

MiFID II research unbundling: assessing the impact on SMEs

ESMA Working Paper

Adrien Amzallag, Claudia Guagliano, Valentina Lo Passo





Outline

- **Background and motivation**
- **Research questions, dataset, and approach**
- **Visual and econometric evidence**
- **Conclusions and ideas for further research**



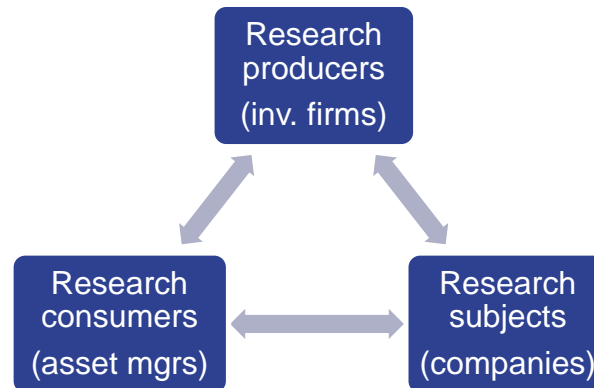
Background and motivation

The research unbundling provisions

As of 1 January 2018, research providers must:

- Charge clients for research products (e.g. reports, analyst calls, access to specific portals)
- Identify these costs separately from trading costs (i.e. commissions, spreads)

Who is affected:



Why do these provisions exist? Target two potential conflicts of interest

- Access to research → clients might trade more with specific brokers vs. 'best execution'
- Many research analysts earn income from trades → incentive to generate trades

Why study this topic?

- Firms with more/less/no analyst coverage → may impact financing conditions
- Does less research imply lower quality research?
- Importance of the research market in driving commissions



Surveys and academic studies yield different results

- **Surveys: MiFID II reduces quantity & quality of sell-side research**
 - Less research, fewer researchers, lower quality – CFA (2019), Hull (2019), AMF (2020)
 - *“Buy-side professionals mostly believe that research quality is unchanged, but sell-side respondents are generally more pessimistic, with 44% believing that research quality has decreased overall... Less than 10% of both buy-side and sell-side respondents believe research quality has increased.”* – FCA (2019)
- **Academic studies: less research; fewer analysts covering EU firms, esp. for:**
 - Large companies. Why? Have more analysts covering them → asset managers can be more selective – Guo and Mota (2020), Anselmi and Petrella (2020)
 - More ‘predictable’ companies (larger, older, and less volatile) – Lang et al. (2019)
- **But academic studies also find increased quality of research...**
 - Fire less accurate analysts; keep higher-quality researchers – Guo and Mota (2020)
 - Stock recommendations on EU companies post-MiFID II more profitable and stimulate greater market reactions – Fang et al. (2020)
- **...and worse liquidity conditions (wider bid-ask spreads – Lang et al. 2019)**



Background and motivation

This paper provides extended analysis & focus on SMEs

- **Focus on SMEs. Why?**

- Market participants: the MiFID II research unbundling provisions may have disproportionately affected SMEs (Société Générale 2019)
- Not main focus of existing studies (Anselmi and Petrella 2020, Fang et al. 2020)
- Enhance SMEs identification → use legal definition (b/c SME status affects financing conditions e.g. prospectus requirements, capital charges)
- Provide evidence for policy debate on revising the unbundling provisions
 - COM Consultation (Jan. 2020): Action Plan for Capital Market; request feedback on proposals to foster research on SMEs
 - COM Consultation (July 2020): “narrowly defined exception” from research unbundling provisions for small + mid-cap issuers & fixed income

- **Extended analysis: impact on financing and liquidity conditions**

- Financing conditions: Why? SMEs already have tough financing vs. larger co.s
- Liquidity → need to check multiple measures: market tightness (bid-ask spread), depth (Amihud & turnover ratios), cost of debt



Research questions and summary of results

- **RQ1:** Do MiFID II research unbundling provisions affect the **quantity** of sell-side research on SMEs relative to large companies?
 - overall reduction in quantity of sell-side research post MiFID II
 - but quantity declines for large companies, unchanged for SMEs
- **RQ2:** Do the provisions affect SMEs' **probability** of no longer being researched vs. the probability faced by large firms?
 - overall increase in probability of losing coverage post MiFID II
 - but this is for large companies, probability unchanged for by SMEs
- **RQ3:** Do the provisions affect the **quality** of sell-side research on SMEs, vs. the quality of sell-side research on larger firms?
 - no significant impact on sell-side research quality (either SMEs or large firms)
- **RQ4:** Do the provisions particularly affect SMEs' **liquidity** & financing conditions?
 - Answer: depends on the measure used
 - Yes (SMEs worse liquidity post-MiFID II) for bid-ask spread & cost of debt
 - No (SMEs not affected) for Amihud illiquidity ratio and turnover ratio



