



NATIONAL DEFENSE RESEARCH INSTITUTE

# Trends in the DoD Industrial Base

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May 5, 2016

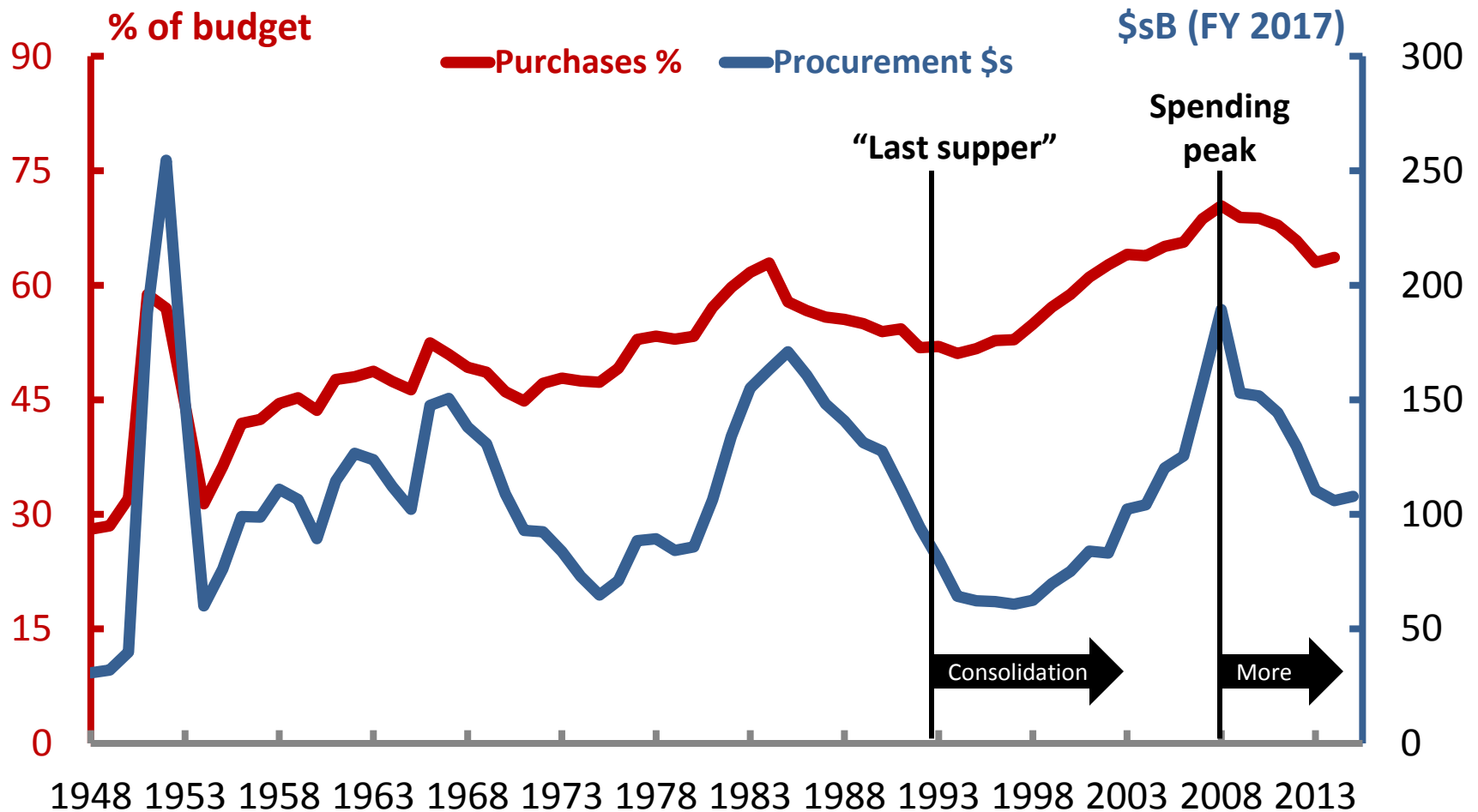
# Industry Consolidation Has Been a Trend for Many Years

- Industries tend to consolidate over time - faster in recent years<sup>1</sup>
- Globally, Merger and Acquisition (M&A) activity reached a volume of \$4.3 trillion, barely beating the record set in 2007<sup>2</sup>
- 2015 M&A driven by<sup>2</sup>
  - Pressure to become more efficient in a slow-growth economy
  - Increased boardroom confidence
  - Cheap debt
  - Desire to keep up with consolidating rivals

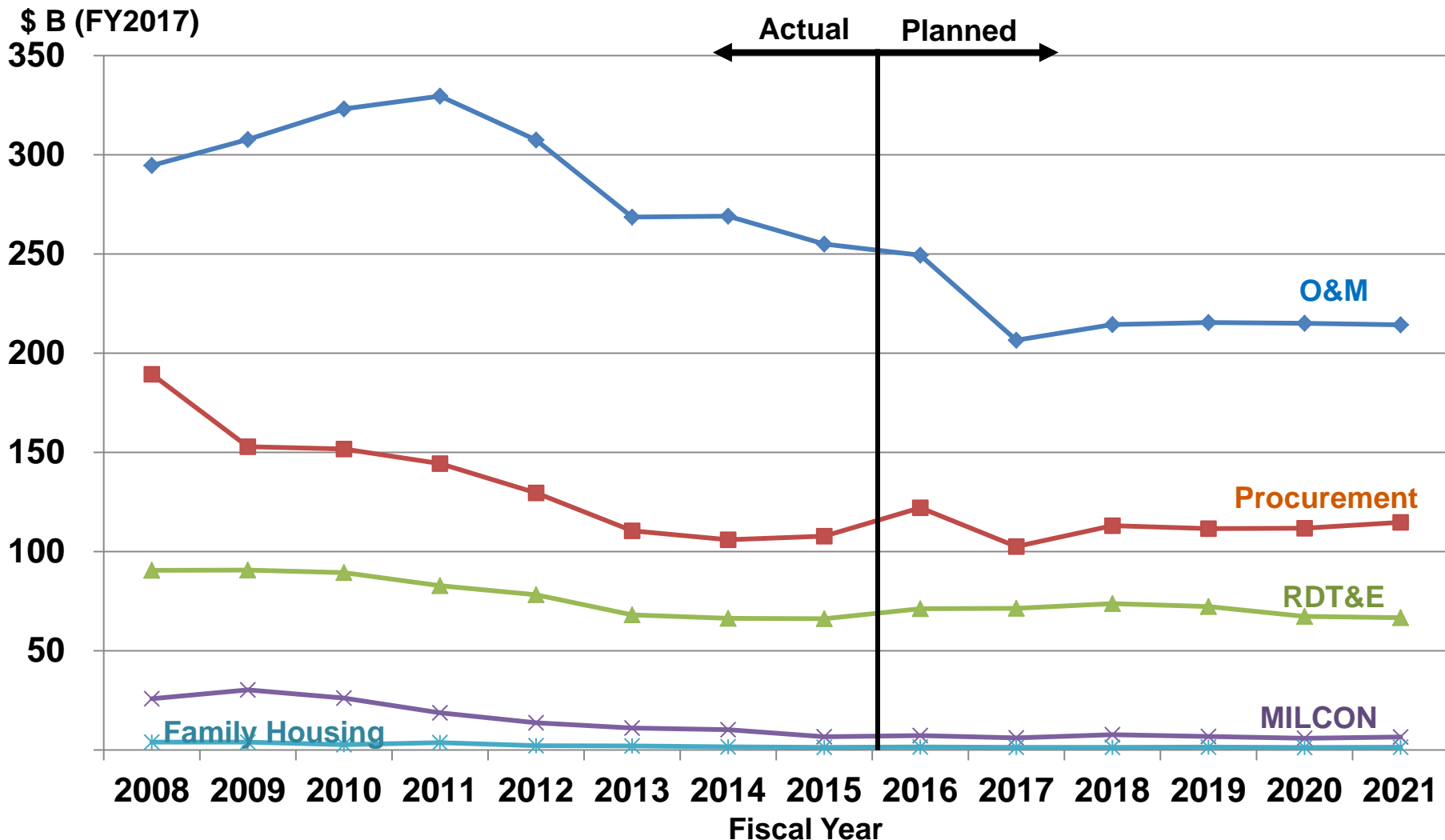
<sup>1</sup>Deans, Graeme K., Kroeger, Fritz, and Zeisel, Stefan, "The Consolidation Curve," *Harvard Business Review*, December 2002.

<sup>2</sup>Farrell, Maureen, "2015 Becomes the Biggest M&A Year Ever," *The Wall Street Journal*, Dec. 3, 2015, as of April 4, 2016 at <http://www.wsj.com/articles/2015-becomes-the-biggest-m-a-year-ever-1449187101>

# Purchases Have Increased while Procurement Funding Has Varied in DoD Budget



# Procurement Is Projected to Increase, then Decrease, and then Increase Slightly in Future Budgets



Source: OUSD(Comptroller), National Defense Budget Estimates for FY 2017, March 2016, Table 6-1  
[http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY17\\_Green\\_Book.pdf](http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY17_Green_Book.pdf)

NOTE: Data in Constant FY2017 Dollars.

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# Leading Industries for DoD Procurement Dollars

NAICS		Procure \$sB		Total DoD \$sB		Total Industry \$Bs
Code	Name	2012	2015	2012	2015	2012
336411	Aircraft Manufacturing	23.6	20.5	46.7	34.5	113.0
336611	Ship Building and Repairing	11.8	9.3	16.6	13.9	24.9
336414	Missile & Space Veh. Mfg.	6.1	5.0	10.7	8.8	19.7
541330	Engineering Services	5.5	3.8	28.8	22.8	208.1
336413	Other Aircraft Pts./Equip. Mfg.	4.1	2.9	13.5	11.3	34.3
334511	Search Instrument Mfg.	3.9	3.9	9.1	8.8	47.0
336992	Armored Vehicle & Tank Mfg.	3.4	1.3	6.5	3.3	5.6
541710-2	R&D in Sciences	3.0	2.0	25.4	20.6	110.7
332993	Ammo. (not small-arms) Mfg.	2.2	1.5	2.8	1.9	3.6
336412	Acft. Engines & Engine Parts	2.1	2.3	5.3	4.5	37.1
334220	Radio/TV Broadcast Equip.	2.1	0.8	4.9	2.3	30.3
332410	Boiler and Heat Exch. Mfg.	1.2	1.6	1.2	1.6	7.1

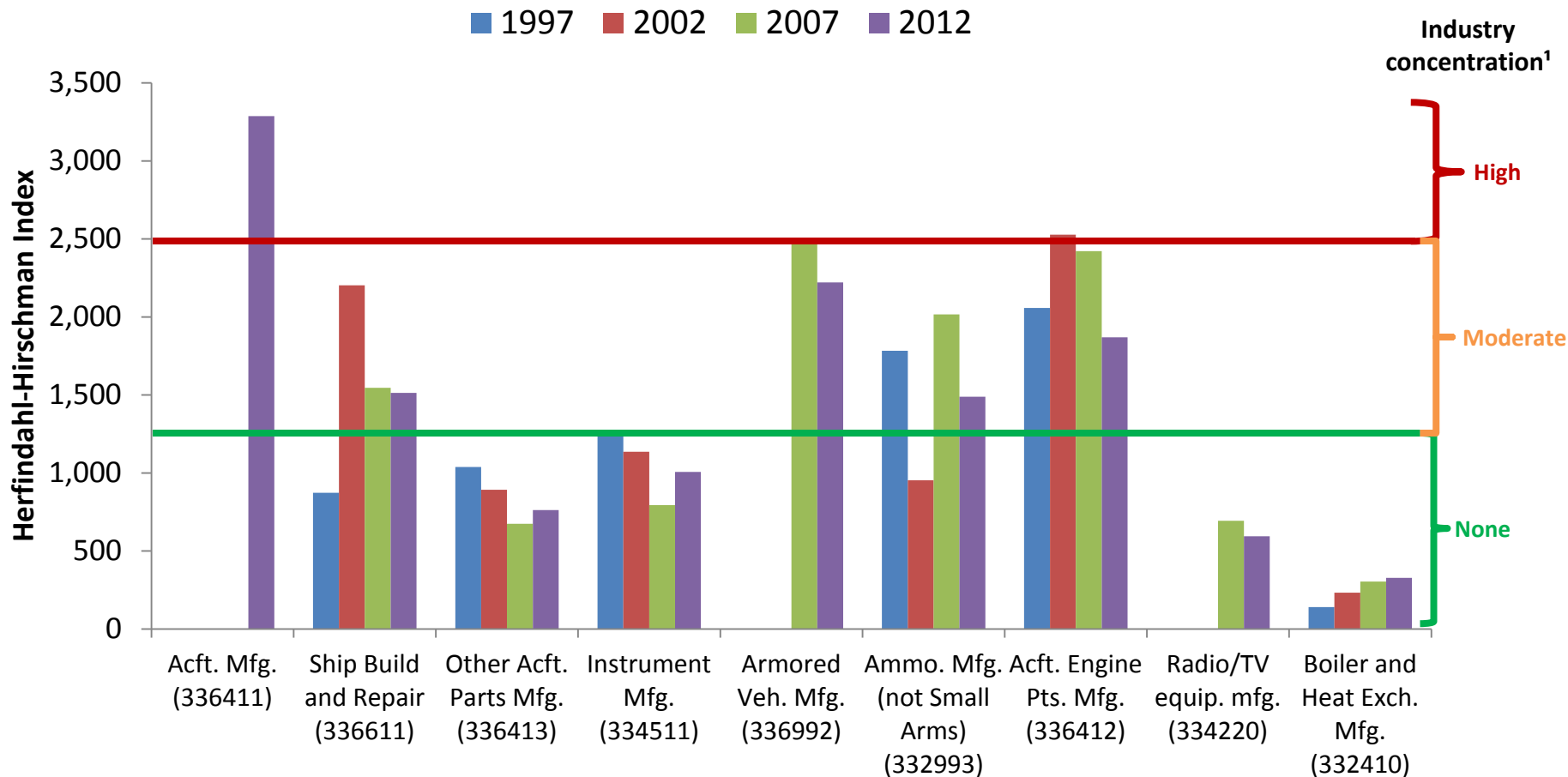
# Procurement Share of DoD Dollars and DoD Share of Industry Dollars

