

# 2009 Commercial Air Transport MRO Logistics Survey

## AIRLINE PARTICIPANT FEEDBACK REPORT

January 2010



**AeroStrategy**  
Management Consulting

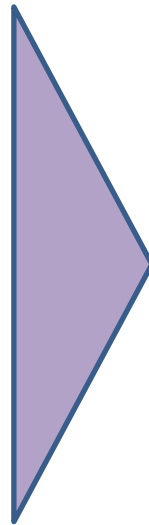
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[www.AeroStrategy.com](http://www.AeroStrategy.com)

- **Introduction**
- Airline Survey Results
- Logistics Trends
- Conclusions / Implications
- Appendices

# This Year AeroStrategy Updated The Survey In Conjunction With IATA

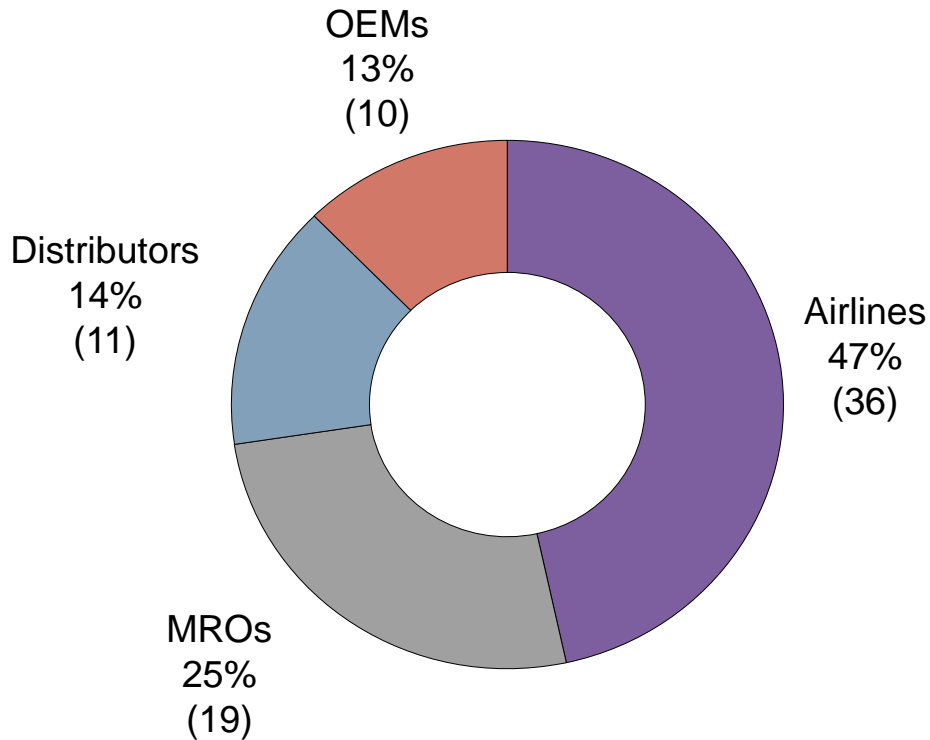
## Survey Objectives

- Sent survey instrument to more than 200 airlines via IATA and 100+ airlines, OEMs and distributors via AeroStrategy
- Survey questions included
- Current inventory value and type
- Location of inventory
- Inventory turns and costs
- Anticipated changes in inventory levels
- Use of pooling, vendor-owned inventory, and PMA parts



# Respondents Include More Than 70 Of The Premier Companies In The MRO Supply Chain

## MRO Inventory and Supply Chain Logistics Survey Respondents



- 36 airlines with over 3,800 aircraft in total
- 19 MROs with over \$11B in MRO revenue
- 11 distributors and surplus dealers with inventory valued at \$2.6B
- 10 OEMs with nearly \$3.5B in spare parts sales volume

- Introduction
- **Airline Survey Results**
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# 2009 MRO Logistics Survey – Average Airline (1)

### Airline Averages

Note: Percentages do not always add to 100% due to difference in reporting. E.g. - Some respondents provided Cost of Capital, Total Overhead, Total Labor and Warehouse while others provided the breakdown. Averages shown are for the responses for that data point

### Base Data

No. of aircraft – own fleet	105
No. of aircraft supported by inventory	97
Number of suppliers	426

### Inventory Value

Purchase value	\$282,807,234
Book value	\$247,310,513
Book value date (Year)	2008
Estimated Market Value	\$85,852,052
Currency Type	US\$

### Carrying Cost Breakdown

Cost of Capital (%)	9.0%
<b>OVERHEAD BREAKDOWN</b>	
Insurance (%)	0.9%
Obsolescence (%)	1.2%
Taxes (%)	4.3%
Depreciation (%)	9.2%
Pilferage / Shrinkage (%)	1.3%
Other (Please Specify)	4.0%
<b>Overhead Total (%)</b>	<b>11.8%</b>
<b>LABOR BREAKDOWN</b>	
Inventory Management (%)	2.1%
Physical Handling (%)	2.2%
<b>Labor Total (%)</b>	<b>3.7%</b>
<b>WAREHOUSE FACILITIES</b>	
Warehouse Facilities (%)	1.2%
<b>GRAND TOTAL</b>	<b>21.9%</b>

### Breakdown By Location

Category	Value (%)	Inventory Turn
Main warehouse	81%	1.9
Line stations	13%	2.0
Other (specify)	6%	1.2
Average Inventory Turn		<b>1.8</b>
Specify locations for other, if applicable:		

### Breakdown By Type

Category	%
Spare engines	19%
Major airframe structural parts	4%
Rotable components	54%
Consumables/	25%
Other (e.g. piece parts)	2%

### Breakdown By Segment

(Further detail on P. 6)

Category	%
Engine-related	30%
Airframe/Component-related	69%
Other (Please specify)	3%

### Excess Inventory %

Question	Answer
What proportion of inventory is "excess/	12.7%

### Performance Measures

Measure	Rotable	Consumable / Expendable
Inventory turn	1.1	1.4
Service level / fill rate from in-house stock	94.5%	93.1%
"Other" measures: please specify.		

### Material Spend 2008

Source	Rotable	Consumable
OEM	52.5%	47.3%
Distributor	34.9%	46.8%
Surplus Dealer	15.3%	15.1%
PMA Manufacturer	1.4%	4.2%
Total 2008 Spend Value		
	36,425,039	51,320,880
Currency Used		
	US\$	

### Transaction Volumes 2008

Measure	Answer
Number of internal parts requests	179,021
Number of parts transactions with outside vendors	33,122
% of transactions that are on AOG basis	7.8%

### Transportation

Measure	%
Material transportation cost as % of PURCHASE price	8.1%
What % of parts shipments are transported via own aircraft?	41.6%

### Depreciation Policy

Question	Answer
What is your depreciation policy with regard to rotable components?	

# 2009 MRO Logistics Survey – Average Airlines (2)

## MRO / Spare Parts Spend / Budget

MRO / Spare Parts Spend /	2008 Spend	2009 Spend	2010 Spend	Currency
Airframe Heavy Maintenance				
Engine Overhaul				
Component Overhaul				
Line Maintenance				
Modifications				
Spare Parts - Rotables				

## Inventory Ownership

Inventory Ownership	Answer (please note currency)				
What % of component MRO spend is under bundled asset management	33%				
Do you have vendor-owned inventory on site? If so, what is the approximate	YES = 66% AND AVG INVENTORY OF \$9.9M NO = 33%				
How do you expect your use of vendor-owned inventory to change through 2014?	Decline	Remain Same as	Increase <20%	Increase 20-50%	Increase >50%
	5%	21%	53%	16%	5%

## Pooling

Pooling	Answer				
Do you participate in any major pooling arrangements? With whom?	96% Participate in pooling Most named suppliers included IATP, Lufthansa Technik and Air France				
What % of own inventory (by value) is available to others via pooling arrangements?	3%				
How do you expect your use of pooling to change through 2014?	Decline	Remain Same as Today	Increase <20%	Increase 20-50%	Increase >50%
Put a "f" in the box that corresponds to your answer	4%	29%	67%	0%	0%

## E-Commerce/E-procurement

E-Commerce/e-procurement	Answer				
What proportion of spend by value is conducted via e-commerce / e-	43%				
How do you expect your use of e-commerce to change through 2014?	Decline	Remain Same as	Increase <20%	Increase 20-50%	Increase >50%
	0%	18%	47%	24%	12%

## 3rd Party Logistics

3 <sup>rd</sup> Party Logistics	Answer				
Do you use 3 <sup>rd</sup> Party Logistics (3PL) provider(s)? If so, which ones and for what services?					
What types of 3rd Party Logistics (3PL) providers do you use?	Asset Management	Material Procurement	Transportation	Repair Management	Other
Put a "f" in each box that applies	16%	11%	45%	18%	11%
<i>Asset Management</i>					
<i>Material Procurement</i>					
<i>Transportation</i>					
<i>Repair Management</i>					
<i>Other (e.g. warehousing, consultancy,</i>					
How do you expect your use of 3PLs to change through 2014?	Decline	Remain Same as Today	Increase <20%	Increase 20-50%	Increase >50%
Put a "f" in the box that corresponds to your answer	11%	37%	47%	5%	0%

## Other

Other	Spare Engines	Airframe Structural Parts	Rotables (LRUs)	Consumables	Other
How have inventory levels changed between 2008 and 2009? (Percent change)	21%	9%	5%	-5%	0%
Are other inventory reduction initiatives planned for 2010? What are they?					
What is the anticipated change in inventory between 2009 and 2010?	-12%	-4%	-7%	-10%	0%
What method was used to derive the cost of capital measure in your inventory carrying cost?	Weighted Average Cost Of Capital		Short Term Lending Rate	Other	Don't Know
	44%		6%		50%

# 2009 MRO Logistics Survey – Average Airlines (3)

## Organizational

Organizational	Answer		
Does your company have an official Supply Chain Organization?	Yes / No?	91% YES, 9% NO	
To what discipline does your Supply Chain organization report?	Finance/ CFO	Technical Operations	Other: Specify -
	8%	72%	20%
Please describe your Supply Chain Organization	Department		Employees
			47
Does your inventory cost reside on the same P&L as your engineering	Yes / No?	45% YES, 55% NO	
Do you outsource any of your Supply Chain functions?	Yes / No?	57% YES, 43% NO	
Is your Supply Chain organization responsible for make vs. buy decisions?	Yes / No?	77% YES, 23% NO	
Do you have a separate organization or individuals that focus on supply chain strategy rather than on transaction execution? If so, can you describe their	Yes / No?	24% YES, 76% NO	
	Please specify:	See aggregated answers	

## Process

Process	Answer	
What percentage of the spend goes through some sort of an RFP?	41%	
Do you have a documented process or procedure to outsource?	Yes / No?	91% YES, 9% NO
Do you provide suppliers with templates to bid contracts?	Yes / No?	76% YES, 24% NO
Do you utilize your contractual templates as the basis of an agreement with your	Yes / No?	67% YES, 33% NO
How many other departments weigh in on the outsource decisions?	3	
Do you utilize quantitative factors to evaluate supplier bids?	Yes / No?	95% YES, 5% NO
Do you utilize a weighed quantitative matrix to evaluate supplier bids?	Yes / No?	59% YES, 41% NO
Do you utilize qualitative factors to evaluate supplier bids?	Yes / No?	94% YES, 6% NO

## Philosophy

Philosophy	Answer	
With how many MRO Suppliers does your company conduct business?	73	
How many MRO Suppliers constitute 80% of the outsourced spend?	8	
What is the level of your outsourced MRO spend in US\$?	\$129,154,144	
How long is the term of the majority of your contracts? Is there a trend?	Average answer = 4 years... trend toward longer term contracts	
What is your cost savings threshold to outsource vs. insource?		
Do you dual source?	Yes / No?	70% YES, 30% NO
Percentage % of exclusive Suppliers?	32%	
Percentage % of exclusive spend?	49%	
What type of arrangement do the majority of your contracts fall into?	T&M / PBH/ Other: Specify -	
	T&M (13), PBH (15), Flat (2)	
Are ownership costs considered for make vs. buy or insource vs. outsource decisions?	Yes / No?	85% YES, 15% NO
Do your contracts have performance clauses?	Yes / No?	90% YES, 10% NO
Do your contracts have financial penalties?	Yes / No?	95% YES, 5% NO

# 2009 MRO Logistics Survey – Average Airlines (5)

## PMA Questions

Category	2008 MRO Spend (Currency Value in Millions)	%Material	PMA Penetration (% of Material Spend)						
			0%	1%-2%	3%-4%	5%-6%	7%-10%	11%-15%	>15%
<b>Engine</b>	N/A	63%	55%	34%	0%	0%	0%	11%	0%
<b>Airframe</b>	N/A	33%	67%	33%	0%	0%	0%	0%	0%
<b>Components</b>									
<b>Avionics</b>	N/A	N/A	67%	17%	0%	17%	0%	0%	0%
ATA 22, 23, 31, 34	N/A								
<b>IFE</b>	N/A	N/A	71%	29%	0%	0%	0%	0%	0%
ATA 44	N/A								
<b>Engine Accessories</b>	N/A	N/A	67%	17%	0%	0%	17%	0%	0%
ATA 75 - 80	N/A								
<b>APU</b>	N/A	N/A	71%	29%	0%	0%	0%	0%	0%
ATA 49	N/A								
<b>Air Conditioning &amp; Pneumatic</b>	N/A	N/A	67%	17%	17%	0%	0%	0%	0%
ATA 21, 36	N/A								
<b>Hydraulic &amp; Flight Control</b>	N/A	N/A	57%	14%	14%	0%	0%	0%	0%
ATA 29, 27	N/A								
<b>Landing Systems</b>	N/A	N/A	57%	29%	14%	0%	0%	0%	0%
ATA 32 (W&B, Landing gear)	N/A								
<b>Electrical Power</b>	N/A	N/A	57%	14%	0%	14%	0%	0%	0%
ATA 24	N/A								
<b>Fuel systems &amp; control</b>	N/A	N/A	67%	17%	17%	0%	0%	0%	0%
ATA 28, 73	N/A								
<b>Interiors</b>	N/A	N/A	30%	20%	10%	10%	20%	0%	10%
ATA 25	N/A								
<b>Other</b>	N/A	N/A	67%	33%	0%	0%	0%	0%	0%
<b>TOTAL</b>	N/A								

Continued...

