

Greening the Marketplace: The Impact of Sustainability Requirements on Market Competition and Equity

Benjamin M. Brunjes, University of Washington

Ana-Maria Dimand, Boise State University

Research Questions

How do sustainability requirements affect contractor marketplaces?

In particular:

- Do sustainability requirements affect the competitiveness of markets?
- Do sustainability requirements affect equity objectives?

Hypotheses

1) Sustainability requirements may increase search, screening, and negotiation costs for potential vendors, reducing the number of interested firms (*ex ante TCs*)

H1a: Sustainability requirements → contracts will receive fewer bids

2) Sustainability requirements may increase monitoring and enforcement costs for governments (to ensure that firms comply with sustainability requirements), meaning public officials will select known/established partners. (*ex post TCs*)

H1b: Sustainability requirements → contracts less likely to use competitive procedures

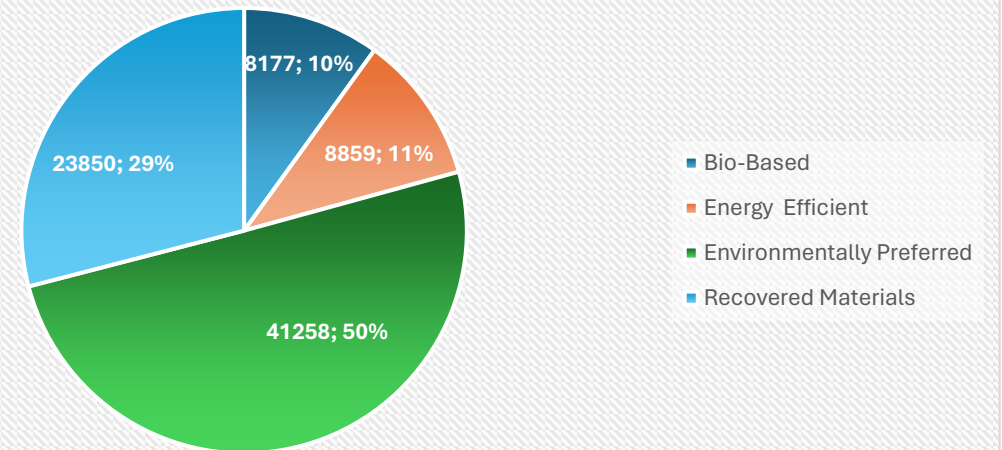
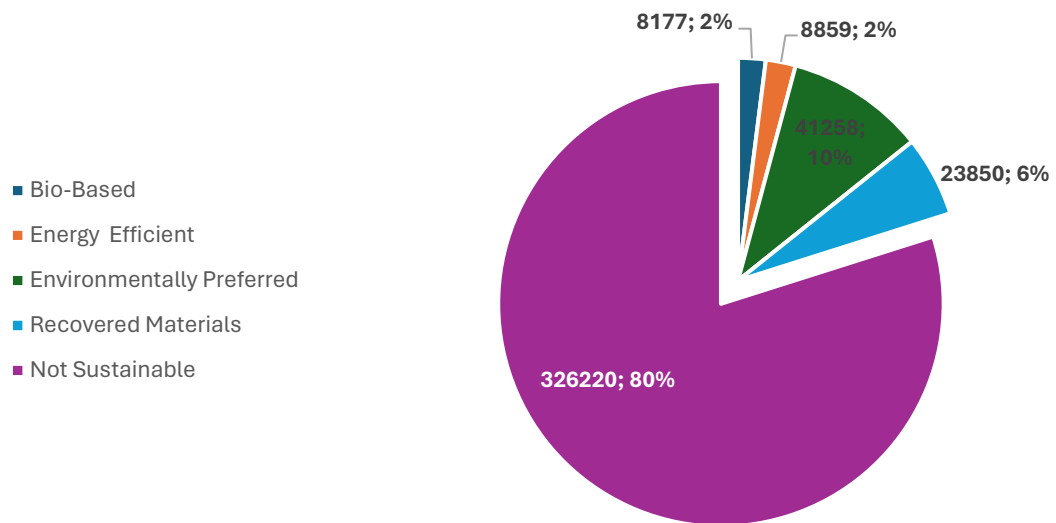
2) Small firms have lower capacity than other firms to navigate the complexities of government procurement processes. Sustainability requirements add to this administrative burden.

