

ONLINE APPENDIX

to

The role of individual audit partners for narrative disclosures

This appendix provides figures and tables for the additional analyses mentioned in the paper. We only present the tables and figures for the main robustness tests. The tables and figures for further analyses based on minor adjustments are available upon request.

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Institutional setting in Germany

General reporting requirements for limited liability firms

In Germany, limited liability firms are required to disclose financial statements consisting of a balance sheet, a profit and loss statement, and notes. In addition to financial statements, firms must disclose a management report.¹ Publicly listed firms are additionally required to disclose a statement of changes in equity and a cash flow statement. Groups need to disclose all of the above statements on a consolidated basis and a group management report. Whereas German GAAP is generally applicable, capital-market-oriented firms have to follow International Financial Reporting Standards (IFRS) as endorsed by the EU for their consolidated financial statements.

TABLE A.1
Reporting requirements and size thresholds for limited liability firms
according to German GAAP in 2012

	Small firms	Medium firms	Large firms
Size thresholds (at least two criteria need to be fulfilled)	≤ 4.84 Mio. € Total assets ≤ 9.68 Mio. € Sales ≤ 50 employees	≤ 19.25 Mio. € Total assets ≤ 38.5 Mio. € Sales ≤ 250 employees	> 19.25 Mio. € Total assets > 38.5 Mio. € Sales > 250 employees
Balance sheet	Yes	Yes	Yes
Income statement	No	Yes	Yes
Notes	Yes	Yes	Yes
Management report	No	Yes	Yes
External audit	No	Yes	Yes

This table presents the reporting requirements and size thresholds for limited liability firms according to German GAAP in 2012. Note that publicly listed firms are always classified as large firms.

Management reports and notes are generally highly comparable to the Management Discussion and Analysis (MD&A) and the footnotes in the United States. To comply with German GAAP, firms must discuss several topics in the management report, such as the economic situation

¹If firms are classified as small by German Generally Accepted Accounting Principles (GAAP), they neither need to disclose a management report nor to have their financial statements audited (see Table A.1). Therefore, we exclude these client firms from our analysis. Note that while the number-of-employees threshold was fixed throughout our sample period, the other two thresholds were slightly inflation-adjusted. These thresholds are very similar to the currently effective thresholds in German GAAP.

of the firm, an economic outlook, and material risks and opportunities. Furthermore, firms need to report on their research and development, financial risks, the internal control and risk management system, and corporate governance topics (Sec. 289, 315 German GAAP). The notes contain supplementary information on items in the financial statements—for example, on the principles underlying the recognition and measurement of assets and liabilities, or detailed information on long-term assets and liabilities (Sec. 284, 285, 313, 314 German GAAP).

Audit requirements

According to Sec. 316 in German GAAP, (consolidated) financial statements of medium and large limited liability firms are subject to mandatory audits.² Auditors need to provide an auditor’s report and issue an audit opinion, which become part of the firm’s financial statements. Furthermore, unlike in the United States, German GAAP also requires an audit of management reports with reasonable assurance (Sec. 317 (2) German GAAP). The financial statements and the management report must be in line with German GAAP, and auditors conducting the audit must follow the International Standards of Auditing (Sec. 317 (5) German GAAP). Additionally, management reports need to accord with the financial statements and the impressions the auditor gained during the audit process. Moreover, the management report itself must provide a true and fair view. Because management reports consist of forward-looking information, German GAAP requires an audit of their plausibility.

To provide guidance for auditors, the German Institute of Chartered Auditors (IDW) issued an auditing standard for management reports in 2009 (IDW PS 350).³ The standard combines the audit requirements of German GAAP with clarifications regarding the scope, process, and procedures of audits. For example, IDW PS 350.17 asks auditors to evaluate client firms’ internal financial planning systems when judging the validity of forecasts, and IDW PS 350.18 requires that auditors consider the general economic development or that of industry peers when evaluating the information in client firms’ management reports.

²Other than EU Directive 2013/34/EU, the German legislation requires an audit with reasonable assurance for management reports.