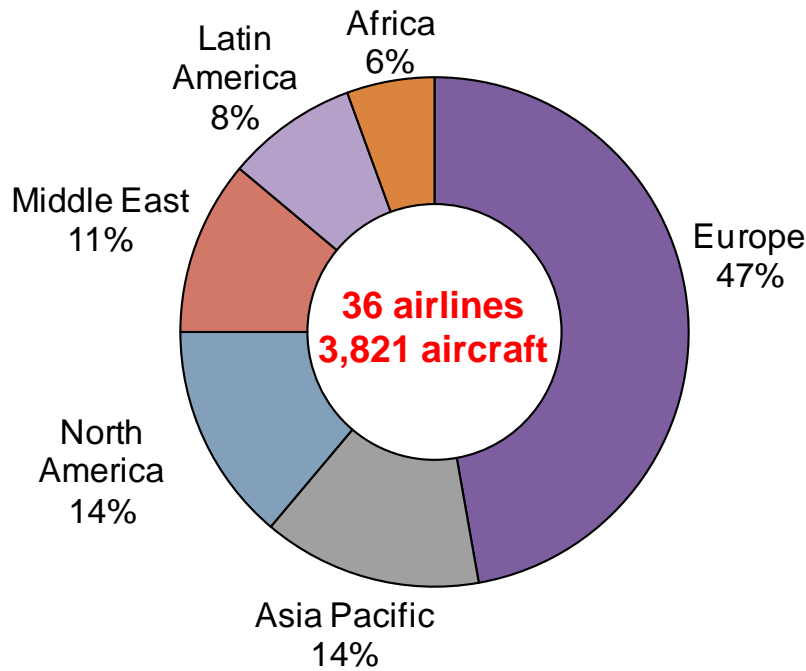
# 2009 MRO Logistics Survey – Average Airlines (5)

General PMA Questions	Answer					
Does your authority allow your airline to use PMA parts?	93% YES, 7% NO					
If not, do you know if any other airlines in the jurisdiction of your authority are allowed to use PMA Parts?						
Does your authority have procedures in place to locally approve PMA parts from vendors willing to have them certified?	44% YES, 56% NO					
Do you know if your authority has a general policy of accepting/endorsing the FAA PMA approval of parts?	78% YES, 22% NO					
Does your company or your authority have different policies in place for safety critical parts (e.g. turbine blades) versus non-safety critical parts?	67% YES, 33% NO					
Do you have additional criteria for the use of PMA parts?	56% YES, 44% NO					
If yes, how many PMA parts were denied after evaluation and what are the main reasons for the denial?						
What proportion of your material spend do you expect to be PMA in 2014?						
Please rank the barriers to greater PMA adoption on a scale of 1 to 5 (where 1 is insignificant and 5 is very significant)?	Regulatory	OEM Agreements	Leasing Companies	Culture	Other (please	
	1 = 18%	1 = 24%	1 = 16%	1 = 26%	1 = 67%	
	2 = 27%	2 = 8%	2 = 0%	2 = 17%	2 = 0%	
	3 = 32%	3 = 8%	3 = 12%	3 = 30%	3 = 33%	
	4 = 5%	4 = 40%	4 = 8%	4 = 8%	4 = 0%	
	5 = 18%	5 = 20%	5 = 64%	5 = 64%	5 = 0%	
How many approved PMA vendors do you currently have?	N/A					

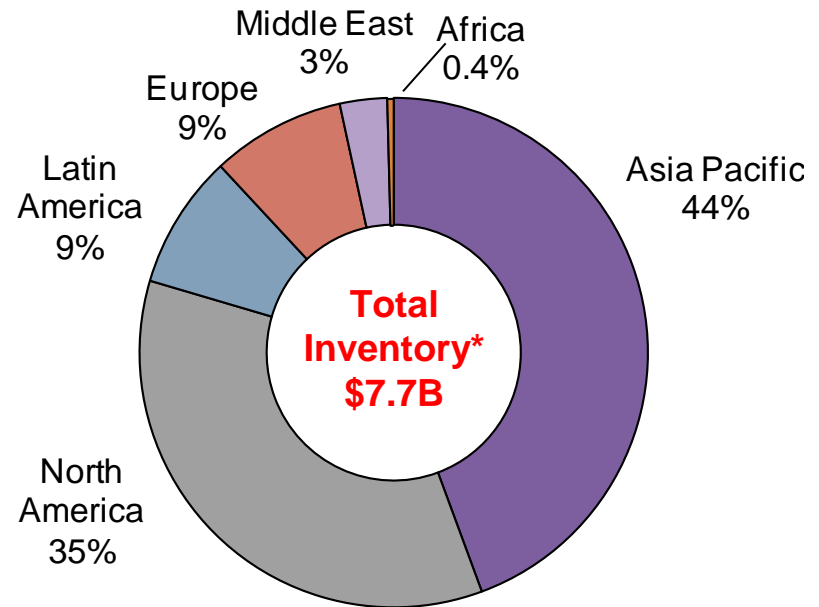
General PMA Questions	Answer				
To what extent does OEM pricing policy drive the use of PMA?	Not Significant	(2)	Moderately (3)	(4)	Significant (5)
	13%	4%	22%	13%	48%
What annual material price increases have you seen in recent years from the OEMs?	Decline	Remain Same	Increase <2%	Increase 3%-5%	Increase >5%
	4%	0%	4%	43%	48%
What is the typical price discount for PMA parts versus OEM?	0%-10%	11-20%	21%-30%	31%-40%	>40%
	9%	17%	39%	26%	9%

# 36 Airlines Operating 3,800 Aircraft Hold Inventory Valued At \$7.7B\* -- An Average \$1.9M per Aircraft

**Breakdown of Responding Airlines**



**Breakdown of Responding Airlines' Inventory Holdings**



**Average Inventory per aircraft = \$1.9 million\*\***

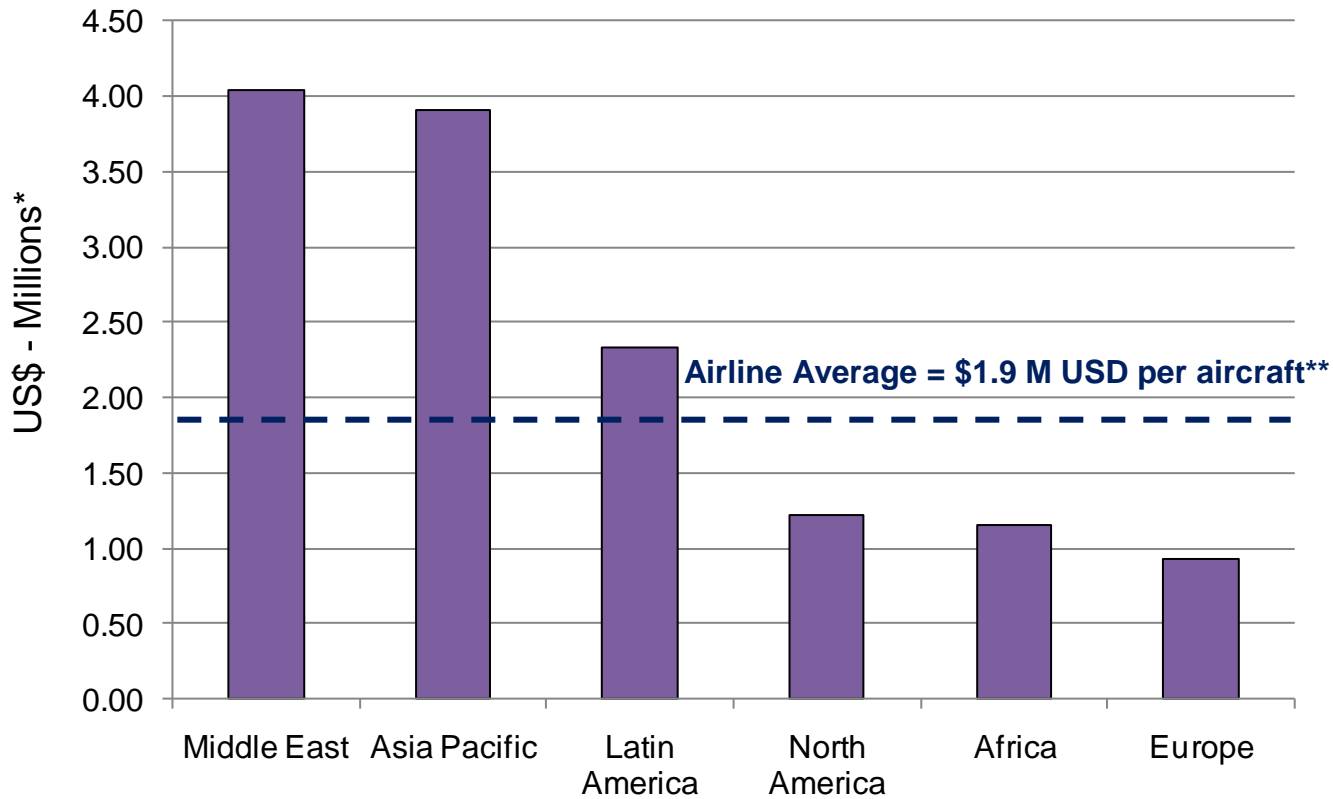
Note:

\* Book Value

\*\* Inventory per aircraft value is for the 36 participating airlines only

# Middle East And Asia Pacific Airlines Carry Nearly Four Times The Inventory Per Aircraft As European Airlines

## Inventory\* Per Aircraft



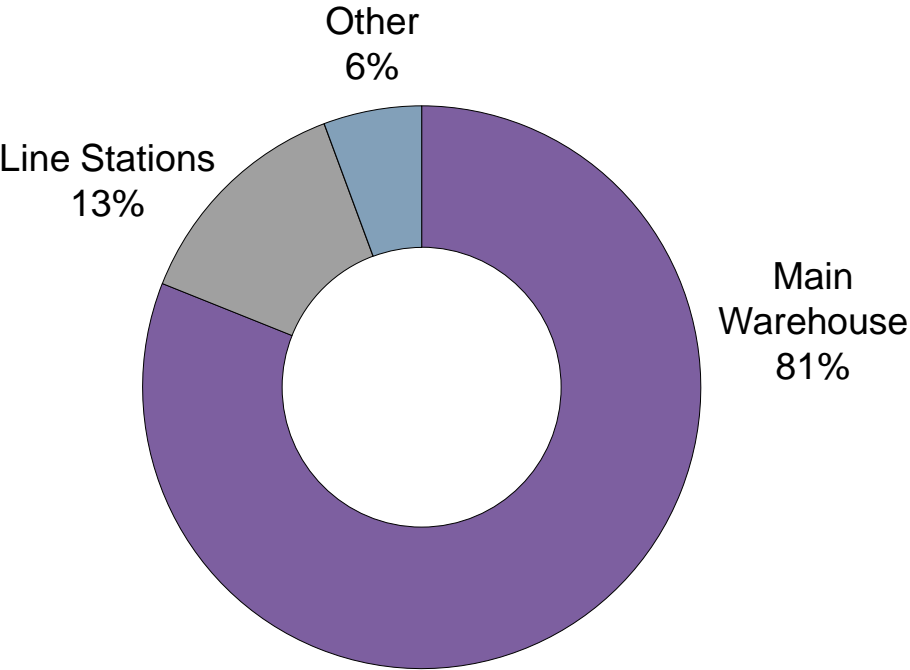
Note:

\* Book Value

\*\* Inventory per aircraft value is for the 36 participating airlines only

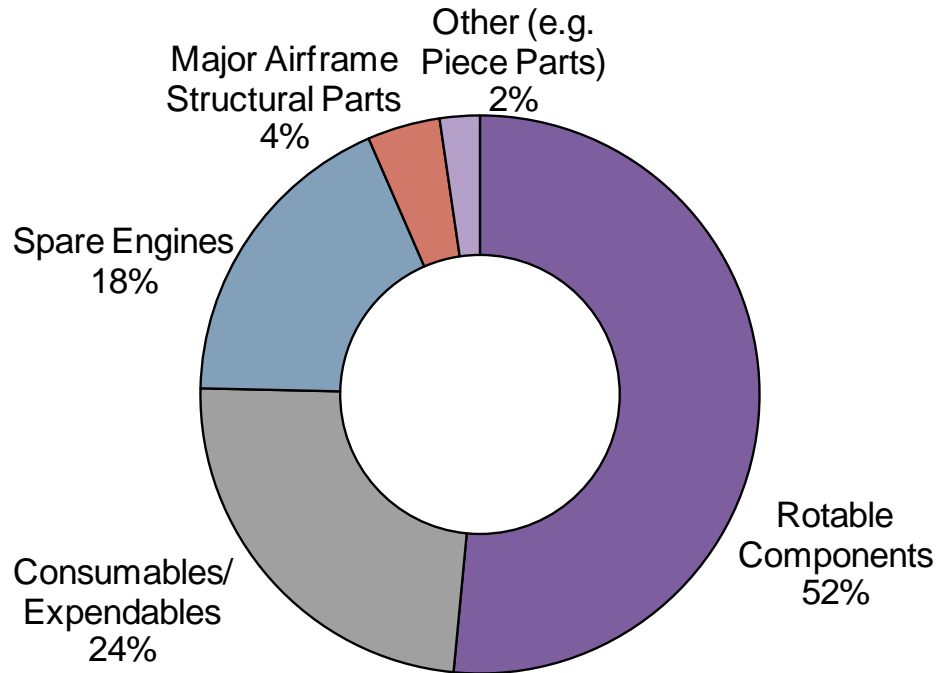
# More Than 50% Of Airline Inventory Is Rotables, Followed By Consumables Which Represent About 24%

**Average Airline Inventory Distribution By Location**



- 81% of the inventory is held at the main warehouse
- 13% of airline inventory is held at line stations to support operational requirements – down from 26% in 2005

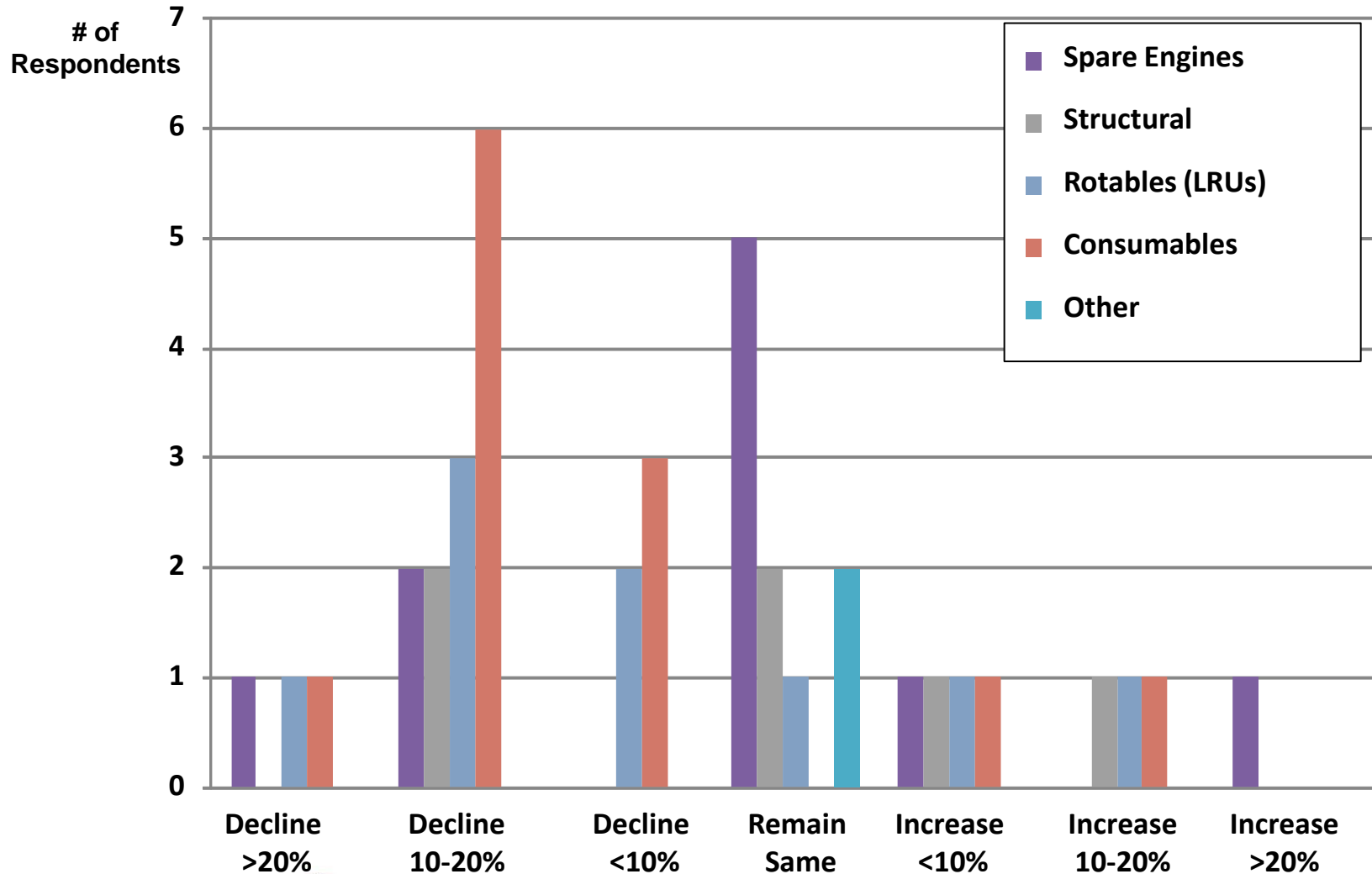
**Airline Inventory Composition**



- 52% of airline inventory is rotables
- Consumables represent 24% of an airlines inventory
- Spare engines are 18%

# Most Airlines Expect In Inventory Levels To Decline From 2009 To 2010

**Airline Expected Change In FUTURE Inventory Levels 2009-2010**

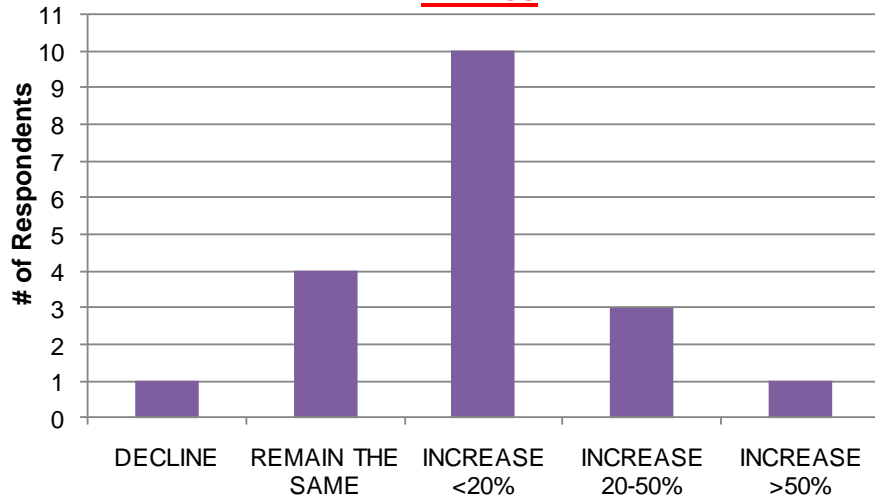


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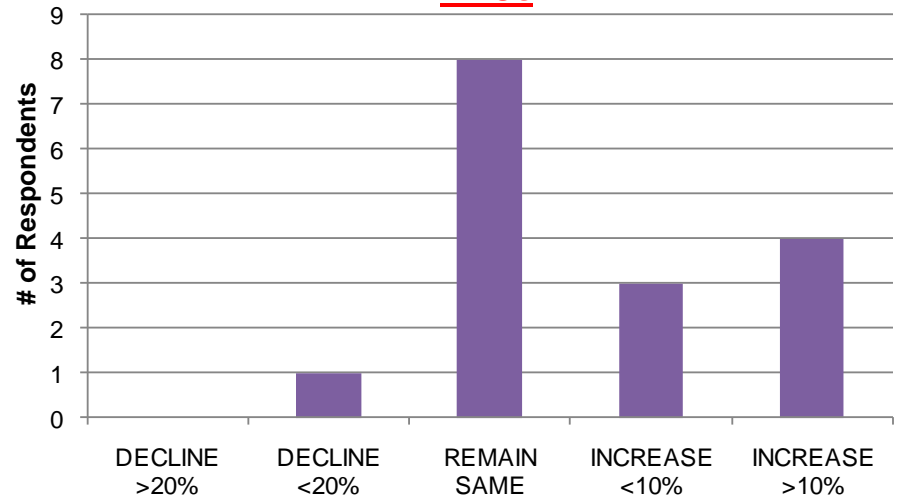
# Over 60% Of The Respondents Expect The Use Of Supplier Owned Inventory To Grow

