EU-regulated market, or if firms are headquartered outside of the respective country of the stock exchange (*Foreign*).

6. Conclusion

This research note describes exchange-regulated markets in Europe and contributes to our understanding of the rate of voluntary IFRS adoption and the determinants of voluntary IFRS adoption in an unexplored setting. I find that the voluntary IFRS adoption rate in these firms is higher than within private firms (André et al., 2012; Bassemir, 2018), but the majority of firms did not voluntarily adopt IFRS. This suggests that even after IFRS became mandatory for the majority of public firms in 2005, firms listed in exchange-regulated markets do not believe that the benefits of IFRS adoption offset the costs. Furthermore, firms are more likely to voluntarily adopt IFRS if they target institutional investor, if firms plan to upgrade to a higher market segment, or if firms are headquartered in another country.

This research note shows that not only are there private firms that voluntarily adopt IFRS in the EU, but there are also public firms that do not. Standard setters should be aware that firms listed in exchange-regulated markets might have different needs for financial reporting and financial disclosure compared to firms listed in major European (EU-regulated) stock exchanges or compared to private firms.

Appendix A

See Tables A1 and A2.

Table A1
Summary statistics.

Panel A: Summary Statistics								
	N	Mean	Sd	Min	P25	Median	P75	Max
<i>Entry_market</i>	166	0.512	0.501	0.000	0.000	1.000	1.000	1.000
<i>Fam_own</i>	166	0.486	0.399	0.000	0.050	0.508	0.900	1.000
<i>Freefloat</i>	166	0.508	0.511	0.000	0.250	0.418	0.635	4.915
<i>Size</i>	166	10.827	2.135	6.988	9.364	10.627	11.955	18.631
<i>Placement</i>	166	0.819	0.386	0.000	1.000	1.000	1.000	1.000
<i>Foreign</i>	166	0.127	0.333	0.000	0.000	0.000	0.000	1.000
<i>Big5</i>	166	0.349	0.478	0.000	0.000	0.000	1.000	1.000
<i>ROA</i>	166	0.058	0.282	-3.081	0.022	0.074	0.136	0.462
<i>Leverage</i>	166	0.433	0.322	0.000	0.114	0.394	0.702	1.335
<i>Int_investors</i>	166	0.343	0.476	0.000	0.000	0.000	1.000	1.000
<i>#Patents</i>	166	7.428	31.677	0.000	0.000	1.000	5.000	372.000
<i>IFRS</i>	166	0.614	0.488	0.000	0.000	1.000	1.000	1.000
<i>MTB</i>	166	11.853	24.012	-26.367	1.709	3.185	10.284	176.556

Panel B: Mean Comparisons				
	<i>Entry_market</i> = 1	<i>Entry_market</i> = 0	Delta	P-Value
<i>Fam_own</i>	0.637	0.327	0.310	< 0.001
<i>Freefloat</i>	0.397	0.625	-0.228	0.004
<i>Size</i>	9.327	12.401	-3.074	< 0.001
<i>Placement</i>	0.706	0.938	-0.232	< 0.001
<i>Foreign</i>	0.047	0.210	-0.163	0.001
<i>Big5</i>	0.153	0.556	-0.403	< 0.001
<i>ROA</i>	0.026	0.092	-0.066	0.129
<i>Leverage</i>	0.574	0.279	0.295	< 0.001
<i>Int_investors</i>	0.153	0.543	-0.390	< 0.001
<i>#Patents</i>	3.353	11.704	-8.351	< 0.001
<i>IFRS</i>	0.247	1.000	-0.753	< 0.001
<i>MTB</i>	18.583	4.79	13.793	< 0.001

The table reports summary statistics. *Entry_market* is a dummy variable that equals one (zero) if the respective firm is listed in an exchange-regulated (EU-regulated) market. *Fam_own* is the percentage of ownership from private/family investors prior to the IPO. *Freefloat* is the number of all shares that are offered upon IPO deflated by the number of shares prior to the listing. *Size* is the natural logarithm of total assets (in thousand Euros). *Placement* is coded one if the company offers stocks only to institutional investors prior to the listing. *Foreign* is coded one if the company is located in a country outside its listed exchange-regulated market. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors. *ROA* is return on assets. *Leverage* is the ratio of non-equity to total assets. *Int_investors* is a dummy variable that equals one if the majority of shareholders is non-domestic. *#Patents* is the number of patents. *IFRS* is coded one if the company adopted the International Financial Reporting Standards (IFRS) in the year of their admission to the exchange-regulated market and zero otherwise. *MTB* is the market to book ratio.

Table A2
Choice of the Market Segment.

Dependent variable: <i>Entry_market</i>	Coef.	SE
<i>Fam_own</i>	12.244 ^{***}	(3.688)
<i>Freefloat</i>	−19.998 ^{**}	(8.682)
<i>Size</i>	−18.181 ^{***}	(6.839)
<i>Placement</i>	2.370 [†]	(1.435)
<i>Foreign</i>	−12.725 ^{**}	(6.347)
<i>Big5</i>	7.622 ^{***}	(1.245)
<i>ROA</i>	11.233 ^{**}	(4.348)
<i>Leverage</i>	30.842 ^{***}	(10.297)
<i>Int_investors</i>	1.142	(2.519)
<i>#Patents</i>	−0.877 ^{***}	(0.305)
<i>MTB</i>	−0.298 ^{**}	(0.144)
Time & Industry FE	Yes	
Pseudo R-squared	0.9095	
N	166	

The table provides the results of the logistic regression of listing in an exchange-regulated market (in contrast to a EU-regulated) market. *Entry_market* is a dummy variable that equals one (zero) if the respective firm is listed in an exchange-regulated (EU-regulated) market. *Fam_own* is the percentage of ownership from private/family investors prior to the IPO. *Freefloat* is the number of all shares that are offered upon IPO deflated by the number of shares prior to the listing. *Size* is the natural logarithm of total assets (in thousand Euros). *Placement* is coded one if the company offers stocks only to institutional investors prior to the listing. *Foreign* is coded one if the company is located in a country outside its listed exchange-regulated market. *Big5* is a dummy variable coded one if the company is audited by one of the dominating auditors. *ROA* is return on assets. *Leverage* is the ratio of non-equity to total assets. *Int_investors* is a dummy variable that equals one if the majority of shareholders are non-domestic. *#Patents* is the number of patents. Standard errors are clustered at the industry level and are provided within the brackets next to the coefficients. ***/**/* marks significance at the 1/5/10% level.

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