July 23, 2025 - cascad#438

Execution Report

Title: **Measuring Regulatory Complexity**
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Full reference: Colliard, Jean-Edouard and Georg, Co-Pierre, Measuring Regulatory Complexity (May 09, 2025). HEC Paris Research Paper No. FIN-2020-1358, Available at SSRN: https://ssrn.com/abstract=3523824 or http://dx.doi.org/10.2139/ssrn.3523824f

The structure and contents of this execution report provided by **cascad** for the certification are similar to those recommended by the AEA Data Editor.

1. DATA DESCRIPTION

The study relies on three primary sources of data:

- Regulatory texts: These include Basel I (Annex 2), the Dodd-Frank Act (848 pages), and technical standards from the European Banking Authority (EBA-ITS). These documents are analyzed using dictionaries of operators and operands.
- Experimental data: Collected from 118 students applying randomly generated regulations to simulated bank balance sheets, allowing analysis of complexity, error rates, and response times.
- Survey data: Provided by the EBA, this includes responses from 251 banks and several national authorities, evaluating the perceived cost and relevance of regulatory reporting templates.

2. CODE DESCRIPTION

The replication package is organized into thematic folders, each corresponding to a specific component of the study. Each folder contains the necessary data files and scripts required to replicate the results. The project uses four software environments: Python, Stata, MATLAB, and Mathematica.

Folder structure:

- **01_Basel_I/**: Computes complexity measures from both textual and algorithmic representations of Basel I rules (MATLAB).
- **02_Dodd_Frank_Act/**: Extracts operators and operands from the Dodd-Frank Act and generates summary statistics (Python and Stata).
- **03_EBA/**: Analyzes EBA regulatory templates and links complexity scores to survey responses (Python and Stata).

- **04_Experiments/**: Processes data from controlled lab experiments involving randomized regulations (MATLAB and Stata).
- **05_Model/**: Implements the theoretical model and generates associated figures (Mathematica).
- **06_Other/**: Contains auxiliary scripts used for generating figures, comparing dictionaries, and producing Table 9 (Stata).

Additional files:

- *python-requirements.txt*: Lists the required Python packages.
- *README.txt*: Provides setup instructions, computational and runtime notes.

3. VERIFICATION STEPS

The verification material was sent by email, and run on a machine with the following specifications:

- OS: Windows 10
- CPU: Intel(R) Xeon(R) w9-3575X @ 2.21 GHz (44 cores)
- RAM: 256 GB
- GPU: NVIDIA RTX™ 4000 Ada Generation
- Python version: 3.13.5
- Stata version: 19.5
- MATLAB version: MATLAB R2025a
- Wolfram Mathematica version: 12.3

All scripts were executed as per the instructions in the README file.

All scripts were executed without any issues.

Notes on required packages:

- Stata: The *estout* package must be installed manually, although this is not mentioned in the README file.
- Python: The list of packages in *python-requirements.txt* does not fully align with the packages described in the file *README.txt*. The packages listed in the README file are the ones required for the code to run.

4. FINDINGS

The table below summarizes the reproducibility assessment.

The classification is based on direct value comparison for tables, and visual inspection for figures.

Fully reproduced	Tables 2-9, OA.1-OA.31 Figures 2 and OA.8
Reproduced partially	none
Not reproduced	none

Table OA.3 was not generated by script and was therefore verified manually. Note that Table 1 and Figures 1, 3, and OA.1-7 do not contain any result. As a result, they are not included in this verification.

4.1. TABLE 2: CORRELATION OF THE COMPLEXITY MEASURES BETWEEN THE ALGORITHMIC AND THE TEXT VERSIONS OF BASEL I ITEMS

Result from the execution:

Table 2

Measures_Corr_Table1	Measures_Corr_Table2
0.68	0.83
0.41	0.64
NaN	NaN
0.82	0.80
0.40	0.48
0.45	0.51

With explanations from the article:

Table 2

Measures_Corr_Table1	Measures_Corr_Table2
0.68	0.83
0.41	0.64
1.00	1.00
0.82	0.80
0.40	0.48
0.45	0.51

Note that the authors mention page 68 that they “report both the Pearson and Spearman correlation coefficients. Since each item between (1a) and (5h) contains by construction exactly one regulatory instruction, the measure quantity is always equal to 1 and its correlation with other measures is undefined”.

