MiFID II und die Bedeutung der Finanzanalyse für Marktliquidität und Volatilität

Prof. Dr. Dirk Schiereck und David Häfner, M. Sc.

Agenda

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1. **Introduction**

2. **The Impact of MiFID II on EU Capital Markets**

   I.   Measuring the Impact of MiFID II

   II. Sample Selection

   III. Difference-in-Difference Approach

   IV. Empirical Results

3. **The Role of Financial Analysts in Capital Markets**

   I.   Investment Research Definition

   II. An Exogeneous Shock: How does MiFID II affect the Role of Financial Analysts?

   III. Measuring the Impact: Variable Definition

   IV. Sample Selection

   V.   Multivariate Regression Approach

4. **Conclusion**

1. Introduction

Early Observations Post MiFID II Introduction

Intense targeting effort, due to client list exclusivity

IR teams need more resources

Increasing direct contacts / reverse roadshows

The post MiFID II world

Fewer pitches for roadshows in Europe / fewer conferences

More pitches for overseas conferences and roadshows

More analysts joining corporates on roadshows

WACKER
Corporate Access: The Issuer View
DIRK-Konferenz, June 5th, 2018

1. Introduction

Since 3rd of January 2018, the revised EU-wide **Markets in Financial Instruments Directive (MiFID II)** is in force:

MiFID II

Main aims
- Make European markets safer, more transparent and more efficient
- To restore investor confidence following the financial crisis
- To move significant part of OTC trading on to regulated trading venues

Which market participants are affected?
- Banks, fund managers, exchanges
- Trading venues, HFTs, brokers
- Pensions funds, retail investors

Which markets are affected?
- Equity markets, fixed income, commodities
- Currencies, futures, exchange traded products
- Retail derivatives
- Applicable across all 28 EU member states

Main changes
- Splitting payments for analyst research and trading commissions
- More pricing transparency for off-exchange markets
- Volume caps for equity dark pools
- Tougher standards for investment products