## Expected Change In Supplier-Owned Inventory Through 2014

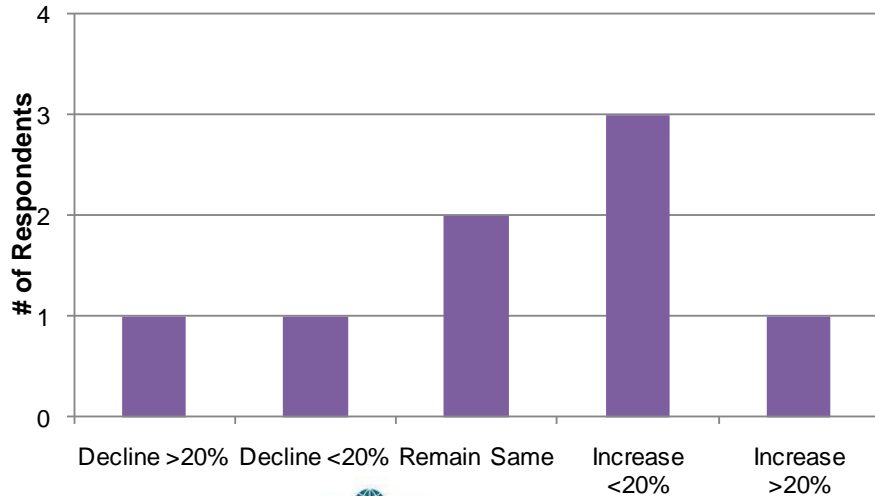
### Airlines



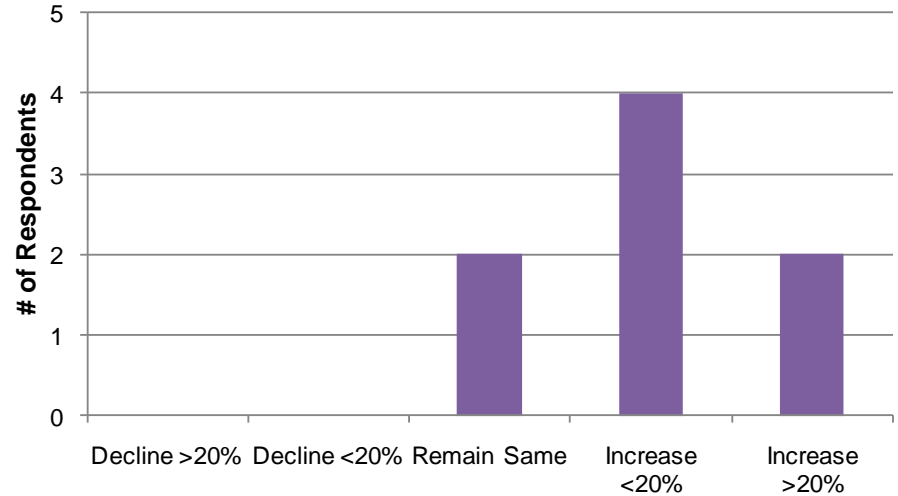
### MROs



### OEMs

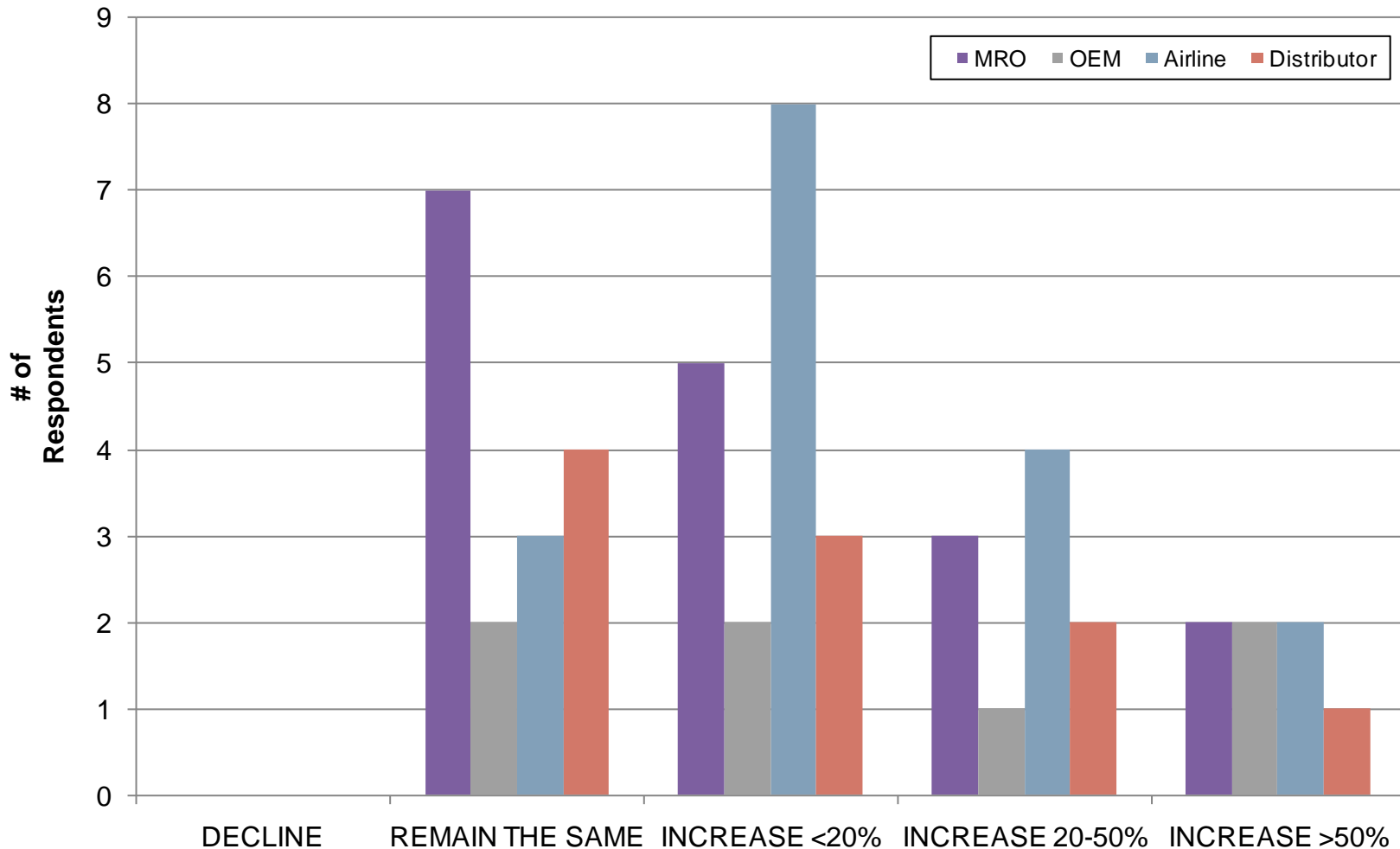


### Distributors / Surplus Dealers



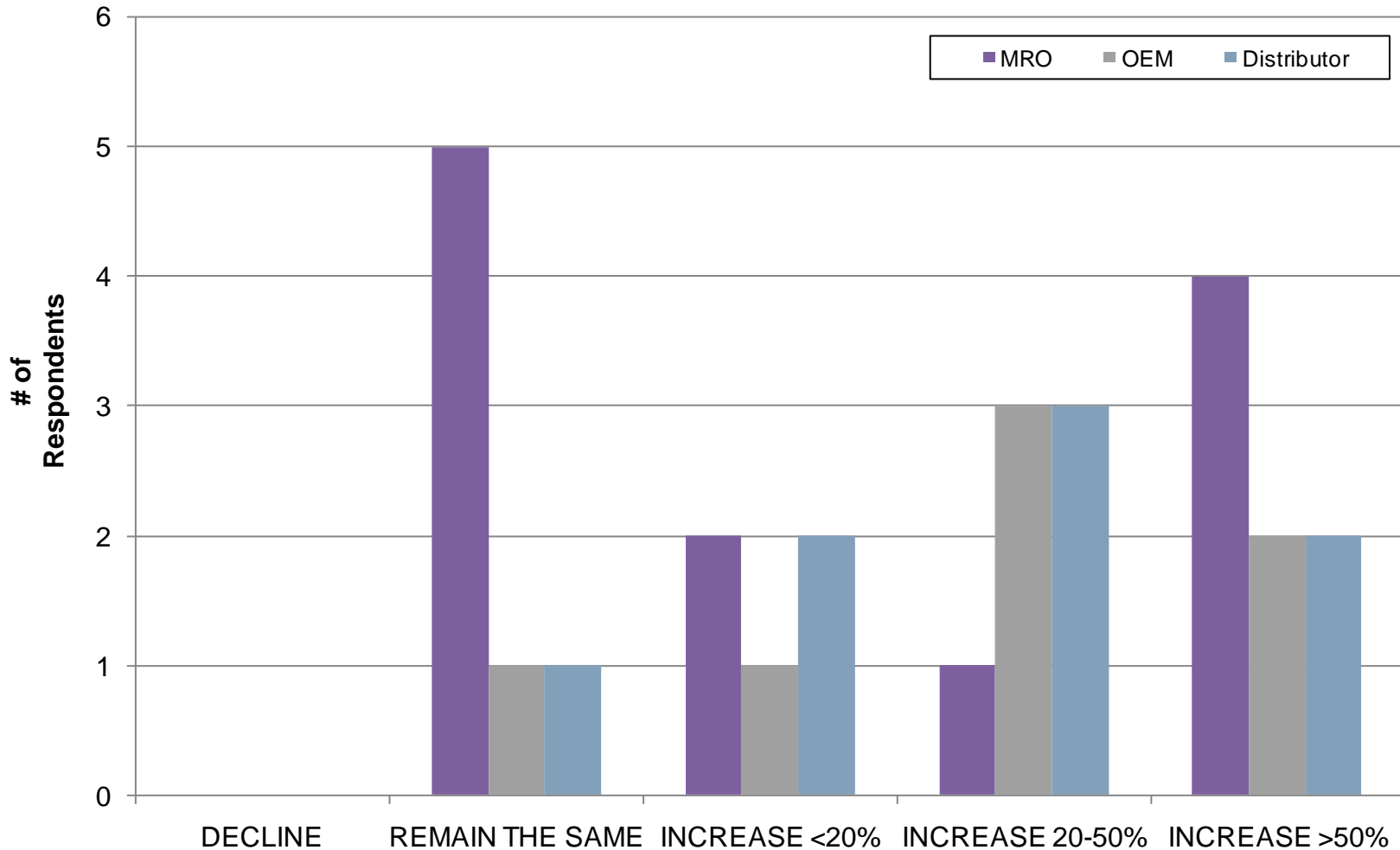
# All Participant Types Expect The Use Of eCommerce To Increase; Nearly 70% Expect It To Grow By More Than 20%

**Expected Change In Of E-commerce Usage Through 2014**



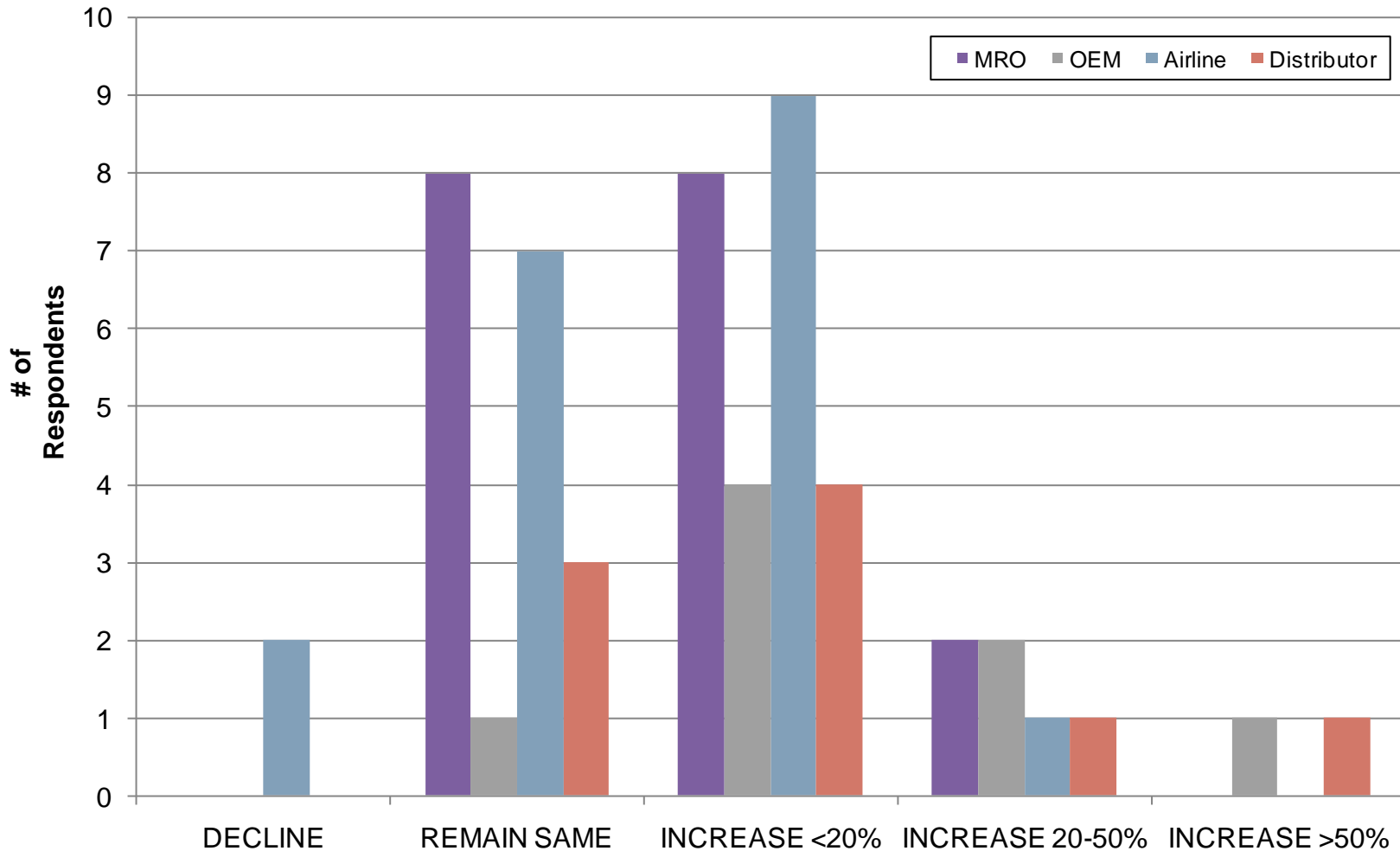
# Nearly Three Quarter Of The Participants Expect The Use Of Pooling To Grow