H2a: Sustainability requirements → 8(a) firms less likely to win

H2b: Sustainability requirements → WOSB firms less likely to win

Research Setting: U.S. Federal Contracting

- Four primary programs:
 - Bio-based → biological products, renewable resources
 - Energy efficient → FEMP and Energy Star[®]
 - Environmentally preferred → EPA standards
 - Recovered materials → recycled products



Data

- SAM.gov
- Range of industries by task complexity, many contracts
- Unit: contract, *overall* and *by industry*
- 2013 – 2019

PSC	Description	% Spending	% Contracts	Kim, Roberts, Brown TCE	n
S205	Trash Collection	14.0%	10.5%	3.08 (low)	10,211
S201	Custodial Services	35.2%	29.6%	3.30 (low)	21,160
U	Training	8.7%	2.8%	5.02 (med)	74,340
Z	Construction: Repair	34.39%	30.4%	5.22 (med)	190,888*
R706	Logistics Support	4.7%	1.7%	5.63 (med)	22,229
D302	IT Sys Dev	4.9%	4.3%	7.58 (High)	7,392

Key Variables and Methods

Variables of Interest (DVs)

- Market competition:
 - *Use of competitive procedures* (dichotomous) → logit
 - *Number of bids* (count) → negative binomial
- Use of small, disadvantaged firms:
 - *8(a) contractor* (dichotomous) → logit
 - *WOSB contractor* (dichotomous) → logit

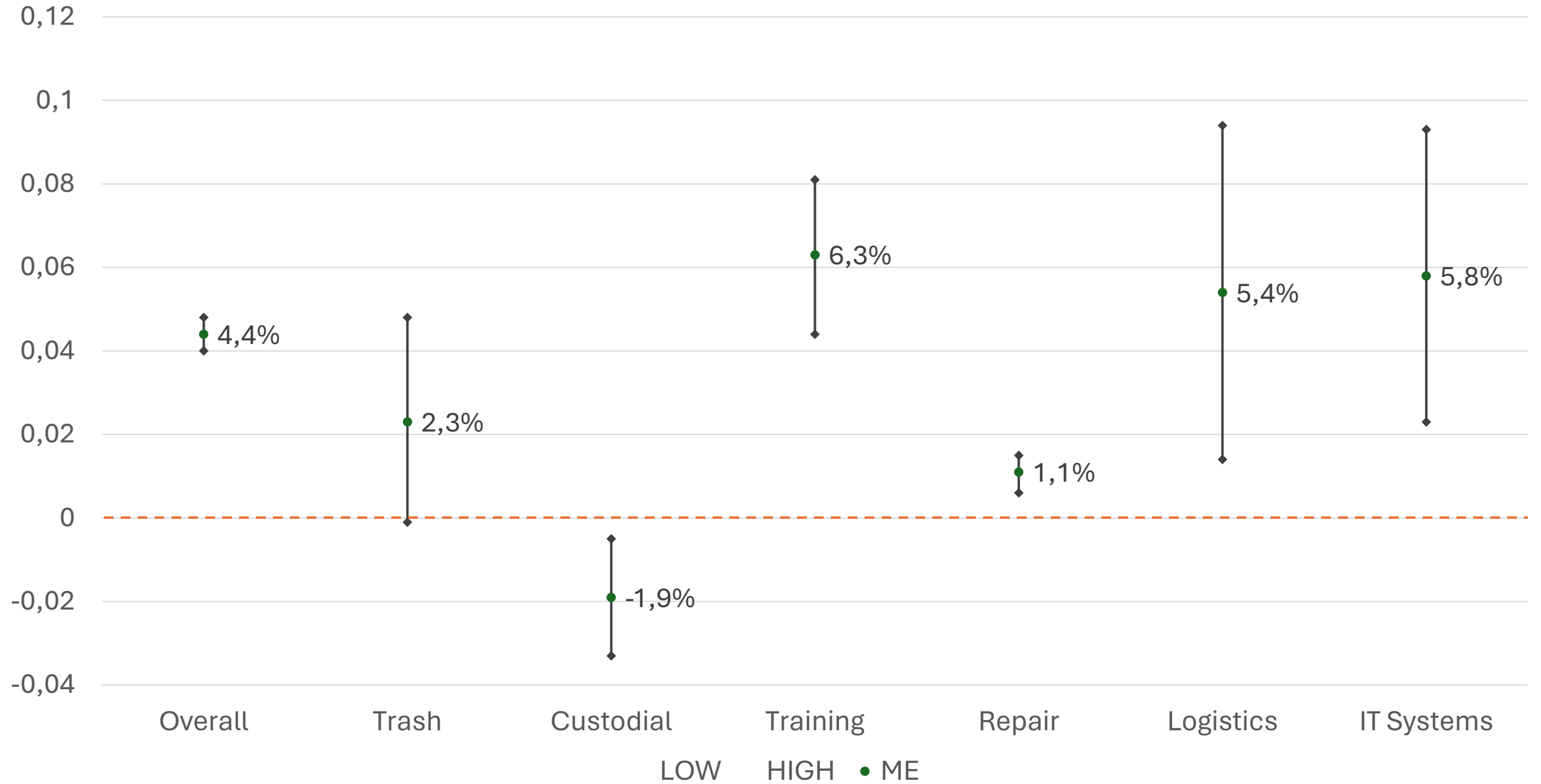
Explanatory Variables (IVs)