Source: Own depicition based on ft.com

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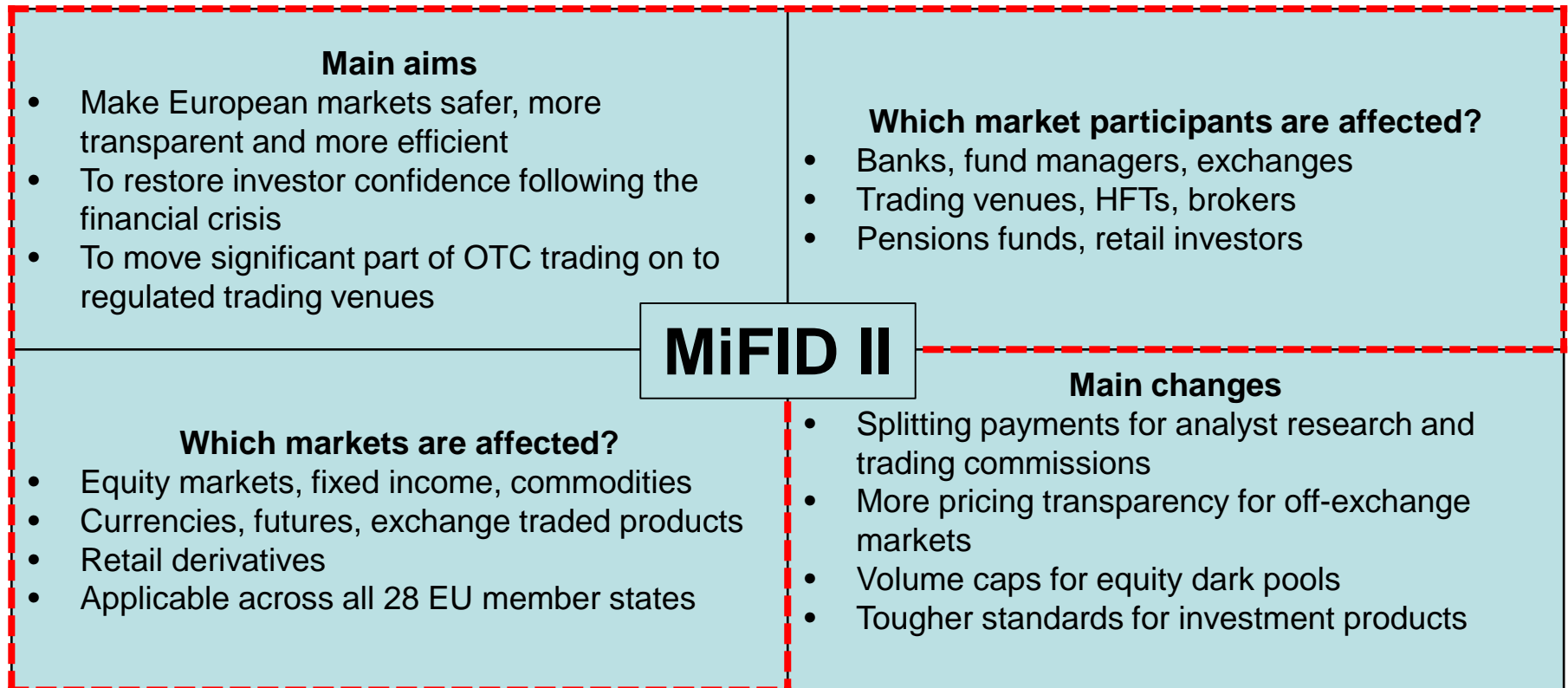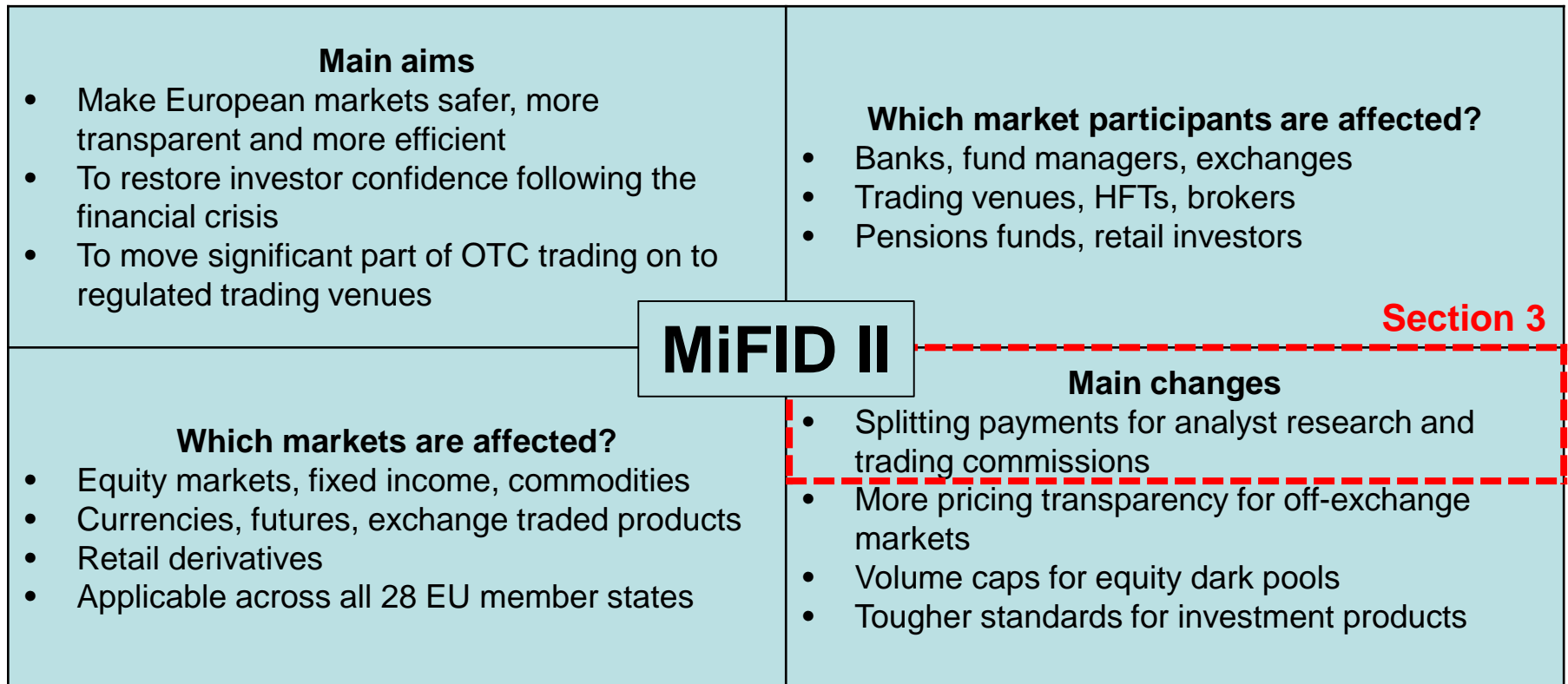
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MiFID II