4.2. TABLE 3: TOP 10 WORDS PER CATEGORY IN THE DFA

	category	key	total_count
1.	LogicalOperators	and	9730
2.	LogicalOperators	or	8959
3.	LogicalOperators	any	4007
4.	LogicalOperators	such	2849
5.	LogicalOperators	as	2633
6.	LogicalOperators	other	1547
7.	LogicalOperators	not	1128
8.	LogicalOperators	after	907
9.	LogicalOperators	including	761
10.	LogicalOperators	each	697
11.	MathematicalOperators	adding	267
12.	MathematicalOperators	more	165
13.	MathematicalOperators	amount of	154
14.	MathematicalOperators	additional	125
15.	MathematicalOperators	total	101
16.	MathematicalOperators	minimum	86
17.	MathematicalOperators	the end of the	85
18.	MathematicalOperators	more than	83
19.	MathematicalOperators	exceed	70
20.	MathematicalOperators	over	69
21.	Operands	commission	1487
22.	Operands	1	1479
23.	Operands	2	1222
24.	Operands	person	931
25.	Operands	financial	877
26.	Operands	bureau	788
27.	Operands	corporation	772
28.	Operands	information	734
29.	Operands	3	704
30.	Operands	securities	672
31.	RegulatoryOperators	shall	3596
32.	RegulatoryOperators	amended	651
33.	RegulatoryOperators	required	605
34.	RegulatoryOperators	regulations	436
35.	RegulatoryOperators	regulation	308
36.	RegulatoryOperators	established	282
37.	RegulatoryOperators	determination	281
38.	RegulatoryOperators	establish	247
39.	RegulatoryOperators	compliance	242
40.	RegulatoryOperators	require	223
41.	other	inserting	1071
42.	other	striking	1006
43.	other	term	764
44.	other	described	673
45.	other	means	432
46.	other	enactment	293
47.	other	terms	250
48.	other	apply	228
49.	other	amendments	150
50.	other	form	130

4.3. TABLE 4: SUMMARY STATISTICS ON COMPLEXITY MEASURES IN THE RANDOMLY GENERATED REGULATIONS

	(mean) Length	(mean) Cyclomatic	(mean) Quantity	(mean) Diversity	(mean) Level
Mean	32	0.15	0.16	0.15	0.55
SD	12	0.06	0.03	0.05	0.09
Min	10	0.03	0.10	0.08	0.39
P25	21	0.10	0.14	0.12	0.48
P50	31	0.16	0.16	0.14	0.55
P75	41	0.19	0.18	0.17	0.62
Max	57	0.26	0.21	0.30	0.70

4.4. TABLE 5: CORRELATION OF MISTAKES WITH MEASURES OF COMPLEXITY, BEYOND LENGTH

Table 5

	(1)	(2)	(3)	(4)	(5)	(6)
Length	0.037***	0.055***	-0.005	0.030***	0.065***	0.031***
	(8.67)	(6.14)	(-0.64)	(2.85)	(8.41)	(5.55)
Cyclomatic		-0.068**				
		(-2.25)				
Quantity			0.554***			
			(6.27)			
Potential Volume				0.017		
				(0.73)		
Operator Diversity					-0.438***	
					(-4.49)	
Level						-1.275
						(-1.60)
Pseudo R^2	0.243	0.248	0.277	0.244	0.260	0.246

4.5. TABLE 6: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH

Table 6

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.388***	5.371***	2.234***	0.556	2.946***	4.183***
	(14.63)	(9.93)	(3.88)	(0.81)	(6.09)	(11.92)
Cyclomatic		-8.084***				
		(-3.84)				
Quantity			13.072**			
			(2.30)			
Potential Volume				6.807***		
				(4.41)		
Operator Diversity					6.899	
					(1.14)	
Level						165.462***
						(3.29)
Adjusted R^2	0.445	0.461	0.450	0.465	0.445	0.455

4.6. TABLE 7: CORRELATION OF THE FRACTION OF BANKS REPORTING A HIGH COST WITH MEASURES OF COMPLEXITY, BEYOND LENGTH

Table 7

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00001***	0.00002***	-0.00000	0.00001***	0.00001***	0.00001***
	(6.64)	(2.93)	(-0.00)	(5.48)	(5.13)	(5.58)
cyclomatic		-0.00009				
		(-1.28)				
quantity			0.00006***			
			(3.83)			
potential				0.00026*		
				(1.76)		
diversity					0.00015	
					(0.38)	
level						-0.52748*
						(-1.78)
Adjusted-R2	0.170	0.172	0.210	0.179	0.166	0.178

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

4.7. TABLE 8: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH

Table 8

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00005**	-0.00006	0.00011***	0.00002	0.00002	0.00005**
	(2.48)	(-1.18)	(3.09)	(1.37)	(1.28)	(2.10)
cyclomatic		0.00125**				
		(2.54)				
quantity			-0.00026*			
			(-2.00)			
potential				0.00327***		
				(3.79)		
diversity					0.00744***	
					(3.23)	
level						-0.58279
						(-0.39)
Adjusted-R2	0.090	0.141	0.111	0.195	0.176	0.071