Data

Full dataset (2006 to 2019):

- **8,000** EU companies (active and inactive)
- Of which c. **3,320 SMEs**, **3,920 large companies**, 760 not classifiable
- Monthly data on *sell-side* analyst forecasts per company
- SMEs defined per **COM recommendation 2003/361/EC**: Fewer than 250 employees AND (either annual turnover \leq €43m or total assets \leq €50m)
- **Long-term view** (2006 to 2019) to control for long-term trends and cycles

Restricted dataset (2015 to 2019): ← focus of econometric analysis

- **5,727** EU companies (active and inactive);
- Of which **2,605 SMEs** and **3,122 large companies** (ignore not classifiable)
- Monthly data on analyst forecasts per company
- SMEs defined as above (COM recommendation)
- **Shorter time window** (2015 to 2019) to isolate possible MiFID II impact



Model specification

Difference-in-difference strategy: SMEs are treated upon arrival of MiFID II relative to large companies

- Test research questions 1-4 using equation (1):

$$y_{i,t} = \beta_1 * SME * Post\ MiFID\ II_t + \beta_2 * Post\ MiFID\ II_t + \beta * X_{i,t} + f.e._t + f.e._i + \varepsilon_{i,t}$$

- Dependent variables ($y_{i,t}$):

- RQ1: monthly number of earning-per-share estimates produced by sell-side analysts
- RQ2: indicator (1 if company no longer researched at any month; 0 otherwise)
- RQ3: median forecast accuracy (latest interim EPS minus last estimate)
- RQ4: bid-ask spread, Amihud illiquidity ratio, turnover ratio and weighted cost of debt

- Also test RQ4 using equation (2) (add permanent loss term):

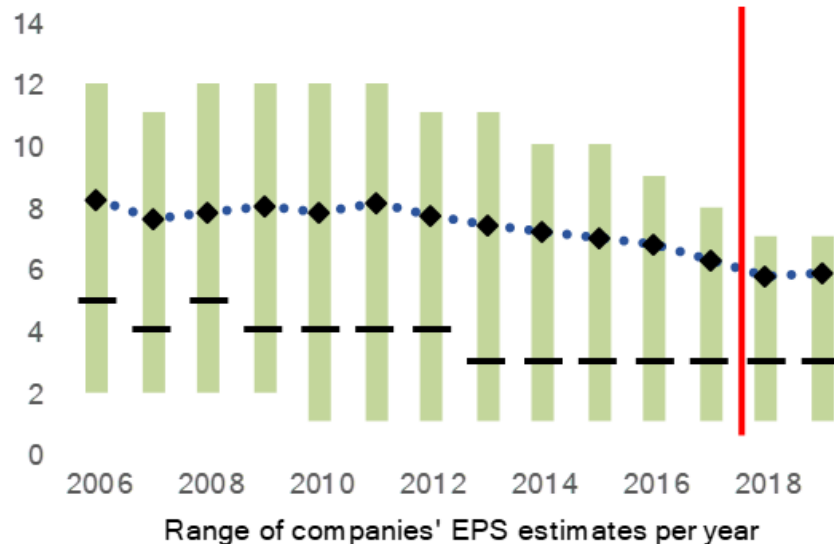
$$y_{i,t} = \beta_1 * SME * Post\ MiFID\ II_t + \beta_2 * SME * permanentloss_{it} + \\ + \beta_3 * permanentloss_{it} + \beta * X_{i,t} + f.e._t + f.e._i + \varepsilon_{i,t}$$



Visual evidence on quantity of research (intensity of research) Consistent number of analysts per firm after MiFID

Figure 1
Impact of MiFID II on intensity of research for large companies and SMEs

Stable number of analysts covering each company before and after MiFID II



Note: Sample of 4,870 EU firms that have been in operation at all times bet. 2006 and end-2019, and at all times researched (i.e. have EPS estimates produced) by analysts. Black diamonds (horizontal bars) in each box = average (median) across firms in the year. 25th and 75th percentiles = bottom and top edges in each box. MiFID II date of application = vertical red line. Sources: Refinitiv, I/B/E/S, ESMA calculations