Expected Change In Pooling Through 2014



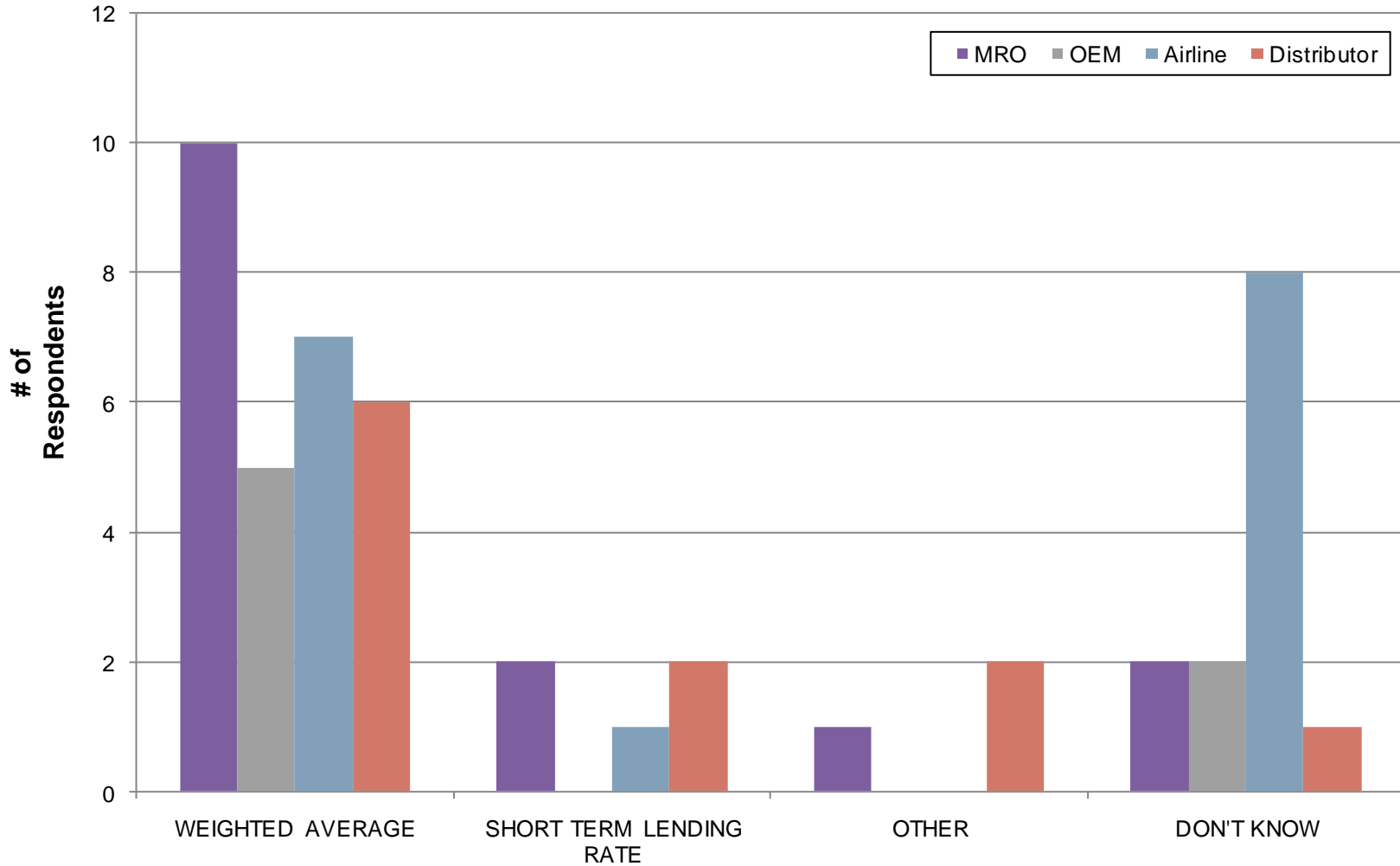
# The Majority Of Respondents Expect Usage Of 3PLs To Increase; OEMs And Distributors Are The Most Bullish

Expected Change In Usage Of 3rd Party Logistics Through 2014



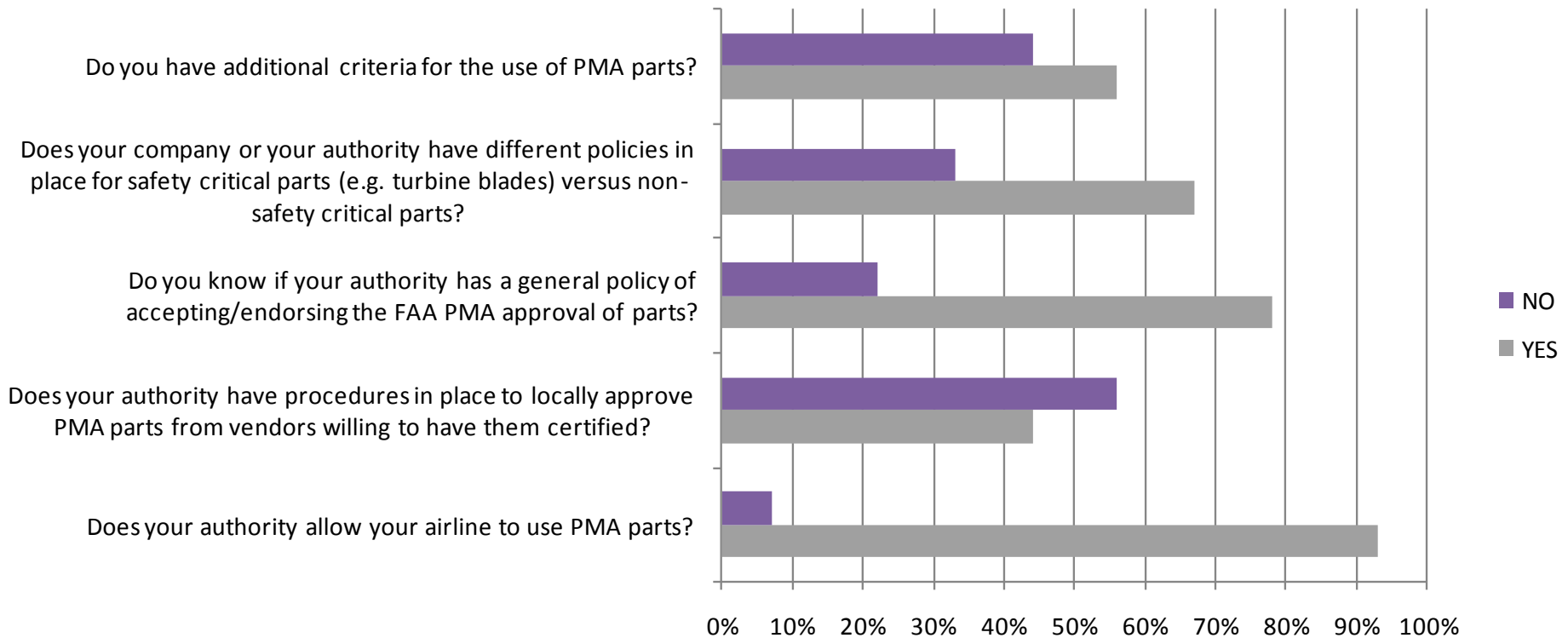
# Weighted-average Cost Of Capital Is Used By Over Half The Respondents

Method Used To Derive Cost Of Capital



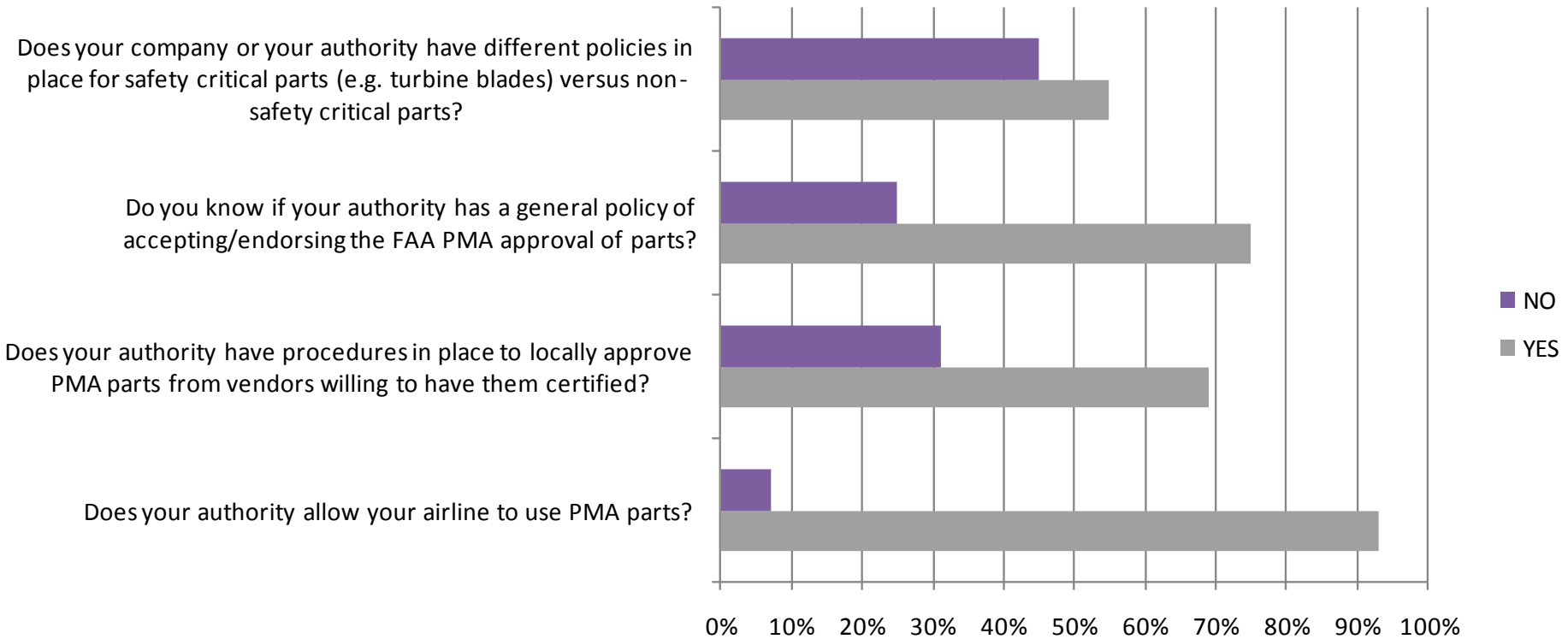
# Over Half Of The Airlines' Feel That Their Authority Do Not Have Procedures In Place To Locally Approve PMA Parts...

## PMA Usage – Airline Perspective



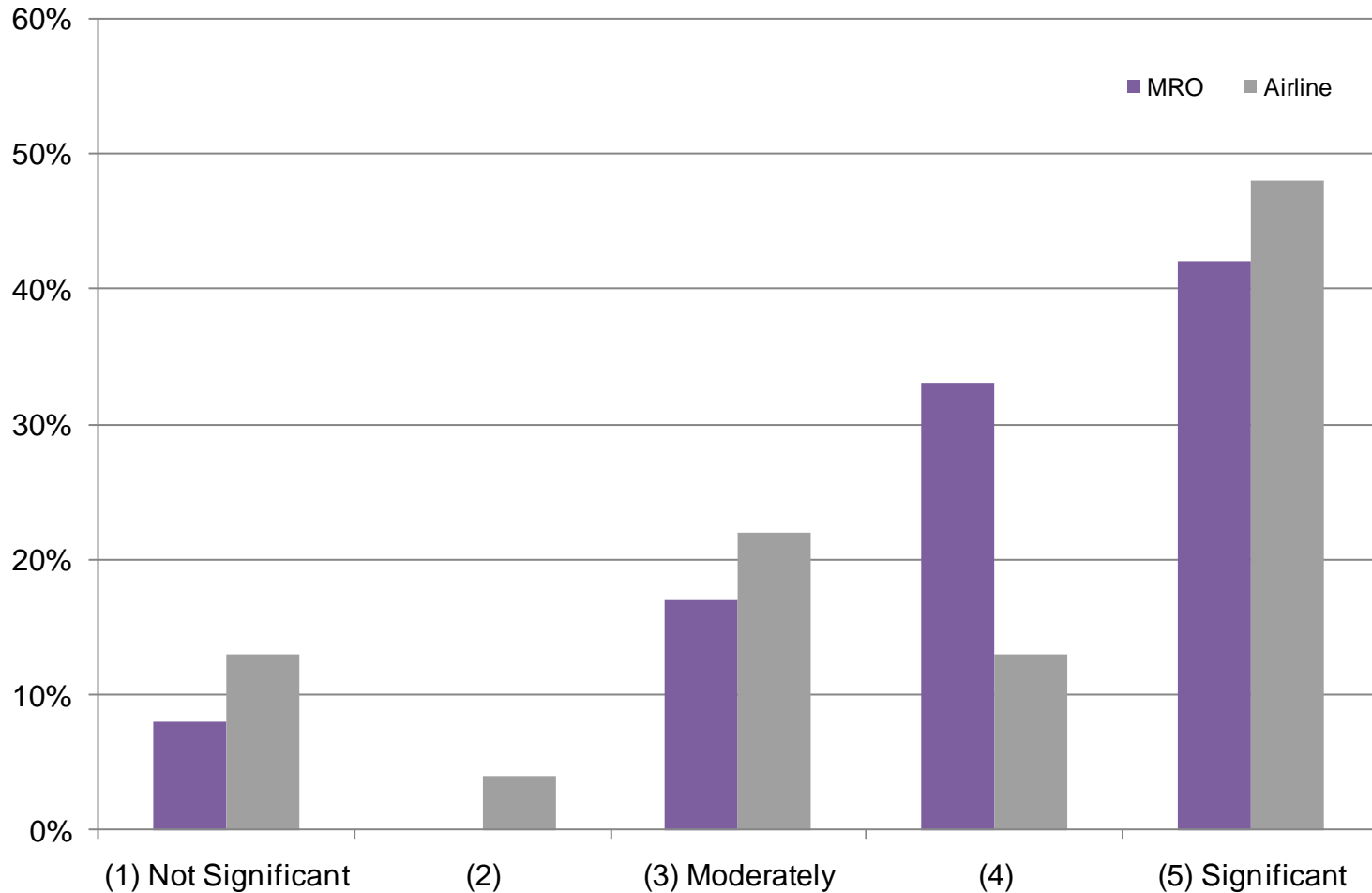
# ...While Nearly 70% Of MROs Feels That There Are Procedures In Place To Locally Approve PMA Parts

