

# Microeconomics, Competition, and Major Defense Acquisition Program Cost

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# Overview

- The MDAP market is a monopsony-facing oligopoly
- According to microeconomic theory, firms in an oligopoly market do not compete on price (cost)
- Defense acquisition reforms based on competition fail to control cost overruns and cost growth in hardware MDAPs

# Research Questions

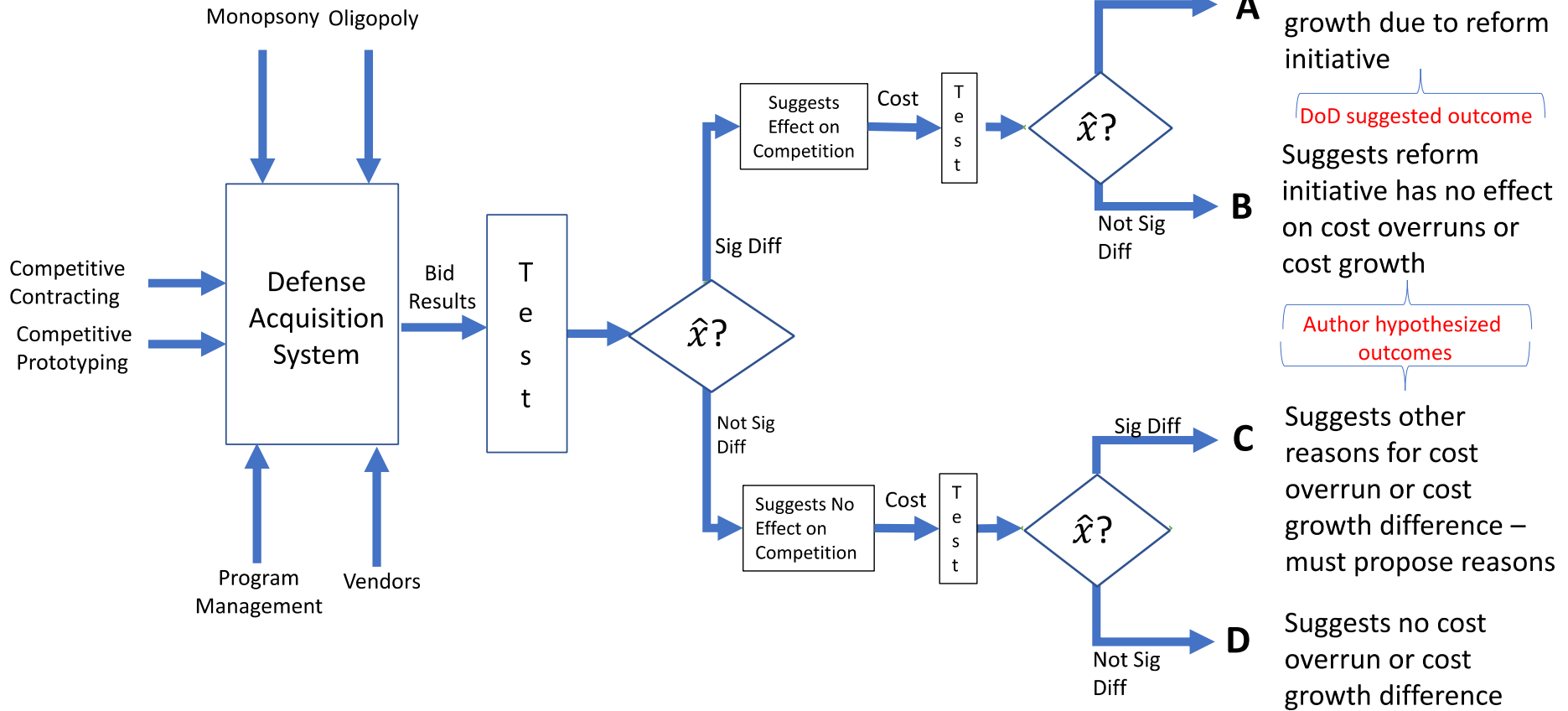
- Do competitive prototyping and competitive contracting lead to more competition (an increase in the # of bids) in the MDAP market?
- Does more competition lead to lower cost growth or overruns in the MDAP market?

# Research Hypotheses

- H1: Competitive prototyping leads to more competition
- H2: Competitive contracting leads to more competition
- H3: Competition does not lead to lower cost growth or lower cost overruns