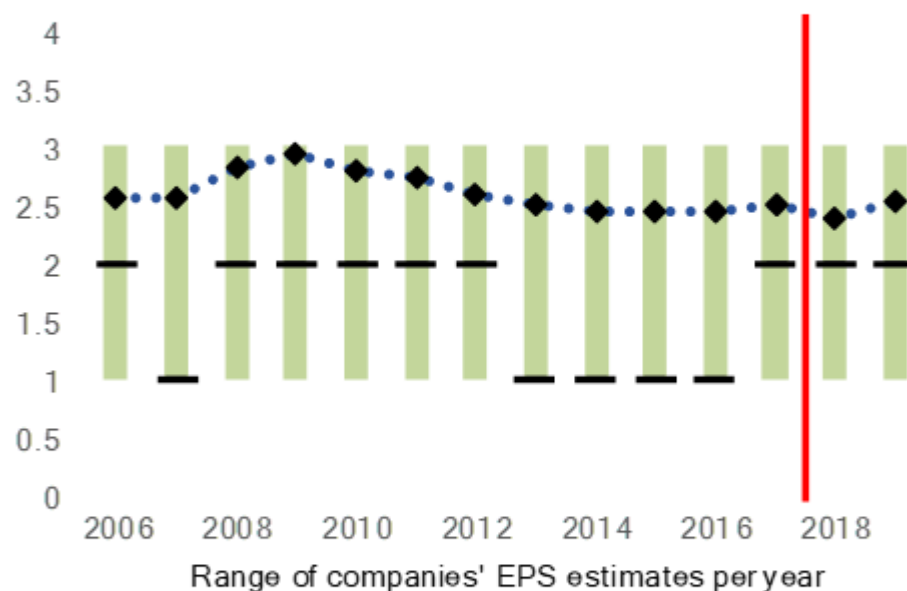
Long-term trend, no sudden change following MiFID II:

- *Assessing intensity of research:* Looking at companies that have always been researched (**both large and SMEs**), these are most often covered by 3 analysts both before MiFID II (starting in 2013) and after MiFID II—see black horiz. bar
- But steady decline in the average number of analysts assigned to firms in the sample overall, after a peak in 2011 (cf. black diamonds and upper green bar)



Visual evidence on quantity of research (intensity of research) **Consistent number of analysts per firm after MiFID - SMEs**

Figure 2
 Impact of MiFID II on intensity of research for SMEs
 SMEs: Stable number of analysts covering each company before and after MiFID II



Note: Sample of 2,100 EU firms that have been in operation at all times bet. 2006 and end-2019, and at all times researched (i.e. have EPS estimates produced). Black diamonds (horizontal bars) in each box = average (median) across firms in the year. 25th and 75th percentiles = bottom and top edges in each box. MiFID II date of application = vertical red line. SMEs defined as per European Commission (2003).

Sources: Refinitiv, I/B/E/S, ESMA calculations.

Long-term trend, no sudden change following MiFID II:

- *Assessing intensity of research:* For SMEs that are covered by research analysts, the most common number of analysts researching a company (horiz. black bar) is 2 both before and after MiFID II
- Relatively stable picture in terms of analyst coverage on average as well, i.e. even for SMEs covered by more than 2 analysts (upper half of the distribution)



Econometric evidence on quantity of research

Number of analysts researching SMEs stable following MiFID II

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All companies	All companies	All companies	All companies	All companies	All companies	Only companies that never lose coverage
VARIABLES	# eps est. (2015-2019)	# eps est. (2015-2019)	# eps est. (2015-2019)	# eps est. (2015-2019)	# eps est. (2006-2019)	# analysts (2015-2019)	# eps est. (2015-2019)
sme x mifid_II	1.051*** (0.0535)	1.046*** (0.0532)	1.046*** (0.0532)	0.771*** (0.0484)	1.036*** (0.0668)	0.819*** (0.0499)	1.062*** (0.0780)
mifid_II	-1.004*** (0.0495)	-1.198*** (0.0669)	-1.198*** (0.0670)	-0.860*** (0.0611)	-0.663*** (0.105)	-1.006*** (0.0631)	-1.098*** (0.0863)
turnover				0.0570*** (0.0106)	0.0939*** (0.0151)	0.0568*** (0.0115)	0.161*** (0.0261)
market_cap				0.321*** (0.0249)	0.821*** (0.0386)	0.380*** (0.0271)	0.608*** (0.0529)
sme	-6.708*** (0.169)	-6.703*** (0.169)					
Constant	8.163*** (0.163)	8.433*** (0.170)	5.658*** (0.0300)	3.156*** (0.144)	0.109 (0.220)	3.020*** (0.160)	3.468*** (0.390)
Observations	297,095	297,095	297,095	241,433	626,208	232,671	135,091
Fixed Effects	NO	Year-Month	Firm & Year-Month	Firm & Year-Month	Firm & Year-Month	Firm & Year-Month	Firm & Year-Month
Clustering of errors at co. level	YES	YES	YES	YES	YES	YES	YES
R-squared	0.187	0.187	0.070	0.064	0.103	0.073	0.089
Estimation Model	OLS	OLS	OLS	OLS	OLS	OLS	OLS