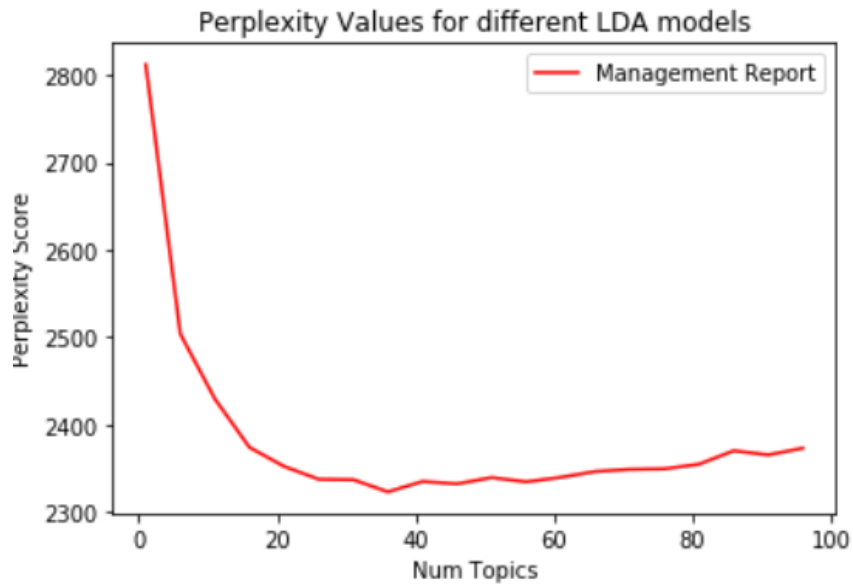
³IDW PS 201.29 states that auditors can only deviate from IDW auditing standards in justified cases, which makes their application de facto mandatory. Additionally, a revised version of the standard, IDW PS 350 n.F., came into effect in 2018.

Specifics of auditing narrative disclosures

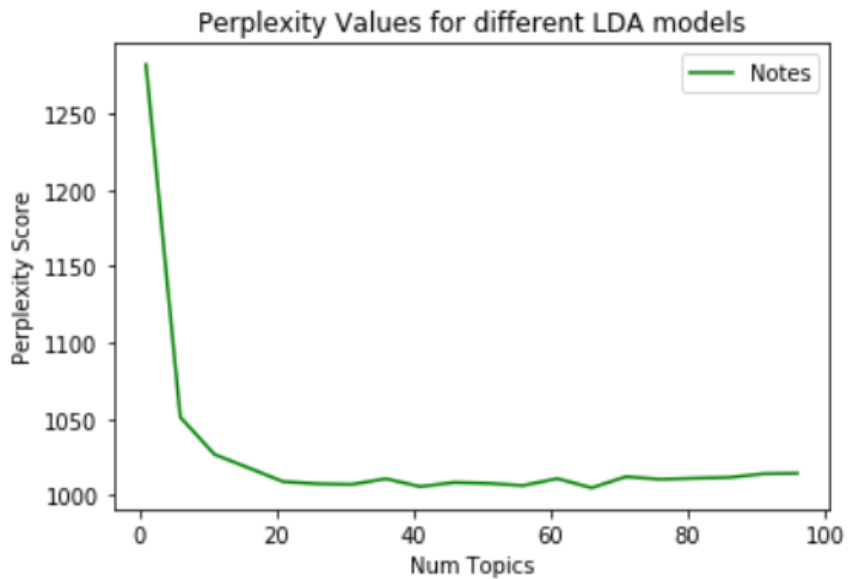
The audit of narrative disclosures is characterized as follows. First, their audit generally follows the audit of financial statements. Auditors can thus audit narrative disclosures in the context of the information gained from the financial statement audit (Cohen et al. 2008). Second, even though German GAAP has clear requirements on the subjects of management reports, the requirements remain vague in order to allow the disclosure of tailored, firm-specific information (Baetge et al. 1989). Hence, client firms have a high degree of discretion on what to report and how to phrase it, which makes the audit of narrative disclosures challenging (Kajüter et al. 2017). Third, the audit of forward-looking statements in management reports requires the verification of the validity and plausibility of the assumptions underlying the forecasts, which might be challenging because auditors are used to auditing historical and quantitative financial statement information (Gibbins and Pomeroy 2007).

FIGURE A.1
Perplexity for different number of topics in LDA model training

Panel A: Management report



Panel B: Notes



This figure shows different perplexity values for a ten percent holdout sample for different LDA models that are based on a different number of predefined topics in the management reports (Panel A) and the notes (Panel B).

