



# Discrepancies in corporate emissions data and their impact on firm performance assessment

*or*

*Something is rotten in the corporate emissions data landscape*

**Georgios Papadopoulos (EC-JRC)**

The views in this presentation are my own and do not necessarily reflect those of the EC

- **In academic research:**
  - Underpin virtually every economic study related to climate change
- **In financial markets:**
  - Are an important element behind ESG ratings
  - Guide assessments of firms' transition risk
  - Affect investors' decisions (Bolton & Kacperczyk, 2021)
- **In policy:**
  - Are the target of policy actions (to reduce them)
- **And, ultimately, key to addressing climate change**

- Problems with ESG ratings' divergence (e.g. Berg et al., 2022; Billio et al., 2021)

### **What about emissions data?**

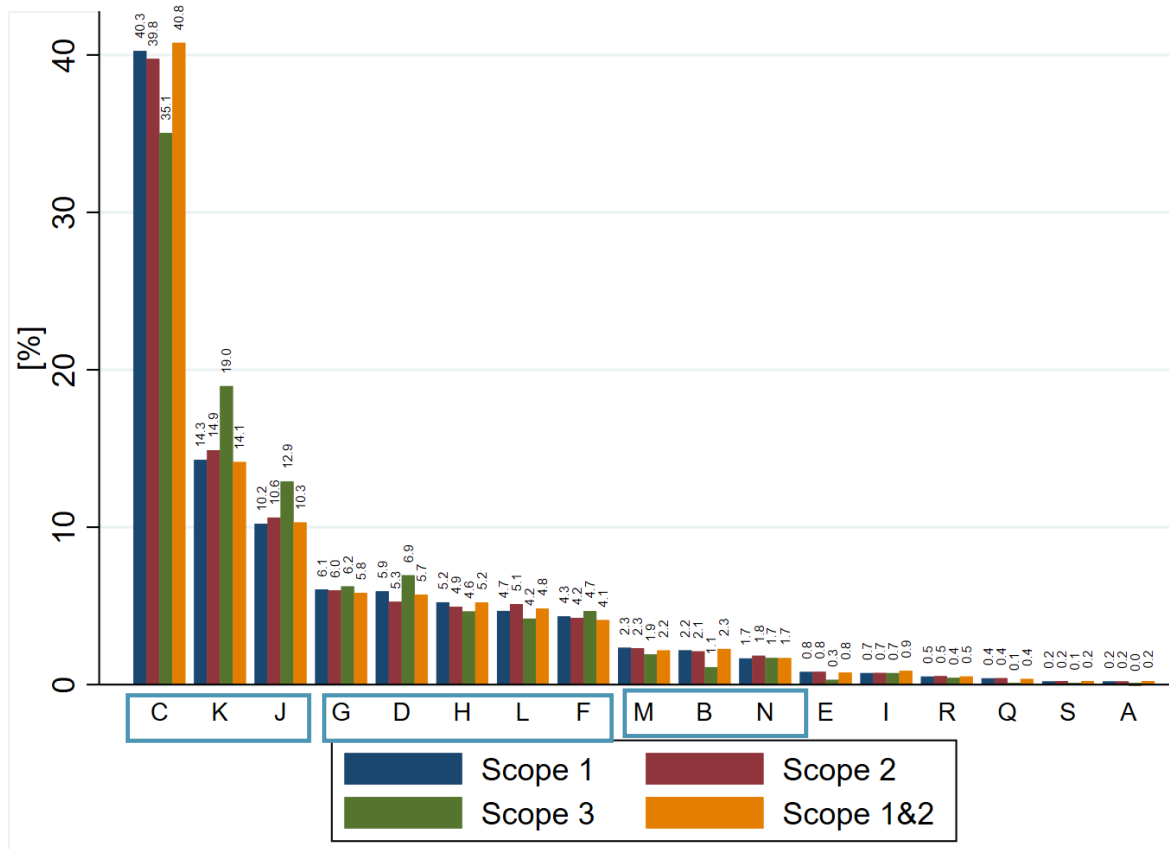
- Methodological ambiguity & frequent restatements in sustainability reports (Dragomir, 2012)
- Incomplete & often opaque information in sustainability reports (Talbot & Boiral, 2018)
- Different figures in different communication channels (Depoers et al., 2016; Klaaßen & Stoll, 2021)
- Correlations among data providers decrease by emissions Scope (Busch et al., 2022)

- Goals:
  - Document the extent of discrepancies in emissions data between data providers
  - Explore ramifications for firm rankings
- Findings:
  - General agreement in emissions figures
  - Yet, large discrepancies present
  - Increasing by emissions Scope (direct, indirect)
  - Impact on firm performance assessment