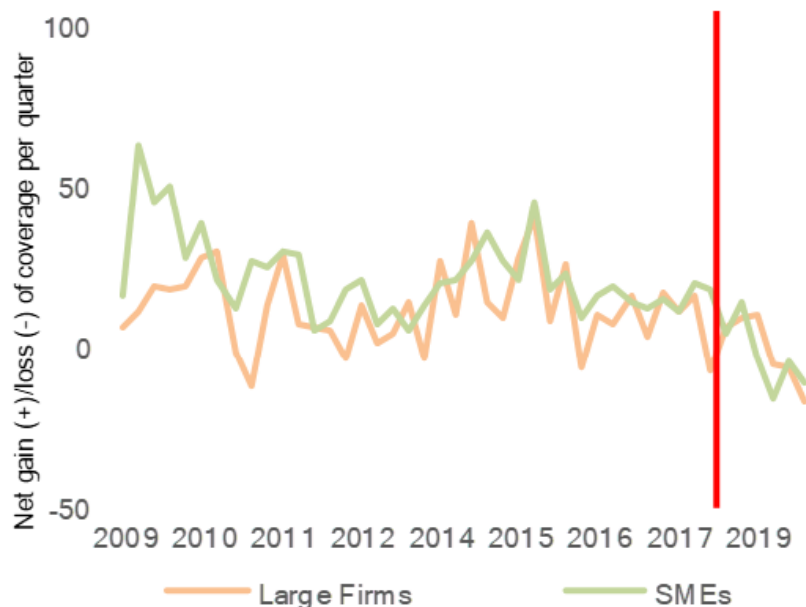
Note: The sample is based on a dataset of company-year-month observations for companies that have been researched by at least one analyst at any time in the considered time-window. Only Model 7 makes the exception to be built on a sample constituted by companies that never lose coverage between 2015 and 2019. Standard errors are always clustered at the company level and fixed effects are as indicated in each model. Models 5, 6 and 7 report the results of some robustness checks performed on a larger sample time-window (2006-2019), on a different dependent variable (number of analysts following a company). All models are OLS estimates and report the Adjusted R-squared. Statistical significance is based on two-tailed tests and is indicated as follows: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1.



Visual evidence on coverage developments

Recent net loss in new firms researched

Figure 4
Impact of MiFID II on research coverage
Net loss across the EU of research coverage
starting in 2019



Note: Sample of 6,120 EU firms that have at any time from 2006 to end 2019 either begun or permanently ceased to be researched (i.e. have EPS estimates produced) by at least one analyst. Firms that cannot be classified as either SMEs or Large are excluded.

Sources: Refinitiv, I/B/E/S, ESMA calculations.

EU-wide decline in new firms covered began in 2019

- Beginning in 2019: evidence of EU-wide net reduction in new firms covered by research analysts
- i.e. number of firms starting to be covered by analysts is less than the number of firms no longer covered by analysts
- This decline only begins one year after MiFID II unbundling provisions—possibility of lags in any effect of the legal provisions (e.g. due to duration of contracts)?



Econometric evidence on the probability of losing coverage

Unchanged probability of losing coverage for SMEs post-MiFID II

VARIABLES	(1)	(2)	(3)	(4)
	All companies	All companies	All companies	All companies
	loss of coverage (2015-2019)	loss of coverage (2015-2019)	loss of coverage (2015-2019)	loss of coverage (2016-2018)
sme x mifid_II	-0.393*** (0.0717)	-0.392*** (0.0719)	-0.163** (0.0809)	-0.123 (0.0828)
mifid_II	0.556*** (0.0587)	0.430*** (0.0735)	0.144* (0.0834)	0.158* (0.0849)
sme	2.273*** (0.149)	2.037*** (0.126)	1.096*** (0.173)	1.270*** (0.240)
market_cap			-0.466*** (0.0284)	-0.532*** (0.0377)
turnover			-0.0166 (0.0112)	-0.0121 (0.0145)
Constant	-4.227*** (0.151)	-3.714*** (0.121)	-1.204*** (0.245)	-1.304*** (0.325)
Observations	297,095	297,095	241,433	145,428
Fixed Effects	NO	Year-Month	Year-Month	Year-Month
Clustering of errors at firm level	YES	YES	YES	YES
R-squared	0.025	0.025	0.050	0.041
Estimation Model	Probit	Probit	Probit	Probit

Note: The sample is based on a dataset of company-year-month observations for companies that have been researched by at least one analyst at any time in the considered time-window. We do not introduce firm fixed effects as unconditional Probit fixed effects model are known to be biased, in particular in short panels. Standard errors are always clustered at the company level and fixed effects are as indicated in each model. Models 4 reports the results of a robustness check performed on a shorter sample time-window (2016-2018). Since loss of coverage is a binary variable, all models are Probit estimations and report the Pseudo R-squared. Statistical significance is based on two-tailed tests and is indicated as follows: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1.