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

4.8. TABLE 9: SYNTHESIS - EXPLANATORY POWER OF QUANTITY AND POTENTIAL AGAINST LENGTH, FOR ALL DEPENDENT VARIABLES

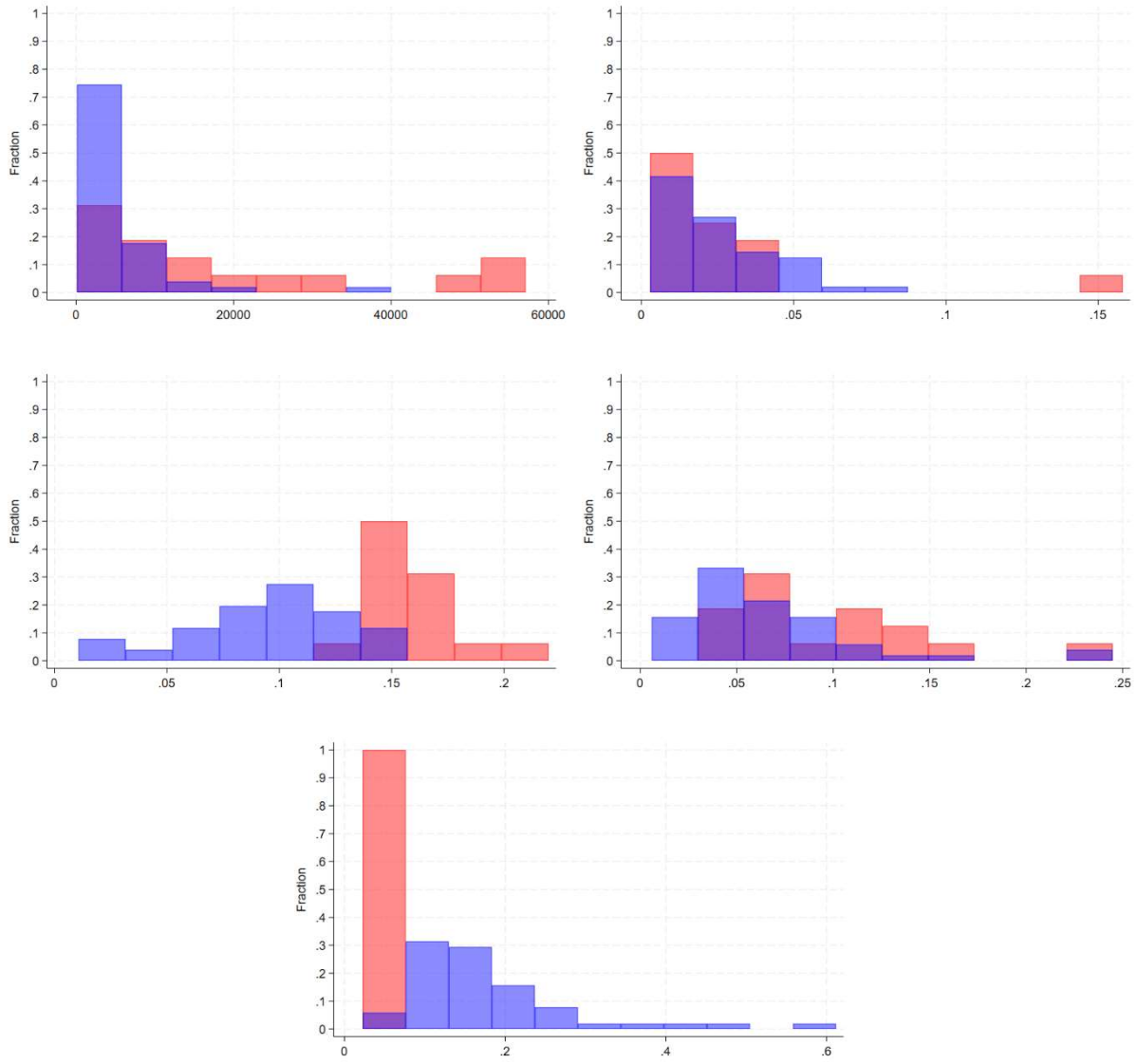
Panel A - length and quantity

	mistake		time		**cost**		importance	
Variable	**length**	**quantity**	length	quantity	**length**	**quantity**	length	quantity
Standardized coeff.	**-0.03**	**0.28**	0.29	0.17	**-0.00**	**0.45**	0.71	-0.43
p-value	**0.53**	**0.00**	0.00	0.02	**1.00**	**0.00**	0.00	0.05
Contribution to ^{2}	**-2%**	**17%**	24%	14%	**-0%**	**89%**	154%	-54%

Panel B - length and potential

	mistake		**time**		cost		**importance**	
Variable	length	potential	**length**	**potential**	length	potential	**length**	**potential**
Standardized coeff.	0.16	0.05	**0.07**	**0.40**	0.32	0.14	**0.11**	**0.42**
p-value	0.03	0.47	**0.42**	**0.00**	0.00	0.08	**0.18**	**0.00**
Contribution to ^{2}	8%	3%	**6%**	**33%**	65%	23%	**15%**	**85%**