## Data sample and coverage

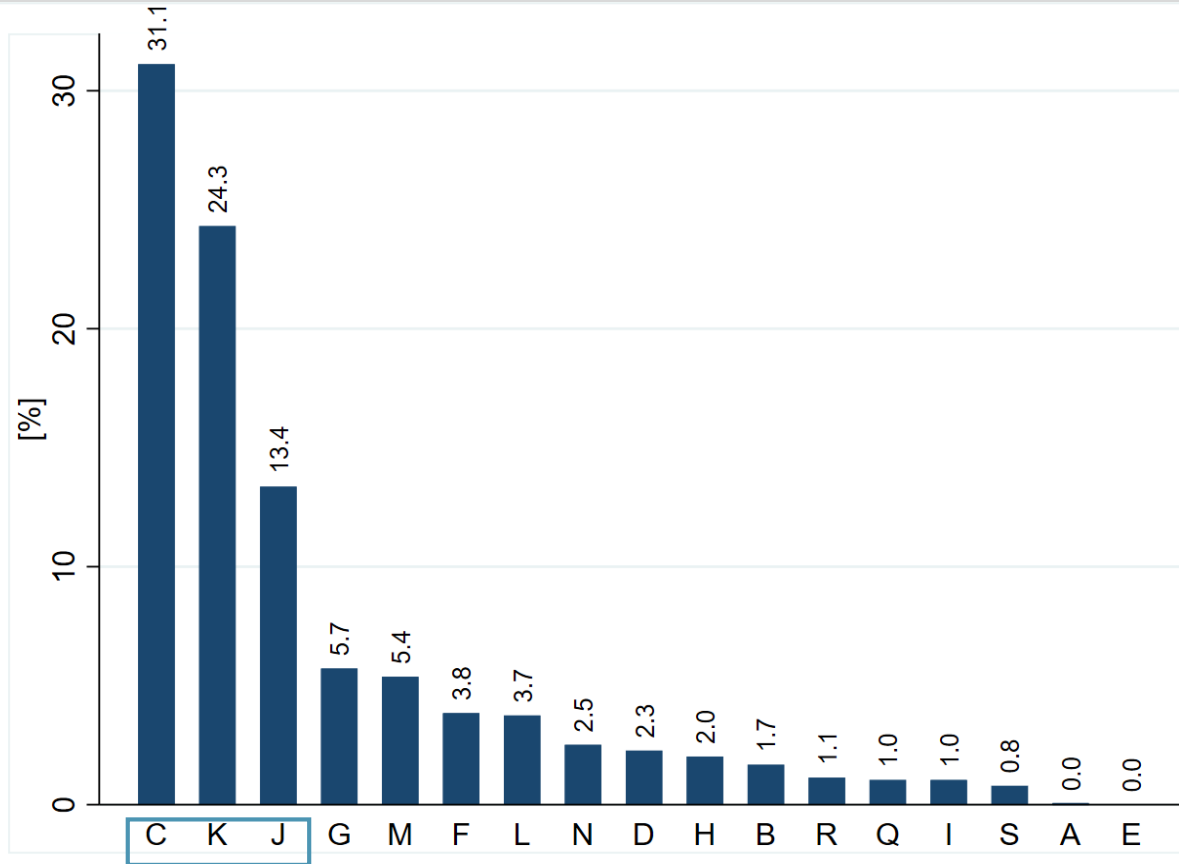
		Urgentem	MSCI	Refinitiv-EIKON
Sample		EU-domiciled firms		
		2017 – 2019 (annual)	2008 – 2020 (annual)	2002 2008 – 2020 (annual)
Scope 1	Reported	(468) 588	(106) 726	(170) 757
	Estimated	(211) 203	(308) 399	NA
Scope 2	Reported	(428) 550	(99) 702	(151) 759
	Estimated	(239) 220	(315) 423	NA
Scope 3	Reported	(427) 694	(40) 544	(94) 562
	Estimated	(518) 615	NA	NA

# Sectoral coverage – Firm-reported data



NACE Rev. 2 sections: A: Agriculture, B: Mining, C: Manufacturing, D: Electricity supply, E: Water supply, F: Construction, G: Trade, H: Transportation, I: Accommodation, J: IT, K: Financial & insurance, L: Real estate, M: Professional, N: Administrative, Q: Health, R: Arts, S: Other

## Sectoral coverage – Provider-estimated data



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## Is this a clean or a polluting company?