Visual evidence on quality of research

EPS annual surprise percentage stable after MiFID II

Figure 5

Impact of MiFID II on research quality

Research quality stable post vs. pre-MiFID II



Note: Sample of 5,200 EU firms that have at any time been in operation at all times bet. 2006 and end-2019, and at all times researched (i.e. have EPS estimates produced) by analysts. Black horizontal bars in each box = median across firms in theyear. 25th and 75th percentiles = bottom and top edges in each box. Additional lines ('whiskers') = 10th and 90th percentiles. MiFID II date of application = vertical red line.

Sources: Refinitiv, I/B/E/S, ESMA calculations.

No clear effect of MiFID II

- Essentially unchanged research quality (despite reduction in research overall)
- Less-accurate analysts are being removed/transferred? (Fang et al. 2020, Guo and Mota 2020)
- In low volatility markets easier to have more accurate forecasts?



Econometric evidence on quality of research

No reduction in quality of SME research post MiFID II

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	All companies	All companies	All companies	All companies	All companies	Only companies that never lose coverage
	median forecast <i>inaccuracy</i> (2015-2019)	median forecast <i>inaccuracy</i> (2015-2019)	median forecast <i>inaccuracy</i> (2015-2019)	median forecast <i>inaccuracy</i> (2015-2019)	median forecast <i>inaccuracy</i> (2006-2019)	median forecast <i>inaccuracy</i> (2015-2019)
sme x mifid_II	0.469 (33.75)	0.304 (33.78)	-5.636 (42.67)	17.09 (45.35)	26.09 (38.58)	-7.383 (40.43)
mifid_II	-10.78* (6.038)	-4.111 (14.03)	2.097 (14.98)	23.98 (18.78)	11.39 (20.31)	27.00 (18.70)
turnover				-35.44** (17.08)	1.294 (7.418)	-30.28* (17.34)
market_cap				-22.13 (21.46)	-32.61** (12.75)	-25.79 (22.12)
sme	90.63*** (23.45)	90.45*** (23.47)				
Constant	49.31*** (4.482)	50.56*** (11.24)	77.82*** (13.34)	328.3** (128.7)	275.6*** (86.70)	332.9** (137.2)
Observations	15,107	15,107	15,107	10,349	29,926	9,814
Fixed Effects	NO	Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Clustering of errors at co. level	YES	YES	YES	YES	YES	YES
R-squared	0.004	0.005	0.002	0.003	0.001	0.002
Estimation Model	OLS	OLS	OLS	OLS	OLS	OLS

Note: The sample is based on a dataset of company-year observations for companies that have been researched by at least one analyst at any time in the considered time-window. Only Model 6 makes the exception to be built on a sample constituted by companies that never lose coverage between 2015 and 2019. Standard errors are always clustered at the company level and fixed effects are as indicated in each model. Models 5 reports the results of a robustness check performed on a larger sample time-window (2006-2019). All models are OLS estimations and report the Adjusted R-squared. Statistical significance is based on two-tailed tests and is indicated as follows: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1.



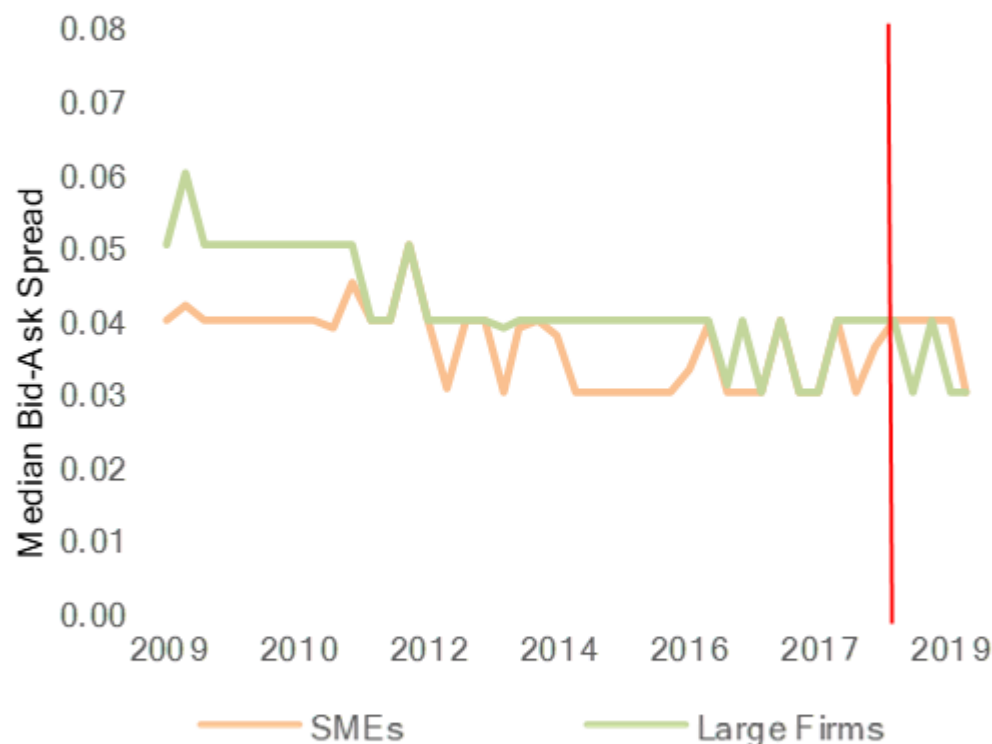
First visual evidence on bid-ask spreads