4.9. FIGURE 2: HISTOGRAM OF COMPLEXITY MEASURES FOR THE DFA AND THE ITS



4.10. TABLE OA.1: COMPLEXITY MEASURES FOR BASEL I (ALGORITHMIC APPROACH)

Table OA.1

Regulation	Length	Cyclomatic	Quantity	Potential Volume	Operator Diversity	Level
1	8	2	1	6	4	0.75
2	24	6	1	12	6	0.5
3	20	5	1	11	6	0.55
4	16	4	1	9	6	0.56
5	43	11	1	14	7	0.33
6	68	17	1	14	6	0.21
7	26	7	1	12	6	0.46
8	34	9	1	14	8	0.41
9	44	11	1	15	7	0.34
10	12	3	1	8	5	0.67
11	20	5	1	11	6	0.55
12	12	3	1	8	5	0.67
13	20	5	1	12	7	0.6
14	22	6	1	12	6	0.55
15	16	4	1	10	5	0.63
16	21	6	1	9	5	0.43
17	13	4	1	7	5	0.54
18	16	4	1	10	6	0.63
19	5	2	1	4	3	0.8
20	440	114	19	54	10	0.12

4.11. TABLE OA.2: PAIRWISE CORRELATIONS BETWEEN COMPLEXITY MEASURES IN BASEL I (ALGORITHMIC APPROACH)

Table OA.2 Panel A

	Length	Cyclomatic	Potential Volume	Operator Diversity	Level
Length	1	1.00	0.81	0.60	-0.93
Cyclomatic	1.00	1	0.80	0.58	-0.94
Potential Volume	0.81	0.80	1	0.90	-0.83
Operator Diversity	0.60	0.58	0.90	1	-0.67
Level	-0.93	-0.94	-0.83	-0.67	1

Table OA.2 Panel B

	Length	Cyclomatic	Potential Volume	Operator Diversity	Level
Length	1	0.99	0.94	0.78	-0.93
Cyclomatic	0.99	1	0.92	0.76	-0.95
Potential Volume	0.94	0.92	1	0.89	-0.79
Operator Diversity	0.78	0.76	0.89	1	-0.65
Level	-0.93	-0.95	-0.79	-0.65	1

4.12. TABLE OA.3: TOP 5 WORDS PER CATEGORY IN ANNEX 2 OF BASEL I (TEXTUAL APPROACH)

Verified manually. Exact match.

4.13. TABLE OA.4: COMPLEXITY MEASURES FOR BASEL I (TEXTUAL APPROACH)

Table OA.4

Regulation	Length	Cyclomatic	Quantity	Potential Volume	Operator Diversity	Level
1	5	0	1	5	1	1
2	20	2	1	12	2	0.6
3	13	2	1	9	3	0.69
4	19	1	1	13	2	0.68
5	26	3	1	18	4	0.69
6	26	2	1	17	3	0.65
7	18	1	1	9	2	0.5
8	38	3	1	13	4	0.34
9	21	3	1	14	4	0.67
10	9	0	1	8	1	0.89
11	25	2	1	13	2	0.52
12	9	0	1	7	1	0.78
13	18	1	1	11	3	0.61
14	23	3	1	12	5	0.52
15	13	0	1	10	1	0.77
16	12	3	1	9	3	0.75
17	16	5	1	10	5	0.63
18	14	2	1	9	3	0.64
19	7	1	1	5	3	0.71
20	332	34	19	69	13	0.21

4.14. TABLE OA.5: PAIRWISE CORRELATIONS BETWEEN COMPLEXITY MEASURES IN BASEL I (TEXTUAL APPROACH)

Table OA.5 Panel A

	Length	Cyclomatic	Potential Volume	Operator Diversity	Level
Length	1	0.53	0.82	0.52	-0.81
Cyclomatic	0.53	1	0.48	0.89	-0.53
Potential Volume	0.82	0.48	1	0.44	-0.47
Operator Diversity	0.52	0.89	0.44	1	-0.55
Level	-0.81	-0.53	-0.47	-0.55	1

Table OA.5 Panel B

	Length	Cyclomatic	Potential Volume	Operator Diversity	Level
Length	1	0.60	0.93	0.53	-0.74
Cyclomatic	0.60	1	0.56	0.89	-0.51
Potential Volume	0.93	0.56	1	0.47	-0.52
Operator Diversity	0.53	0.89	0.47	1	-0.48
Level	-0.74	-0.51	-0.52	-0.48	1

4.15. TABLE OA.6: COMPLETENESS OF THE DFA DICTIONARY

	All	**Operands**	**Logical Connectors**	**Regulatory Operators**	**Mathematical Operators**	**Other**
1	0.90	0.90	0.97	0.99	0.88	0.84
2	0.86	0.86	0.97	0.89	0.79	0.84
3	0.85	0.93	1.00	0.95	1.00	0.68
4	0.94	0.92	0.99	1.00	1.00	0.96
5	0.89	0.87	0.98	0.96	1.00	0.89
6	0.88	0.91	0.98	0.98	0.96	0.77
7	0.83	0.84	0.94	0.95	0.92	0.74
8	0.96	0.96	1.00	0.98	1.00	0.91
9	0.81	0.82	0.92	0.94	0.88	0.73
10	0.78	0.81	0.92	0.93	0.91	0.63
11	0.91	0.91	0.98	0.96	1.00	0.88
12	0.96	0.94	1.00	1.00	1.00	0.98
13	0.89	0.92	1.00	1.00	1.00	0.77
14	0.80	0.80	0.92	0.93	0.87	0.72
15	0.87	0.85	0.98	0.97	0.93	0.87
16	0.91	0.87	1.00	1.00	.	0.91
Total	**0.88**	**0.88**	**0.97**	**0.96**	**0.94**	**0.82**