2019	
Eurazeo	
GHG emissions <sup>(3)</sup> (in metric tons of CO <sub>2</sub> equivalent)	
Number of companies with an action plan to reduce emissions and/or to have conducted a greenhouse gas assessment in the past 3 years	Yes
Scope 1 <sup>(4)</sup>	10
Scope 2 <sup>(5)</sup>	101
<b>TOTAL (SCOPE 1 + 2)</b>	<b>111</b>
Scope 3 <sup>(6)</sup>	6,973
<b>TOTAL (SCOPE 1 + 2 + 3)</b>	<b>7,084</b>

Note:

Scope 1 average for K-sector firms (across providers): ~**15 ktons** of CO<sub>2</sub>e

Scope 2 average for K-sector firms (across providers): ~**50 ktons** of CO<sub>2</sub>e

Scope 3 average for K-sector firms (across providers): ~**760 to 3000 ktons** of CO<sub>2</sub>e



## Is this *still* a clean or a polluting company?

	2019	
	Eurazeo	Eurazeo and its portfolio companies
<b>GHG emissions</b> <sup>(3)</sup> (in metric tons of CO <sub>2</sub> equivalent)		
Number of companies with an action plan to reduce emissions and/or to have conducted a greenhouse gas assessment in the past 3 years	Yes	22
Scope 1 <sup>(4)</sup>	10	640,298
Scope 2 <sup>(5)</sup>	101	267,332
<b>TOTAL (SCOPE 1 + 2)</b>	<b>111</b>	<b>907,630</b>
Scope 3 <sup>(6)</sup>	6,973	1,979,273
<b>TOTAL (SCOPE 1 + 2 + 3)</b>	<b>7,084</b>	<b>2,886,903</b>

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## Different organizational boundaries

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Urgentem

MSCI  
Refinitiv

## Different operational boundaries

### Environment

	Note	Unit	2020	2019	2018	2017
<b>General indicators</b>						
<b>Carbon Dioxide Emissions (CO<sub>2</sub>)</b>						
Total carbon emissions	3	Tonnes	9,734	22,525	23,606	24,487
Scope 1		Tonnes	1	4		
Scope 2		Tonnes	1,619	2,191		
Scope 3		Tonnes	8,114	20,330		
Carbon emissions from energy consumption (in buildings)		Tonnes	5,125	7,326	7,458	8,810
Carbon emissions from business travel		Tonnes	2,471	12,426	13,807	13,076
Carbon emissions from paper consumption		Tonnes	1,160	1,361	1,155	1,311
Carbon emissions from company cars		Tonnes	978	1,413	1,186	1,290
Total carbon emissions / employee	2	Tonnes	0.61	1.48	1.51	1.54
Change in carbon emissions, including percental change from baseline 2015		Tonnes (%)	-13,600 (-58.3)	-809 (-3.5)	272 (1.2)	1,153 (4.9)
<b>Resource efficiency</b>						

## Different organizational boundaries & updated information

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### EPRA SUSTAINABLE KEY PERFORMANCE INDICATORS

EPRA sustainable performance indicator	GRI Standards (CRESSD) indicators	Measuring unit	WDP property portfolio	
			2018	2019
Sustainability – Environmental indicators				
Elec-Abs	302-1	annual kWh	21,734,194	56,324,248
Elec-LfL 2018	302-1	annual kWh	16,168,190	15,531,893
DH&C-Abs (normalised)	302-1	annual kWh	n.r.	n.r.
DH&C-LfL (normalised)	302-1	annual kWh	n.r.	n.r.
Fuels-Abs (normalised)	302-1	annual kWh	25,420,448	21,179,919
Fuels-LfL 2018 (normalised)	302-1	annual kWh	18,026,314	19,086,494
Energy-Int	302-3, CRE1	kWh/m²	57	77
GHG-Dir-Abs	305-1	annual t CO <sub>2</sub> e	4,736	3,917

2019's  
report

## Different organizational boundaries & updated information

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2019's report

### Greenhouse Gases (location-based) - WDP property portfolio

EPRA	GRI CRESD	Indicator	Performance measurement	Measuring unit	2019 <sup>1</sup>	2020
					Indicator	Indicator
GHG-Dir-Abs	305-1	Direct   Scope 1	Absolute	T CO <sub>2</sub> e	n/a	n/a
GHG-Dir-LfL	305-1	Direct   Scope 1	Like-for-Like	T CO <sub>2</sub> e	n/a	n/a

### Greenhouse Gases (location-based) - WDP corporate offices

EPRA	GRI CRESD	Indicator	Performance measurement	Measuring unit	2019 <sup>1</sup>	2020
					Indicator	Indicator
GHG-Dir-Abs	305-1	Direct   Scope 1	Absolute	T CO <sub>2</sub> e	39	35
GHG-Dir-LfL	305-1	Direct   Scope 1	Like-for-Like	T CO <sub>2</sub> e	39	35