Bid-ask spread conditions stable post vs. pre-MiFID II

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Impact of MiFID II on firm liquidity

Liquidity conditions stable post vs. pre-MiFID II



First explorations suggest no strong MiFID II research unbundling impact on firm liquidity conditions

- Median liquidity profile for both SMEs and large firms in the EU has not substantially changed since 2018, compared with the pre-MiFID II period
- This period of relative stability follows a general trend of tightening from 2009 to 2015, for both large firms and SMEs

Note: Median bid-ask spread for a sample of 3,320 SMEs and 3,920 large firms that have been covered by research analysts at any point between 2006 and end-2019. MiFID II date of application = vertical red line.

Sources: Refinitiv, ESMA calculations.



Econometric evidence on secondary market liquidity

After MiFID II, SME liquidity conditions decline in terms of tightness, but not depth

VARIABLES	(1)	(2)	(3)	(5)	(7)	(8)
	All companies	All companies	All companies	All companies	All companies	All companies
	bid-ask spread	bid-ask spread	amihud illiquidity ratio	amihud illiquidity ratio	turnover ratio	turnover ratio
	(2015-2019)	(2015-2019)	(2015-2019)	(2015-2019)	(2015-2019)	(2015-2019)
sme x mifid_II	0.590***	0.334*	-0.000982	-0.000986	0.0485***	0.0432***
	(0.220)	(0.187)	(0.000625)	(0.000636)	(0.0109)	(0.0107)
mifid_II	0.733**	0.445**	0.000179	0.000365	0.0897***	0.0734***
	(0.232)	(0.220)	(0.00163)	(0.00163)	(0.0115)	(0.0112)
sme x permanent_loss		1.223		-0.00366*		0.0440
		(0.883)		(0.00206)		(0.0602)
permanent_loss		1.165*		0.00774***		0.0649
		(0.610)		(0.00164)		(0.0423)
n_eps_est	-0.0823***	-0.0612***	-0.000431***	-0.000351***		
	(0.0146)	(0.0124)	(9.94e-05)	(9.91e-05)		
sme			0.00709***	0.00658***		
			(0.00228)	(0.00227)		
Constant	3.403***	3.079***	0.0286***	0.0262***	0.0542***	0.0412***
	(0.165)	(0.179)	(0.00202)	(0.00201)	(0.00757)	(0.00971)
Observations	236,859	234,746	236,652	234,566	248,736	235,661
Fixed Effects	Firm & Year-Month	Firm & Year-Month	Year-Month	Year-Month	Firm & Year-Month	Firm & Year-Month
Clustering of errors at co. level	YES	YES	YES	YES	YES	YES
R-squared	0.004	0.004	0.016	0.015	0.005	0.006
Estimation Model	OLS	OLS	Tobit	Tobit	OLS	OLS

Note: The sample is based on a dataset of company-year-month observations for companies that have been researched by at least one analyst at any time in the considered time-window. Standard errors are always clustered at the company level and fixed effects are as indicated in each model. R-squared measures differ according to the underlying estimation model (Adj. R-squared for OLS and Pseudo R-squared for Tobit). Statistical significance is based on two-tailed tests and is indicated as follows: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1.



Econometric evidence on financing conditions

SME financing conditions decline post-MiFID II

VARIABLES	(1)	(2)	(3)	(4)
	All companies	All companies	All companies	All companies
	weighted cost of debt (2015-2019)	weighted cost of debt (2015-2019)	weighted cost of debt (2015-2019)	weighted cost of debt (2015-2019)
sme x mifid_II	0.170*** (0.0552)	0.208*** (0.0590)	0.149*** (0.0552)	0.179*** (0.0599)
mifid_II	-0.661*** (0.0433)	-0.611*** (0.0466)	-0.662*** (0.0430)	-0.599*** (0.0465)
sme x permanent_loss			0.421* (0.215)	0.357 (0.218)
permanent_loss			-0.116 (0.149)	-0.138 (0.145)
n_eps_est	0.00793 (0.00918)		0.0103 (0.00910)	
market_cap		-0.363*** (0.0445)		-0.390*** (0.0478)
Constant	2.417*** (0.0633)	4.389*** (0.236)	2.372*** (0.0662)	4.518*** (0.257)
Observations	215,660	196,341	214,055	189,633
Fixed Effects	Firm & Year-Month	Firm & Year-Month	Firm & Year-Month	Firm & Year-Month
Clustering of errors at co. level	YES	YES	YES	YES
R-squared	0.045	0.053	0.045	0.055
Estimation Model	OLS	OLS	OLS	OLS

Note: The sample is based on a dataset of company-year-month observations for companies that have been researched by at least one analyst at any time in the considered time-window. Standard errors are always clustered at the company level and fixed effects are as indicated in each model. All models are OLS estimations and report the Adjusted R-squared. Statistical significance is based on two-tailed tests and is indicated as follows: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1.