4.16. TABLE OA.7: COMPLEXITY MEASURES FOR THE DFA

	Length	Cyclomatic Complexity (n)	Quantity (n)	Diversity (n)	Level
1	18,641	0.14	0.05	0.01	0.07
2	29,076	0.18	0.03	0.01	0.06
3	15,229	0.15	0.03	0.01	0.06
4	3,626	0.16	0.03	0.04	0.12
5	6,048	0.16	0.04	0.02	0.12
6	14,672	0.16	0.04	0.01	0.07
7	56,703	0.17	0.05	0.01	0.04
8	6,616	0.15	0.05	0.02	0.09
9	48,275	0.14	0.04	0.01	0.05
10	57,095	0.16	0.04	0.01	0.05
11	6,023	0.15	0.04	0.02	0.11
12	1,337	0.15	0.05	0.04	0.17
13	1,009	0.17	0.04	0.04	0.14
14	28,456	0.15	0.04	0.01	0.07
15	3,826	0.13	0.03	0.03	0.14
16	132	0.22	0.02	0.14	0.24
100	296,764	0.16	0.04	0.00	0.02

4.17. TABLE OA.8: COMPLEXITY MEASURES FOR THE ITS

Table OA.8

	Length	Cyclomatic_n	Quantity_n	Diversity_n	Level
C01-05	17099	0.12	0.06	0.01	0.03
C06	2780	0.13	0.08	0.03	0.07
C07	6773	0.11	0.13	0.02	0.05
C08+C10	9823	0.12	0.14	0.02	0.04
C09	3700	0.10	0.20	0.03	0.05
C11	948	0.10	0.09	0.04	0.08
C15	95	0.05	0.12	0.05	0.22
C16	1568	0.14	0.08	0.05	0.10
C17	5160	0.11	0.17	0.02	0.04
C18-23	6294	0.09	0.29	0.02	0.04
C24	988	0.10	0.08	0.06	0.10
C25	417	0.11	0.12	0.08	0.16
C26-29	3272	0.12	0.09	0.04	0.07
C32.01	1560	0.11	0.15	0.04	0.06
C32.02	3774	0.11	0.09	0.03	0.05
C32.03+32.04	1452	0.09	0.04	0.05	0.10
C33.00	4747	0.12	0.17	0.02	0.04
C40+44+47	11236	0.14	0.06	0.01	0.03
C66	5688	0.02	0.45	0.00	0.02
C67+68	2313	0.10	0.11	0.03	0.06
C69	1215	0.14	0.13	0.06	0.11
C70	7294	0.01	0.56	0.00	0.01
C71	946	0.09	0.15	0.05	0.15
C72-77	12058	0.10	0.26	0.00	0.02

4.18. TABLE OA.9: COMPLEXITY MEASURES FOR THE ITS – CONTINUED

Table OA.9

	Length	Cyclomatic_n	Quantity_n	Diversity_n	Level
F01-03	8579	0.11	0.09	0.01	0.04
F04-07	10915	0.09	0.27	0.01	0.03
F08	2338	0.03	0.18	0.02	0.05
F09	4309	0.09	0.15	0.02	0.04
F10+11	8540	0.12	0.18	0.01	0.03
F12+43	8028	0.08	0.29	0.01	0.02
F13	1999	0.12	0.18	0.03	0.08
F14+41	2328	0.04	0.34	0.01	0.04
F15	2575	0.07	0.21	0.01	0.04
F16+45	4752	0.13	0.11	0.02	0.06
F17	1894	0.06	0.11	0.01	0.06
F18+19	39844	0.08	0.21	0.00	0.01
F20	4894	0.09	0.22	0.01	0.05
F21+42	404	0.10	0.19	0.05	0.11
F22	2279	0.14	0.08	0.03	0.09
F23	21256	0.09	0.19	0.00	0.01
F24	3932	0.13	0.17	0.02	0.03
F25	4070	0.07	0.15	0.01	0.03
F26	1924	0.10	0.13	0.03	0.06
F30	629	0.05	0.15	0.03	0.09
F31	1498	0.15	0.16	0.03	0.07
F32	837	0.14	0.40	0.01	0.08
F33+34+36	2164	0.07	0.45	0.01	0.03
F35	192	0.03	0.21	0.05	0.24
F40	1185	0.08	0.10	0.04	0.09
F44	1212	0.11	0.12	0.04	0.10
F46	1951	0.06	0.23	0.01	0.04