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2. The Impact of MiFID II on EU Capital Markets

Why is MiFID II being implemented?

- Investor protection, transparency, improved integrity of financial service providers

- Suitability of investment recommendations, best execution, documentation and traceability

What is the impact of MiFID II?

- Uncertainty about the impact prevails

- Liquidity might be affected, especially for firms with low analyst coverage

- According to the media, a competitive market for investment research services develops

> ➢ How will MiFID II affect the EU capital market environment?
>
> ➢ **We measure the impact of MiFID II on different stock specific variables.**

2.I. Measuring the Impact of MiFID II

Variable Definition - **Bid-ask spread:**

Theoretical model (Stoll, 1989):

Spread = Adverse Information Costs + Inventory Holding Costs + Order Processing Costs

Straight forward practical measurement:

$$Absolute\ Spread_{i,t} = ask_{i,t} - bid_{i,t} \qquad\qquad Relative\ Spread_{i,t} = \frac{ask_{i,t} - bid_{i,t}}{\frac{1}{2} * (ask_{i,t} + bid_{i,t})}$$

> ➢ The **bid-ask spread** is the difference between the lowest buy price and the lowest sell price of a stock i at time t.

2.I. Measuring the Impact of MiFID II

Variable Definition - **Illiquidity:**

The Amihud (2002) illiquidity measure (Amihud, 2002):

$$Amihud\,2002_{i,t} = \frac{|R_{i,t}|}{VOL_{i,t}}$$

- ➢ The Amihud (2002) illiquidity measure is **the ratio of the absolute return of stock *i* at time *t* and the USD trading volume of stock *i* at time *t*,** i.e. the change in stock price per unit of trading volume.

- ➢ Amihud (2002) also gives an alternative interpretation of the measure: If investors agree about the implication of new information the stock price changes without trading. Thus the Amihud (2002) illiquidity measure can also be interpreted as a measure for consensus belief of new information.

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2.I. Measuring the Impact of MiFID II

Variable Definition – **Idiosyncratic Risk:**

- First, we estimate the market model on an individual stock basis using OLS:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \epsilon_{i,t}$$

- R_i^2 gives the variation of individual stock returns explained by market returns

- Consequently, 1- R_i^2 gives the idiosyncratic risk of a stock

- In the recent literature, the following measure for idiosyncratic risk has been proposed (e.g. Zhu et al., 2014):

$$\Psi_i = ln\left(\frac{1 - R_i^2}{R_i^2}\right)$$

- Links between idiosyncratic risk and information asymmetry have been documented

- A link between the idiosyncratic risk measure and financial analysts has been found by Piotroski and Roulstone (2004)

2.I. Measuring the Impact of MiFID II

Variable Definition – **Information Asymmetry (1/3):**

We try to capture the variation of the level of asymmetric information by decomposing the theoretical model of the bid-ask spread.

$$\Delta Spread = \Delta Inventory\, Holding\, Costs + \Delta Asymmetric\, Information Costs$$
$$+ \Delta Order Processing Costs$$

> ➢ A change in the bid-ask spread only occurs, if one or more of the three components of the bid-ask spread varies.
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> ➢ Idea: Isolate the asymmetric Information component of the bid-ask spread to get a measure for information asymmetry.