NAICS		Procure Share of DoD \$s		DoD Share of Industry \$s
Code	Name	2012	2015	2012
336411	Aircraft Manufacturing	51	59	41
336611	Ship Building and Repairing	71	67	66
336414	Missile & Space Veh. Mfg.	58	57	54
541330	Engineering Services	19	17	14
336413	Other Aircraft Pts./Equip. Mfg.	30	26	39
334511	Search Instrument Mfg.	43	45	19
336992	Armored Vehicle & Tank Mfg.	52	40	117
541710-2	R&D in Sciences	12	10	23
332993	Ammo. (not small-arms) Mfg.	79	77	79
336412	Acft. Engines & Engine Pts.	40	50	14
334220	Radio/TV Broadcast Equip.	43	36	16
332410	Boiler and Heat Exch. Mfg.	99	99	18

# NAICS Codes Are Often Very Broad — Aircraft Manufacturing Example

- Airplane(military, civilian, general aviation)
  - Manufacturing
  - Conversions
  - Overhauling
  - Rebuilding
  - Prototype development
- Other aircraft mfg.
  - Autogiro
  - Blimp
  - Drone
  - Glider
  - Helicopter
  - Ultralight

# Herfindahl-Hirschman Index of Market Concentration by Industry, 1997-2012

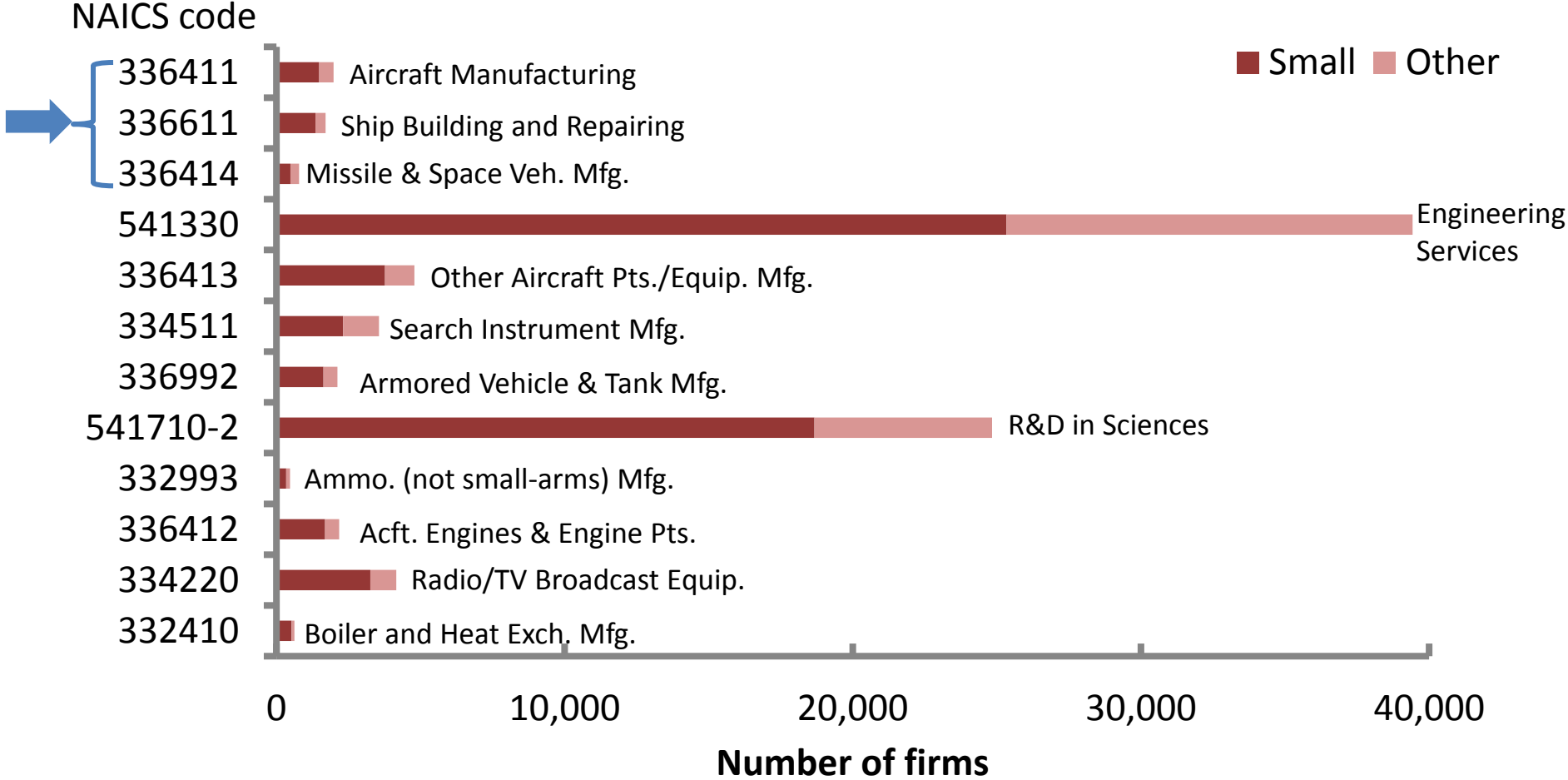


<sup>1</sup>As defined U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, August 19, 2010, p. 19.

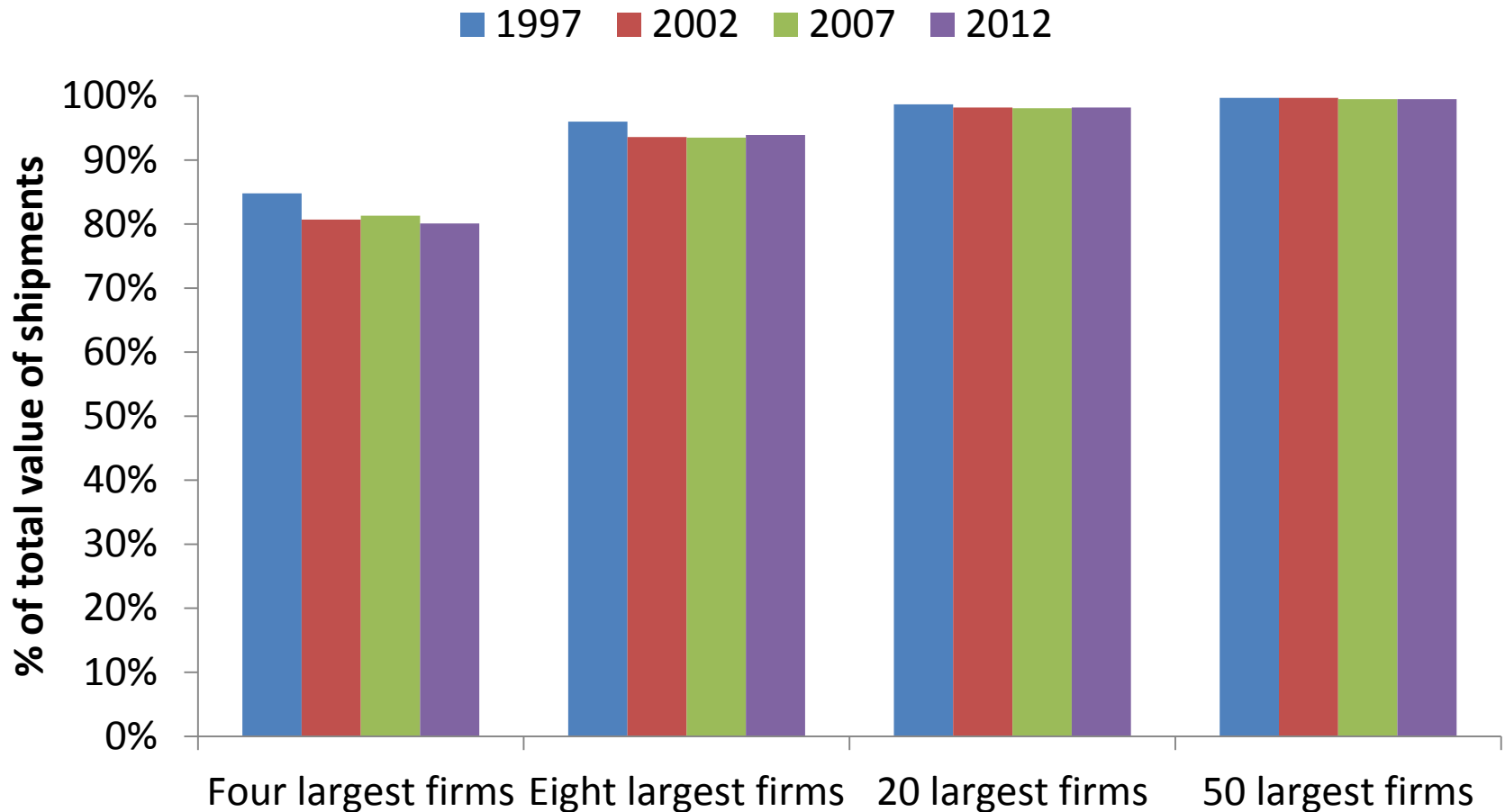
Source: Economic Census. Data not available for years not shown.