- Sustainable contract requirements (dichotomous)

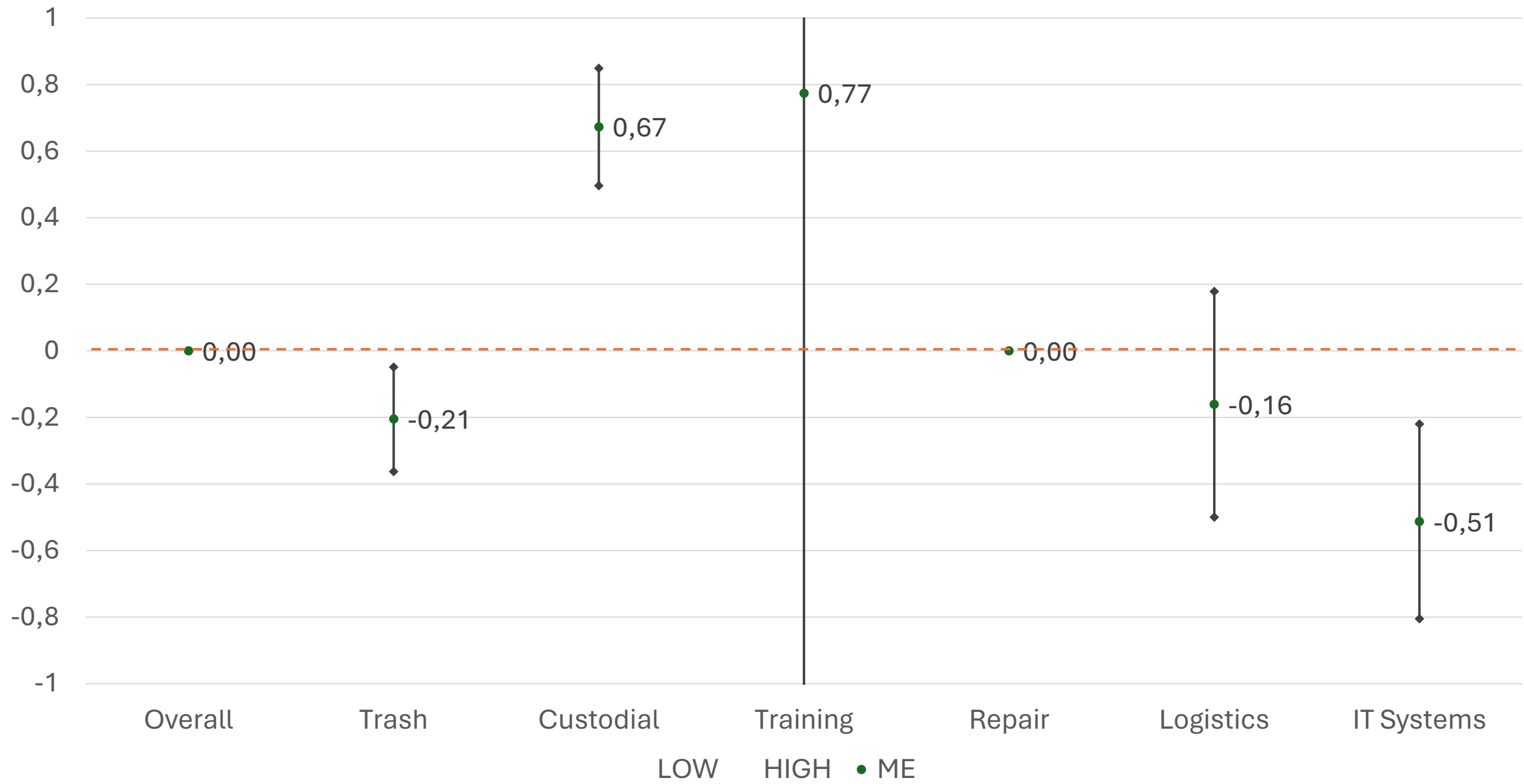
Controls

- Prior relationship, complexity, duration, value, SAP, agency and year FE

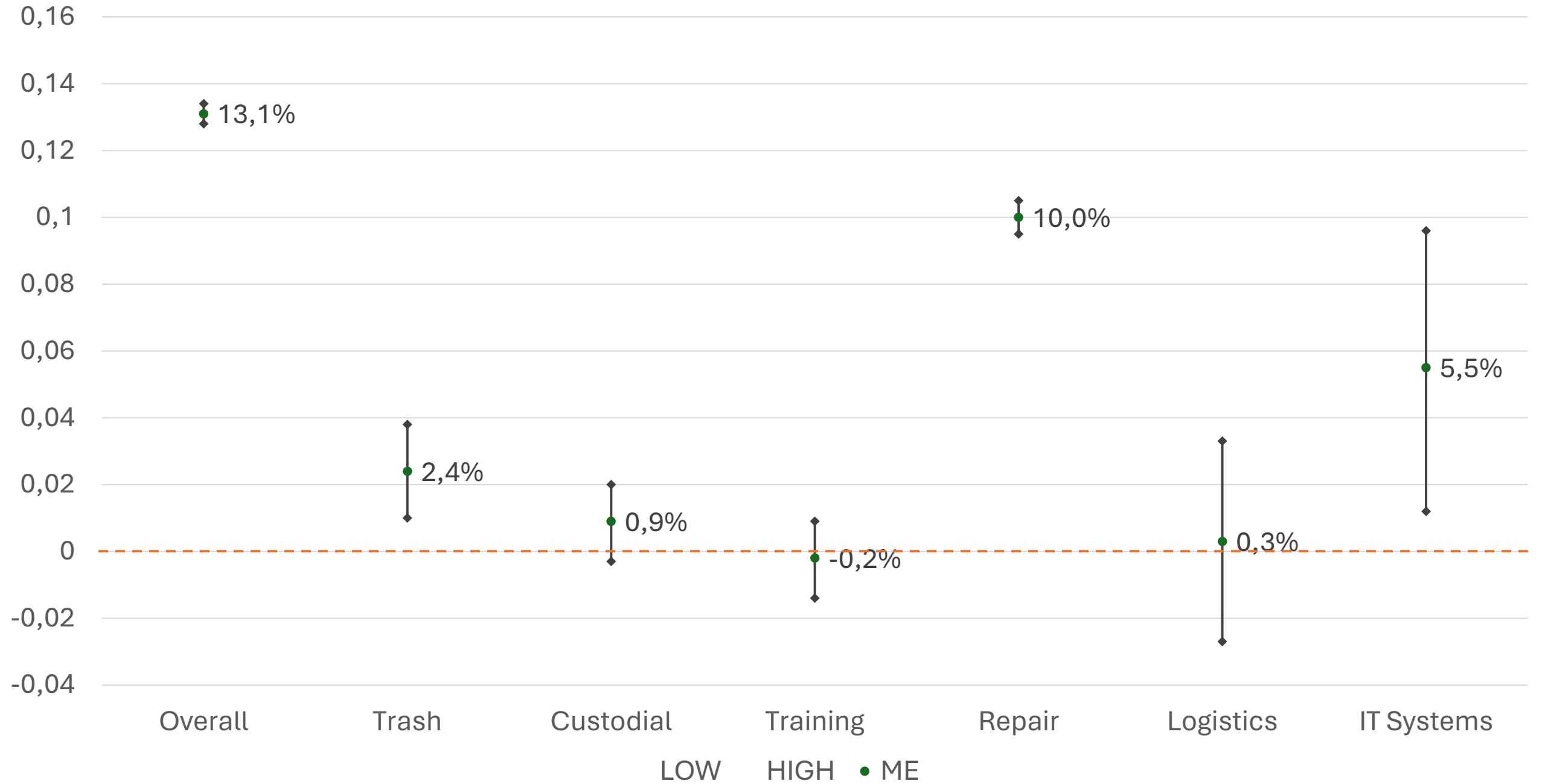
Competitive Procedures



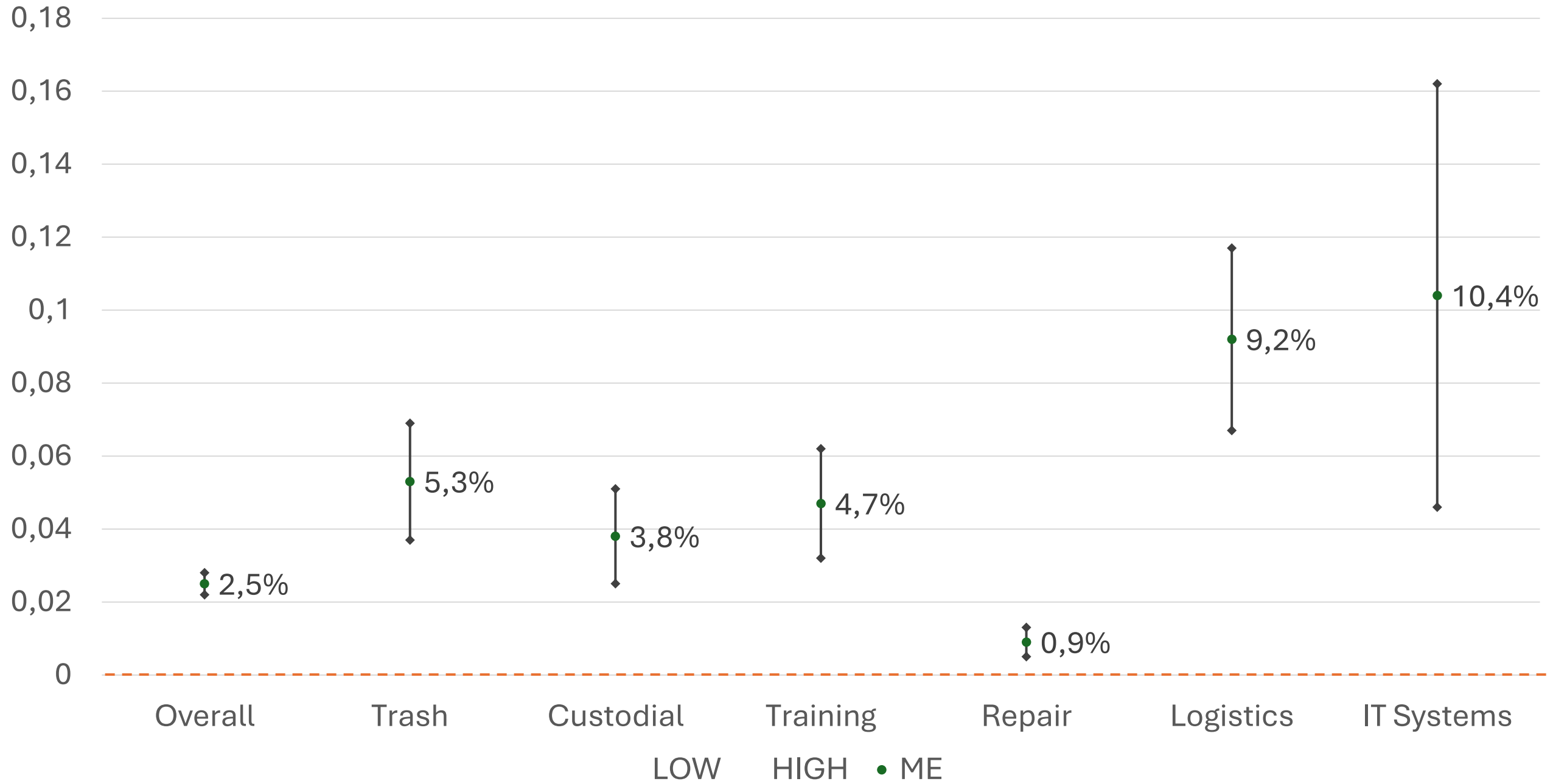
Bids



8(a) Firms



WOSB Firms



Revisiting Hypotheses: Markets are Competitive

H1a: Sustainability requirements → fewer bids

- Overall and in 4 industries sustainable contracts do not receive fewer bids
- Fewer bids in two industries: trash (-0.21 bids) and IT systems (-0.51 bids)

Assessment: not supported

H1b: Sustainability requirements → lower use of competitive procedures

- Overall and in 4 industries sustainable contracts are more likely to compete
- In one industry, there is no difference (trash collection)
- In one industry, sustainable contracts are less likely to compete (-custodial, 1.9%)

Assessment: not supported

Revisiting Hypotheses: Small Firms Win

H2a: Sustainability requirements → 8(a) firms less likely to win

→ Overall and in every industry 8(a) firms are either more likely to win sustainable contracts, or are not different from other firms

→ More likely overall, trash collection, and structure repair

H2b: Sustainability requirements → WOSB firms less likely to win

→ Overall and in every industry WOSB firms are more likely to win sustainable contracts than other firms