2020's report

## Typing error



## Environment continued

Sustainability scorecard and indicators

Unit of  
measure

2018

2019

2020

### Greenhouse gas emissions

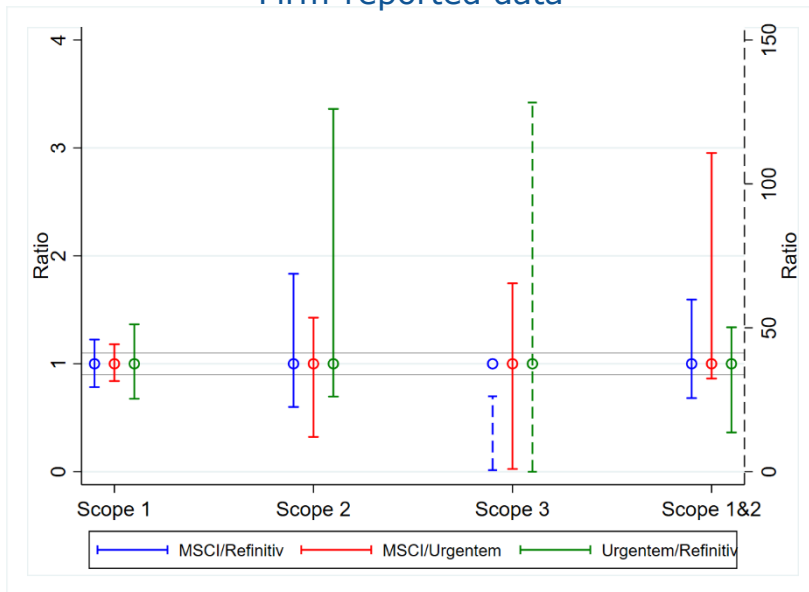
<b>Scope 1</b>	Direct emissions from own energy consumption and production process	tonnes CO <sub>2e</sub>	14,799	16,247	12,053
<b>Scope 2</b>	Emissions and purchased electricity (market based)	tonnes CO <sub>2e</sub>	48,177	47,138	13,147
	Emissions and purchased electricity (location based)	tonnes CO <sub>2e</sub>	43,177	42,774	44,385
	Emissions and purchased heat (market based)	tonnes CO <sub>2e</sub>	247	199	296*
	Emissions and purchased heat (location based)	tonnes CO <sub>2e</sub>	247	199	296**
<b>Scope 3</b>	Total Scope 3 emissions	kilotonnes CO <sub>2e</sub>	9.012*	8.220*	20,308***

## Location vs market based method (for Scope 2)

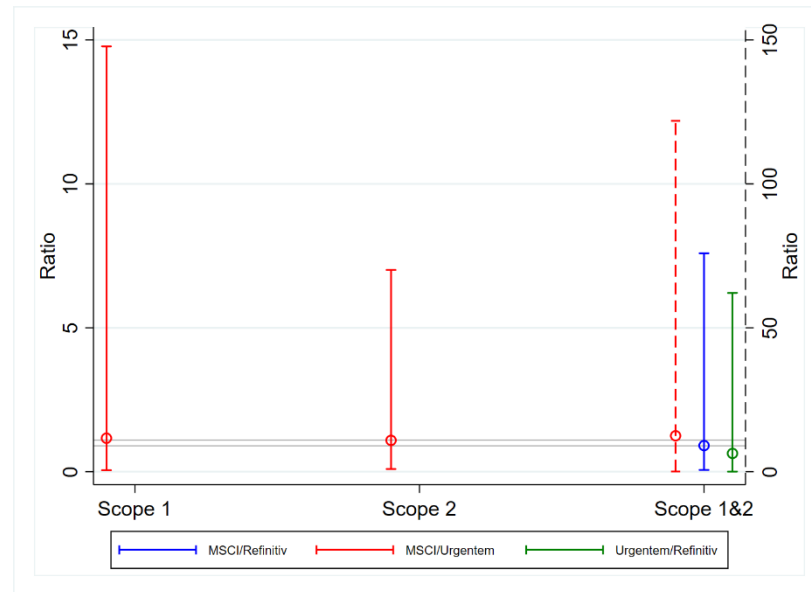
E2	Emissions	Unit	2017	2018	2019	2020	2021
	CO <sub>2</sub> e emissions scope 1, 2 and 3	KTons	811.6	847.7	779.3	463.8	459.4
	<i>Evolution CO<sub>2</sub>e emissions scope 1, 2 and 3 (vs previous year)</i>	%	6%	4%	-8%	-40%	-1%
	<i>Evolution CO<sub>2</sub>e emissions scope 1, 2 and 3 (vs 2015 baseline)</i>	%	8%	12%	3%	-39%	-39%
E2.2	CO <sub>2</sub> e emissions scope 2 - electricity - market based method	KTons	2.6	1.0	0.9	0.8	0
E2.3	CO <sub>2</sub> e emissions scope 2 - electricity - location based method	KTons	68.4	65.0	62.5	70.4	52.2