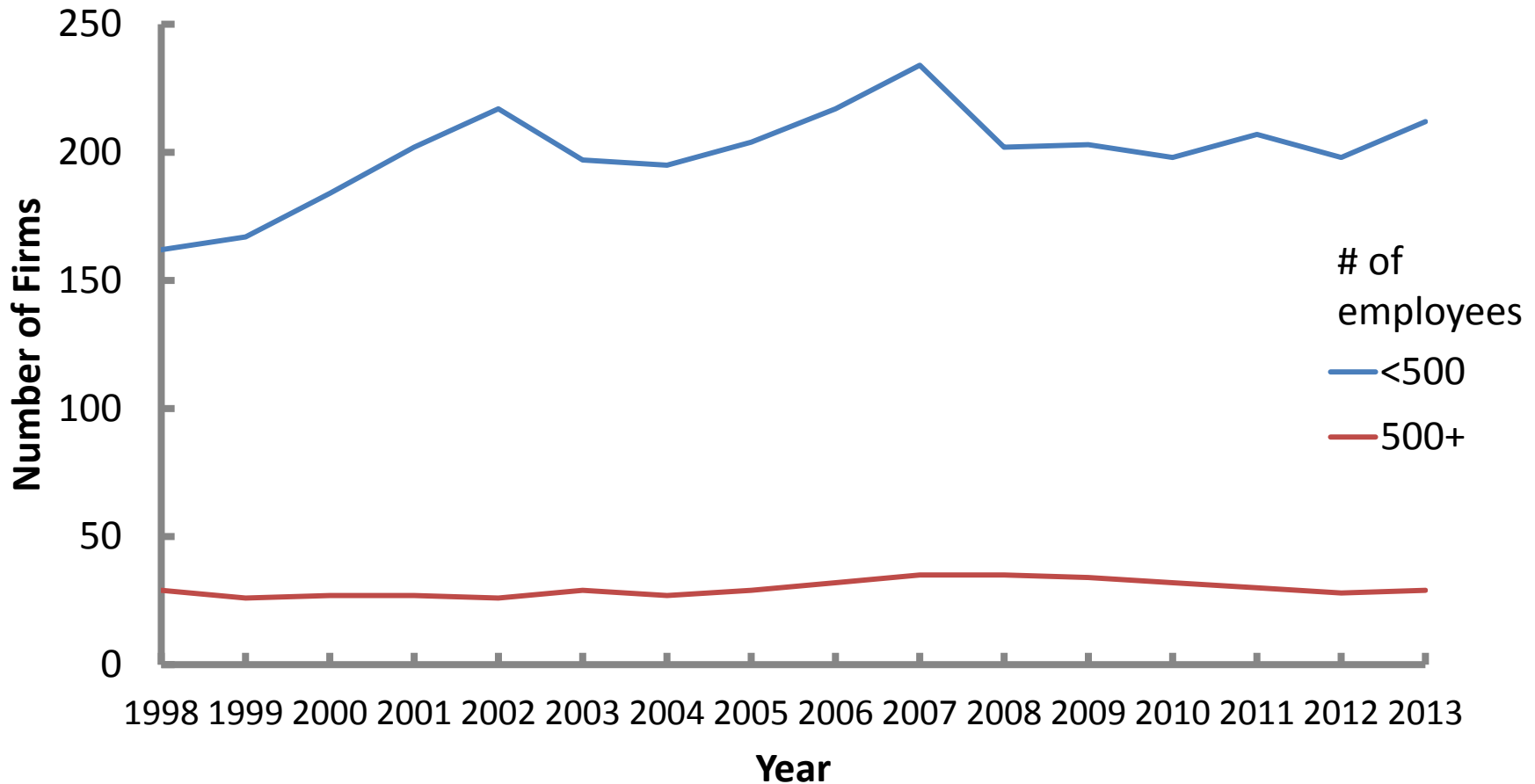
# Registered Firms by Industry and Size



# Concentration Indexes for Aircraft Manufacturing (NAICS Code 336411)

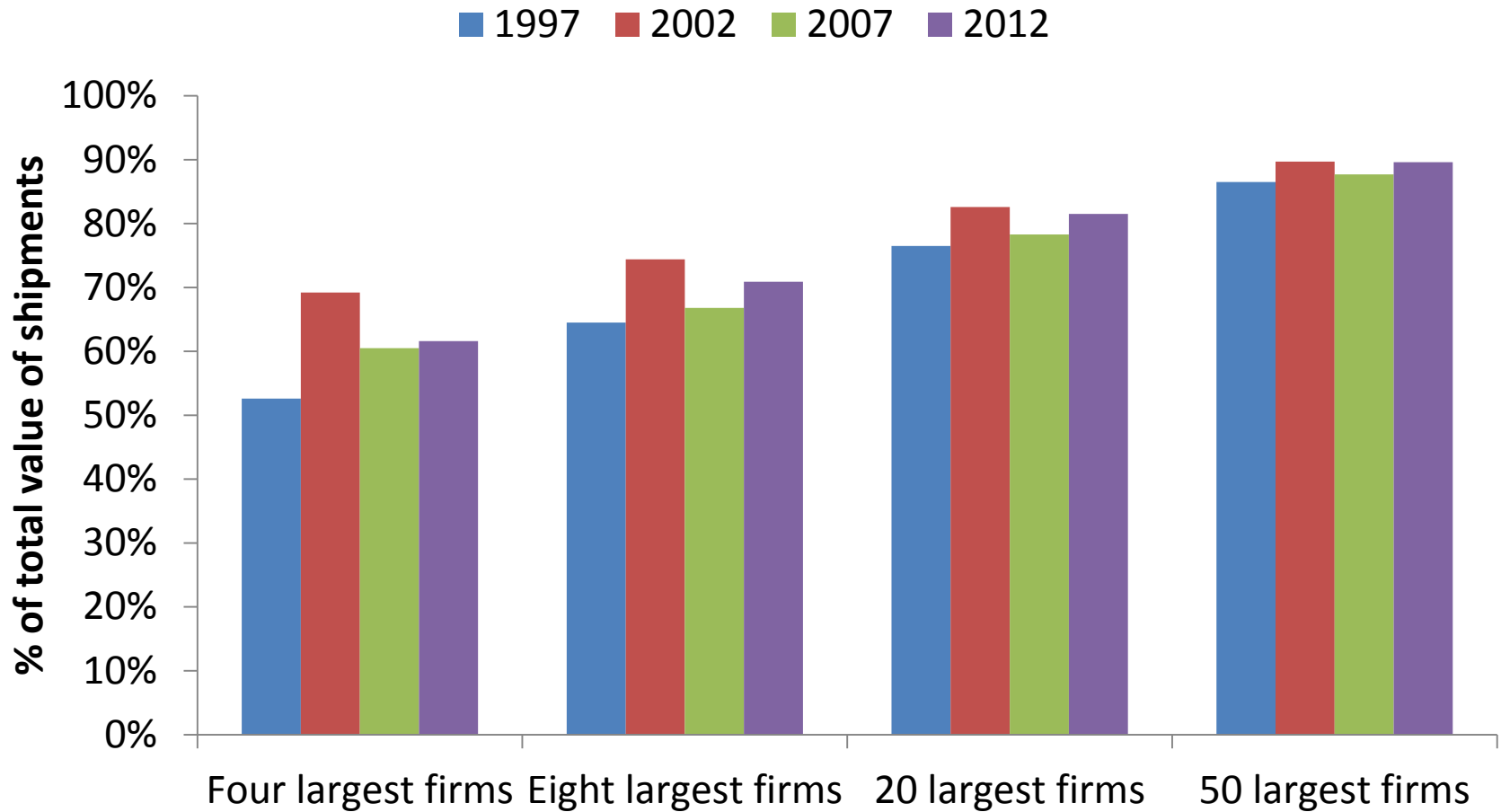


# Aircraft Manufacturing (NAICS Code 336411) Firms by Number of Employees

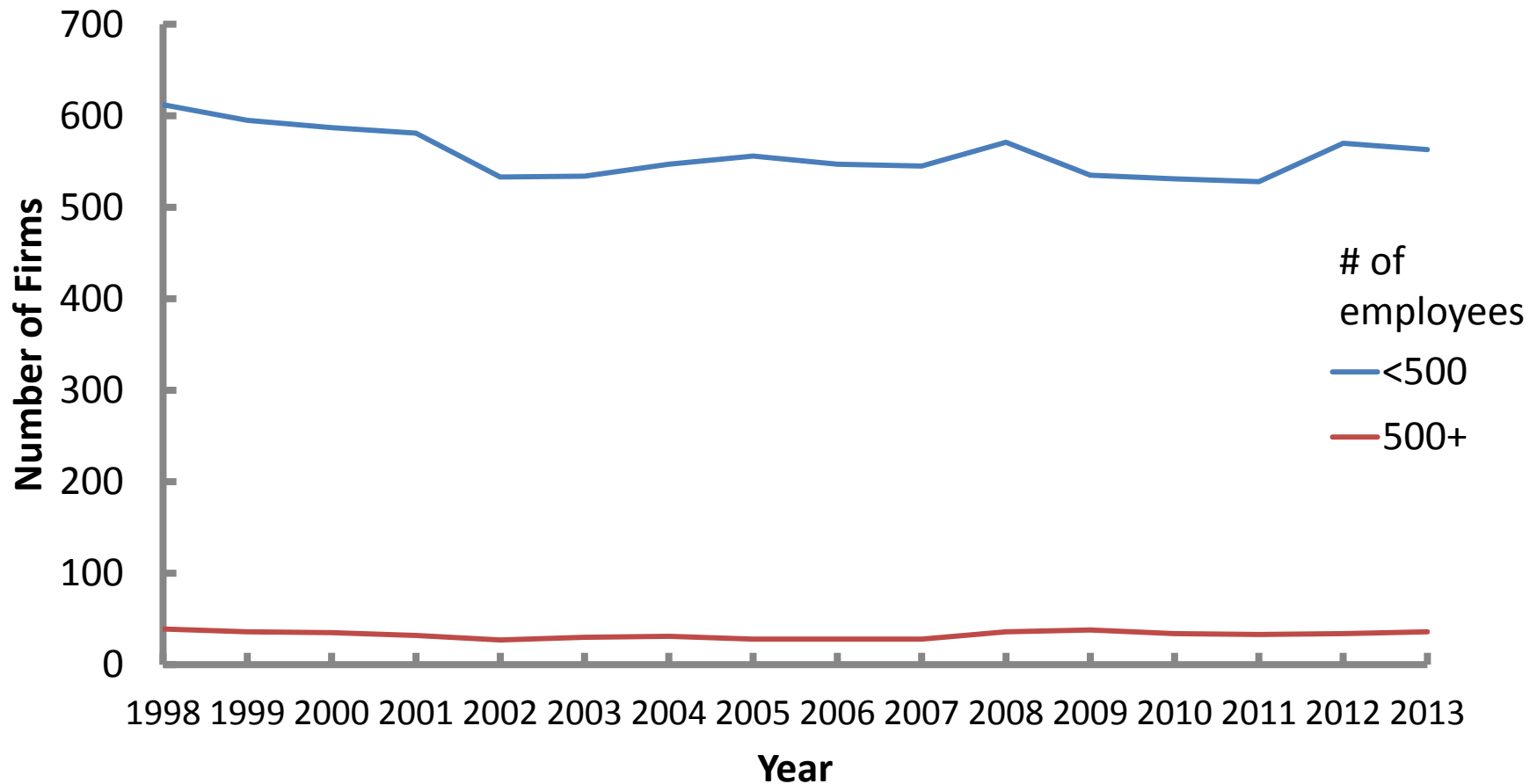


SBA size standard = 1,500 employees

# Concentration Indexes for Ship Building and Repairing (NAICS Code 336611)

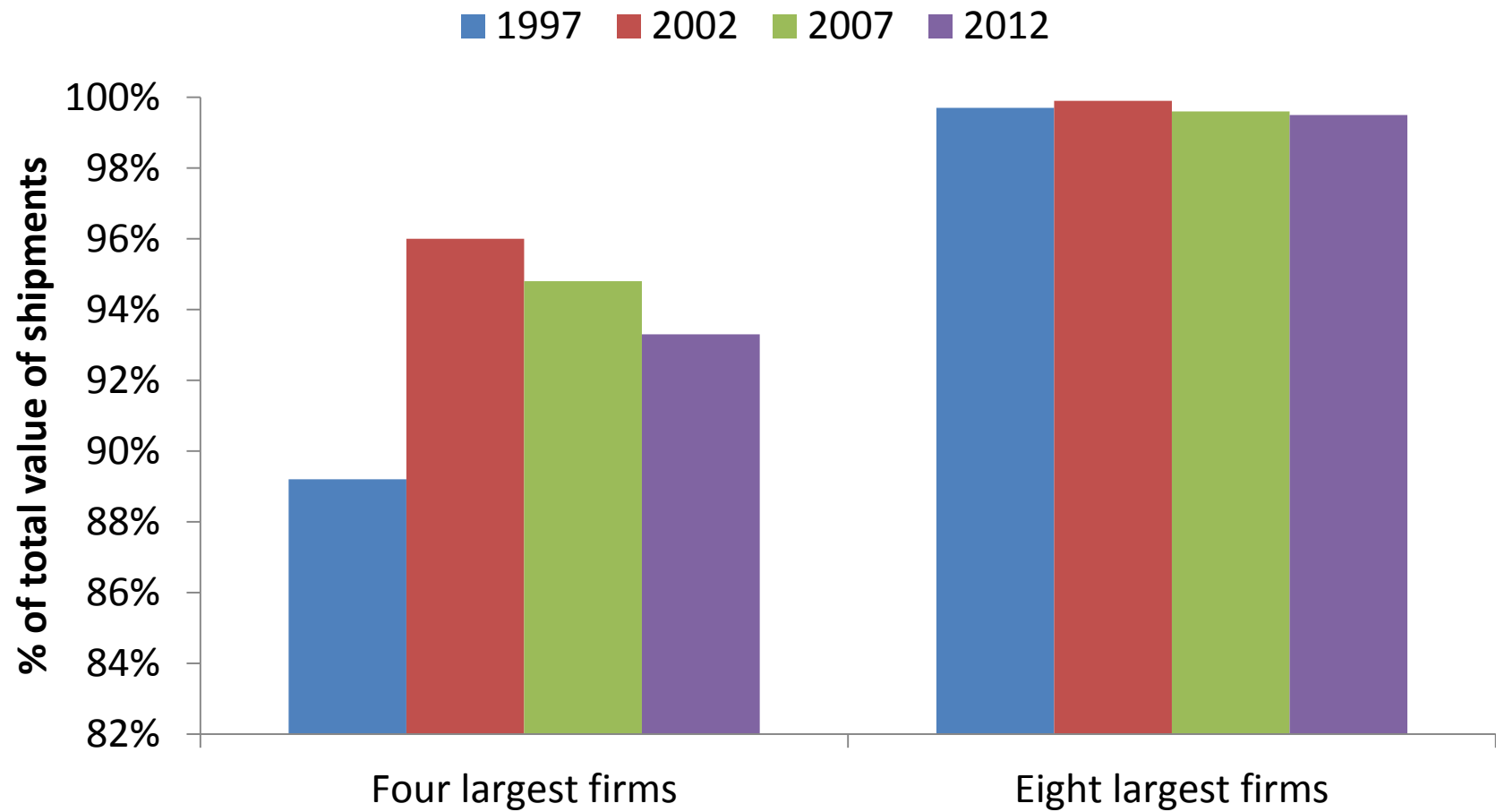


# Ship Building and Repairing (NAICS Code 336611) Firms by Number of Employees

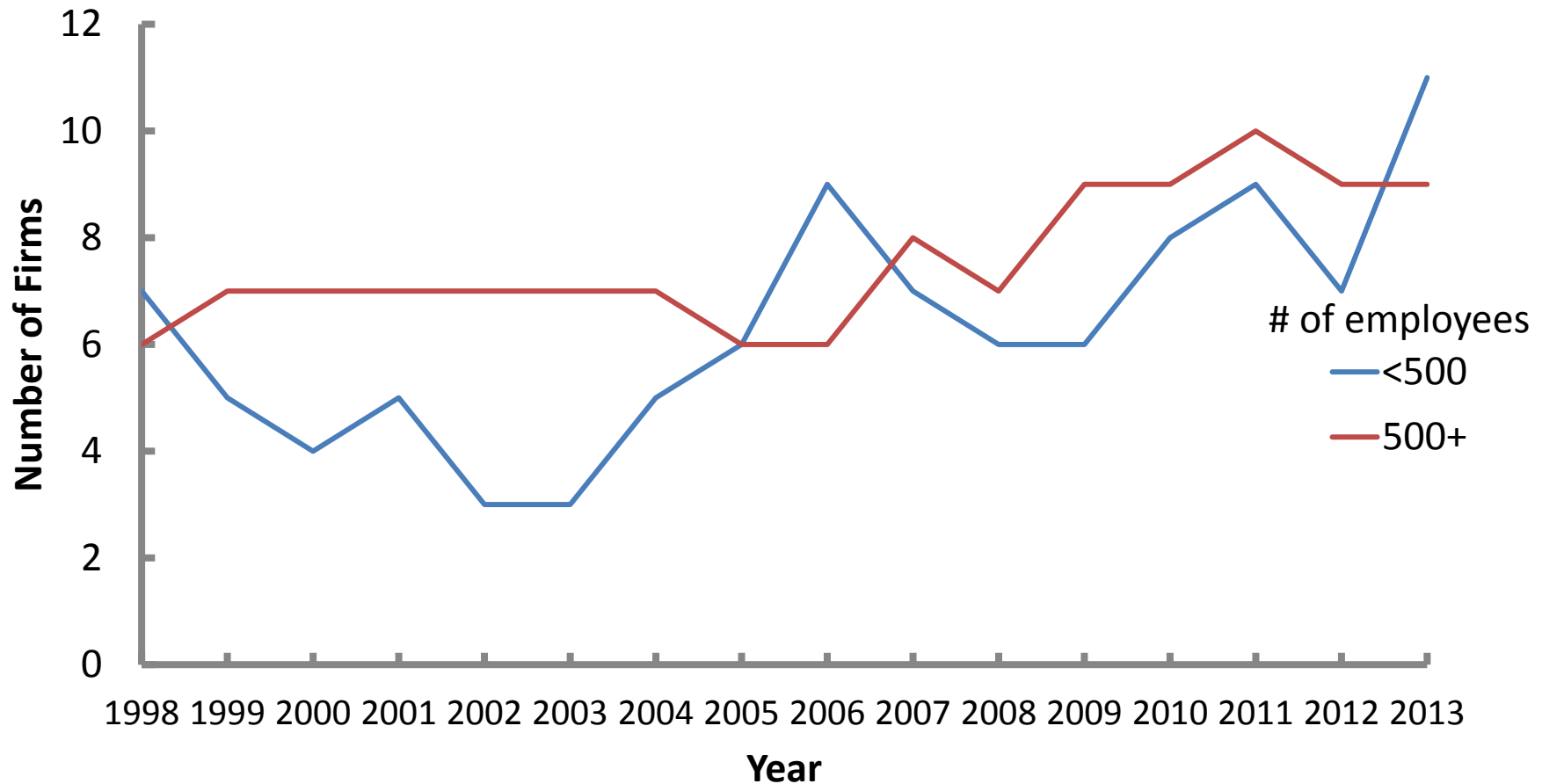


SBA size standard = 1,250 employees

# Concentration Indexes for Guided Missile and Space Vehicle Manufacturing (NAICS Code 336414)



# Guided Missile and Space Vehicle Manufacturing (NAICS Code 336414) Firms by Number of Employees



SBA size standard = 1,250 employees

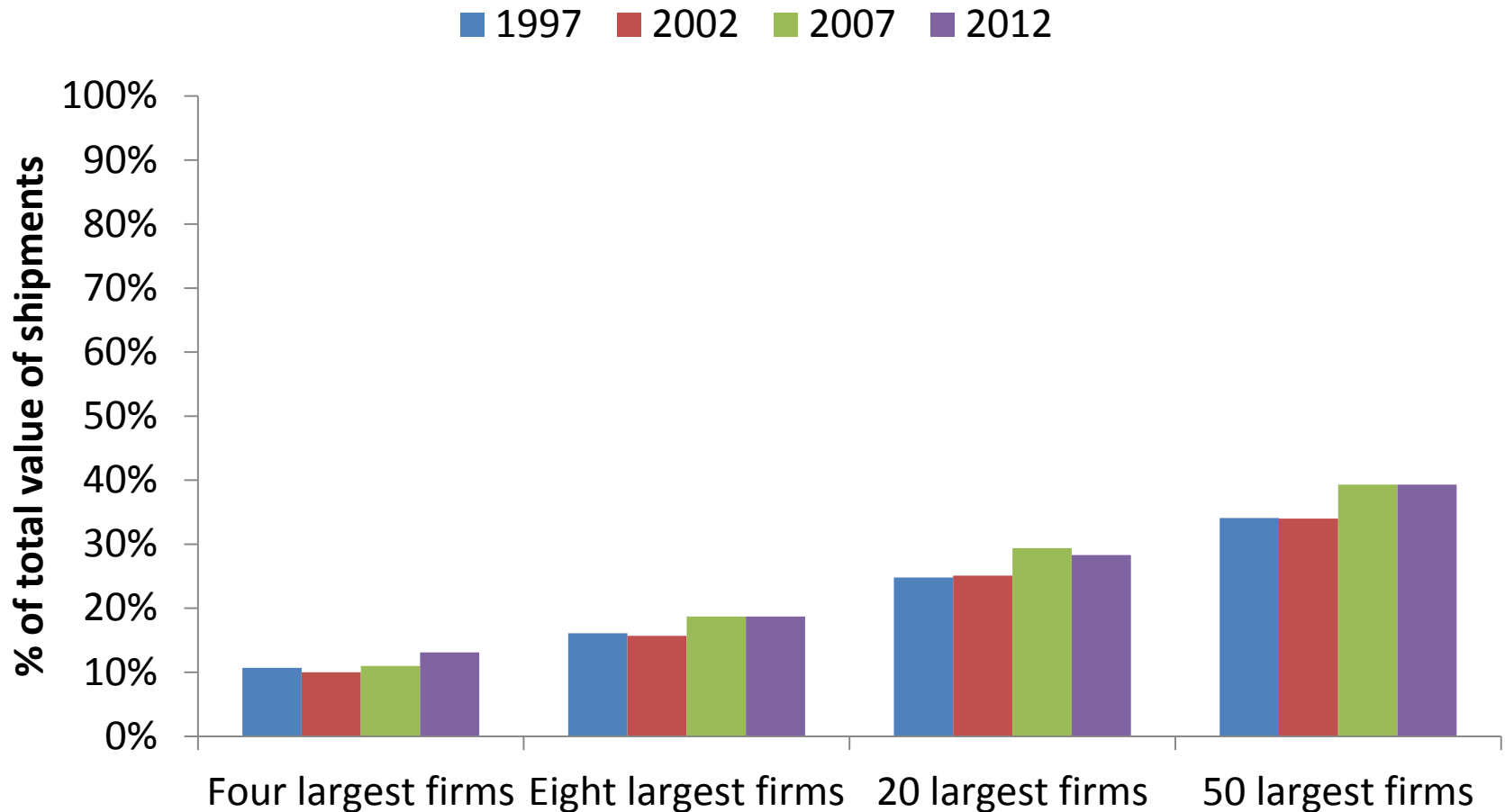
# Findings

- DoD is a dominant or major buyer in some, but not all, top procurement industries