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2.I. Measuring the Impact of MiFID II

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Variable Definition – **Information Asymmetry (2/3):**

<u>To demonstrate our line of thought, we rearrange the previous equation:</u>

$$\Delta Asymmetric\ Information\ Costs = \Delta Spread - \Delta Inventory\ Holding\ Costs$$
$$- \underbrace{\Delta Order\ Processing\ Costs}_{=0}$$

> ➢ We justify **zero variation in order processing costs assumption** with the increase in cost efficiency of exchanges, especially due to the digitalization and automatization of the order process since the creation of the first theoretical models explaining the bid-ask spread.

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2.I. Measuring the Impact of MiFID II

Variable Definition – **Information Asymmetry (3/3):**

$$\Delta Asymmetric\ Information = \Delta Spread - \Delta Inventory\ Holding\ Costs$$

- We use the Amihud (2002) illiquidity measure as a proxy for inventory holding costs:

$$Inventory\ Holding\ Costs \uparrow \longleftrightarrow Amihud\ (2002)\ Illiquidity\ Measure \uparrow$$

- Including the proxy for Inventory Holding Costs in a regression model, we control for the variation of the bid-ask spread caused by Inventory holding costs.

$$Spread = \beta_0 + \beta_1 * Illiquidity + e$$
$$\rightarrow Asymmetric\ \widehat{Information}\ Costs = Spread - \widehat{\beta_1} * Illiquidity$$

(Order processing costs are included in β_0.)

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2.II. Sample Selection

- Database: Thomson Reuters Datastream

- Daily data of publicly traded stocks covered by the Thomson Reuters Global Equity Index Each trading day in October 2017, November 2017, February 2018 and March 2018 (surrounding the implementation of MiFID II)

- We drop all observations not in EU member states (*control group*) or US (*treatment group*)

- We use **ISIN** to determine the country in which a company is listed

- We identify and drop financial services companies using two-digit **SIC Code**

- We use **number of earnings-per-share estimates** reported by Institutional Brokers' Estimate System (I/B/E/S) as proxy for analyst coverage

- Raw data on **market capitalization, daily stock trading volume, market closing bid and ask prices**

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2.II. Sample Selection

- Our final sample consists of 2,927 companies, thereof 1,281 European companies and 1,646 companies listed in the United States.

- The five largest economies (UK, SWE, FR, DE and IT) account for more than half of all European observations.

- US accounts for more than half of the total observations in our sample

Table 2: Summary Statistics by Country

Four months of daily data surrounding the implementation of MiFID II (October 2017, November 2017, February 2018 and March 2018).

Country	Firm-Day Observations			Analyst Coverage		
	Freq.	Percent	Cum.	Min	Max	Mean
European Countries						
AT	2,175	0.87	0.87	2	19	7.19
BE	3,480	1.40	2.27	1	31	6.58
CZ	174	0.07	2.34	2	11	6.09
DE	13,875	5.57	7.92	1	40	12.49
DK	3,247	1.30	9.22	1	32	10.60
ES	4,894	1.97	11.19	1	34	14.15
FI	5,216	2.10	13.28	1	28	8.04
FR	14,470	5.81	19.09	1	32	10.10
GB	22,322	8.97	28.06	1	33	12.14
GR	1,698	0.68	28.74	1	17	6.01
HU	348	0.14	28.88	3	9	6.33
IE	2,926	1.18	30.06	3	31	13.64
IT	7,596	3.05	33.11	1	29	7.55
LU	1,467	0.59	33.70	2	25	11.04
MT	261	0.10	33.80	1	5	2.67
NL	5,112	2.05	35.86	1	31	11.49
PL	5,099	2.05	37.91	1	17	5.22
PT	1,131	0.45	38.36	2	24	9.84
SE	14,525	5.83	44.19	1	30	5.56
United States of America						
US	138,920	55.81	100.00	1	45	10.90
Total	248,936	100.00				

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2.III. Difference-in-Difference Approach