# Overall sample comparison across providers

## Firm-reported data



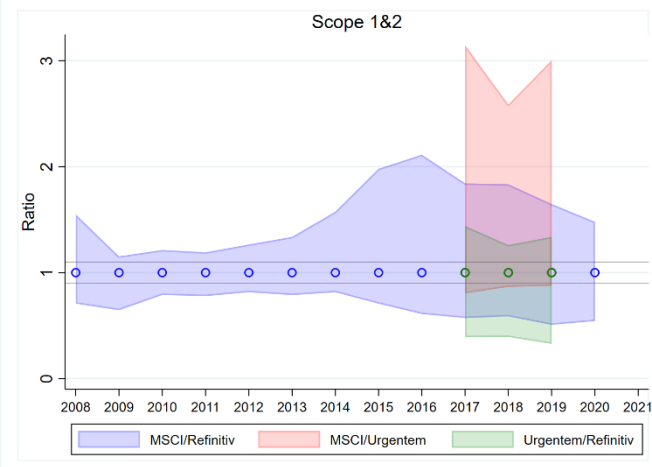
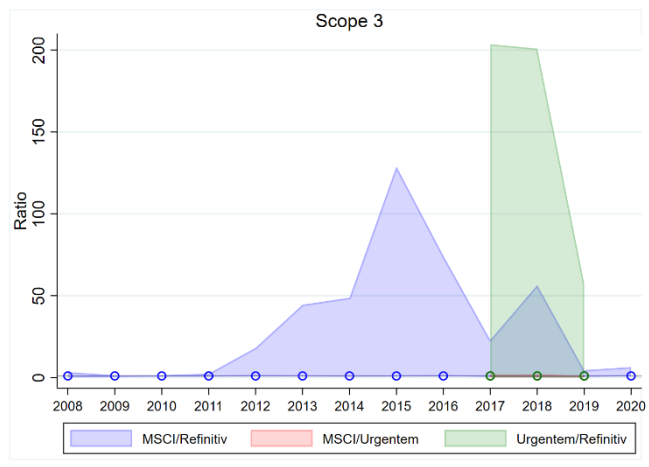
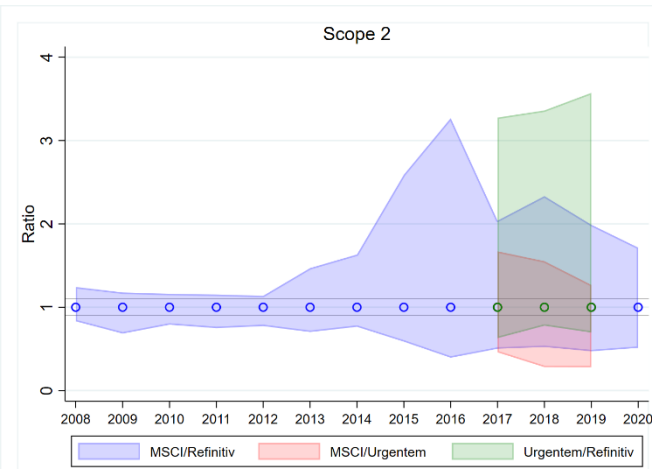
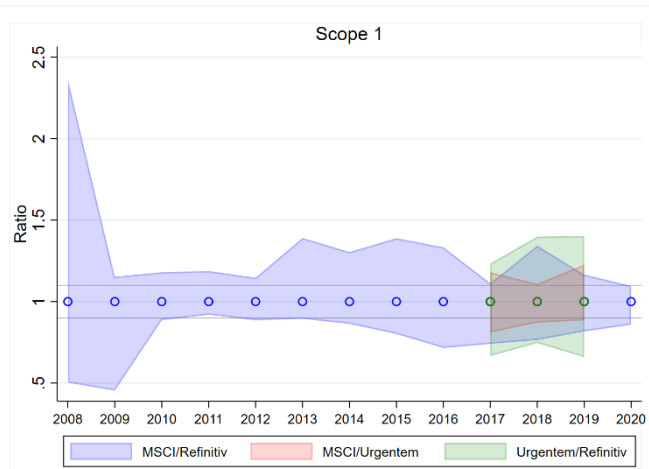
## Provider-estimated data



- General agreement; ratio distribution medians always 1
- Discrepancies seem to increase by emissions Scope in firm-reported data
- The opposite pattern is observed in provider-estimated figures