## PMA Usage – MRO Perspective



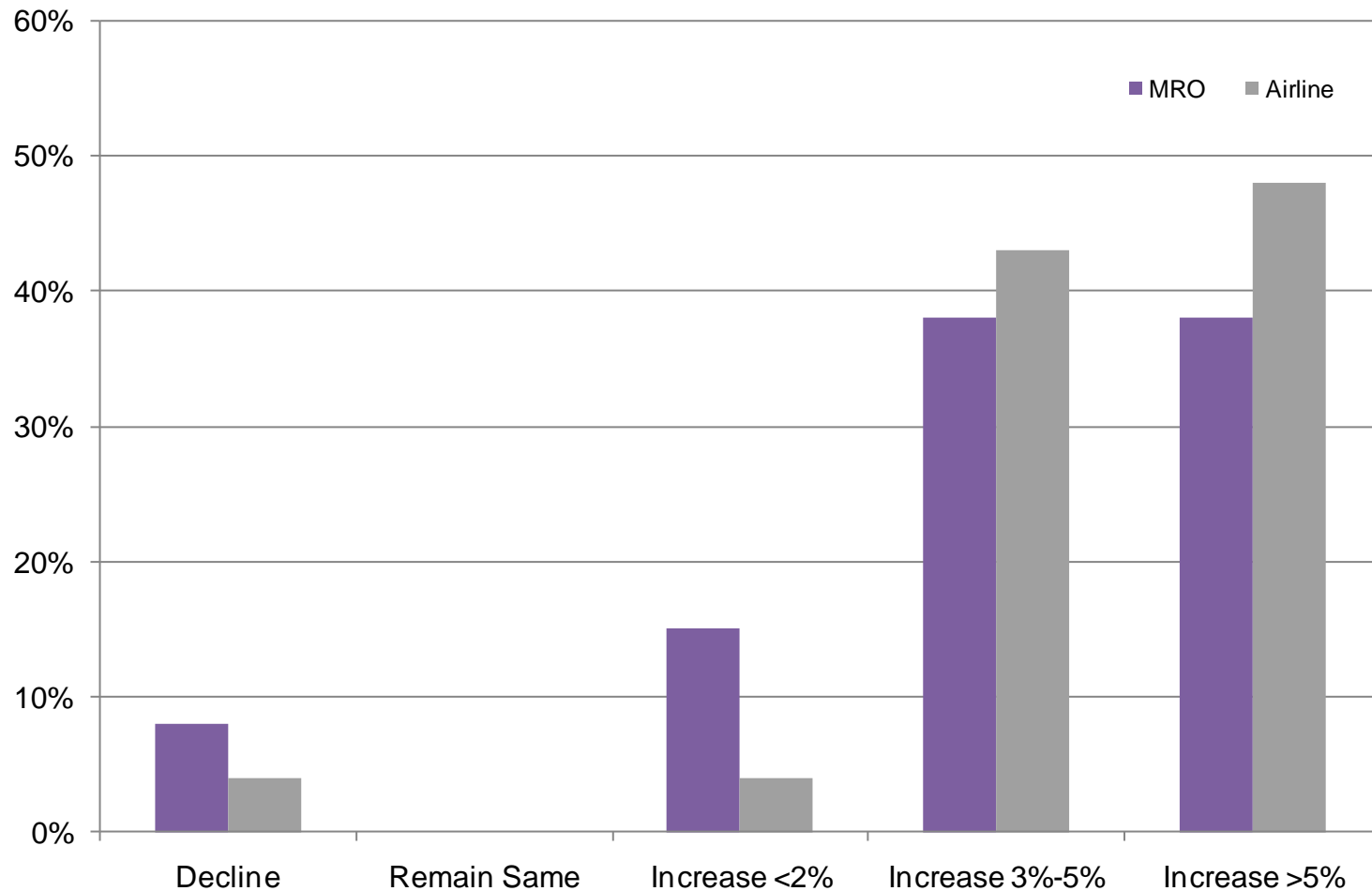
# The Majority Of Airlines And MROs Feel That OEM Pricing Policy Significantly Drive The Usage Of PMA...

## Extent Of Which OEM Pricing Policy Drive The Use Of PMA



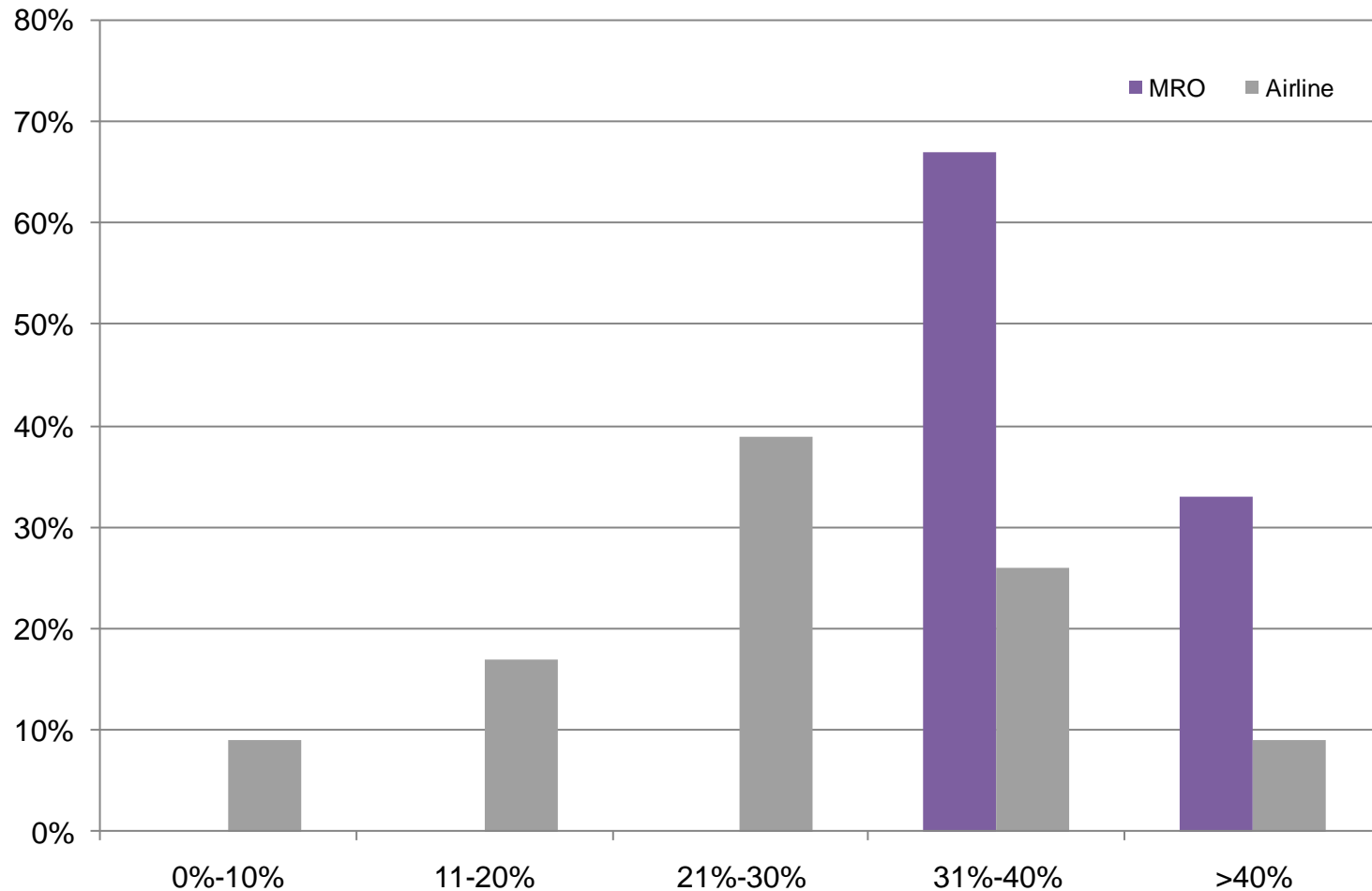
# ...And Have Seen Price Increase From The OEMs Of At Least 3% In Recent Years...

## Annual Material Price Increases Seen From OEMs In Recent Years



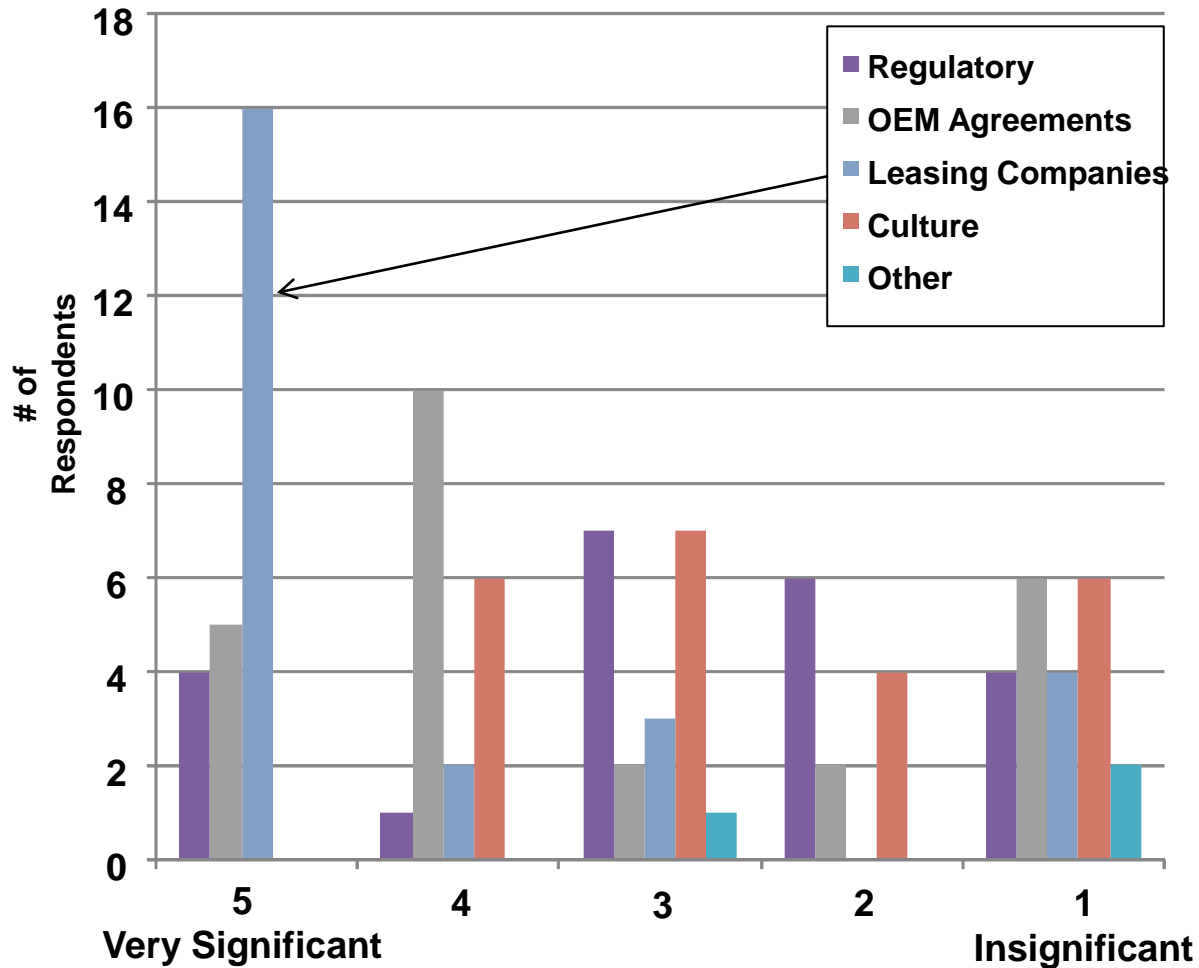
# ... While The Perception Is That PMA Offers At Least 20% Discount Compared To OEM Parts

