# INTERNAL CONTROL QUALITY, AUDIT TEAM COMPOSITION, AND AUDIT QUALITY

*FAR Conference 2023*

Project 2019B01 Hofmann

Hofmann/Kuhn/van Raak/Schwaiger

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*This research is made possible by funding and data provided through/by the Foundation for Auditing Research*

# 1 2019B01 Hofmann

*Who we are & what we do*

Christian Hofmann
*LMU Munich*

Sebastian B. Kuhn
*LMU Munich*

Jeroen van Raak
*University of Amsterdam*

Nina Schwaiger
*LMU Munich*



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# Internal Control Quality and Audit Quality

**Project goals**

1. What is the impact of internal control risks on audit effort and audit quality?
2. Do financial analysts provide information on fraud risk to auditors through questioning during earnings conference calls?

**→ 2 work packages**

# Internal Control Quality and Audit Quality: Work Package 2

**Using Earnings Conference Call Discussions to Assess Internal Control Quality**

**Christian Hofmann[1], Sebastian B. Kuhn[1*], Nina Schwaiger[1]**

*„Using a topic modeling approach, we find that conference call discussion topics are informative about internal control quality beyond determinants identified by prior research.“*

**→ not the focus today**



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# Contents





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# 1 Research Question

*Internal control quality, audit team composition, and audit quality*

How do audit firms adjust the audit production process as a function of the client firm's assessed risk?

→ Relevance for **practice**

- Optimal staffing decisions dependent on risk assessments

→ Relevance for **academia**

- Often broad/noisy proxies of audit input
- Detailed data on audit team composition



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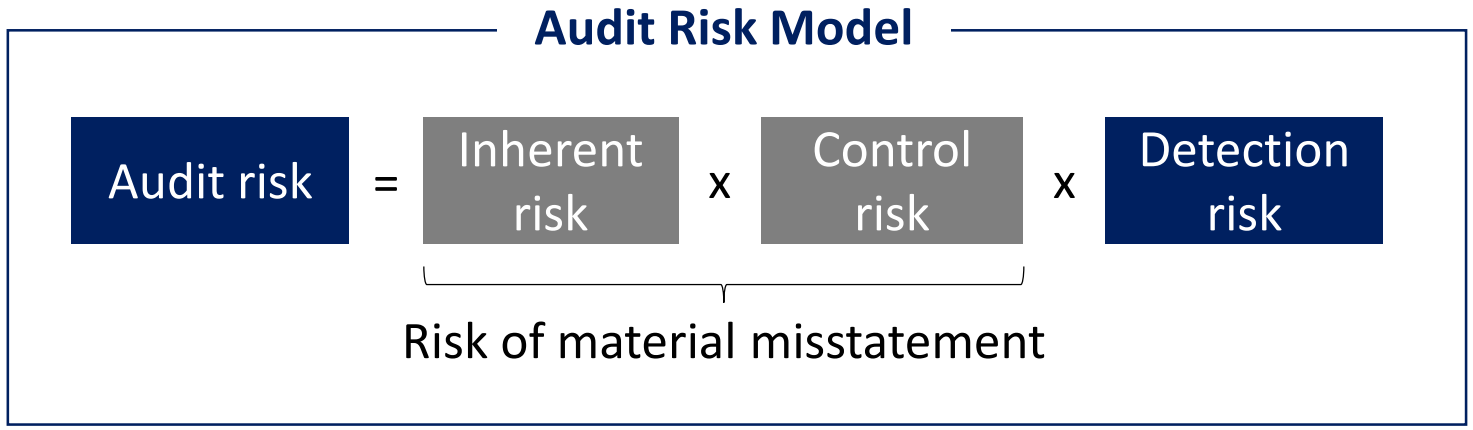
# 2 Theoretical Framework

*The audit risk model (ARM)*




→ Auditor mitigates risk of material misstatement through audit effort

→ Evidence that the ARM works in practice (e.g., Ruhnke and Schmidt 2014)



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# 2 Theoretical Framework

*The relevance of internal controls*

**Audit firms who overlook serious misstatements as a result of weak internal control**

- Face reputational damage
- Have increased risk of being fired (Mande and Son 2013)
- Have increased litigation risk (Hennes et al. 2014)