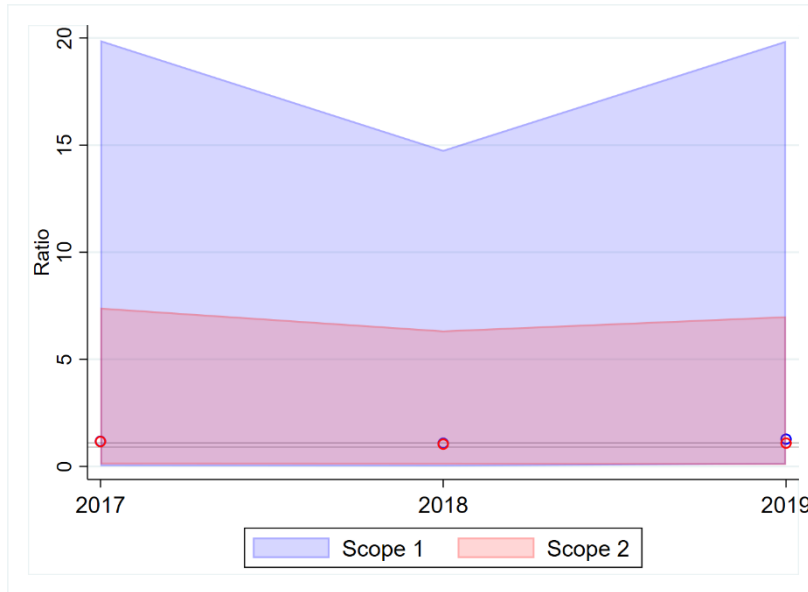


# Discrepancy evolution in firm-reported data

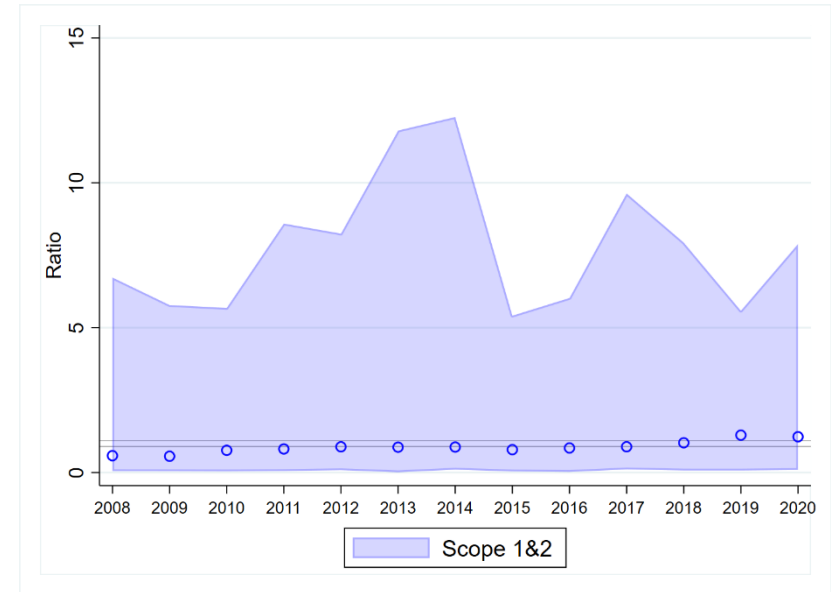


# Discrepancy evolution in provider-estimated data

MSCI vs Urgentem pair

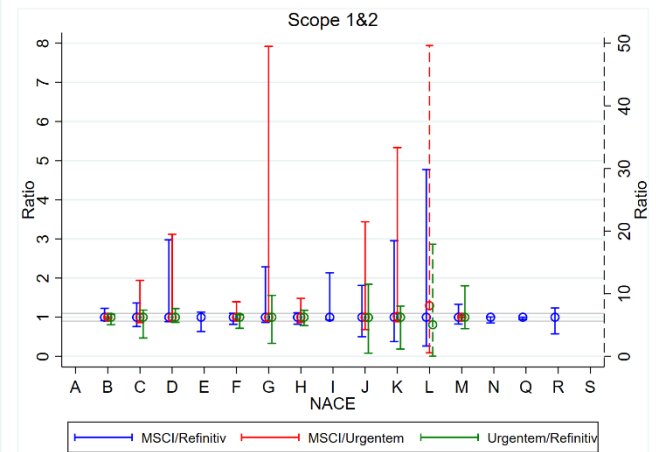
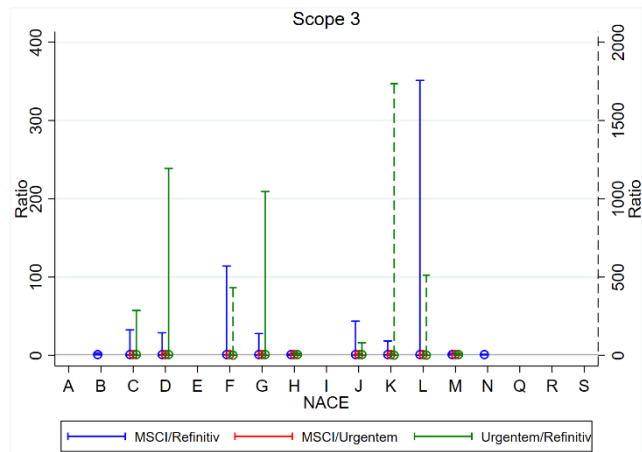
