Trends in the DoD Industrial Base

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Industry Consolidation Has Been a Trend for Many Years

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

Purchases Have Increased while Procurement Funding Has Varied in DoD Budget

$\text{\% of budget}$

- Purchases %
- Procurement $s$

- $\text{\$B (FY 2017)}$

"Last supper"

Spending peak

Consolidation

More


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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

NOTE: Data in Constant FY2017 Dollars.

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# Leading Industries for DoD Procurement Dollars

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

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

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>NAICS</th>
<th>Procure Share of DoD $s</th>
<th>DoD Share of Industry $s</th>
</tr>
</thead>
<tbody>
<tr>
<td>336411</td>
<td>Aircraft Manufacturing</td>
<td>51</td>
<td>59</td>
</tr>
<tr>
<td>336611</td>
<td>Ship Building and Repairing</td>
<td>71</td>
<td>67</td>
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<tr>
<td>336414</td>
<td>Missile &amp; Space Veh. Mfg.</td>
<td>58</td>
<td>57</td>
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<tr>
<td>541330</td>
<td>Engineering Services</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>336413</td>
<td>Other Aircraft Pts./Equip. Mfg.</td>
<td>30</td>
<td>26</td>
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<tr>
<td>334511</td>
<td>Search Instrument Mfg.</td>
<td>43</td>
<td>45</td>
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<tr>
<td>336992</td>
<td>Armored Vehicle &amp; Tank Mfg.</td>
<td>52</td>
<td>40</td>
</tr>
<tr>
<td>541710-2</td>
<td>R&amp;D in Sciences</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>332993</td>
<td>Ammo. (not small-arms) Mfg.</td>
<td>79</td>
<td>77</td>
</tr>
<tr>
<td>336412</td>
<td>Acft. Engines &amp; Engine Pts.</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>334220</td>
<td>Radio/TV Broadcast Equip.</td>
<td>43</td>
<td>36</td>
</tr>
<tr>
<td>332410</td>
<td>Boiler and Heat Exch. Mfg.</td>
<td>99</td>
<td>99</td>
</tr>
</tbody>
</table>

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

Herfindahl-Hirschman Index

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

Concentration Indexes for Aircraft Manufacturing (NAICS Code 336411)

Source: Economic Census

Approved for public release; distribution is unlimited.
Aircraft Manufacturing (NAICS Code 336411) Firms by Number of Employees

Source: Statistics of U.S. Businesses

SBA size standard = 1,500 employees
Concentration Indexes for Ship Building and Repairing (NAICS Code 336611)

Source: Economic Census
Ship Building and Repairing (NAICS Code 336611) Firms by Number of Employees

SBA size standard = 1,250 employees

Source: Statistics of U.S. Businesses
Concentration Indexes for Guided Missile and Space Vehicle Manufacturing (NAICS Code 336414)

Source: Economic Census. In no year of Economic Census since 1997 has industry had 20 firms.
Approved for public release; distribution is unlimited.
Guided Missile and Space Vehicle Manufacturing (NAICS Code 336414) Firms by Number of Employees

SBA size standard = 1,250 employees

Source: Statistics of U.S. Businesses

Approved for public release; distribution is unlimited.
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)

Source: Economic Census

Approved for public release; distribution is unlimited.
Engineering Services (NAICS Code 541330)
Firms by Number of Employees


Source: Statistics of U.S. Businesses

Approved for public release; distribution is unlimited.
Engineering Services (NAICS Code 541330) Firms by Annual Receipts

Source: Economic Census

Approved for public release; distribution is unlimited.
Concentration Indexes for Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS Code 336413)

Source: Economic Census

Approved for public release; distribution is unlimited.
Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS Code 336413) Firms by Number of Employees

SBA size standard = 1,250 employees

Source: Statistics of U.S. Businesses

Approved for public release; distribution is unlimited.
Concentration Indexes for Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing (NAICS Code 334511)

Source: Economic Census

Approved for public release; distribution is unlimited.
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing (NAICS Code 334511) Firms by Number of Employees

Source: Statistics of U.S. Businesses. NAICS code 334511 is in concordance with SIC code 3812.

SBA size standard = 1,250 employees
Concentration Indexes for Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS Code 336992)

Source: Economic Census.
Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS Code 336992) Firms by Number of Employees


SBA size standard = 1,500 employees

Approved for public release; distribution is unlimited.
Concentration Indexes for Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) (NAICS Code 541712)

Approved for public release; distribution is unlimited.
Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) (NAICS Code 541712) Firms by Number of Employees


Approved for public release; distribution is unlimited.
Concentration Indexes for Ammunition (except Small Arms) Manufacturing (NAICS Code 332993)

Four largest firms: % of total value of shipments
Eight largest firms: % of total value of shipments
20 largest firms: % of total value of shipments

Source: Economic Census. In no year of Economic Census since 1997 has industry had 20 firms.

Approved for public release; distribution is unlimited.
Ammunition (except Small Arms) Manufacturing (NAICS Code 332993) Firms by Number of Employees

Source: Statistics of U.S. Businesses. NAICS code 332993 is in concordance with SIC code 3483.

SBA size standard = 1,500 employees

Approved for public release; distribution is unlimited.
Concentration Indexes for Aircraft Engine and Engine Parts Manufacturing (NAICS Code 336412)

Source: Economic Census.

Approved for public release; distribution is unlimited.
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)


Approved for public release; distribution is unlimited.
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)

Source: Economic Census.
Power Boiler and Heat Exchanger Manufacturing (NAICS Code 332410) Firms by Number of Employees

SBA size standard = 750 employees


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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