➡ **Audit firms** care about correctly assessing internal control quality



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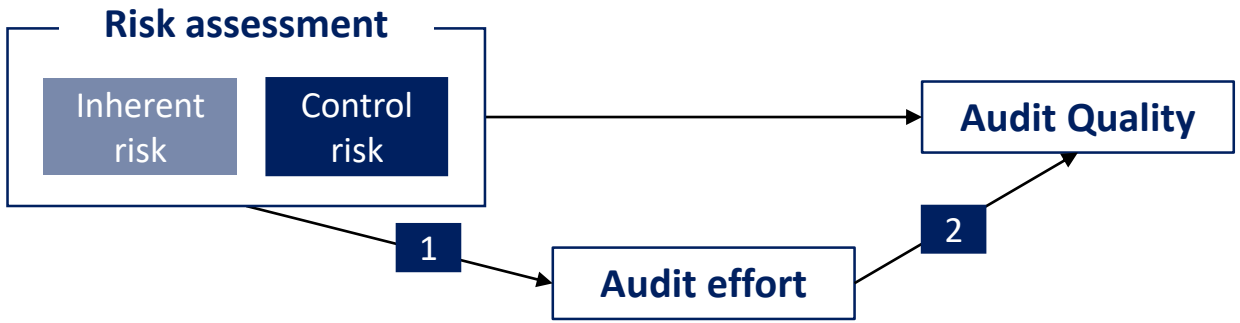
# 2 Theoretical Framework

*Evidence on the audit risk model*




**1**

- Audit fees increase with low-quality internal controls (Hoitash et al. 2008, Hogan and Wilkins 2008, Hoag and Hollingsworth 2011)
- Audit effort and audit fee premiums increase with low quality internal controls (Bae et al. 2021)

**2**

- Audit effort (proxied by audit fees) increases audit quality (Blankley et al. 2012, Lobo and Zhao 2013)

**1** **2**

- Audit adjustments vary with internal control quality (Ruhnke and Schmidt 2014)



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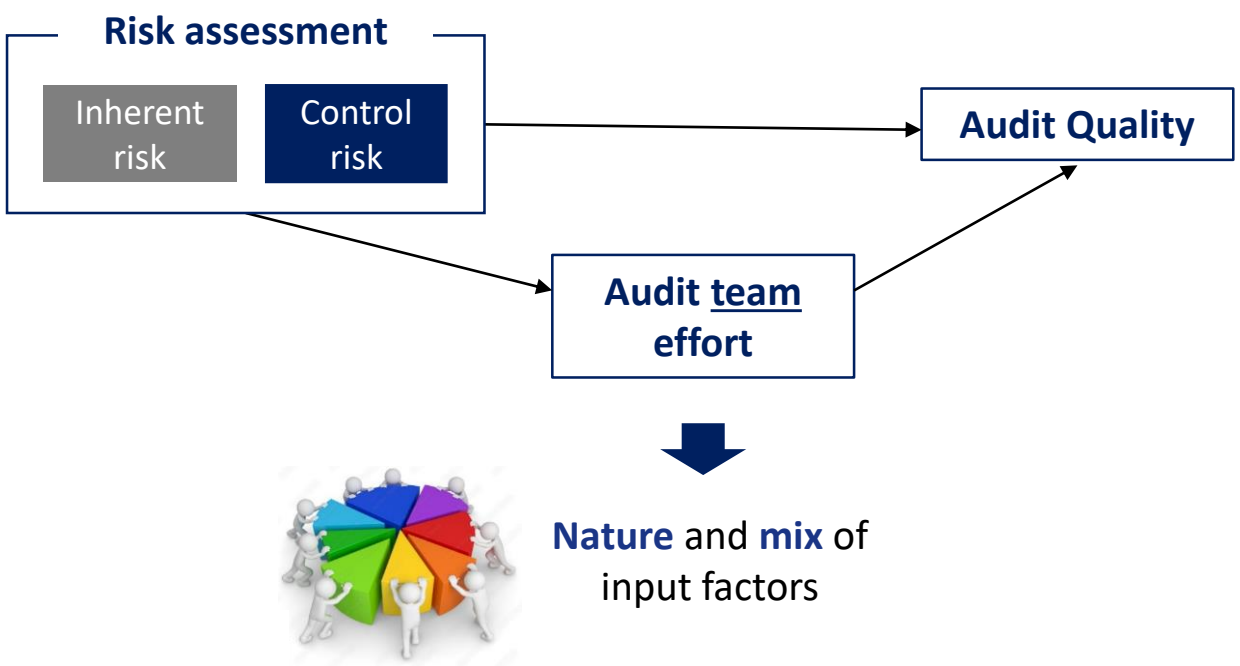
# 2 Theoretical Framework