4.19. TABLE OA.10: CORRELATION OF MISTAKES WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, REGULATION-LEVEL

Table OA.10

	(1)	(2)	(3)	(4)	(5)	(6)
(mean) Length	0.007***	0.011**	-0.002	0.005	0.012***	0.006**
	(4.34)	(2.69)	(-0.72)	(1.00)	(3.96)	(2.43)
(mean) Cyclomatic		-0.015				
		(-1.05)				
(mean) Quantity			0.111***			
			(3.41)			
(mean) Potential Volume				0.006		
				(0.50)		
(mean) Operator Diversity					-0.083*	
					(-1.97)	
(mean) Level						-0.225
						(-0.55)
Adjusted R^2	0.247	0.248	0.388	0.231	0.307	0.233

4.20. TABLE OA.11: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, REGULATION-LEVEL

Table OA.11

	(1)	(2)	(3)	(4)	(5)	(6)
(mean) Length	3.256***	5.549***	1.899*	0.324	3.286***	4.177***
	(6.56)	(4.42)	(1.82)	(0.26)	(6.40)	(4.69)
(mean) Cyclomatic		-8.940**				
		(-2.06)				
(mean) Quantity			16.403*			
			(1.81)			
(mean) Potential Volume				7.254**		
				(2.37)		
(mean) Operator Diversity					-0.487	
					(-0.08)	
(mean) Level						189.632*
						(1.71)
Adjusted R^2	0.573	0.638	0.596	0.647	0.560	0.613

4.21. TABLE OA.12: CORRELATION OF MISTAKES WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, NO ROUND-FIXED EFFECTS

Table OA.12

	(1)	(2)	(3)	(4)	(5)	(6)
Length	0.037***	0.055***	-0.004	0.027***	0.064***	0.032***
	(8.63)	(6.23)	(-0.53)	(2.59)	(8.37)	(5.77)
Cyclomatic		-0.072**				
		(-2.39)				
Quantity			0.533***			
			(6.10)			
Potential Volume				0.023		
				(0.99)		
Operator Diversity					-0.431***	
					(-4.49)	
Level						-1.009
						(-1.28)
Pseudo R^2	0.228	0.233	0.260	0.229	0.244	0.229

4.22. TABLE OA.13: CORRELATION OF MISTAKES WITH OPERANDS AND OPERATORS

Table OA.13

	(1)	(2)	(3)	(4)	(5)
Length	0.037***				0.044***
	(8.67)				(3.99)
Total Operands		0.062***			
		(4.10)			
Total Operators		-0.006			
		(-0.23)			
Unique Words			0.065***		
			(7.92)		
Unique Operands				0.144***	0.070***
				(8.31)	(2.74)
Unique Operators				-0.451***	-0.559***
				(-4.54)	(-5.14)
Pseudo R^2	0.243	0.246	0.232	0.253	0.266

4.23. TABLE OA.14: CORRELATION OF MISTAKES WITH MEASURES OF COMPLEXITY

Table OA.14

	(1)	(2)	(3)	(4)	(5)	(6)
Length	0.037***					
	(8.67)					
Cyclomatic		0.095***				
		(6.65)				
Quantity			0.507***			
			(10.39)			
Potential Volume				0.078***		
				(8.30)		
Operator Diversity					0.243***	
					(4.53)	
Level						-4.061***
						(-6.76)
Pseudo R^2	0.243	0.217	0.277	0.237	0.198	0.221

4.24. TABLE OA.15: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, NO ROUND-FIXED EFFECTS

Table OA.15

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.425***	5.563***	2.099***	0.311	3.089***	4.330***
	(13.73)	(9.21)	(3.26)	(0.42)	(5.82)	(11.42)
Cyclomatic		-8.699***				
		(-3.61)				
Quantity			15.036**			
			(2.40)			
Potential Volume				7.505***		
				(4.49)		
Operator Diversity					5.257	
					(0.78)	
Level						187.402***
						(3.41)
Adjusted R^2	0.360	0.379	0.367	0.384	0.360	0.373

4.25. TABLE OA.16: CORRELATION OF TIME TAKEN WITH OPERANDS AND OPERATORS

Table OA.16

	(1)	(2)	(3)	(4)	(5)
Length	3.388***				0.654
	(14.63)				(0.93)
Total Operands		7.102***			
		(7.42)			
Total Operators		-3.193*			
		(-1.90)			
Unique Words			6.886***		
			(15.21)		
Unique Operands				8.452***	7.272***
				(7.38)	(4.32)
Unique Operators				-3.309	-4.550
				(-0.53)	(-0.70)
Adjusted R^2	0.445	0.461	0.462	0.464	0.464

4.26. TABLE OA.17: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY

Table OA.17

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.388***					
	(14.63)					
Cyclomatic		9.338***				
		(9.64)				
Quantity			32.996***			
			(14.55)			
Potential Volume				7.965***		
				(15.09)		
Operator Diversity					39.316***	
					(12.78)	
Level						-265.538***
						(-6.90)
Adjusted R^2	0.445	0.363	0.433	0.465	0.403	0.308