- Because some NAICS codes cover very broad activities; they may need refinement to provide better data
- One top DoD industries by total Procurement dollars is already highly concentrated and several more are close to being so
- Since 1997 industry concentration has improved for a number of top defense industries
- Most industries have many small firms, but these firms may not provide the goods or services DoD needs



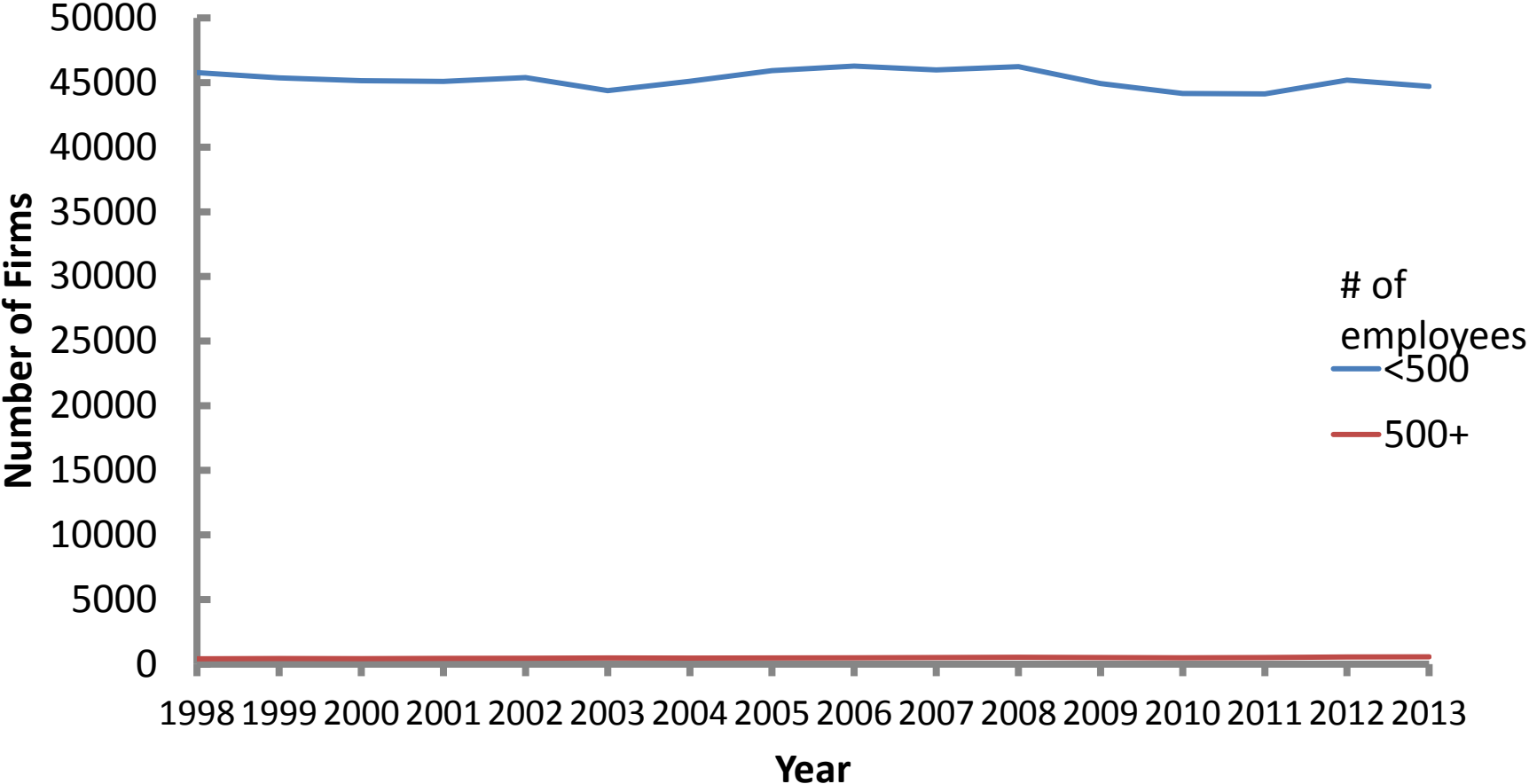
# Questions?

# Concentration Indexes for Engineering Services (NAICS Code 541330)



# Engineering Services (NAICS Code 541330)

## Firms by Number of Employees

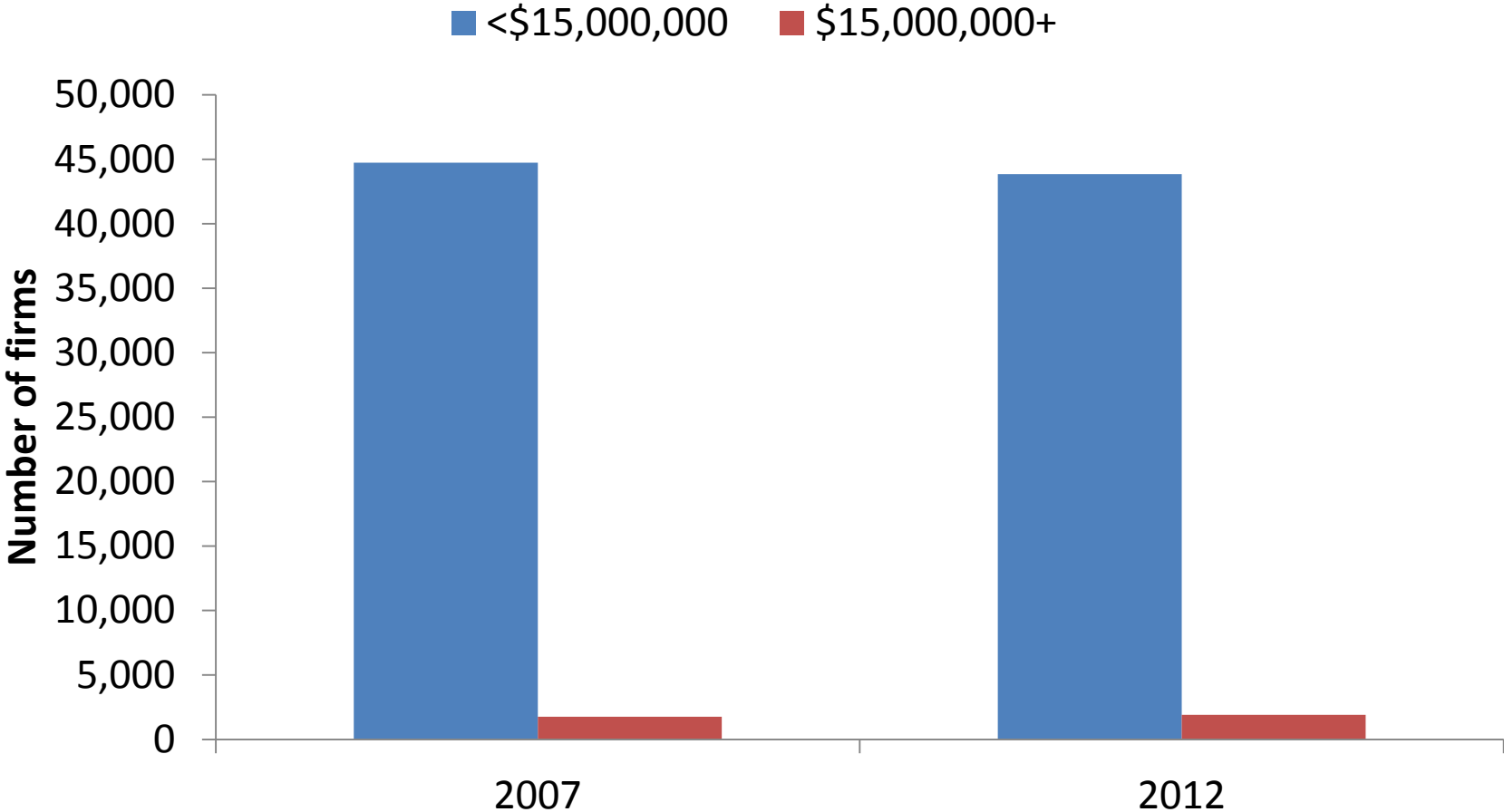


SBA size standard = \$15 million in revenue except Military and Aerospace Equipment and Military Weapons, Contracts and Subcontracts for Engineering Services Awarded Under the National Energy Policy Act of 1992, and Marine Engineering and Naval Architecture = \$38.5 million in revenue