*The role of the nature and mix of labor input*




**Audit firm's objective function**

$$\min_{\mathbf{h}} c(\mathbf{h}, \boldsymbol{\gamma})$$

such that $\bar{q} = p(\mathbf{h}, \boldsymbol{\gamma})$

| | |
|---|---|
| $c(\cdot)$ | = audit cost function |
| $\mathbf{h}$ | = vector of audit service inputs |
| $\boldsymbol{\gamma}$ | = vector of exogenous client firm characteristics |
| $\bar{q}$ | = required level of assurance |
| $p(\cdot)$ | = audit production function |

Reference: O'Keefe et al. (1994).

- Client characteristics (such as client size, complexity, leverage, and inherent risk) determine the nature and mix of labor resources (O'Keefe et al. 1994) and the allocation of labor among audit activities (Hackenbrack and Knechel 1997)
- **However:** No evidence on control risk as a determinant of the nature and mix of labor input!



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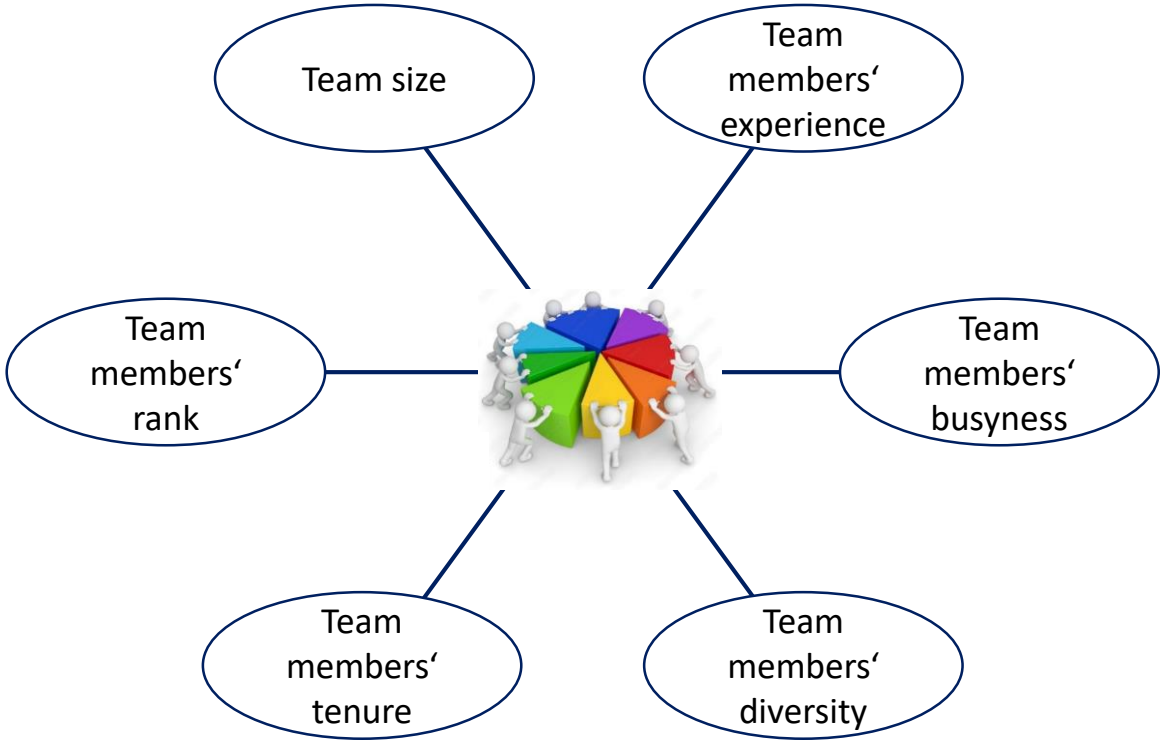
# 2 Theoretical Framework

*Focus of this project*

How does the control risk determine the nature and mix of input factors in the audit production process?