Deep Dive: Structure Repair

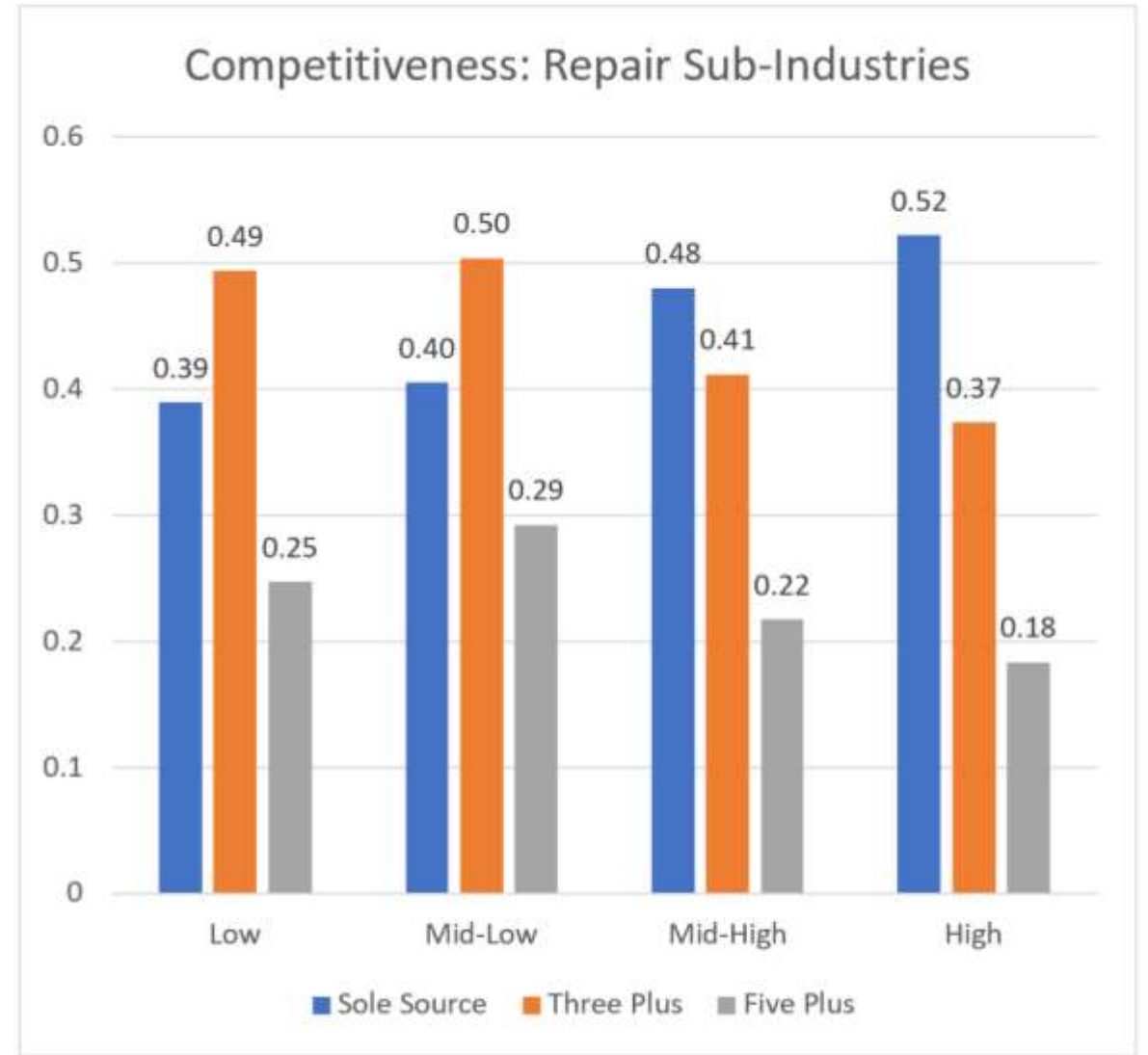
- Comparison of similar types of work to assess effects of sustainability requirements
- Sub-industry level of analysis

Quartiles (% Sustainable)					
Quartile	Upper Bound	Lower Bound	Contracts	Example	Example
High	100%	39.34%	37182	Office Building Repair	Maintenance of Gov't R&D Facilities
Mid-High	39.31%	29.61%	43305	Office Building Maintenance	Road Maintenance, Hwys, Bridges
Mid-Low	29.36%	26.88%	49498	Misc. Building Repair	Repair of Non-Building Facilities
Low	26.87%	0.00%	60969	Misc. Building Maintenance	Repair of Contractor-Owned Labs

Sole Source				
Quartile	No	Yes	Total	PCT
High	17777	19405	37182	0.521892313
Mid-High	22508	20797	43305	0.480244775
Mid-Low	29452	20046	49498	0.40498606
Low	37215	23754	60969	0.389607833

Five Plus Bids				
Quartile	No	Yes	Total	PCT
High	30369	6813	37182	0.183233823
Mid-High	33888	9417	43305	0.217457568
Mid-Low	35025	14473	49498	0.292395652
Low	45920	15049	60969	0.246830356