TABLE A.2
Top five words for the topics identified by LDA

Panel A: Management report

<u>Topic number</u>	<u>Top five words</u>
1	Order inflow, Maschine, Manufacturing, Research, Unfilled orders
2	Risk management, Internal, Regularly, Risk, Control
3	USA, China, India, Asia, Global
4	Sustainable, Strategy, Safe, Challenge, Success
5	Clinic, Medicine, Hospital, Patient, Inpatient
6	Retail, Trade, Merchant, Assortment, Wholesale
7	Service, Media, Service provider, Software, IT
8	Supervisory board, Stock, Remuneration, Member, General meeting
9	Financial instrument, Risk report, Financial, Within, Risk
10	Law, Human, Supply, Establishment, Insurance
11	Construction, Public, Building industry, House building, Main construction work
12	Return, However, Property, Competition, Cost
13	Market, Corporation, Net, Catering trade, Food
14	Branch, City, Limited liability, Public, Service provider
15	ISO, Firm, Personnel, Necessary, Supplier
16	Solar, Energy, Electricity, Renewable, Gas
17	Version, Visit, Setcustomvariable, PAQ, Script
18	Technology, System, Group, USA, Distribution
19	Automotive, Vehicle, BMW, Automotive industry, Passenger car
20	GDP, Decrease, Cyclical, Second, Went
21	Research, Study, Treatment, Phase, Program
22	Holding, Group, Group company, Consolidated Accounts, Hotel
23	Mr., January, April, Supervisory board, March
24	Waste disposal, Spanish, Web, Recycling, Waste
25	Price, Ressource, Sales, Ton, Issuance
26	Transaction, Presentation, See, Financial position, Total output
27	Agriculture, Milk, Fiscal-year, Price, EU
28	Property, Apartment, Munich, Object, Rent
29	Provision, Result, Reporting date, Decrease, Contain
30	Cooperative, EG (short for registered cooperative), Member, Supervisory board, PPE

(continued)

Panel B: Notes

Topic number	Top five words
1	Million, Investment, Associated, Subsidiary, Equitymethod
2	Holding, Limited, Incorporated, Investment, Subsidiary
3	Goodwill difference amount, Capital, Capital consolidation, First-time, Difference
4	Munich, Estate, Construction, Property, Us
5	Low, Linear, Value, Ordinary, Operational
6	Recognized, Value, Fair, Impairment, Affecting net income
7	Stock corporation, Management board, Supervisory board, Stock, Capital stock
8	Extraordinary item, Investment committee, City, Close a position, Form a position
9	Limited liability, Principle, Stuttgart, First consolidation, Group company
10	Financial instrument, Derivative, Market value, Converted, Abroad
11	Euro, Insofar, Ordinary, Balance sheet, As far as
12	Stock corporation, Group, Group (German), Subsidiary, Munich
13	Balance sheet, Member, EG (short for registered cooperative), Valuation method, Item
14	Annual financial statements, Balance sheet, Number, Rule, Mr.
15	Person, Liable, Proprietor, Complementary, Administration
16	IFRS, Other, IAS, Standard, Apply
17	Amount repayable, Time to maturity, BILMOG (Law act), Sentence, EGHGB (Law act)
18	Subsidiary, Goodwill difference amount, Capital consolidation, Basis of consolidation, Parent company
19	Capitalize, Goodwill, Following, Firm, Business
20	Firm, Subject, Output, Include, Position

This table shows the top five words (English translation) for the topics identified by the LDA algorithm for the management reports (Panel A) and the notes (Panel B).

TABLE A.3
Replication of Table 2 using a within year-industry paired sample

Panel A: Management report

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	33.580*** (4.451)	17.634** (2.166)	43.735*** (5.436)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.058	0.234	0.013
Observations	345,801	337,379	345,801

Panel B: Notes

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	43.156*** (10.217)	22.253*** (5.498)	72.678*** (6.658)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.147	0.689	0.016
Observations	327,992	326,255	324,745

This table presents the relation between sharing an audit partner and textual similarity of narrative disclosures for a within industry-year paired sample. Panel A (Panel B) presents the results for management reports (notes). In Column 1, the dependent variable $WORDING_SIM_{i,j}$ is the cosine of the angle between the IDF-weighted term frequency vectors of management reports or notes i and j , multiplied by 100. In Column 2, the dependent variable $CONTENT_SIM_{i,j}$ is the cosine of the angle between the topic vectors of management reports or notes i and j , multiplied by 100. In Column 3, the dependent variable $STRUCTURE_SIM_{i,j}$ is the cosine of the angle between the headline vectors, which contain the exact headings of management reports or notes i and j , multiplied by 100. All three dependent variables are log-transformed and multiplied by 100. $SAME_AUDITOR(Partner)_{i,j}$ is an indicator variable that equals one if client firms i and j share the same audit partner in a year, and zero otherwise. In all three regressions, we use the same control variables as in our main model except $SAME_INDUSTRY_{i,j}$, and include client firm i -by year and client firm j -by year fixed effects. We cluster standard errors on client firm i 's and j 's audit partners. Differences in the pre-processing of our algorithms lead to different sample sizes for $WORDING_SIM_{i,j}$, $CONTENT_SIM_{i,j}$, and $STRUCTURE_SIM_{i,j}$. Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed tests), respectively.