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# Current Data Set

| Two audit firms | 2017 - 2019 | All listed client firms and largest unlisted client firms in the Netherlands | Excluding:<br>• holding firms<br>• financial institutions<br>• governmental organizations |
|---|---|---|---|

→ **Preliminary evidence using 430 engagement observations**



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# Advantages of FAR Data over Previous Literature

| Construct | Measure in previous literature | Measure using FAR data |
|---|---|---|
| Audit effort | Audit fees | Budgeted hours<br>Actual hours |
| Audit risk premium | Audit fees | Audit fees per hour |
| Audit team composition | Survey based/ None available | Data on rank, tenure, workload |

→ Prior literature often cannot disentangle effort from risk premium (Hogan and Wilkins 2008)

→ FAR data allows us to more precisely measure how the audit risk model is used in practice

# 3 Data & Analysis

*Internal control quality and audit quality*

**Regression design**

$$AuditEffort = \beta_1 * NrICD + \sum \beta_i * Controls + \varepsilon$$

$$AuditQuality = \beta_1 * HoursOvertime + \beta_2 * NrICD + \beta_3 * NrICD * HoursOvertime + \sum \beta_i * Controls + \varepsilon$$

**Variable construction**

- Internal control quality: Number of significant deficiencies in internal control (*NrICD*)
- *AuditEffort*: Logarithm of audit hours (*AuditHours*), audit hours worked **divided by budgeted** hours (*HoursOvertime*)
- *AuditQuality*: Discretionary accruals (*DACC*), abnormal working capital accruals (*ACWA*), natural logarithm of audit fees (*AuditFees*), number of misstatements (*#Misstate*), natural logarithm of the value of misstatements in million $ (*$Misstate*)

*Controls audit effort: ROA, TotalAssets (log), CurrentRatio, Leverage, Receivables, Inventory, EngagementRisk*
*Controls audit quality: ROA, TotalAssets (log), Leverage, Receivables, Inventory, PPE, SalesGrowth, Cash, EngagementRisk*