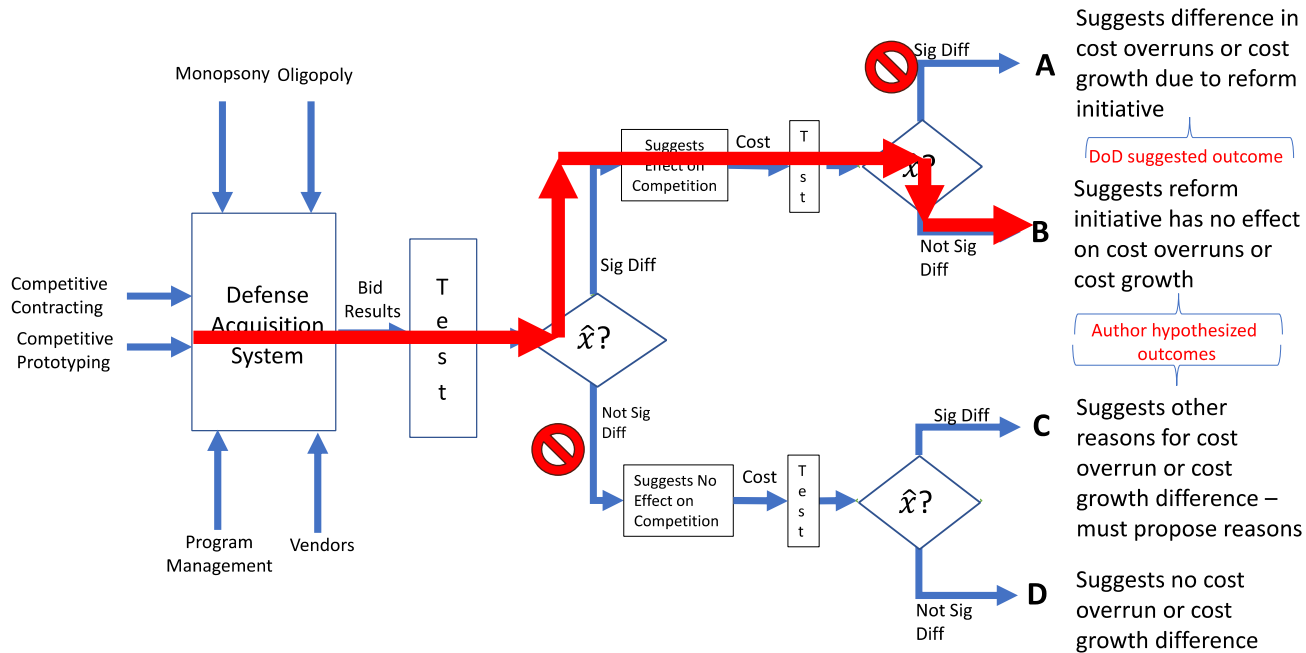
# Methodology

## Logic Flow



# Results

Result Measure	Increase Competition?	Reduce Cost Overruns/Cost Growth?	Outcome
Competitive Prototyping	Yes	Yes	A
	Yes	No	B
	No	Yes	C
	No	No	D
Competitive Contracting	Yes	Yes	A
	Yes	No	B
	No	Yes	C
	No	No	D



# Results

- Competitive Prototyping and Competitive Contracting **do increase competition** in MDAPs
- Greater competition **does not** lead to reduced cost overruns or reduced cost growth
- Competition based cost control measures are **not effective** for MDAPs

# Conclusions and Recommendations

- Microeconomic theory correctly predicts the effect of competition on cost overruns and cost growth
- Competition has its place in MDAP market but *not as a cost control measure*
- The defense acquisition community must devise and adopt strategies that do not rely on competition as a mechanism to reduce cost overruns and cost growth



**Questions?**

# Bottom Line Up Front

- The MDAP market is an oligopoly
- It is possible to increase competition in the MDAP market
- However, in an oligopoly, firms do not compete on price (cost)
- Therefore, competition is not an effective cost control measure in the MDAP market

# Definitions

- **Competition** - The attempt by two or more companies or other organizations to secure the business of a customer. (Financial Dictionary, 2020)
- **Competitive Prototyping** - Prototyping where two or more contractors develop prototypes prior to Milestone B which are tested or demonstrated to the government to verify that they meet requirements. (Fast, 2016)
- **Competitive Contracting** - A contracting strategy that relies on full and open competition. A procurement is considered to be competed under full and open competition if all responsible sources are permitted to submit sealed bids or competitive proposals. (Competition in the Contracting Act, 2000)

# Methodology

- Case Study 63 MDAP, hardware programs, all services, various types
- Data sources – SARS, GAO Reports, Kamp (2019), Fast (2016), the Federal Procurement Data System (FPDS) and corporate 10-K reports
- Test with Non-parametric Mood's Median Test:
  - Effect of competition measures on number of bids
  - Effect of number of bids on cost overruns and cost growth
  - Effect of competition measures on cost overruns and cost growth directly



# Results

Research Hypothesis	Indep Variable	Dep Variable	H <sub>0</sub>	P-value	Conclusion
H1	CP (T/F)	# of bids	$\hat{x} =$	0.000	→ ↑ Competition
H2	CC (T/F)	# of bids	$\hat{x} =$	0.004	→ ↑ Competition

**H1:** Competitive prototyping leads to more competition.

**H2:** Competitive contracting leads to more competition

# Results

Research Hypothesis	Indep Variable	Dep Variable	H <sub>0</sub>	P-value	Conclusion
H3	# of bids	Cost Overruns	$\hat{x} =$	0.166	 ↓ cost overruns
H3	# of bids	% Chg Cost Overruns	$\hat{x} =$	0.360	 ↓ % cost overruns
H3	# of bids	R&D Cost Growth	$\hat{x} =$	0.480	 ↓ R&D Cost Growth
H3	# of bids	% Chg R&D Cost Growth	$\hat{x} =$	0.145	 ↓ % chg R&D Cost Growth
H3	# of bids	% Chg in Unit Cost Growth	$\hat{x} =$	0.802	 ↓ % chg in Unit Cost Growth
H3	# of bids	PAUC	$\hat{x} =$	0.298	 ↓ PAUC

**H3:** Competition does not lead to lower cost growth or lower cost overruns.

# Results

Research Hypothesis	Indep Variable	Dep Variable	H <sub>0</sub>	P-value	Conclusion
Similar results for CP and CC versus cost variable except CC versus PAUC					
	CC	PAUC	$\hat{x} =$	0.006	→ ↓ PAUC

PAUC includes military construction. MILCON market is near perfect competition which is highly competitive on price (cost).