TABLE A.4
Audit partner changes specification

Panel A: Management report

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	1.806* (1.908)	−0.517 (−0.402)	13.962*** (2.833)
Controls	Yes	Yes	Yes
Client firm-pair _{i,j} FE	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.872	0.872	0.441
Observations	2,962,180	2,848,510	2,962,180

Panel B: Notes

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	5.988*** (4.906)	6.752*** (2.931)	24.331*** (3.360)
Controls	Yes	Yes	Yes
Client firm-pair _{i,j} FE	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.929	0.948	0.502
Observations	2,803,177	2,770,636	2,766,907

This table presents the relation between sharing an audit partner and textual similarity of narrative disclosures with the inclusion of client-firm pair fixed effects. Panel A (Panel B) presents the results for management reports (notes). In Column 1, the dependent variable $WORDING_SIM_{i,j}$ is the cosine of the angle between the IDF-weighted term frequency vectors of management reports or notes i and j , multiplied by 100. In Column 2, the dependent variable $CONTENT_SIM_{i,j}$ is the cosine of the angle between the topic vectors of management reports or notes i and j , multiplied by 100. In Column 3, the dependent variable $STRUCTURE_SIM_{i,j}$ is the cosine of the angle between the headline vectors, which contain the exact headings of management reports or notes i and j , multiplied by 100. All three dependent variables are log-transformed and multiplied by 100. $SAME_AUDITOR(Partner)_{i,j}$ is an indicator variable that equals one if client firms i and j share the same audit partner in a year, and zero otherwise. In all three regressions, we use the same control variables as in our main model, control additionally for audit office and audit firm changes, and include client firm-pair i,j , client firm i -by year, and client firm j -by year fixed effects. We cluster standard errors on client firm i 's and j 's audit partners. Differences in the pre-processing of our algorithms lead to different sample sizes for $WORDING_SIM_{i,j}$, $CONTENT_SIM_{i,j}$, and $STRUCTURE_SIM_{i,j}$. Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed tests), respectively.

TABLE A.5
Falsification test

	WEBSITE_SIM _{<i>i,j</i>}	WORDING_SIM _{<i>i,j</i>}
SAME_AUDITOR(Partner) _{<i>i,j</i>}	3.571 (1.322)	19.655*** (4.044)
Controls	Yes	Yes
Client firm _{<i>i</i>} × Year FE	Yes	Yes
Client firm _{<i>j</i>} × Year FE	Yes	Yes
Adjusted R^2	0.718	0.567
Observations	284,683	356,610

This table presents the relation between sharing an audit partner and textual similarity of clients' website text. In Column 1, the dependent variable $WEBSITE_SIM_{i,j}$ is the cosine of the angle between the IDF-weighted term frequency vectors of the website text of client firms i and j , multiplied by 100. In Column 2, the dependent variable $WORDING_SIM_{i,j}$ is the cosine of the angle between the IDF-weighted term frequency vectors of management reports i and j , multiplied by 100. Both dependent variables are log-transformed and multiplied by 100. $SAME_AUDITOR(Partner)_{i,j}$ is an indicator variable that equals one if client firms i and j share the same audit partner in a year, and zero otherwise. In both regressions, we use the same control variables as in our main model and include client firm i -by year and client firm j -by year fixed effects. We cluster standard errors on client firm i 's and j 's audit partners. Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed tests), respectively.

TABLE A.6
Matched sample analyses

Panel A: Management report with client firm-by year FE

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	29.182*** (5.171)	27.230*** (2.620)	27.568* (1.772)
Controls	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.732	0.556	0.221
Observations	2,879	2,762	2,879

Panel B: Notes with client firm-by year FE

	<u>WORDING_SIM_{i,j}</u>	<u>CONTENT_SIM_{i,j}</u>	<u>STRUCTURE_SIM_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	37.229*** (7.487)	30.785*** (3.830)	52.386*** (3.309)
Controls	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.790	0.759	0.412
Observations	2,701	2,590	2,705

(continued)

Panel C: Management report with client firm FE

	WORDING_SIM _{i,j}	CONTENT_SIM _{i,j}	STRUCTURE_SIM _{i,j}
SAME_AUDITOR(Partner) _{i,j}	24.414*** (4.932)	24.395*** (3.352)	26.141*** (2.724)
Controls	Yes	Yes	Yes
Client firm _i FE	Yes	Yes	Yes
Client firm _j FE	Yes	Yes	Yes
Adjusted R^2	0.740	0.601	0.328
Observations	5,409	5,259	5,409