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# 4 Descriptive Statistics

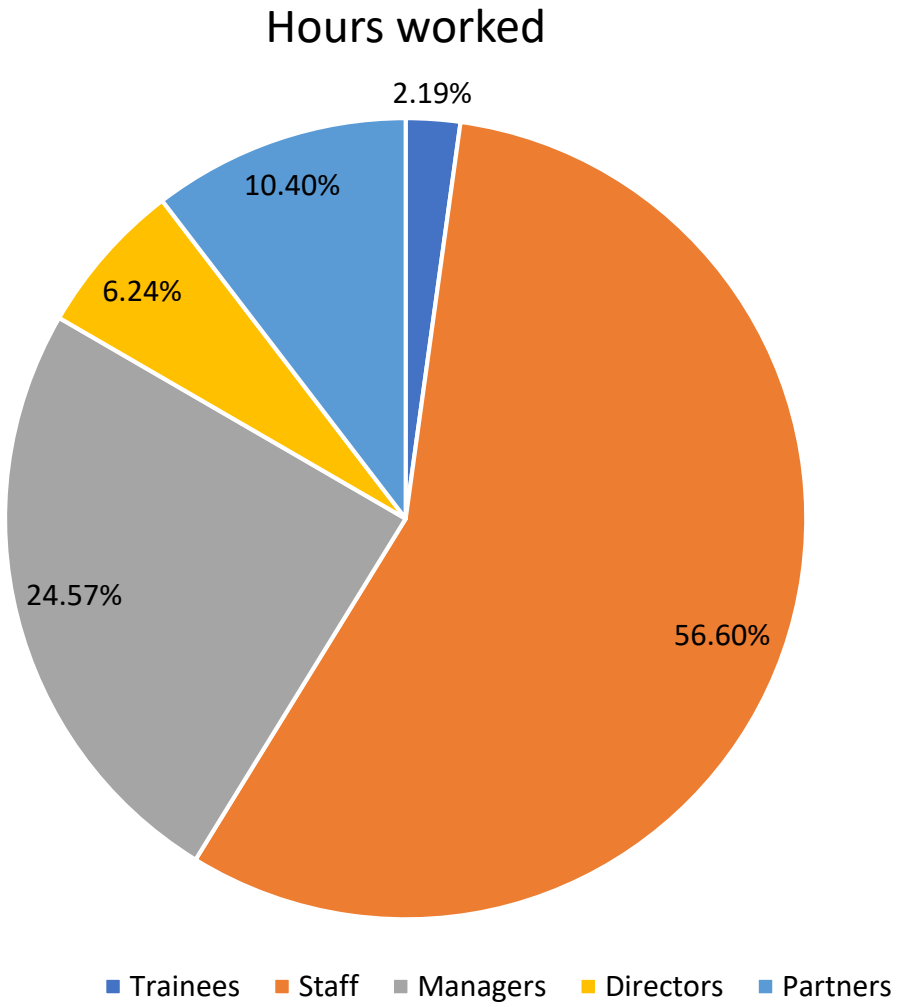
*Data Sample*

430 Engagements

Average of *19* auditors per team

- 2 partners
- 2 directors
- 4 managers
- 11 staff
- 2 trainees

On average, 59% of auditors per team are new to the client



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# 4 Descriptive Statistics

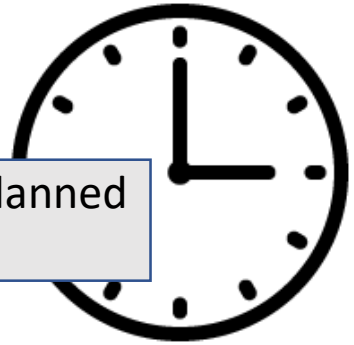
*Data Sample*

430 Engagements

Average of *3* significant ICDs

- between 0 and 34
- 66% of engagements have at least one
- 10% affect revenue

Actual hours *23%* above planned hours on average



Correlated:

- positively with average team rank
- negatively with firm profitability



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# 4 Results

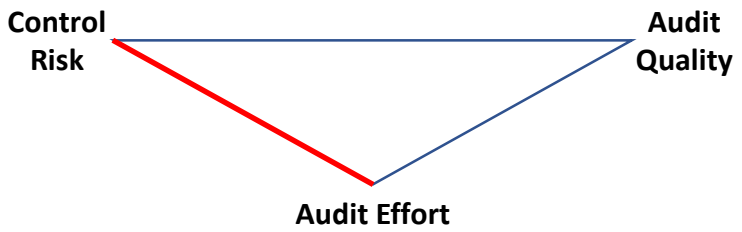
*Internal Control Quality, Audit Team Composition, and Audit Quality*

| | AuditHours | HoursOvertime |
|---|---|---|
| NrICD | **0.21*** ** | **0.01†** |
| ROA | 1.06 | -0.33** |
| TotalAssets | 1.14*** | 0.01 |
| CurrentRatio | 0.15 | 0.01 |
| Leverage | -0.12 | -0.01 |
| Receivables | -0.00 | 0.00 |
| Inventory | 0.00 | 0.00 |
| EngagementRisk | 0.14 | -0.06 |
| Fixed Effects | Year, industry | |
| Clustered SE | Client firm level | |
| Observations | 225 | 195 |
| R-squared | 73.7% | 25.2% |

**, **, and *** denote two-tailed significance at the 10%, 5%, and 1% level, respectively.*

† *denotes one-tailed significance at the 10% level.*

Evidence that auditors react to internal control deficiencies by increasing audit effort




→ But **how** is this effort produced?



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# 4 Results

*Internal Control Quality, Audit Team Composition, and Audit Quality*

| | TeamSize | HoursPerAuditor | AvgRank | SD(TeamHours) |
|---|---|---|---|---|
| NrICD | **-0.40** | **184,917*** | **0.03**** | **4.29**** |
| Controls | ROA, TotalAssets, CurrentRatio, Leverage, Receivables, Inventory, EngagementRisk | | | |
| Fixed Effects | Year, industry | | | |
| Clustered SE | Client firm level | | | |
| Observations | 154 | 152 | 150 | 224 |
| R-squared | 43.7% | 88.0% | 54.9% | 17.6% |

**, **, and *** denote two-tailed significance at the 10%, 5%, and 1% level, respectively*

***TeamSize**: number of personnel who work on the engagement*

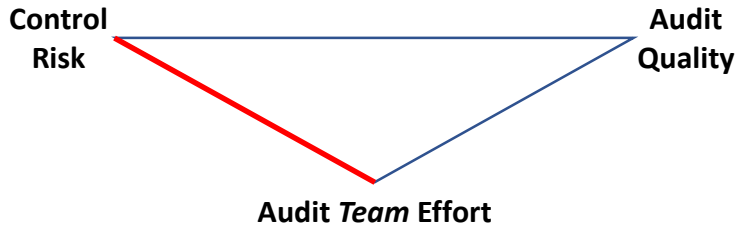
***AvgRank**: rank of personnel weighted by work hours, scaled from 1 (trainee) to 5 (partner)*