Conclusions

- MiFID II research unbundling provisions: portfolio managers must pay for research obtained
- We explore possible disproportionate impacts of the provisions on SMEs, and it appears that:
 1. the **quantity** of research per SME has not declined relative to larger companies;
 2. the **probability** of an SME completely losing coverage is not higher vs. a larger firm;
 3. the **quality** of SME research has not declined relative to larger firms;
 4. SME **liquidity and financing conditions** have declined vs. larger firms, in terms of tightness (bid-ask spreads) and cost of debt...
 - ...but not in terms of depth (Amihud illiquidity ratio; turnover ratio).
- But, in absolute terms, **SMEs are still relatively less researched, more likely to lose coverage, and suffer from less accurate research and limited market liquidity.** This situation has not been affected by the MiFID II research unbundling provisions.
- These findings appear more in line with academic literature than with industry surveys.
- Ideas for future research:
 - Focus on impact of MiFID II on buy-side research activities (Fang et al. 2020)
 - Analyze differential impacts of MiFID II :
 - by type of research: unsolicited versus sponsored research,
 - by type of research provider: independent vs. embedded research providers
 - Alternative measures to identify research quality



Background slides



Breakdown of companies per EU country and size classification

The Table presents the sample composition by country and size classification. The sample is based on data of 5,727 companies, divided into SMEs (2,605) and large companies (3,122), headquartered in the 27 European Union (EU) and United Kingdom from 2015 to 2019.

Country	SMEs	Large Companies	Total
Austria	11	52	63
Belgium	52	62	114
Denmark	33	73	106
Finland	53	115	168
France	312	352	664
Germany	366	366	732
Greece	37	82	119
Ireland	21	33	54
Italy	121	222	343
Netherlands	33	108	141
Poland	145	177	322
Spain	60	348	408
Sweden	416	254	670
United Kingdom	890	664	1,554
Others*	55	214	269
Total	2,605	3,122	5,727

Notes: Countries with fewer than 50 companies in total have been grouped into 'Other', and include Bulgaria (27), Croatia (21), Cyprus (16), Czech Republic (10), Estonia (18), Hungary (19), Latvia (7), Lithuania (18), Luxembourg (20), Malta (7), Portugal (44), Romania (46), Slovak Republic (1), and Slovenia (1)

Sources: Refinitiv I/B/E/S, ESMA calculations.



Descriptive statistics (2015-2019)

Variables	N	Mean	St. Dev	min	max
amihud illiquidity ratio	247,082	.02	.10	0	1.19
bid-ask spread (bps)	247,469	3.53	11.97	-147.04	200
loss of coverage	297,095	.30	.46	0	1
(ln) market cap	264,128	5.17	2.44	-4.61	12.25
median forecast accuracy	15,107	73.26	658.24	0	35,233.33
mifid II	434,580	.38	.49	0	1
# analysts	284,159	5.40	7.85	0	42
# eps estimates	297,095	5.16	7.71	0	43
permanent loss	313,569	.20	.40	0	1
sme	434,580	.46	.50	0	1
(ln) turnover	252,637	6.34	3.08	-2.30	17.18
turnover ratio	248,736	.11	.61	0	10.39
weighted cost of debt	222,094	1.90	2.45	-50.67	55.64

The sample is based on 297,095 monthly observations for 5,727 European companies from 2015 to 2019. Number of earnings-per-share estimates and number of analysts following a company are expressed in units. Median forecast accuracy is the earnings-per-share annual surprise percentage difference expressed in absolute value; the relatively low number of observations is driven by the fact that this variable is at yearly frequency. Bid-ask spread represents the average bid-ask spread quoted during that month in bps and, together with the amihud Illiquidity ratio, were multiplied by 100. Weighted cost of debt is expressed in percentage, and is available in Refinitiv Eikon starting from December 2015. Turnover and market capitalisation are in natural logarithms and, prior to being transformed, are expressed in thousands and millions of euros, respectively.