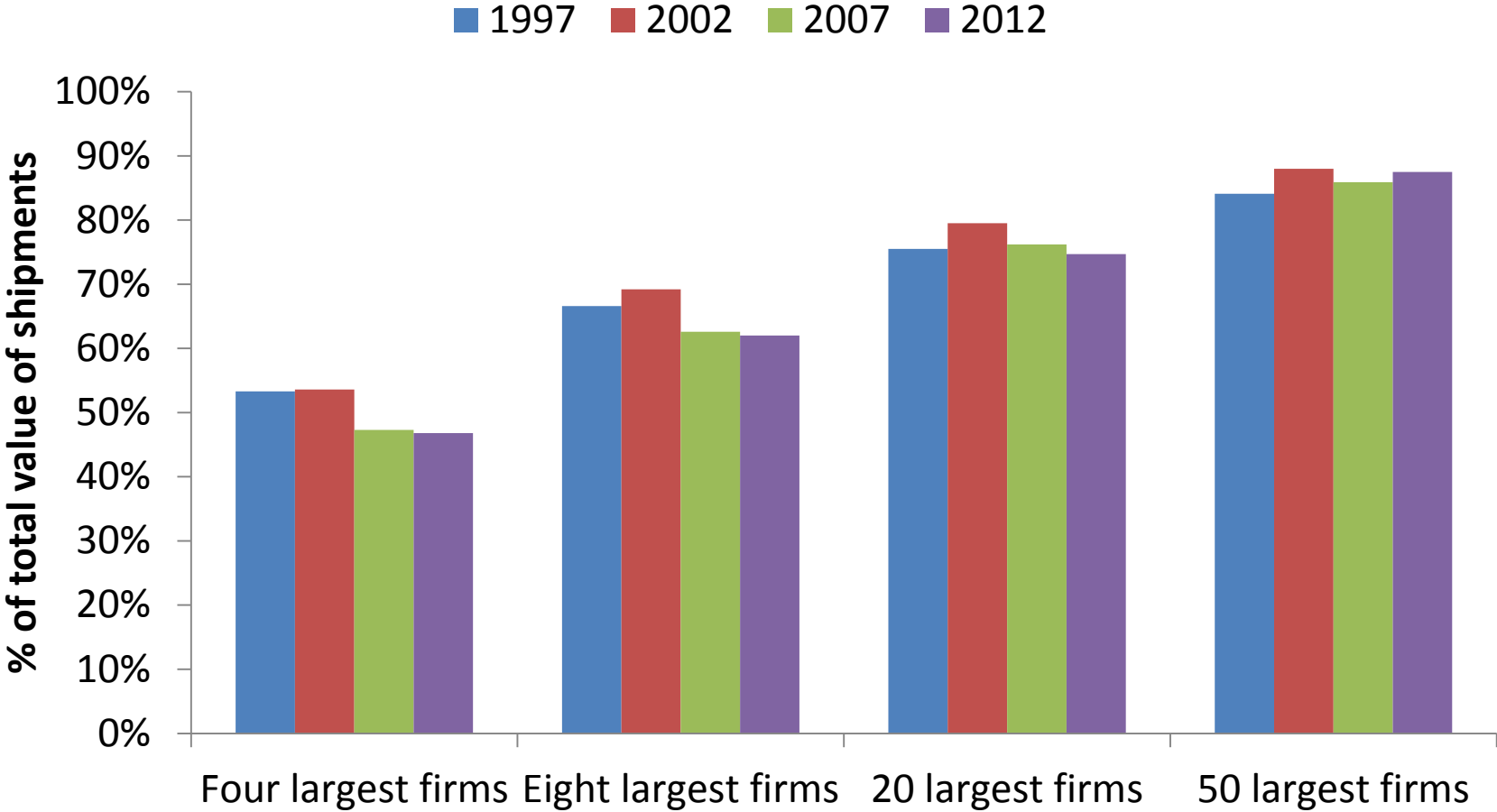
Source: Statistics of U.S. Businesses

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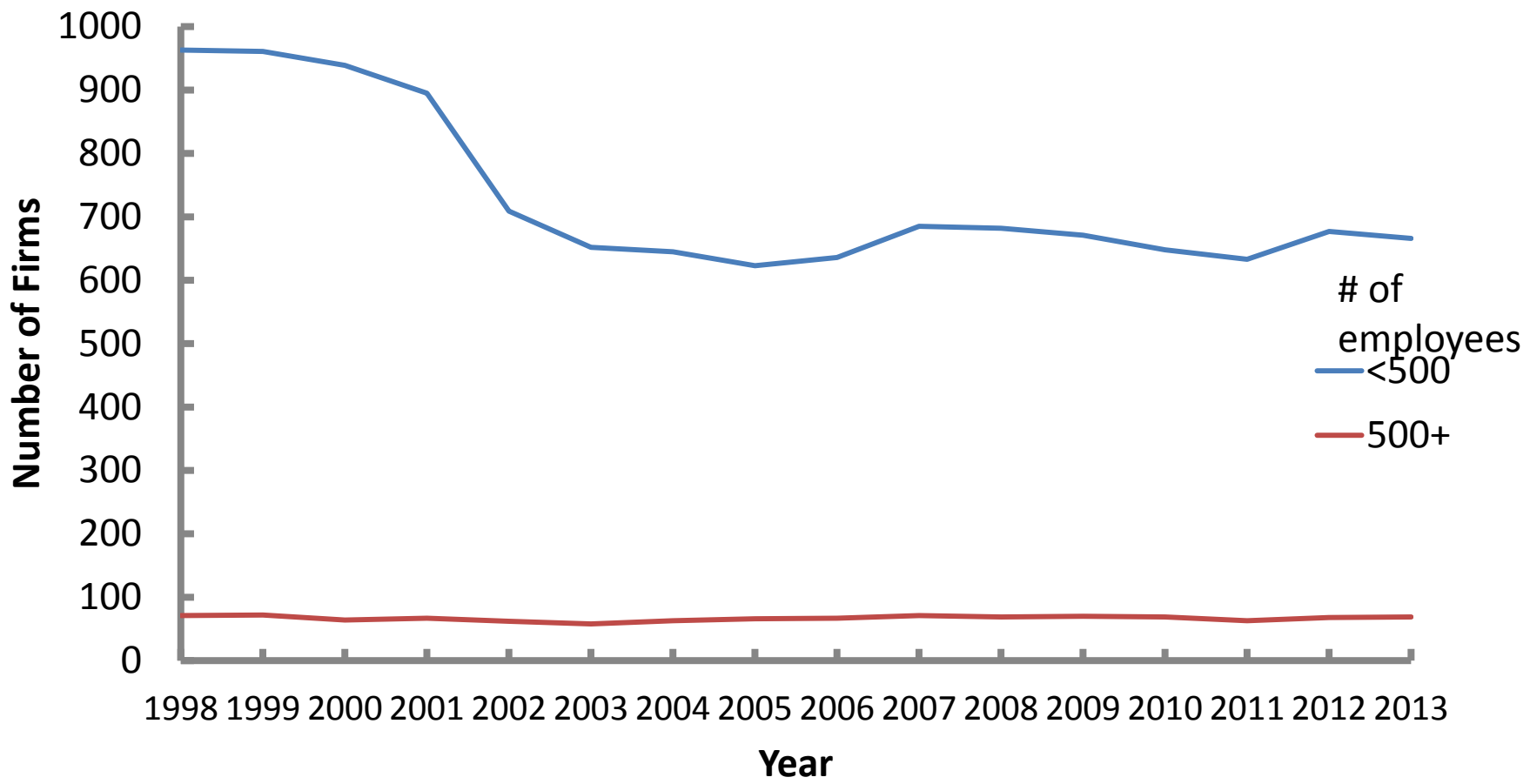
# Engineering Services (NAICS Code 541330) Firms by Annual Receipts



# Concentration Indexes for Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS Code 336413)

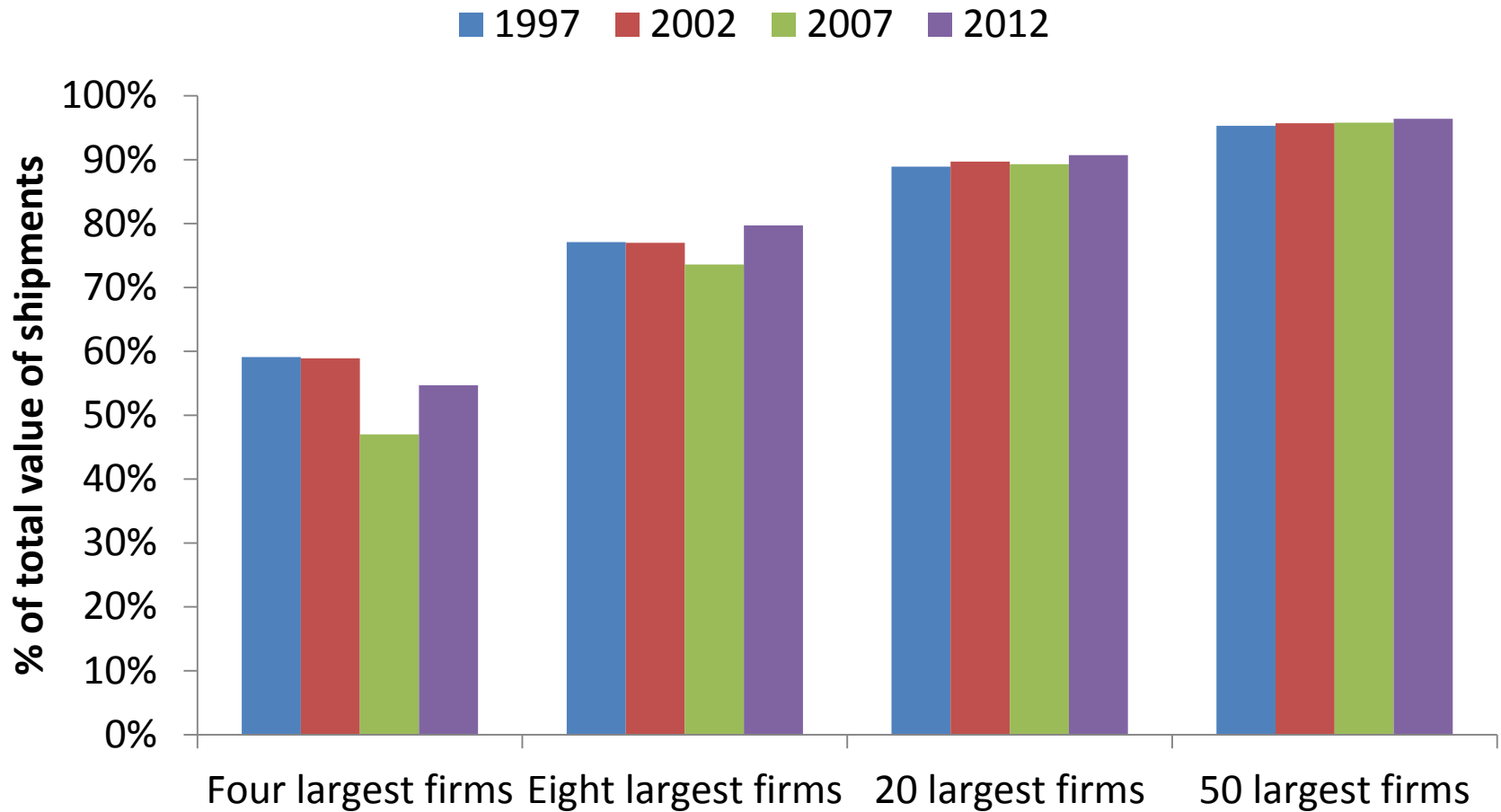


# Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS Code 336413) Firms by Number of Employees