4.27. TABLE OA.18: CORRELATION OF MISTAKES WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, LINEAR PROBABILITY MODEL

Table OA.18

	(1)	(2)	(3)	(4)	(5)	(6)
Length	0.008***	0.012***	-0.001	0.006**	0.014***	0.007***
	(8.28)	(5.24)	(-0.62)	(2.24)	(8.21)	(4.80)
Cyclomatic		-0.015*				
		(-1.86)				
Quantity			0.110***			
			(5.30)			
Potential Volume				0.004		
				(0.72)		
Operator Diversity					-0.094***	
					(-4.09)	
Level						-0.258
						(-1.24)
Adjusted R^2	0.294	0.296	0.314	0.294	0.305	0.294

4.28. TABLE OA.19: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, OUTLIERS WINSORIZED

Table OA.19

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.713***	5.091***	2.952***	1.437*	3.585***	4.397***
	(13.81)	(8.91)	(4.37)	(1.87)	(5.80)	(11.72)
Cyclomatic		-5.569**				
		(-2.36)				
Quantity			8.692			
			(1.37)			
Potential Volume				5.497***		
				(3.33)		
Operator Diversity					2.018	
					(0.26)	
Level						141.549***
						(2.68)
Adjusted R^2	0.447	0.453	0.448	0.457	0.446	0.453

4.29. TABLE OA.20: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, OUTLIERS INCLUDED

Table OA.20

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.806***	5.100***	3.160***	1.791**	3.759***	4.427***
	(13.25)	(8.41)	(4.28)	(2.09)	(5.73)	(11.55)
Cyclomatic		-5.229**				
		(-2.07)				
Quantity			7.373			
			(1.07)			
Potential Volume				4.867***		
				(2.71)		
Operator Diversity					0.739	
					(0.09)	
Level						128.356**
						(2.31)
Adjusted R^2	0.434	0.439	0.435	0.441	0.433	0.438

4.30. TABLE OA.21: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, INCORRECT ANSWERS INCLUDED

Table OA.21

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.236***	4.631***	2.238***	1.611***	3.131***	3.592***
	(16.81)	(10.82)	(5.51)	(3.14)	(8.37)	(12.88)
Cyclomatic		-5.499***				
		(-3.55)				
Quantity			11.868***			
			(2.92)			
Potential Volume				3.972***		
				(3.41)		
Operator Diversity					1.707	
					(0.35)	
Level						74.121*
						(1.92)
Adjusted R^2	0.488	0.495	0.492	0.494	0.487	0.489

4.31. TABLE OA.22: CORRELATION OF TIME TAKEN WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, ALL OBSERVATIONS INCLUDED

Table OA.22

	(1)	(2)	(3)	(4)	(5)	(6)
Length	3.652***	4.507***	3.049***	2.520***	3.929***	3.916***
	(15.15)	(9.76)	(5.76)	(3.98)	(7.49)	(12.64)
Cyclomatic		-3.345*				
		(-1.84)				
Quantity			7.232			
			(1.47)			
Potential Volume				2.779**		
				(2.10)		
Operator Diversity					-4.589	
					(-0.70)	
Level						54.825
						(1.33)
Adjusted R^2	0.468	0.469	0.468	0.470	0.467	0.468

4.32. TABLE OA.23: CORRELATION OF THE FRACTION OF BANKS REPORTING A HIGH COST WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, FRACTIONAL PROBIT

Table OA.23

	(1)	(2)	(3)	(4)	(5)	(6)
share						
length	0.00003***	0.00006***	0.00000	0.00003***	0.00003***	0.00003***
	(6.55)	(3.21)	(0.20)	(5.47)	(5.09)	(5.62)
cyclomatic		-0.00027				
		(-1.58)				
quantity			0.00016***			
			(4.05)			
potential				0.00059		
				(1.53)		
diversity					0.00020	
					(0.19)	
level						-1.20494
						(-1.62)
Pseudo-R2	0.021	0.022	0.026	0.022	0.021	0.022

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

4.33. TABLE OA.24: CORRELATION OF THE FRACTION OF BANKS REPORTING A HIGH COST WITH OPERANDS AND OPERATORS

Table OA.24

	(1)	(2)	(3)	(4)	(5)
length	0.00001***				0.00001***
	(6.64)				(5.85)
operands$_t$*ot*		-0.00002			
		(-1.44)			
operators$_t$*ot*		0.00006***			
		(4.03)			
words$_u$*nique*			0.00041***		
			(4.46)		
operands$_u$*nique*				0.00114***	0.00086***
				(3.21)	(2.63)
operators$_u$*nique*				-0.00151*	-0.00167**
				(-1.69)	(-2.00)
Adjusted-R2	0.170	0.215	0.098	0.123	0.197