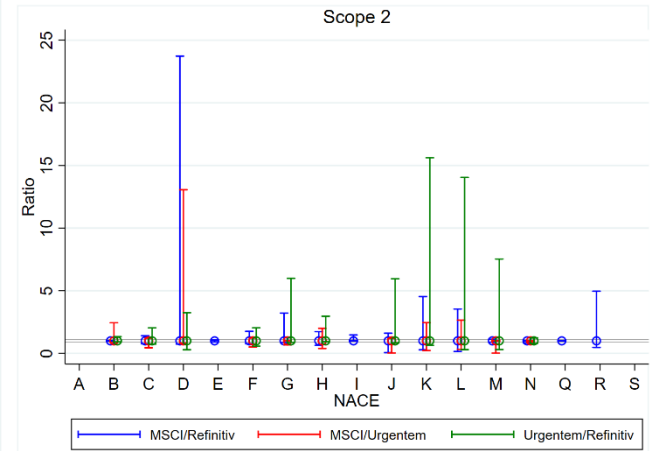
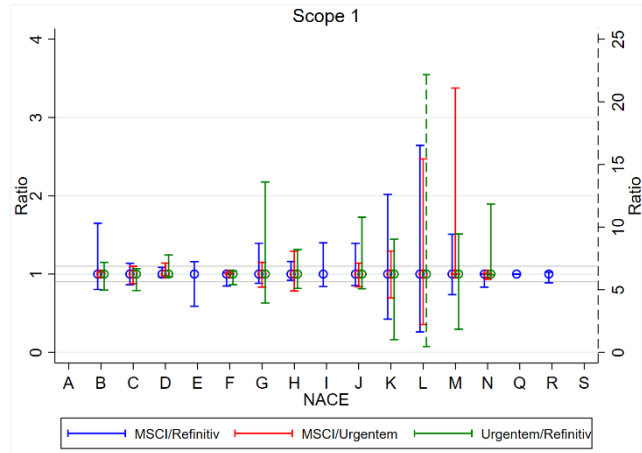


MSCI vs Refinitiv pair



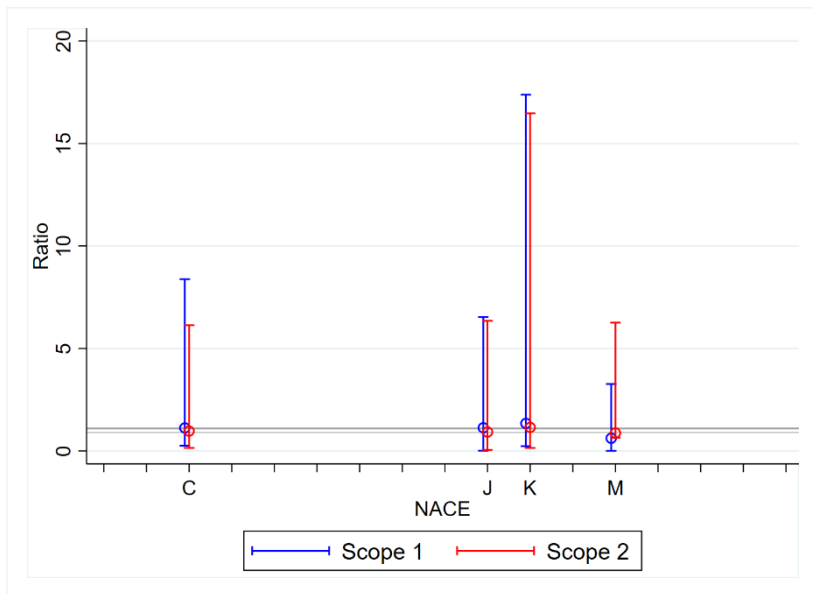
- Scope 1 exhibits greater discrepancies than Scope 2
- Total (Scope 1&2) emissions show comparable inconsistencies to firm-reported data