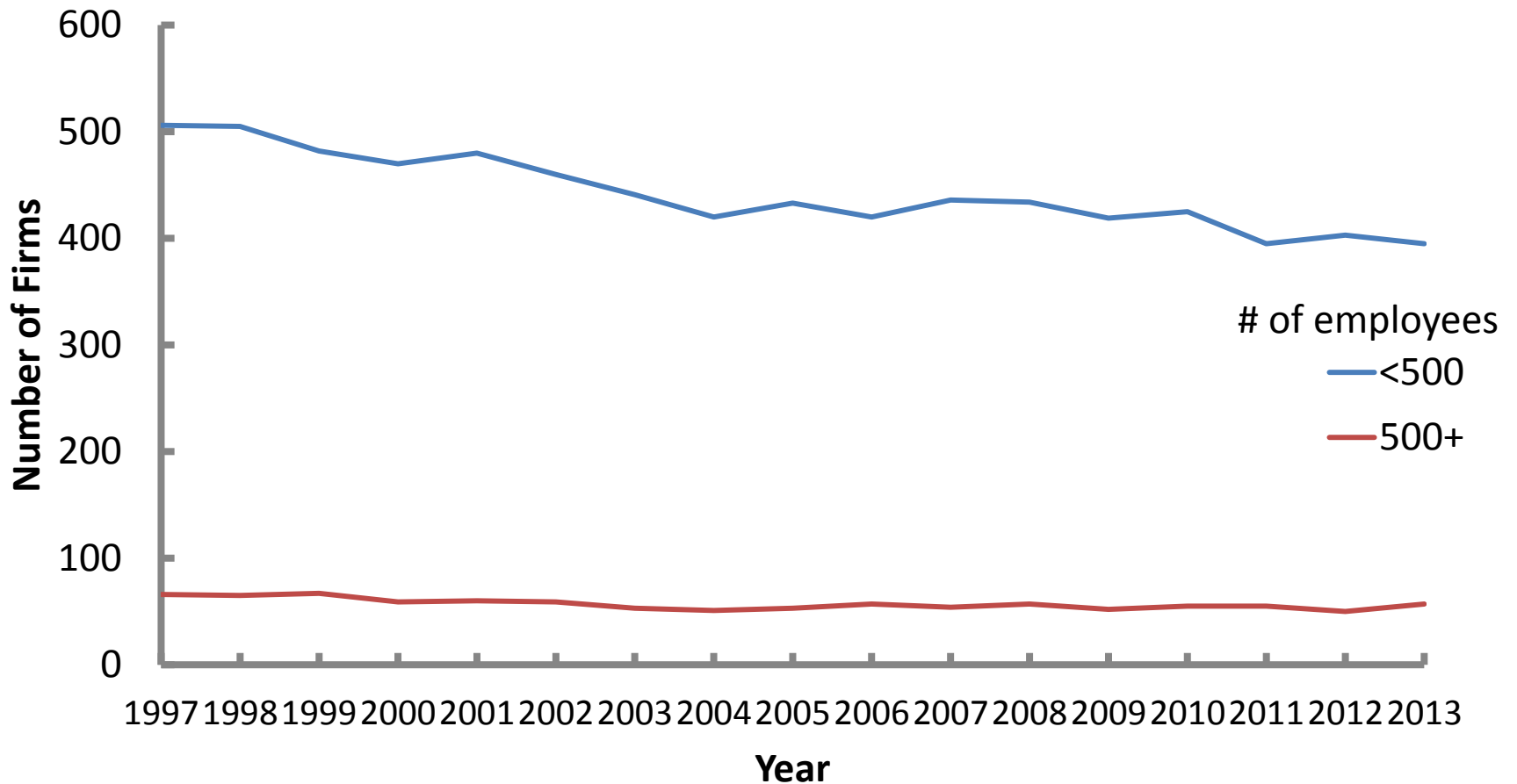


SBA size standard = 1,250 employees

# Concentration Indexes for Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing (NAICS Code 334511)



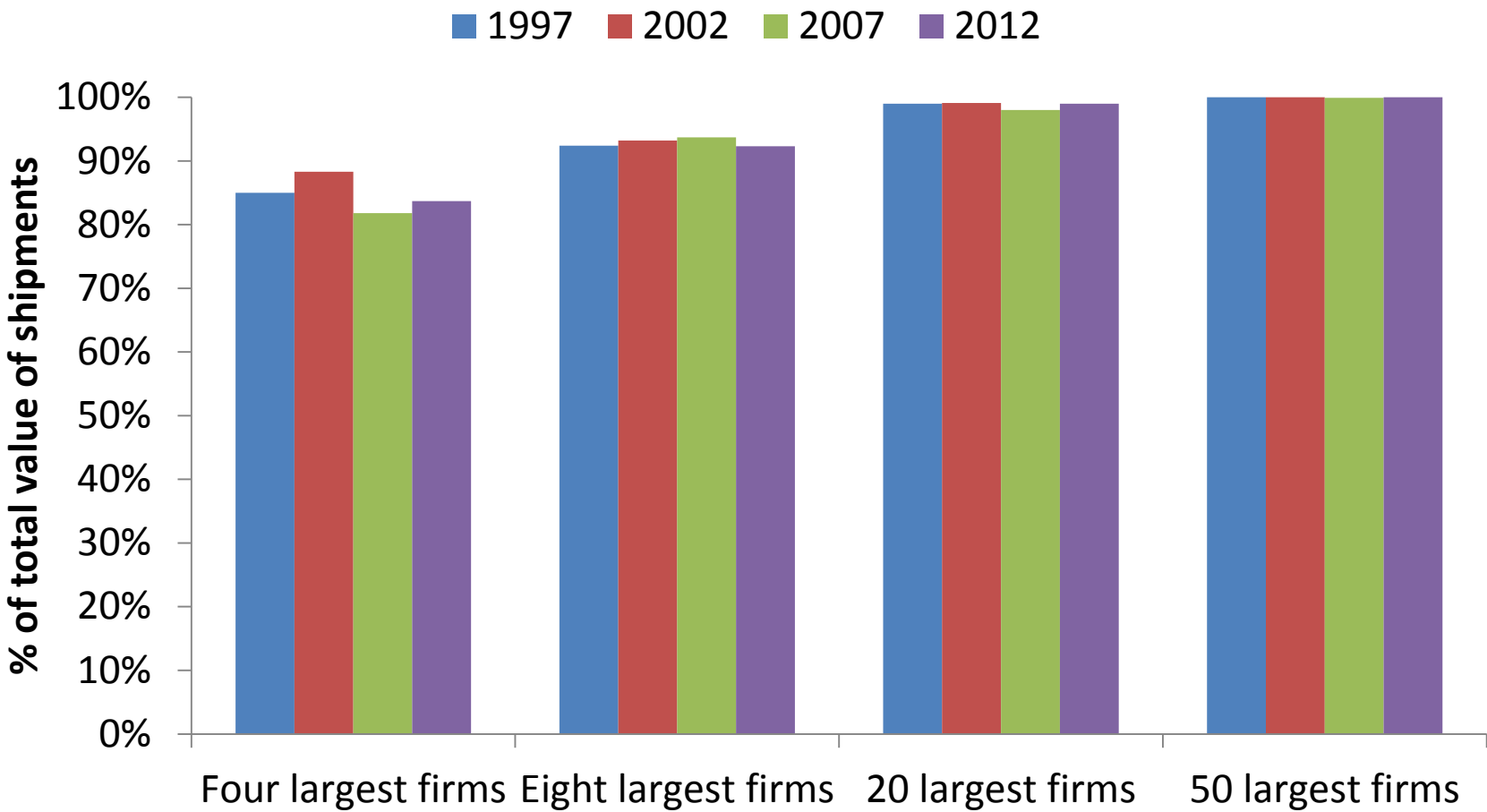
# Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing (NAICS Code 334511) Firms by Number of Employees



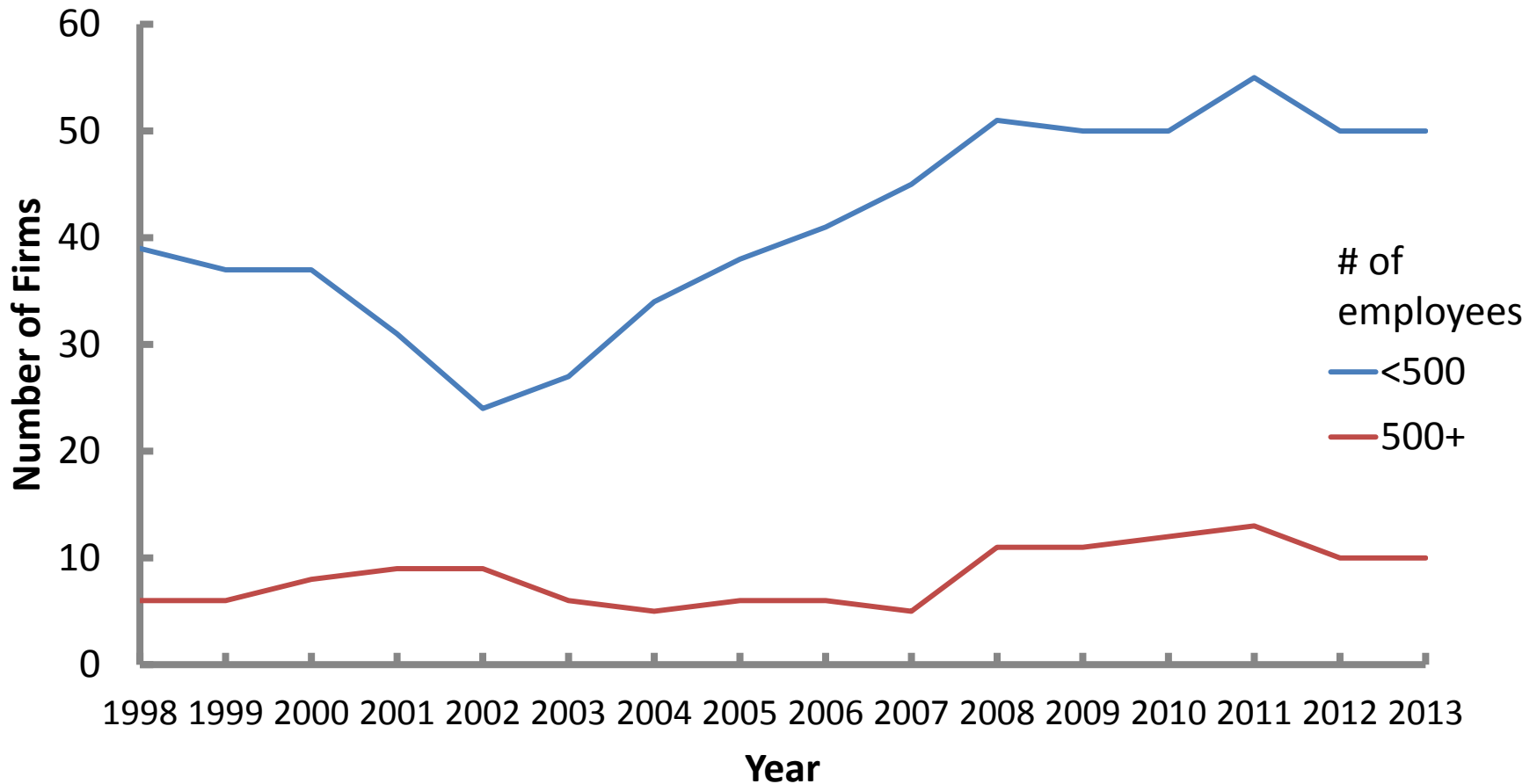
SBA size standard = 1,250 employees



# Concentration Indexes for Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS Code 336992)

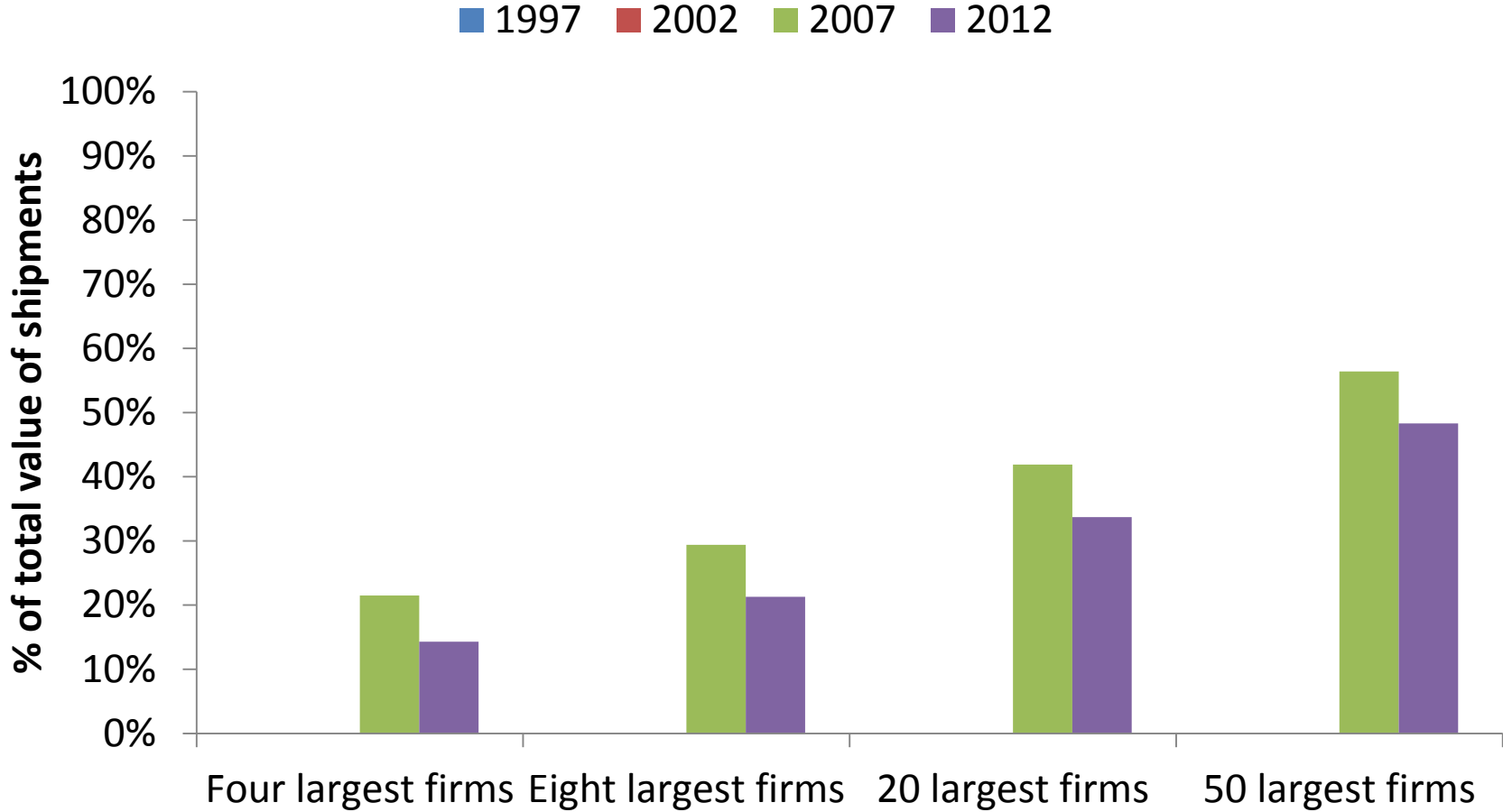


# Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS Code 336992) Firms by Number of Employees

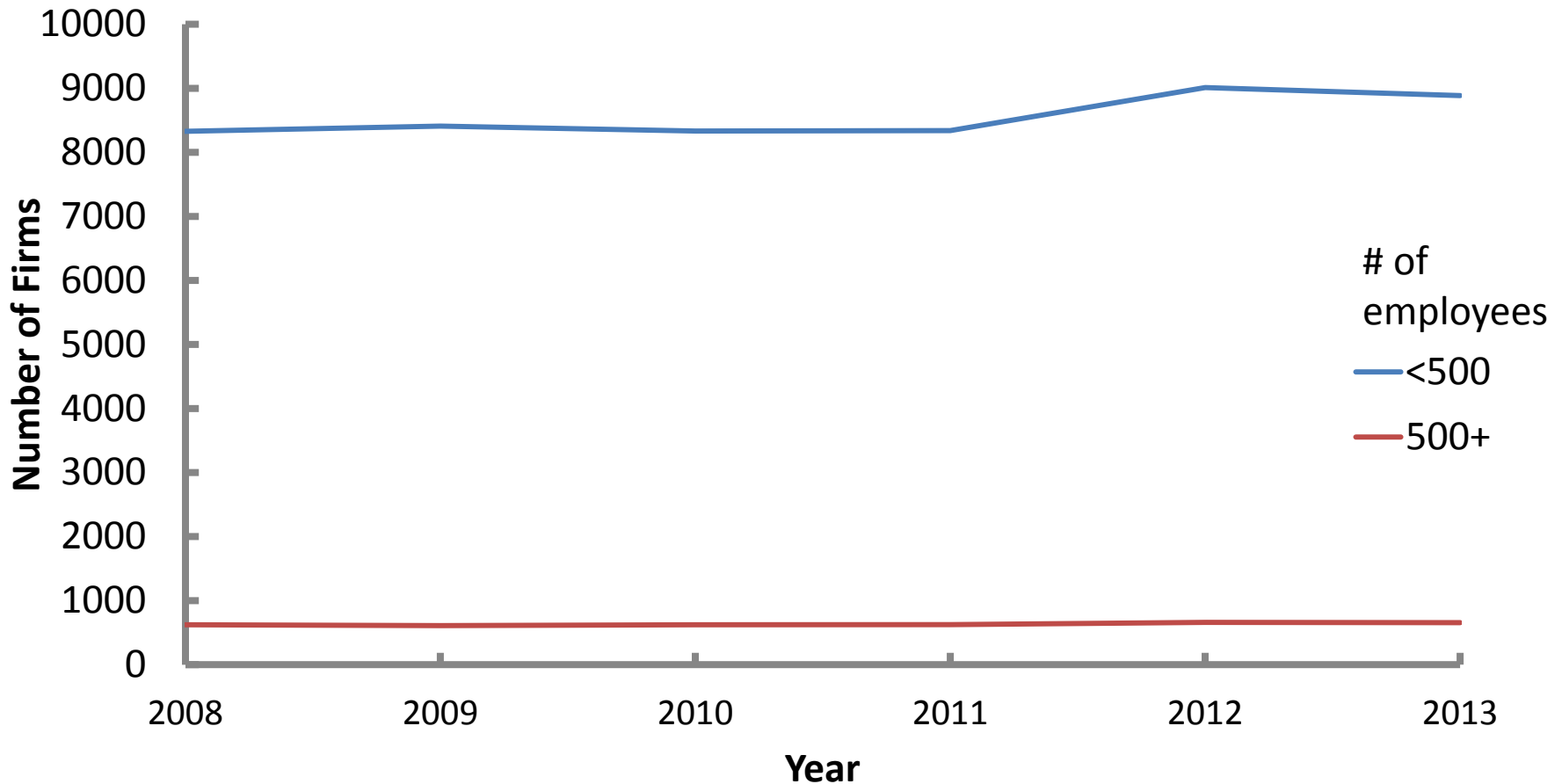


SBA size standard = 1,500 employees

# Concentration Indexes for Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) (NAICS Code 541712)



# Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) (NAICS Code 541712) Firms by Number of Employees