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

4.34. TABLE OA.25: CORRELATION OF THE FRACTION OF BANKS REPORTING A HIGH COST WITH MEASURES OF COMPLEXITY

Table OA.25

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00001***					
	(6.64)					
cyclomatic		0.00011***				
		(6.92)				
quantity			0.00006***			
			(6.56)			
potential				0.00059***		
				(4.70)		
diversity					0.00108***	
					(3.30)	
level						-1.21227***
						(-3.96)
Adjusted-R2	0.170	0.137	0.215	0.110	0.062	0.099

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

4.35. TABLE OA.26: CORRELATION OF THE FRACTION OF BANKS REPORTING A HIGH COST WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, WITH INTERACTION EFFECTS

Table OA.26

	(1)	(2)	(3)
Length1	0.00001***	-0.00000	0.00001***
	(4.18)	(-0.00)	(3.62)
Length2	0.00001***	-0.00001	0.00001***
	(3.51)	(-1.04)	(2.75)
Length3	0.00001***	0.00001	0.00001***
	(3.89)	(0.86)	(3.40)
Quantity1		0.00006***	
		(2.92)	
Quantity2		0.00009***	
		(3.69)	
Quantity3		0.00004	
		(1.10)	
Potential1			0.00013
			(0.58)
Potential2			0.00016
			(0.52)
Potential3			0.00049**
			(2.12)
Adjusted R^2	0.160	0.194	0.162

4.36. TABLE OA.27: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, ONLY ANSWERS "HIGHLY IMPORTANT"

Table OA.27

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00003***	-0.00002	0.00005***	0.00001*	0.00001	0.00003**
	(2.70)	(-0.96)	(3.17)	(1.72)	(1.67)	(2.33)
cyclomatic		0.00057**				
		(2.34)				
quantity			-0.00013*			
			(-1.99)			
potential				0.00157***		
				(3.36)		
diversity					0.00347***	
					(2.93)	
level						-0.15953
						(-0.22)
Adjusted-R2	0.103	0.144	0.123	0.201	0.177	0.082

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

4.37. TABLE OA.28: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, ONLY ANSWERS "HIGHLY IMPORTANT" OR "IMPORTANT"

Table OA.28

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00002**	-0.00002	0.00004***	0.00000	0.00000	0.00002*
	(2.29)	(-1.32)	(3.02)	(1.09)	(0.94)	(1.90)
cyclomatic		0.00047***				
		(2.71)				
quantity			-0.00009**			
			(-2.04)			
potential				0.00126***		
				(4.29)		
diversity					0.00298***	
					(3.66)	
level						-0.27862
						(-0.54)
Adjusted-R2	0.083	0.142	0.104	0.206	0.195	0.068

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

4.38. TABLE OA.29: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, ONLY ANSWERS "NOT IMPORTANT"

Table OA.29

	(1)	(2)	(3)	(4)	(5)	(6)
length	-0.00001*	0.00001	-0.00001**	-0.00000	-0.00000	-0.00000
	(-2.00)	(1.43)	(-2.59)	(-0.80)	(-0.76)	(-1.62)
cyclomatic		-0.00020**				
		(-2.46)				
quantity			0.00004*			
			(1.69)			
potential				-0.00044***		
				(-3.22)		
diversity					-0.00098**	
					(-2.62)	
level						0.14808
						(0.58)
Adjusted-R2	0.038	0.084	0.051	0.097	0.081	0.024

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

4.39. TABLE OA.30: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, ONLY ANSWERS "NOT IMPORTANT" AND "LESS IMPORTANT"

Table OA.30

	(1)	(2)	(3)	(4)	(5)	(6)
length	-0.00002**	0.00002	-0.00004***	-0.00000	-0.00000	-0.00002*
	(-2.29)	(1.33)	(-3.04)	(-1.08)	(-0.93)	(-1.90)
cyclomatic		-0.00047***				
		(-2.72)				
quantity			0.00010**			
			(2.07)			
potential				-0.00126***		
				(-4.30)		
diversity					-0.00298***	
					(-3.67)	
level						0.27648
						(0.54)
Adjusted-R2	0.083	0.142	0.104	0.206	0.194	0.067

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

4.40. TABLE OA.31: CORRELATION OF THE IMPORTANCE GIVEN TO TEMPLATES BY REGULATORS WITH MEASURES OF COMPLEXITY, BEYOND LENGTH, PROBIT MODEL

Table OA.31

	(1)	(2)	(3)	(4)	(5)	(6)
length	0.00023**	-0.00008	0.00050***	0.00006	0.00009	0.00028**
	(2.30)	(-0.54)	(2.96)	(0.53)	(0.76)	(2.22)
cyclomatic		0.00495***				
		(2.83)				
quantity			-0.00087**			
			(-2.05)			
potential				0.00947**		
				(2.30)		
diversity					0.02211**	
					(2.14)	
level						2.24447
						(0.89)
Pseudo-R2	0.156	0.276	0.229	0.242	0.237	0.167

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

4.41. FIGURE OA.8: COSTS OF COMPLEXITY AND WELFARE AS A FUNCTION OF THE NUMBER OF RISK BUCKETS