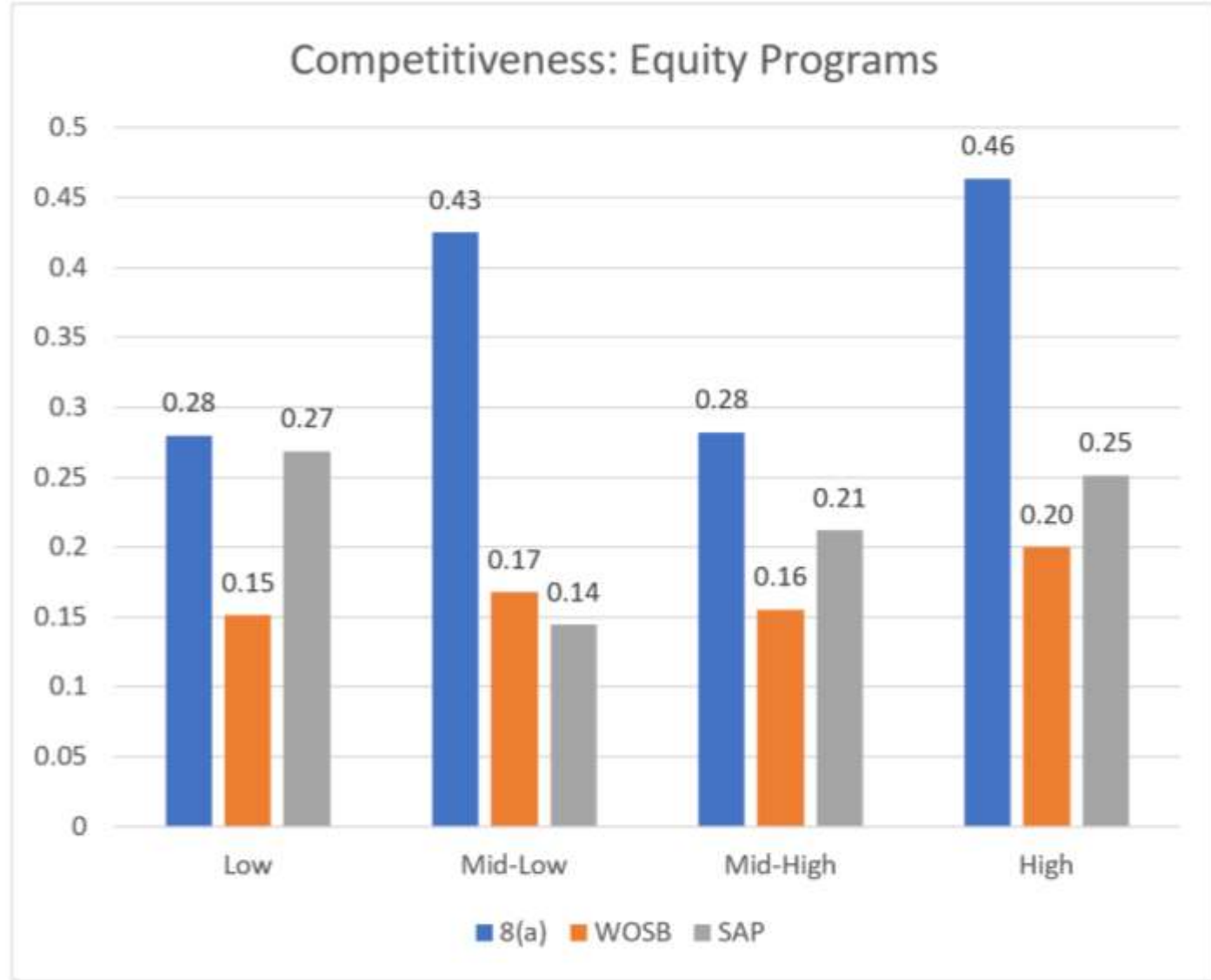
Three Plus Bids				
Quartile	No	Yes	Total	PCT
High	23291	13891	37182	0.37359475
Mid-High	25479	17826	43305	0.411638379
Mid-Low	24547	24951	49498	0.504080973
Low	30861	30108	60969	0.493824731