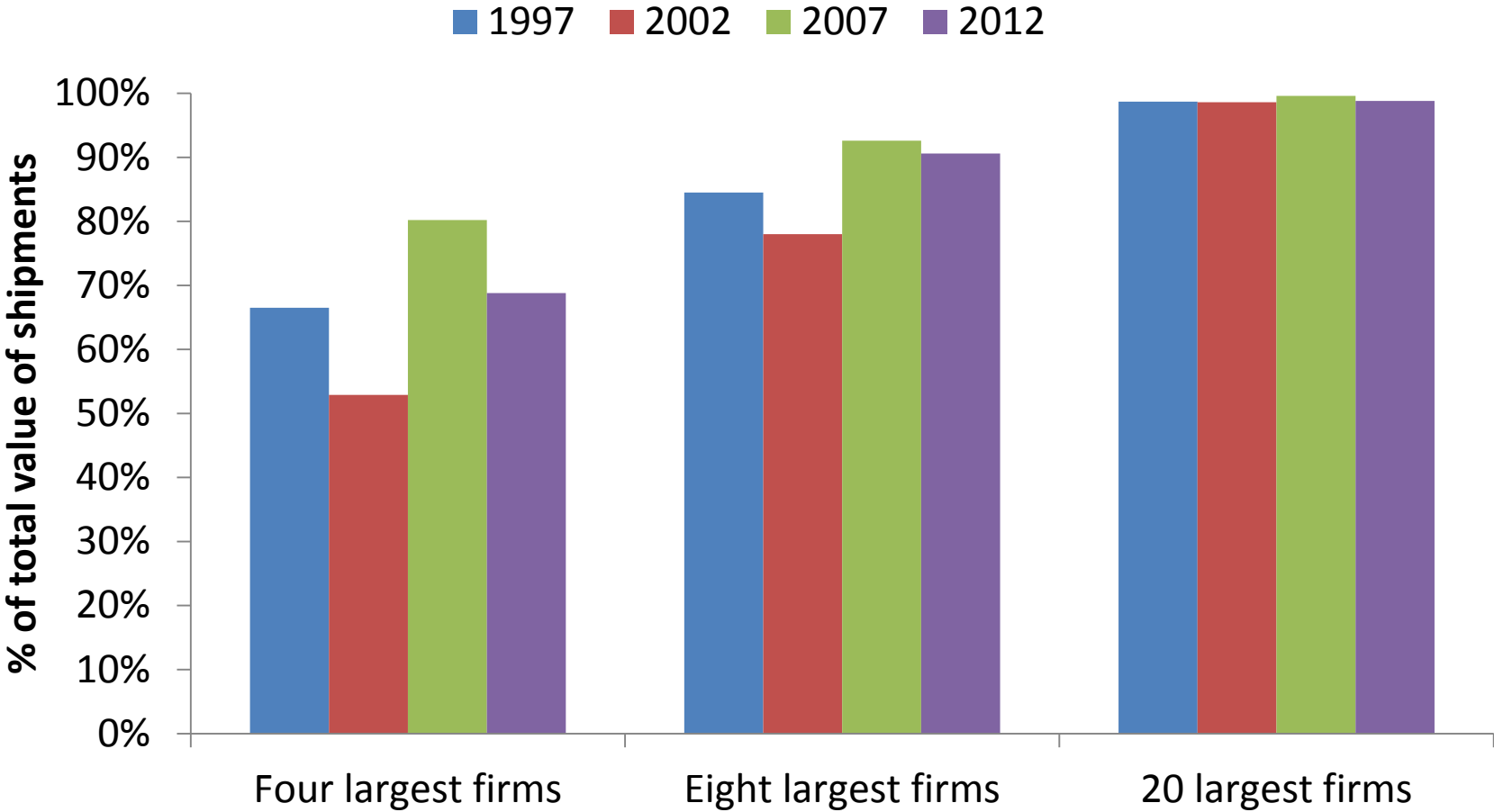


SBA size standard = 1,000 employees except Aircraft Engine and Engine Parts = 1,500 employees and Other Aircraft Parts and Auxiliary Equipment and Guided Missiles and Space Vehicles, Their Propulsion Units and Propulsion Parts = 1,250 employees

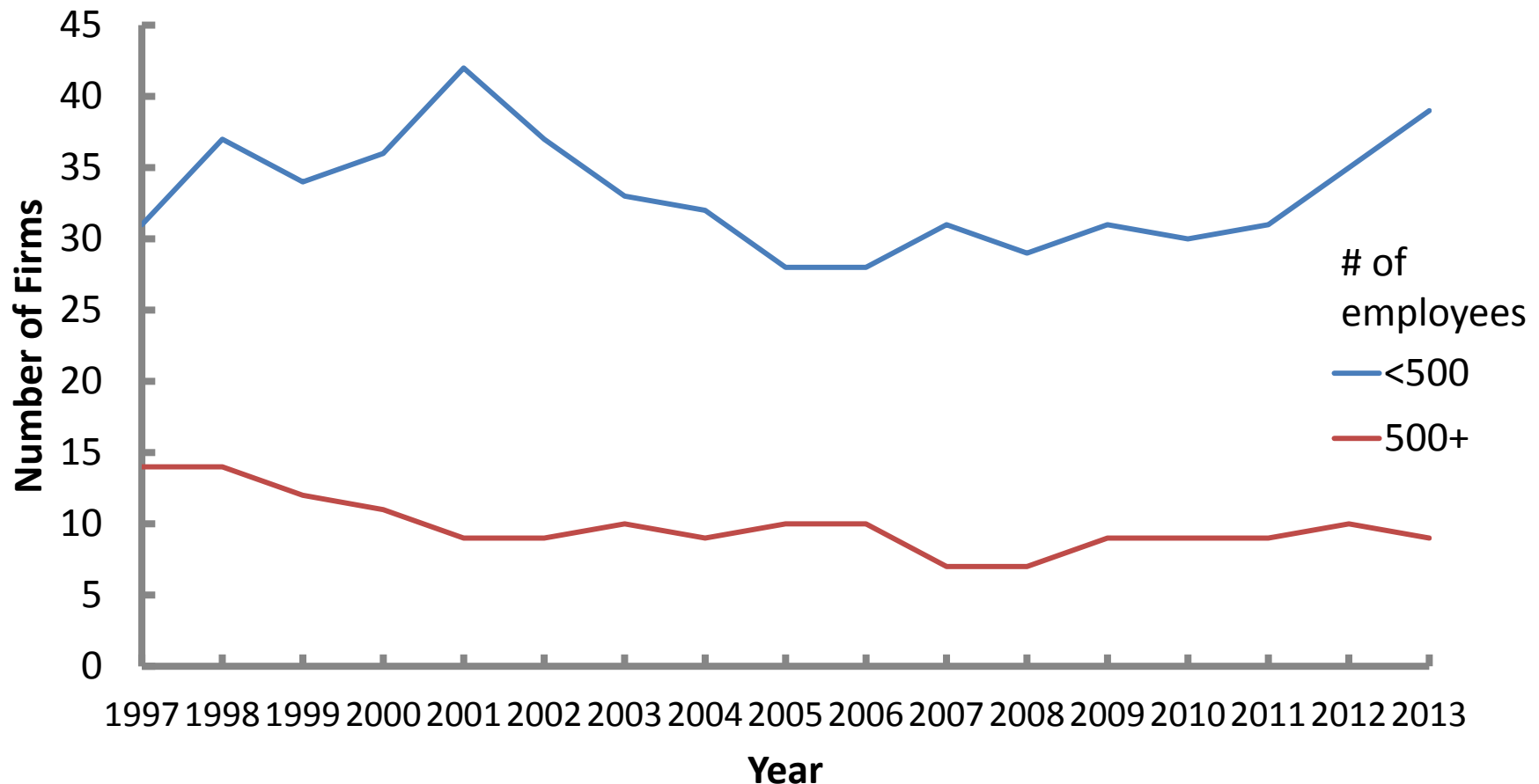
Source: Statistics of U.S. Businesses. Current definition of industry implemented in 2007.

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# Concentration Indexes for Ammunition (except Small Arms) Manufacturing (NAICS Code 332993)