In order to estimate the effect of MiFID II on EU capital markets, we employ the following Difference-in-Differences regression model:

$$y_i = \alpha + \beta treat_i + \gamma after_i + \tau(treat_i \times after_i) + u_i$$

where:

treat$_i$ = 1 if stock *i* is listed in the EU, 0 if listed in the US

after$_i$ = 1 if observation *i* was recorded after the implementation of MiFID II, 0 else

➢ Consequently, *τ* **is the DiD estimator of the effect of MiFID II.**

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Table 4: The Effect of MiFID II on European Financial Markets

Analyst Coverage	(ALL)		(LOW)		(MEDIUM)		(HIGH)	
	Mean of Diff-in-Diffs (Treatments vs Controls)	t-statistic	Mean of Diff-in-Diffs (Treatments vs Controls)	t-statistic	Mean of Diff-in-Diffs (Treatments vs Controls)	t-statistic	Mean of Diff-in-Diffs (Treatments vs Controls)	t-statistic
Panel A: Four Months (M−2 vs. M+2)								
Analyst Coverage	-0.03	-0.07	0.16	1.20	0.03	0.15	-0.09	-0.17
Illiquidity	0.01***	4.24	0.03***	3.39	0.01*	1.87	0.00	0.09
log(Trading Volume)	-0.29***	-3.05	-0.38***	-2.58	-0.20	-1.50	-0.09	-0.71
rel. Bid-Ask Spread	0.07***	5.29	0.09***	3.16	0.08***	4.01	0.03***	3.45
rel. Bid-Ask Spread[1]	0.06***	5.21	0.09***	3.19	0.07***	3.65	0.03***	3.65
Idiosyncratic Risk (Ψ)	1.70***	16.82	1.65***	9.24	1.45***	8.40	1.93***	11.42
Panel B: Six Months (M−3 vs. M+3)								
Analyst Coverage	-0.34	-0.84	-0.10	-0.71	-0.18	-0.85	-0.41	-0.77
Illiquidity	0.01**	2.41	0.01*	1.70	0.00	0.90	0.00	1.47
log(Trading Volume)	-0.35***	-3.68	-0.59***	-3.90	-0.15	-1.13	-0.21*	-1.74
rel. Bid-Ask Spread	0.03**	2.50	0.06**	2.06	0.04**	2.06	-0.00	-0.01
rel. Bid-Ask Spread[1]	0.03**	2.27	0.06**	2.08	-0.04*	1.92	-0.00	-0.43
Idiosyncratic Risk (Ψ)	1.53***	14.09	3.22***	32.98	1.43***	7.66	1.85***	10.36

Illiquidity is measured by the Amihud 2002 illiquidity measure. The estimator is multiplied by 10^6. The estimator of the relative bid-ask spread is multiplied by 100.
[1] Including the Amihud 2002 illiquidity measure as a control variable.

$* \ p < 0.10, \ ** \ p < 0.05, \ *** \ p < 0.01$

Effect of MiFID II on European Financial Markets

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Agenda

3.I. Investment Research Definition

What is **investment research**?

- Research reports and analyses

    o Macro outlook

    o Industry outlook

    o Company outlook (stock performance)

    o Buy or sell recommendations

    o Corporate access, organization of road shows…

- Research reports are typically issued in large quantities and paid for by „soft dollar" comissions included in subsequent trading costs

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➤ **Investment research** is created by financial analysts and provides investors with information.

➤ Disagreement persists, whether this information is useful for investors.

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3.II. Investment Research in the Regulatory Framework

Investment research in the US

The treatment of investment research in the US is regulated by the Investment Advisers Act of 1940.

- **Section 202(a)(11) defines an investment adviser** as "*any person, who, for compensation, engages in the business of advising others, either directly or through publications or writings, as to the value of securities or as to the advisability of investing in, purchasing, or selling securities, or who, for compensation and as part of a regular business, issues or promulgates analyses or reports concerning securities*".

- **Section 202(a)(11)(C) excludes „*any broker-dealer* **whose performance of such services** *is solely incidental to the conduct of his business as a broker or dealer and who receives no special compensation therefor.*"

> ➤ SEC generally does not treat broker-dealers as investment advisers since they include the costs for their research in execution comissions (soft dollars).