***HoursPerAuditor**: total engagement hours divided by TeamSize*

***SD(TeamHours)**: standard deviation of the distribution of engagement hours among engagement personnel*

Inputs when internal control deficiencies are present:

- No effect on team size
- Team members work more
- More work done by high ranking auditors
- Audit hours less equally distributed



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# 4 Results

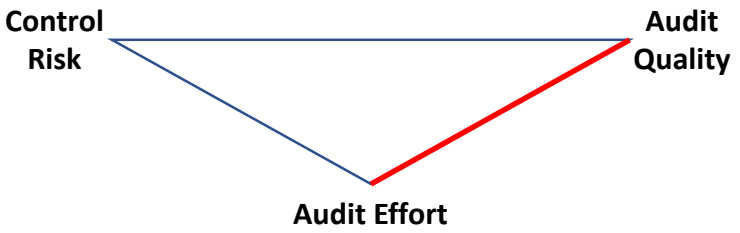
*Internal Control Quality, Audit Team Composition, and Audit Quality*

| | DACC | AWCA | AuditFees | #Misstate | $Misstate |
|---|---|---|---|---|---|
| HoursOvertime | 0.14 | -0.07 | 0.28 | 15.0** | 50.5*** |
| NrICD | 0.07** | 0.06* | 0.09 | -1.30 | 10.1* |
| **HoursOvertime*NrICD** | **-0.06**** | **-0.05*** | **-0.04** | **1.27** | **-8.10*** |
| Controls | Total assets, ROA, leverage, inventory, receivables, PPE, sales growth, cash, engagement risk | | | | |
| Fixed Effects | Year, industry | | | | |
| Clustered SE | Client firm level | | | | |
| Observations | 123 | 100 | 150 | 147 | 147 |
| R-squared | 32.7% | 26.9% | 64.8% | 21.8% | 18.3% |

**, **, and *** denote two-tailed significance at the 10%, 5%, and 1% level, respectively*

Overtime when ICDs are present:

- Decrease in accrual measures
- No effect on audit fees
- Decrease in value of identified misstatements



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# 4 Results

*Interpretation of Findings*

**How do auditors respond to low quality internal controls?**

- Evidence that auditors adjust audit processes in the presence of ICDs
  - workload per auditor increases, team size does not
  - workload less equally distributed
  - more work done by higher ranking team members

**How does this reaction affect audit quality?**

- Mixed evidence that the Audit Risk Model works in practice
- Results dependent on model specification

→ Guideline: Average of **15% of planned audit hours as overtime** needed to keep discretionary accruals constant in the presence of ICDs



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# 4 Results

*Discussion*

**Limitations**

- Imperfect measures of audit quality
- Limited sample size

**Next steps**

- Analysis of nature and severity of internal control deficiencies
  - → Currently treated as if all ICDs were the same
- In-depth analysis of **audit team composition** and its effect on the audit of internal controls
  - → How do auditor characteristics affect audit teams‘ ability to deal with ICDs?
  - → Other dimensions of team composition
    - ➢ Measures of team diversity (Bernile et al. 2018)

# 5 Contribution to academic knowledge

*Internal control quality and audit quality*

**Insights for Academia**

- We expand on previous research that uses audit fees as a proxy of audit effort
  - → More detailed evidence on the audit risk model
  - → Evidence that audit effort is a **multifaceted construct**
  - → Preliminary evidence that the audit risk model works in practice

**Relevance of FAR Data**

- Detailed data on audit planning, team composition, and risk assessment
  - → Project strongly dependent on FAR data

# 6 Contribution to audit practice

*Internal control quality and audit quality*

**Insights for Practitioners**

- Preliminary evidence that the audit risk model works
- Guideline for audit effort needed to keep audit quality constant:

  ~15% of planned hours as overtime in the presence of an ICD
- Next steps: Examine staffing decisions in more detail

**What can researchers do to help practitioners?**

- We would like to know this from you, the audience!

  → Which criteria do you pay attention to when staffing an engagement?

  → To what extent do you expect staffing decisions to affect audit quality?



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# THANK YOU

*"On a mission to reveal audit quality drivers, one insight at a time"*

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