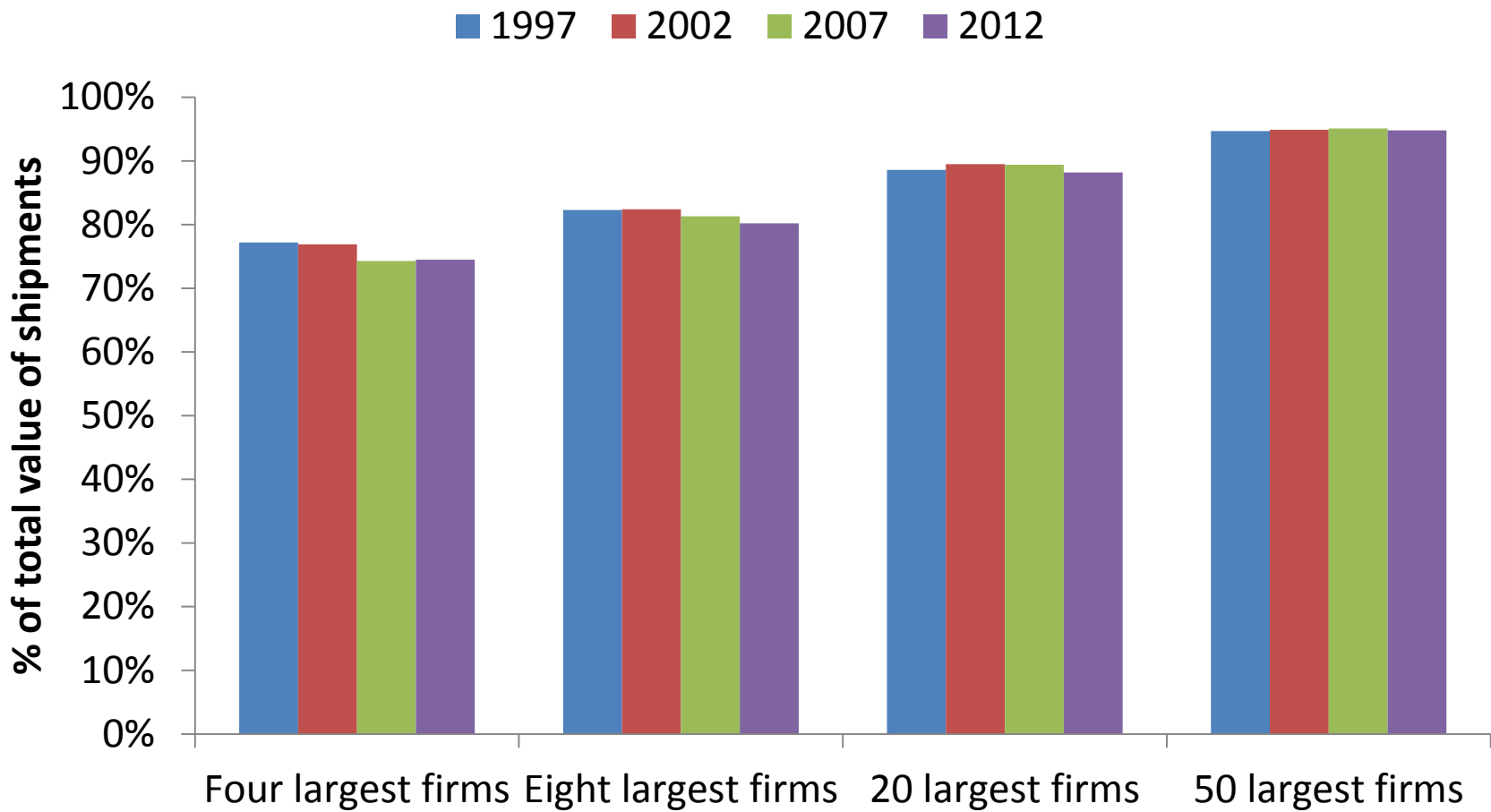


# Ammunition (except Small Arms) Manufacturing (NAICS Code 332993) Firms by Number of Employees

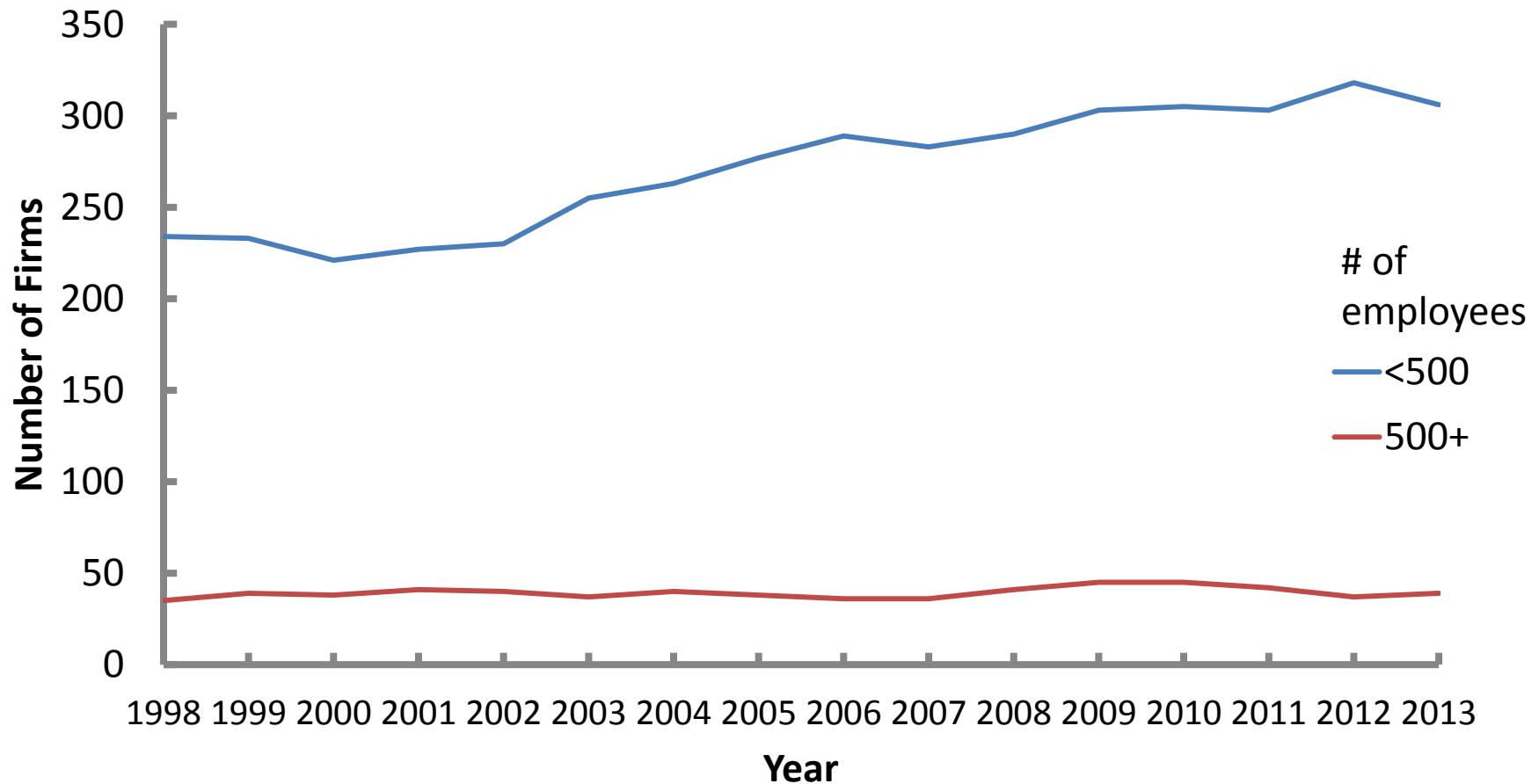


SBA size standard = 1,500 employees

# Concentration Indexes for Aircraft Engine and Engine Parts Manufacturing (NAICS Code 336412)



# Aircraft Engine and Engine Parts Manufacturing (NAICS Code 336412) Firms by Number of Employees



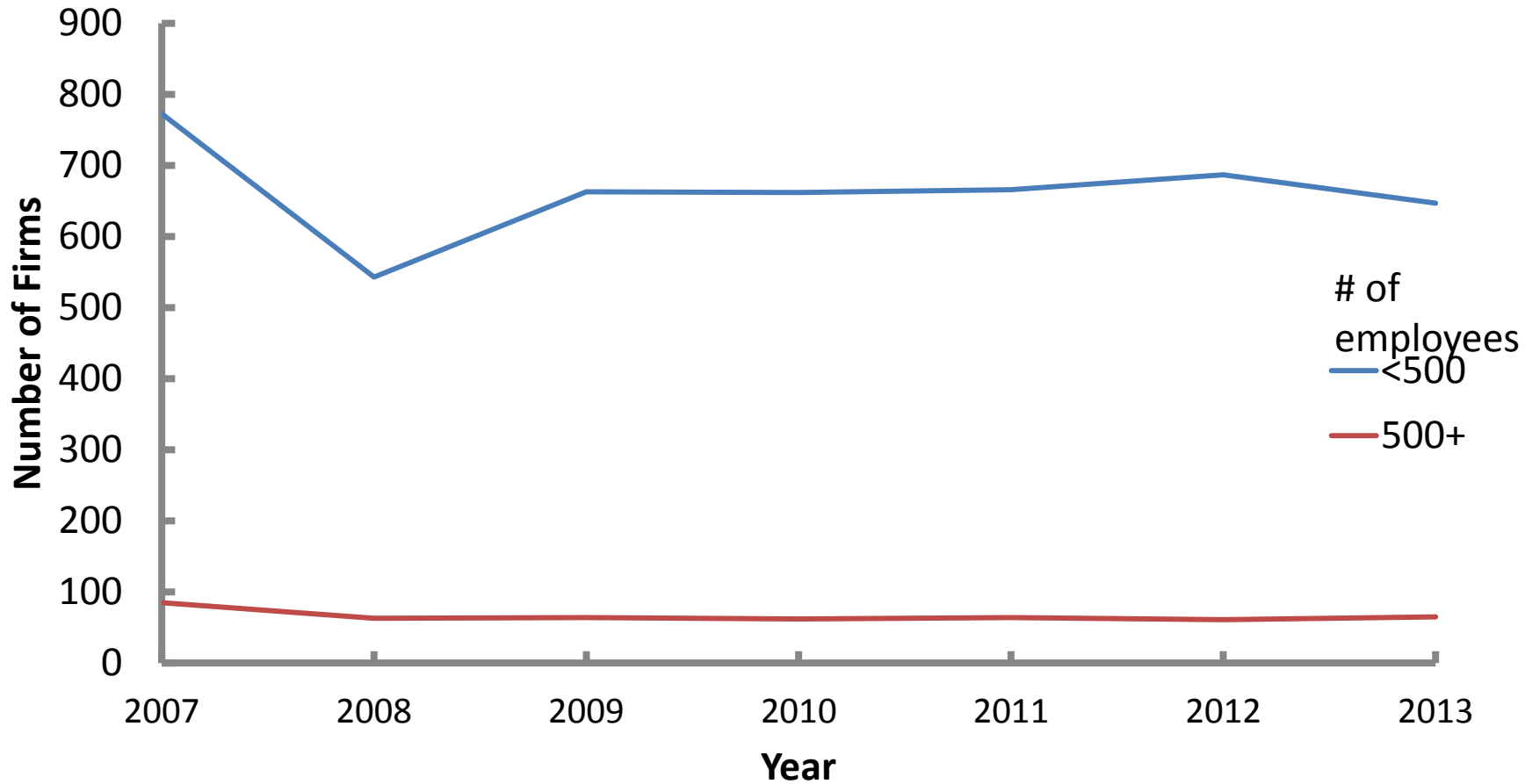
SBA size standard = 1,500 employees



# Concentration Indexes for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing (NAICS Code 334220)

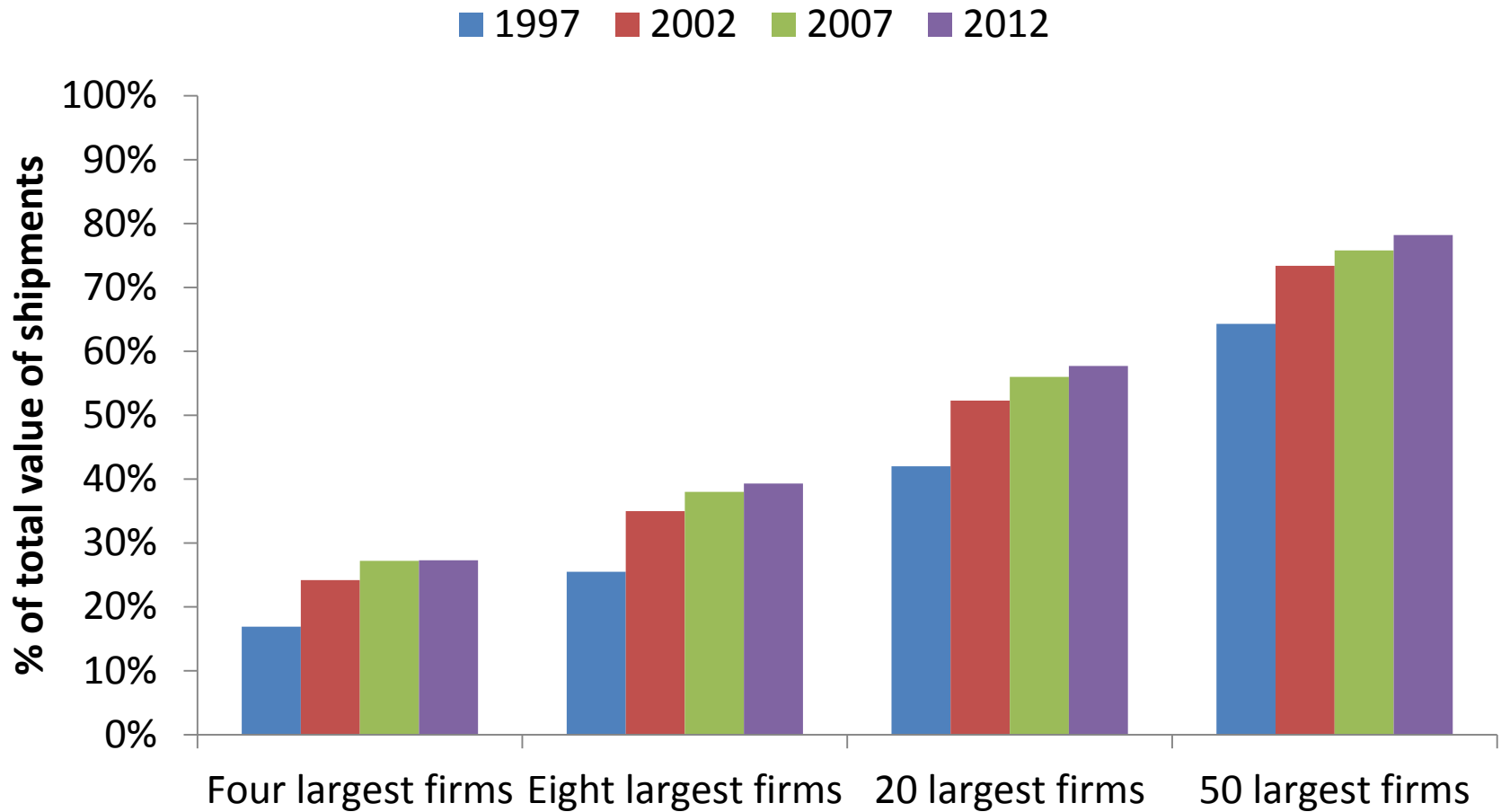


# Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing (NAICS Code 334220) Firms by Number of Employees

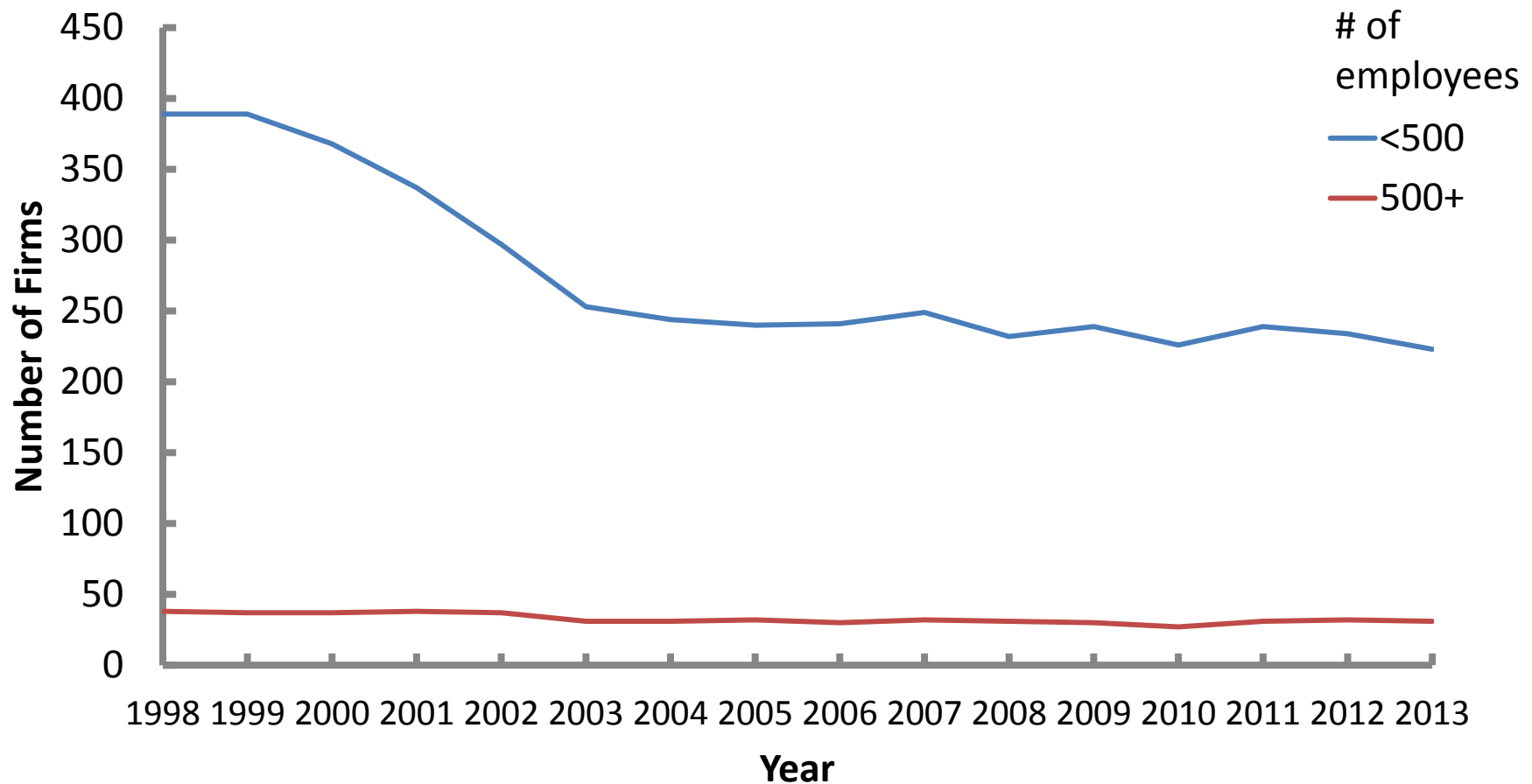


SBA size standard = 1,250 employees

# Concentration Indexes for Power Boiler and Heat Exchanger Manufacturing (NAICS Code 332410)



# Power Boiler and Heat Exchanger Manufacturing (NAICS Code 332410) Firms by Number of Employees



SBA size standard = 750 employees

Source: Statistics of U.S. Businesses.

# Herfindahl-Hirshman Index (HHI)

- Sum of the squared market shares of all the firms in the industry
- The Federal Trade Commission (FTC) used the following cutoffs for the HHI\* in 1997
  - Less than 1,000: unconcentrated
  - 1,000 to 1,800: moderately concentrated
  - Above 1,800: highly concentrated

\*FTC Horizontal Merger Guidelines, revised April 8, 1997, pp. 14-15.