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3.II. Investment Research in the Regulatory Framework

Investment research in the EU

In the EU, investment research costs are also paid for indirectly (similar to the US case).

This changed however due to the implementation of MiFID II on 3rd of January 2018

Investment research has to be paid for explicitly!

- Indirect payment of investment research services deemed too intransparent.
- What is the financial value of investment research?
- How is the work of financial analysts affected?
- Competition across analysts to attract investors with valuable research.

- ➢ **H$_0$:** An increase in analyst coverage leads to a decrease in the bid-ask spread (idiosyncratic risk) due to the reduction of information asymmetries.

- ➢ **H$_0$:** The effect of an increase in analyst coverage on information asymmetry (idiosyncratic risk) is amplified since the implementation of MiFID II.

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3.III. Multivariate Regression Approach

Regression Model 1:

$$Spread = \beta_0 + \beta_1 * Illiquidity + \beta_2 * Analyst\ Coverage + e$$

β_2 gives the the change in the bid-ask spread caused by a change in analyst coverage. This **variation can only stem from a change in the asymmetric information costs component**, as we control for illiquidity (and assume fixed order processing costs captured in β_0).

- ➢ We control for illiquidity in our regression model to isolate the variation of the bid-ask spread due to variation in asymmetric information costs
- ➢ The only variation left in the bid-ask spread is variation due to asymmetric information costs

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3.III. Multivariate Regression Approach

Regression Model[1]:

$$log(Spread)_{i,t} = \beta_0 + \beta_1 log(Analyst\ Coverage)_{i,t} + \beta_2 Amihud\ 2002_{i,t}$$

$$+\beta_3 log(MarketCapitalization)_{i,t} + \beta_4 MiFIDII \times log(AnalystCoverage)_{i,t} + e_{i,t}$$

[1]We include further control variables (see next slide).

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Table 5: The Impact of Analyst Coverage on Information Asymmetry

	log(Bid-Ask Spread)			
Analyst Coverage	(ALL)	(LOW)	(MEDIUM)	(HIGH)
Variables of Interest				
log(Analyst Coverage)	-0.26***	-0.12***	-0.25***	-0.42***
	(-65.10)	(-10.56)	(-12.48)	(-22.62)
Illiquidity	1.70***	1.92***	1.63***	2.22***
	(37.91)	(36.12)	(14.02)	(8.05)
Market Capitalization	0.00***	-0.00	-0.00***	0.00***
	(10.26)	(-1.03)	(-23.88)	(21.27)
MiFID II×log(Analyst Coverage)	-0.03***	0.08***	-0.14***	-1.16***
	(-3.37)	(3.83)	(-3.02)	(-26.34)
Control Variables				
MiFID II	0.02	-0.07**	0.32***	3.22***
	(1.28)	(-2.32)	(3.29)	(24.98)
Year [2017=0;2018=1]	0.06***	0.05***	0.05***	0.08***
	(8.23)	(3.81)	(4.37)	(6.55)
Country [US=0;EU=1]	1.65***	1.56***	1.68***	1.71***
	(213.19)	(110.15)	(128.55)	(134.15)
Constant	-3.50***	-3.64***	-3.39***	-3.11***
	(-365.44)	(-219.35)	(-81.16)	(-57.22)
Observations	241,598	80,558	80,277	80,763
R^2	31.0%	28.3%	30.9%	29.8%

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.III. Multivariate Regression Approach

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[1]We include further control variables (see next slide).