## Typical Price Discount For PMA Parts Versus OEM



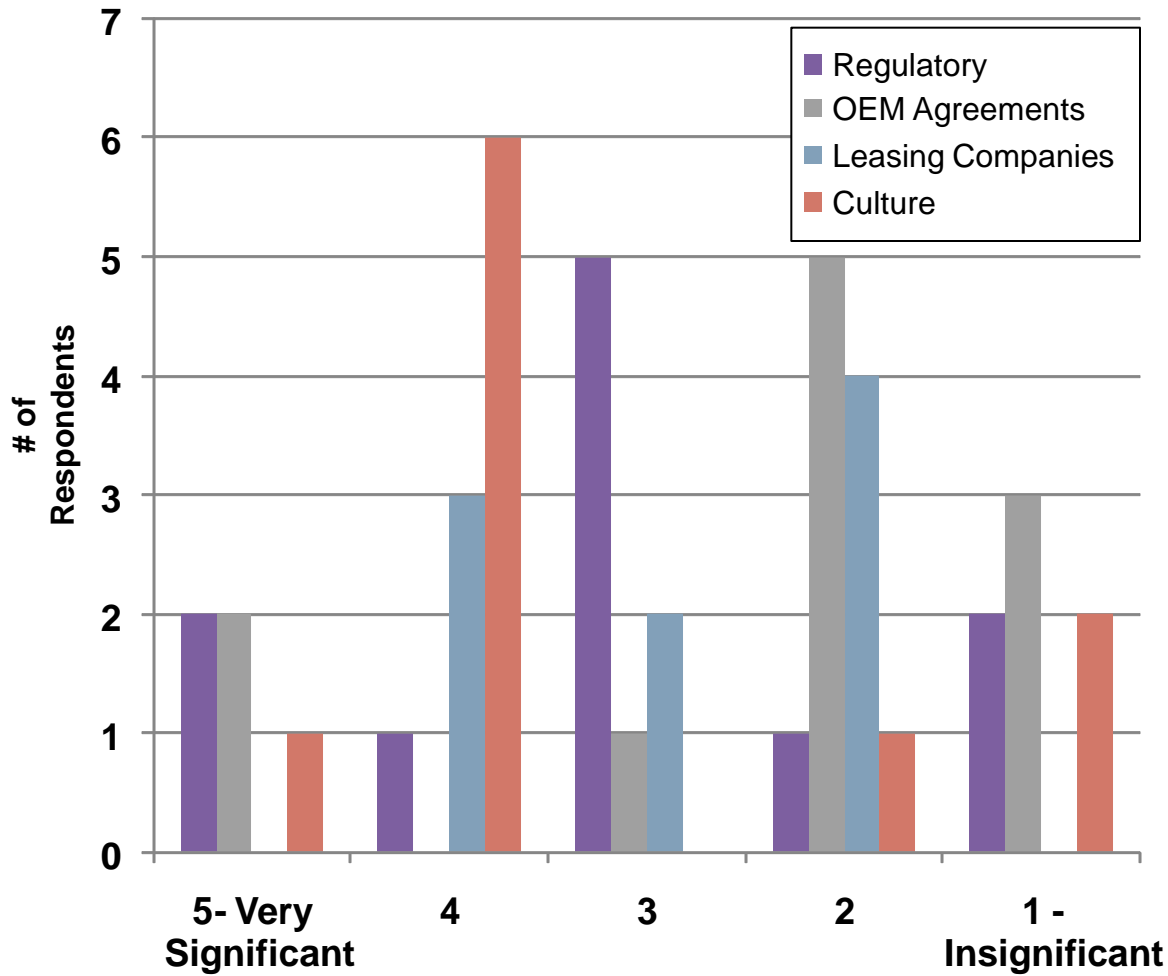
# Airlines Believe That Leasing Companies Are The Largest Barrier To Greater PMA Penetration...

## Barriers to PMA – Airline Perspective



# ...While MROs Believe That Culture Is A Significant Barrier To Greater PMA Usage

**Barriers to PMA – MRO Perspective**



- Introduction
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# AeroStrategy Combined The Survey Results With Our MRO Model Output To Estimate Total Supply Chain Inventory

## Survey Results

- Inventory per Aircraft
- Legacy Airlines
- Low Cost Carriers
- Cargo Carriers
- Charters
- Regional Airlines
- Inventory per \$ of Spare Parts Sales
- OEMs
- Distributors
- Surplus Dealers
- Inventory per \$ of MRO Revenue
- Airframe MROs
- Engine MROs
- Component MROs
- Inventory Holding Costs



## MRO Model Output

- Worldwide Fleets
- Legacy Airlines
- Low Cost Carriers
- Cargo Carriers
- Charters
- Regional Airlines
- Total MRO Material Demand
- Airframe
- Engine
- Component
- Material Supplier Market Shares
- Outsourced MRO Market
- Airframe
- Engine
- Component



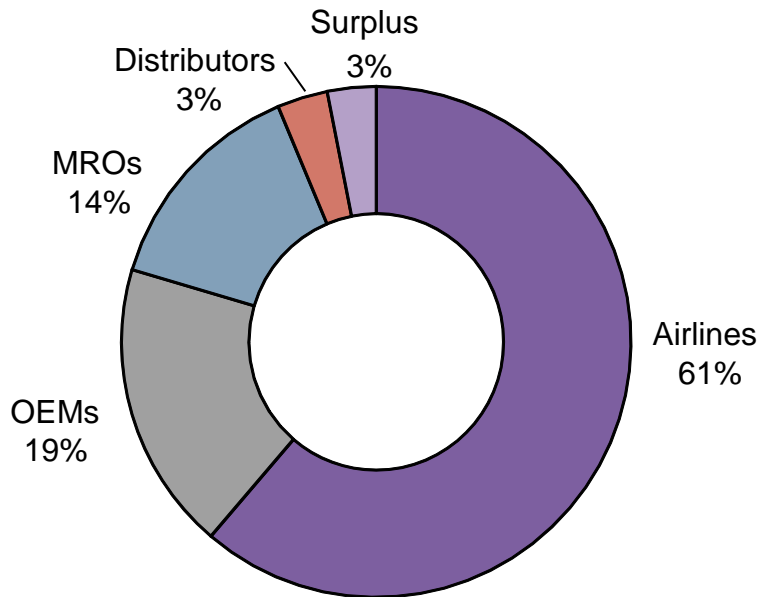
## MRO Supply Chain

- Worldwide Inventory
  - Airlines
  - MROs
  - OEMs
  - Distributors / Dealers
- Total Industry Inventory Holding Cost

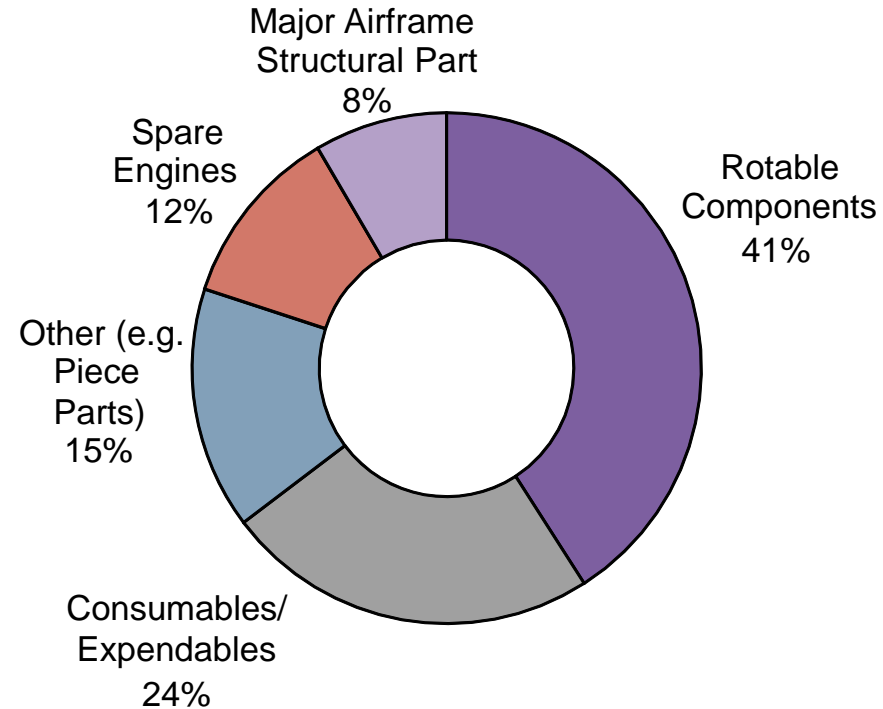
# Survey Results Suggest There Is \$47B Of Inventory In The MRO Supply Chain

## MRO Supply Chain Inventory Holdings: \$47B

**By Segment**



**By Type Of Inventory**



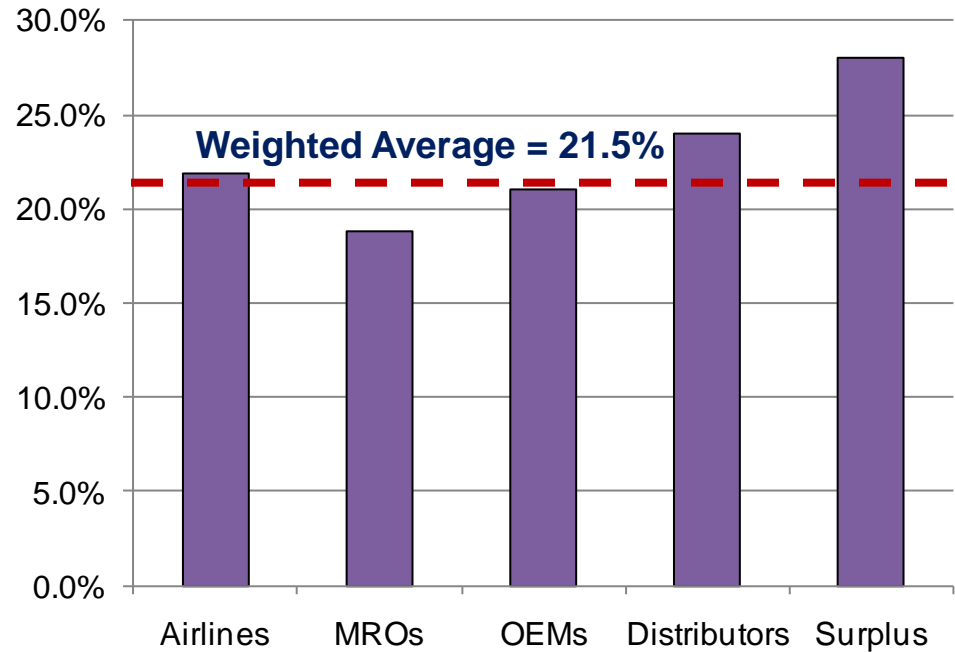
- Total estimated inventory holding for the MRO supply chain is \$47B
- Airlines hold 61% of this inventory
- Rotables account for the largest proportion of inventory (41%)

# The Weighted Average Inventory Holding is 21.5%...

## Inventory Carrying Cost

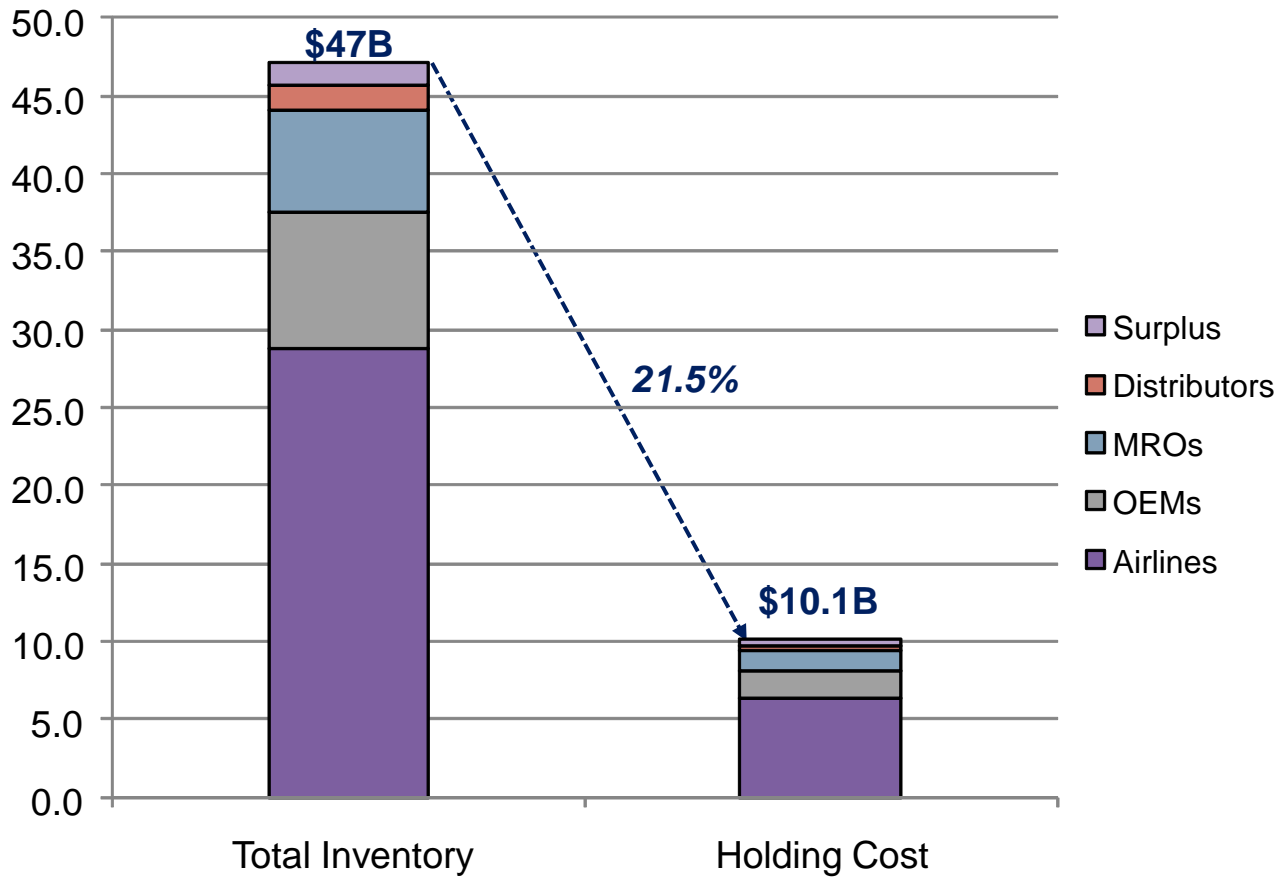
- **Cost of Capital**
- **Overhead**
  - Insurance
  - Obsolescence
  - Taxes
  - Depreciation
  - Pilferage
- **Labor**
  - Inventory Management
  - Warehousing
- **Facilities**
- **Based on AeroStrategy MRO Logistics research program with inputs from over 74 airlines, MROs, OEMs and distributors / redistributors**