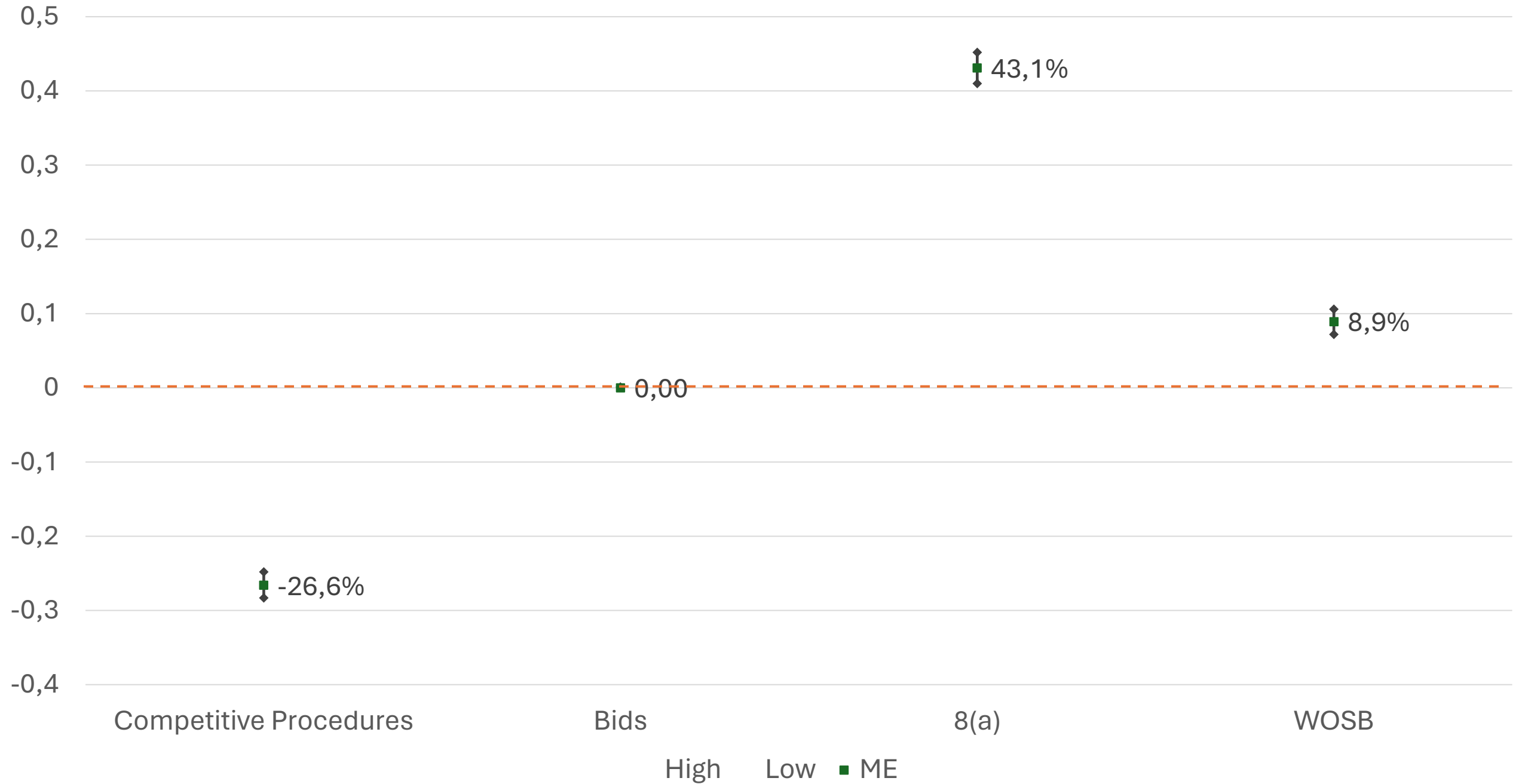
8(a)				
Quartile	No	Yes	Total	PCT
High	19932	17250	37182	0.463934162
Mid-High	31089	12216	43305	0.282092137
Mid-Low	28450	21048	49498	0.425229302
Low	43905	17064	60969	0.279879939

WOSB				
Quartile	No	Yes	Total	PCT
High	29741	7441	37182	0.200123716
Mid-High	36573	6732	43305	0.15545549
Mid-Low	41200	8298	49498	0.167643137
Low	51752	9217	60969	0.151175187

SAP				
Quartile	No	Yes	Total	PCT
High	27839	9343	37182	0.2512775
Mid-High	34122	9183	43305	0.212054035
Mid-Low	42347	7151	49498	0.144470484
Low	44580	16389	60969	0.268808739



Construction Sub-Industry Analysis



Discussion and Conclusion

- GPP: move beyond determinants into implementation and effects
 - Complex procurement goals: blending public values
 - Need to know more about GPP implications for firms, public managers
- Results: Overall, sustainability requirements do not reduce market competition and increase the use of small firms
 - TCs added have small effect – markets remain competitive
 - Differences across industries
- Limitations
- Next steps

Questions?