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3.III. Multivariate Regression Approach

Table 6: The Impact of Analyst Coverage on Idiosyncratic Risk

Analyst Coverage	Relative Idiosyncratic Risk ($\Psi_{t,month}$)			
	(ALL)	(LOW)	(MEDIUM)	(HIGH)
Variables of Interest				
log(Analyst Coverage)	-0.19***	-0.05***	-0.24***	-0.29***
	(-31.43)	(-2.91)	(-7.85)	(-10.31)
Illiquidity	1.12***	0.92***	0.97***	-0.59
	(16.71)	(11.69)	(5.53)	(-1.43)
Market Capitalization	-0.00***	-0.00***	-0.00***	-0.00***
	(-40.01)	(-29.91)	(-28.23)	(-33.39)
MiFID II × log(Analyst Coverage)	-0.15***	0.03	0.09	-0.53***
	(-12.89)	(0.99)	(1.35)	(-8.20)
Control Variables				
MiFID II	1.90***	1.39***	1.24***	3.43***
	(67.99)	(31.27)	(8.52)	(17.92)
Year [2017=0;2018=1]	-2.25***	-1.93***	-2.14***	-2.64***
	(-208.20)	(-92.94)	(-121.62)	(-148.79)
Country [US=0;EU=1]	0.10***	0.28***	0.22***	-0.18***
	(8.64)	(13.33)	(11.32)	(9.69)
Constant	3.58***	3.39***	3.77***	4.07***
	(250.37)	(137.39)	(59.84)	(50.36)
Observations	242,170	80,742	80,578	80,850
R^2	21.5%	16.2%	20.6%	26.4%

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.III. Multivariate Regression Approach

Table 6: The Impact of Analyst Coverage on Idiosyncratic Risk

Analyst Coverage	Relative Idiosyncratic Risk ($\Psi_{i,month}$)			
	(ALL)	(LOW)	(MEDIUM)	(HIGH)
Variables of Interest				
log(Analyst Coverage)	-0.19***	-0.05***	-0.24***	-0.29***
	(-31.43)	(-2.91)	(-7.85)	(-10.31)
Illiquidity	1.12***	0.92***	0.97***	-0.59
	(16.71)	(11.69)	(5.53)	(-1.43)
Market Capitalization	-0.00***	-0.00***	-0.00***	-0.00***
	(-40.01)	(-29.91)	(-28.23)	(-33.39)
MiFID II×log(Analyst Coverage)	-0.15***	0.03	0.09	-0.53***
	(-12.89)	(0.99)	(1.35)	(-8.20)
	(0.01)	(16.66)	(11.82)	(3.63)
Constant	3.58***	3.39***	3.77***	4.07***
	(250.37)	(137.39)	(59.84)	(50.36)
Observations	242,170	80,742	80,578	80,850
R^2	21.5%	16.2%	20.6%	26.4%

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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3.III. Multivariate Regression Approach

Table 6: The Impact of Analyst Coverage on Idiosyncratic Risk

Analyst Coverage	Relative Idiosyncratic Risk ($\Psi_{t,month}$)			
	(ALL)	(LOW)	(MEDIUM)	(HIGH)
Variables of Interest				
log(Analyst Coverage)	-0.19***	-0.05***	-0.24***	-0.29***
	(-31.43)	(-2.91)	(-7.85)	(-10.31)
Illiquidity	1.12***	0.92***	0.97***	-0.59
	(16.71)	(11.69)	(5.53)	(-1.43)
Market Capitalization	-0.00***	-0.00***	-0.00***	-0.00***
	(-40.01)	(-29.91)	(-28.23)	(-33.39)
MiFID II × log(Analyst Coverage)	-0.15***	0.03	0.09	-0.53***
	(-12.89)	(0.99)	(1.35)	(-8.20)
	(0.01)	(10.30)	(11.02)	(3.03)
Constant	3.58***	3.39***	3.77***	4.07***
Observations	242,170	80,742	80,578	80,850
R^2	21.5%	16.2%	20.6%	26.4%

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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Agenda

4. Conclusion

The Impact of MiFID II on EU Capital Markets:

- No change in analyst coverage

- Significant decrease in stock liquidity

- Significant increase in the bid-ask spreads

- Significant increase in the level of asymmetric information and idiosyncratic risk

The Role of Financial Analysts in Capital Markets:

- Analyst coverage significantly decreases bid-ask spread and idiosyncratic risk

- MiFID II significantly increases the effect of an increase in analyst coverage on the bid-ask spread and idiosyncratic risk

- **More specifically, analyst coverage significantly reduces the asymmetric information costs component of the bid-ask spread**

Questions?

Thank you very much for your attention!