Description of variables

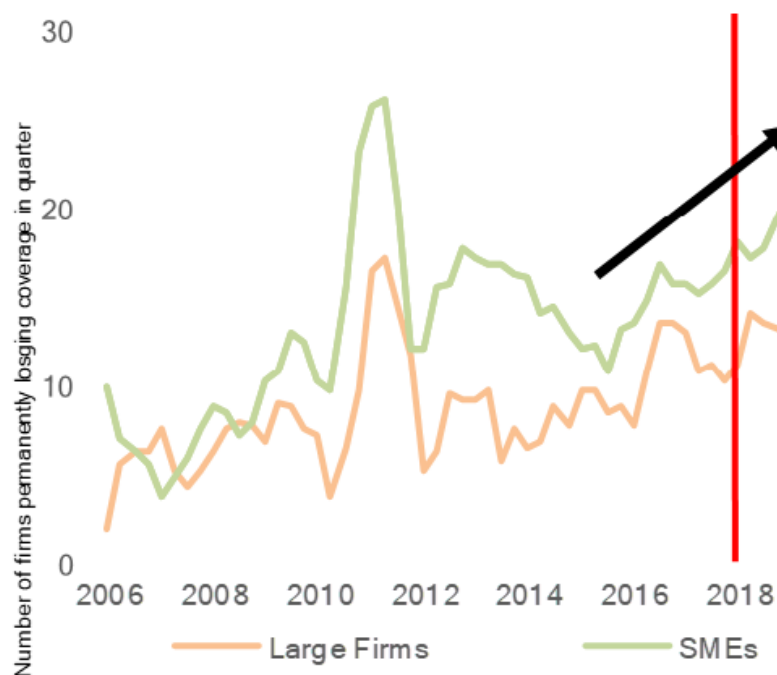
amihud illiquidity ratio	Ratio of the absolute return to the trading volume in that month, as defined in Amihud (2002). Underlying variables of this ratio are sourced from Refinitiv Eikon and Datastream.
bid-ask spread	Average monthly bid-ask spread for stock <i>i</i> in month <i>t</i> in bps. Ask price and bid price available in Datastream.
loss of coverage	Indicator that takes the value of 1 if a company loses all coverage (i.e. no EPS estimate is produced) at any month between January 2015 and December 2019, 0 otherwise. Companies' loss of coverage can be either temporary or permanent. Loss of coverage due to delistings is excluded.
market cap	Natural logarithm of market value expressed in millions of euros. Market value, available in Datastream, is the share price multiplied by the number of ordinary shares in issue.
median forecast inaccuracy	Absolute value of the difference between the latest interim EPS and the last estimated estimate for the period. The EPS Surprise Percentage Difference is available in I/B/E/S Datastream at yearly frequency.
mifid II	Indicator variable that takes the value of 1 for reporting periods after the implementation of MiFID II, i.e. after January 1, 2018, 0 otherwise.
# analysts	Number of analysts covering a company available in Refinitiv Eikon (I/B/E/S Summary Estimates). This variable is at monthly frequency.
# eps estimates	Total number of earnings-per-share (EPS) estimates provided by sell-side analysts and available in I/B/E/S Datastream. The EPS1NET varies monthly. Estimates are updated by a contributing analyst sending a confirmation of their estimate. When an analyst has not updated their estimate in the last 105 days, such estimate is filtered and excluded from the overall number of estimates.
permanent loss	Indicator variable that takes the value of 1 when a company permanently ceases to be covered by research analysts (i.e. no EPS estimate produced) at any time between January 2015 and December 2019, 0 otherwise. This indicator is time-varying. Loss of coverage due to delistings are excluded.
sme	Indicator variable that takes value of 1 for companies defined as SMEs, 0 for companies defined as 'large companies'. Companies are classified as SMEs and large companies according to the criteria set out by the European Commission (2003).
turnover	Natural logarithm of the number of shares traded for a company on a particular month. Turnover by volume is available in Datastream and is expressed in thousands.
turnover ratio	Ratio of the monthly trading volume to the market value in the month, both of which are available in Refinitiv Eikon and Datastream.
weighted cost of debt	Cost of debt represents the marginal cost to the company of issuing new debt and it is available in Refinitiv Eikon. The variable is calculated by adding weighted cost of short-term debt and weighted cost of long-term debt based on 1-year and 10-year point of an appropriate credit curve. It varies monthly and it is expressed in percentage.



First results on loss of coverage

Loss of coverage up after MiFID II...continuing trend

Figure 3
Impact of MiFID II on research coverage
Long-term increase in companies losing coverage



Note: Sample of 6,800 EU firms that have at any time from 2006 to end 2019 permanently ceased to be researched (i.e. have EPS estimates produced) by all analysts. SMEs classified as per European Commission (2003).

Sources: Refinitiv, I/B/E/S, ESMA calculations.

Increase in the number of EU companies losing coverage post MiFID II

- Firms have steadily lost coverage since 2012
- Mostly constant proportion between SMEs (58%) and large firms (42%) over time
- NB: Figures exclude firms no longer researched due to delisting (e.g. resulting from mergers, bankruptcy, etc.)