Panel D: Notes with client firm FE

	WORDING_SIM _{i,j}	CONTENT_SIM _{i,j}	STRUCTURE_SIM _{i,j}
SAME_AUDITOR(Partner) _{i,j}	38.427*** (9.644)	31.025*** (4.353)	68.769*** (5.406)
Controls	Yes	Yes	Yes
Client firm _i FE	Yes	Yes	Yes
Client firm _j FE	Yes	Yes	Yes
Adjusted R^2	0.750	0.805	0.433
Observations	5,146	5,038	5,101

This table presents the relation between sharing an audit partner and textual similarity of narratives disclosures for a matched sample, where approximately 50 percent of the client firm-pairs have the same audit partner. The dependent variable $WORDING_SIM_{i,j}$ is the cosine of the angle between the IDF-weighted term frequency vectors of management reports or notes i and j , multiplied by 100. $CONTENT_SIM_{i,j}$ is the cosine of the angle between the topic vectors of management reports or notes i and j , multiplied by 100. $STRUCTURE_SIM_{i,j}$ is the cosine of the angle between the headline vectors, which contain the exact headings of management reports or notes i and j , multiplied by 100. All three dependent variables are log-transformed and multiplied by 100. $SAME_AUDITOR(Partner)_{i,j}$ is an indicator variable that equals one if client firms i and j share the same audit partner in a year, and zero otherwise. In both regressions, we use the same control variables as in our main model. Panels A and B include client firm i -by year and client firm j -by year fixed effects. Because this fixed effect structure leads to many singleton observations, we also report a specification with client firm i and client firm j fixed effects (Panels C and D). We cluster standard errors on client firm i 's and j 's audit partners. Differences in the pre-processing of our algorithms lead to different sample sizes for $WORDING_SIM_{i,j}$, $CONTENT_SIM_{i,j}$, and $STRUCTURE_SIM_{i,j}$. Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed tests), respectively.

TABLE A.7
Alternative similarity proxies

Panel A: Management report

	<u>WORDING_SIM_WCF_{i,j}</u>	<u>CONTENT_SIM_WEMBED_{i,j}</u>	<u>STRUCTURE_SIM_DEPTH_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	26.559*** (7.707)	0.066*** (2.840)	0.417*** (2.723)
Controls	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.581	0.700	0.942
Observations	2,874,196	3,248,109	3,165,993

Panel B: Notes

	<u>WORDING_SIM_WCF_{i,j}</u>	<u>CONTENT_SIM_WEMBED_{i,j}</u>	<u>STRUCTURE_SIM_DEPTH_{i,j}</u>
SAME_AUDITOR(Partner) _{i,j}	60.725*** (11.797)	0.255*** (6.776)	0.150** (2.078)
Controls	Yes	Yes	Yes
Client firm _i × Year FE	Yes	Yes	Yes
Client firm _j × Year FE	Yes	Yes	Yes
Adjusted R^2	0.859	0.900	0.949
Observations	2,101,086	3,112,756	3,093,740

This table presents the analysis of the effect of client firms i and j sharing the same audit partner on wording, content, and structure similarity, respectively, when using an alternative proxy in each dimension. Panel A (Panel B) presents the results for management reports (notes). In Column 1, the dependent variable $WORDING_SIM_WCF_{i,j}$ is the percentage of text that appears in both management reports or notes i and j measured by the text re-use detection software WCopyFind. In Column 2, the dependent variable $CONTENT_SIM_WEMBED_{i,j}$ is the cosine of the angle between the mean word vectors of management reports or notes i and j , multiplied by 100. In Column 3, the dependent variable $STRUCTURE_SIM_DEPTH_{i,j}$ is the absolute difference in the number of headlines per 100 words of management reports or notes i and j , multiplied by minus one and converted to the positive with a translation by the minimum value. All three dependent variables are log-transformed and multiplied by 100. $SAME_AUDITOR(Partner)_{i,j}$ is an indicator variable that equals one if client firms i and j share the same audit partner in a year, and zero otherwise. In all three regressions, we use the same control variables as in our main model and include client firm i -by year and client firm j -by year fixed effects. We cluster standard errors on client firm i 's and j 's audit partners. Differences in the pre-processing of our algorithms lead to different sample sizes for $WORDING_SIM_WCF_{i,j}$, $CONTENT_SIM_WEMBED_{i,j}$, and $STRUCTURE_SIM_DEPTH_{i,j}$. Robust t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed tests), respectively.

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