# Discrepancies in firm-reported data by sector

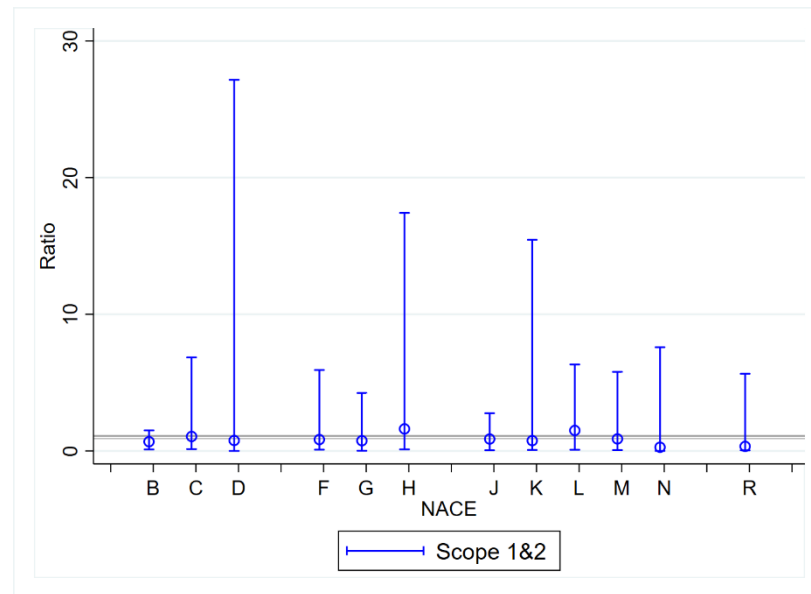


# Discrepancies in provider-estimated data by sector

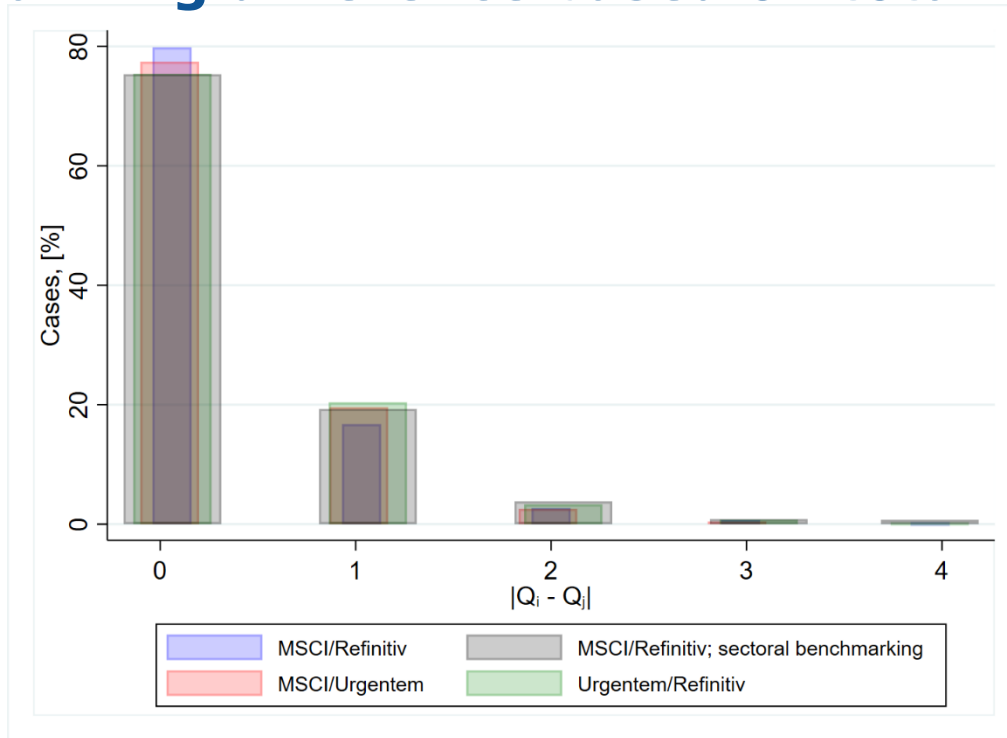
## MSCI vs Urgentem pair



## MSCI vs Refinitiv pair



## Absolute ranking difference based on total emissions



- In more than 95% of cases, ranking difference  $\leq 1$  notch
- In few cases (7 to 30, depending on provider pair), ranking difference  $\geq 3$  notches

### Findings:

- In most cases, there's good agreement in corporate emissions data among providers
- Large discrepancies are present
- Increase by emissions Scope
- Sectoral clustering
- Originate from a few sources
- Implications for firm carbon performance assessment

### Policy actions would likely mitigate problems:

- Better disclosure requirements
- Systematic validation of emissions data
- Guidance / harmonization of reporting standards

# Thank you

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