## Inventory Holding Cost



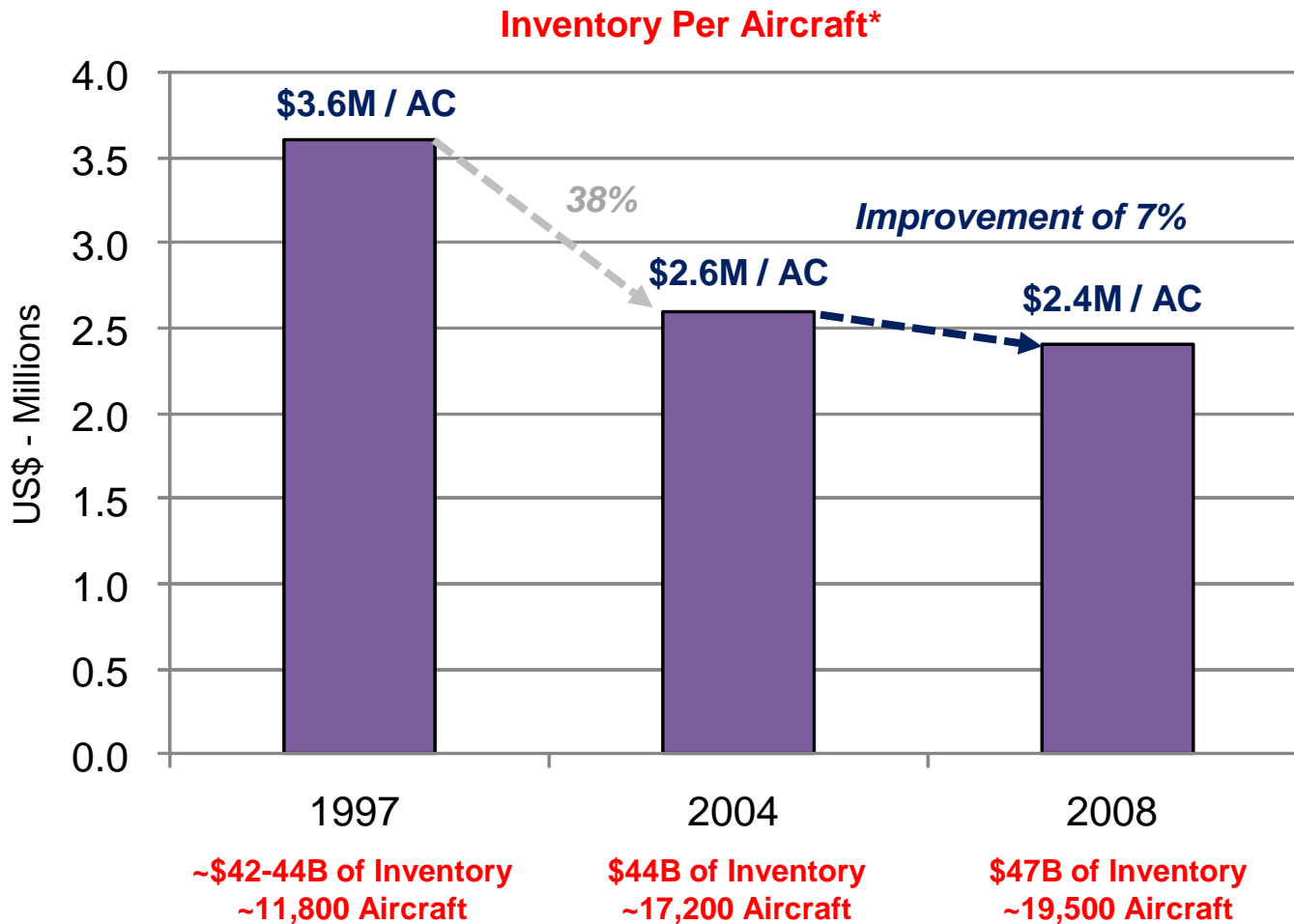
# ... Thus Costing The Industry \$10B Annually

## Inventory And Holding Cost



- The weighted average holding cost of 21.5% implies a cost \$10.1B for the industry
- Airlines bear the brunt of this burden - \$6.3B per annum or 62% of the total

# The Inventory Per Aircraft Is \$2.4M – A 7% Decline Compared To 2004 Inventory Levels



Note:

\* Inventory per aircraft value is the total value of the inventory in the MRO supply chain (i.e. airlines, OEMs, MROs, distributors and surplus) divided by the total number of aircraft in the commercial air transport fleet

# Key Messages



- There is \$47B in inventory across the commercial aviation MRO supply chain today – or approximately \$2.4M per aircraft
- This inventory costing the commercial air transport industry \$10.1B annually, with an average inventory holding cost = 21.5%
- Airlines hold the majority of the inventory at 61% or nearly \$29B; with the remaining split amongst OEMs 18%, MROs 14%, Distributors and Surplus 3% each
- Whilst the 1997-2004 inventory per aircraft had improved by 38%, the 2004-2008 inventory per aircraft has improved by 7%
- Key supply chain initiatives include:
  - Strong expected growth in use of e-commerce and pooling
  - Moderate growth expectations for supplier owned inventory and 3PL usage
- OEM pricing policy is a key driver of PMA usage – the average OEM price increase is at least 3% in recent years
- Airlines view leasing companies and OEM agreements as the largest barrier to greater PMA penetration while MROs view culture and regulations as significant barriers

- Introduction
- Airline Survey Results
- Logistics Trends
- Conclusions / Implications
- **Appendices**

# Calculation Methodology

- Average results have been calculated using straight numerical averages, not weighted averages
- Example – hypothetical data

Airline A	Airline B	Airline C
<ul style="list-style-type: none"> <li>▪ Fleet: 10 Aircraft</li> <li>▪ Total Inventory: \$10m</li> <li>▪ Inv. per A/C: \$1m/aircraft</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fleet: 100 Aircraft</li> <li>▪ Total Inventory: \$160m</li> <li>▪ Inv. per A/C: \$1.6m/aircraft</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fleet: 200 Aircraft</li> <li>▪ Total Inventory: \$1B</li> <li>▪ Inv. per A/C: \$5.0m/aircraft</li> </ul>

$$\text{Average Inventory Per Aircraft} = (\$1.0\text{m/AC} + \$1.6\text{m/AC} + \$5.0\text{m/AC})/3 = \$2.5\text{m/AC}$$

Allows participants to compare themselves against the average airline

$$\text{Weighted Average Inventory Per Aircraft} = (\$1.0\text{m} + \$160\text{m} + \$1\text{B}) / (10\text{AC} + 100\text{AC} + 200\text{AC}) = \$3.8\text{m/AC}$$

**Weighted Averages would skew the averages in favor of larger airlines**  
**Useful for calculating total inventory, but not for comparing with other airlines**

# Airline Response Statistics (1)

Survey Statistics	Base Data			Inventory Value		
	# of Aircraft Own Fleet	# of Aircraft Supported by Inventory	Number of Suppliers	Purchase Value	Book Value	Estimated Market Value
<b>Total</b>	3,821	3,402	N/A	7,352,988,085	7,666,625,912	1,459,484,891
<b>Average</b>	105	97	426	282,807,234	247,310,513	85,852,052
<b>Standard Deviation</b>	141	156	1,094	556,773,274	426,355,019	130,355,184
<b>Min</b>	6	0	0	1,500,000	1,000,000	2,800,000
<b>Max</b>	626	626	6,000	2,288,820,000	1,475,759,098	495,342,891
<b>N</b>	34	35	32	26	31	17

## Carrying Cost Breakdown

Cost of Capital	Overhead Breakdown - Insurance	Overhead Breakdown - Obsolescence	Overhead Breakdown - Taxes	Overhead Breakdown - Depreciation	Overhead Breakdown - Pilferage/Shrinkage	Overhead Breakdown - Other	Overhead TOTAL	Labor Breakdown - Inventory Mgmt	Labor Breakdown - Physical Handling	Labor TOTAL	Warehouse Facilities	Carrying Cost TOTAL
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9.0%	0.9%	1.2%	4.3%	9.2%	1.3%	4.0%	11.8%	2.1%	2.2%	3.7%	1.2%	21.9%
3.6%	0.8%	0.8%	3.7%	13.7%	0.8%	4.0%	12.0%	1.9%	1.3%	2.9%	0.5%	15.3%
3.0%	0.0%	0.0%	0.1%	1.0%	0.5%	0.0%	1.0%	0.6%	0.5%	0.8%	0.7%	2.9%
14.0%	3.0%	3.0%	10.0%	56.0%	2.6%	8.0%	56.0%	6.4%	4.5%	10.9%	2.0%	56.0%
16	10	10	6	15	6	3	18	8	9	10	7	11

## Breakdown By Location

Main Warehouse - Value %	Line Stations - Value %	Other - Value %	Main Warehouse - Inventory Turn	Line Stations - Inventory Turn	Other - Inventory Turn	AVERAGE Inventory Turn By Location
N/A	N/A	N/A	N/A	N/A	N/A	N/A
81.0%	13.3%	5.7%	1.9	2.0	1.2	1.8
22.1%	17.3%	13.4%	1.3	2.3	0.2	1.4
24.0%	0.0%	0.0%	0.5	0.5	1.0	0.5
100.0%	66.7%	57.0%	5.0	7.0	1.3	5.4
31	31	31	13	7	2	12

# Airline Response Statistics (1) – Continued

Breakdown By Type					Breakdown By Segment			Excess Inventory	Performance Measures			
Spare Engines	Major Airframe Structural Parts	Rotable Components	Consumables / Expendables	Other (e.g. Piece Parts)	Engine-related	Airframe/Component related	Other	What portion of inventory is surplus to need?	Inventory Turn - Rotables	Inventory Turn - Consumables	Fill rate from in-house stock - Rotables	Fill rate from in-house stock - Consumables
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19.1%	4.4%	54.2%	25.1%	2.4%	30.1%	68.6%	2.6%	12.7%	1.1	1.4	0.9	0.9
19.6%	6.2%	16.1%	17.4%	5.6%	20.3%	18.6%	5.4%	14.9%	0.8	1.5	0.1	0.0
0.0%	0.0%	26.0%	4.0%	0.0%	2.0%	11.0%	0.0%	1.0%	0.1	0.1	0.8	0.9
56.0%	22.0%	85.0%	61.0%	20.0%	89.0%	96.0%	17.0%	57.0%	3.1	7.0	1.0	1.0
25	23	26	26	25	26	25	21	26	16	20	23	21

Material Spend 2008									
OEM - Rotables	OEM - Consumables	Distributor - Rotables	Distributor - Consumables	Surplus Dealer - Rotables	Surplus Dealer - Consumables	PMA Manufacturer - Rotables	PMA Manufacturer - Consumables	Total 2008 Spend Value - Rotables	Total 2008 Spend Value - Consumables
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	801,350,864	975,096,714
52.5%	47.3%	34.9%	46.8%	15.3%	15.1%	1.4%	4.2%	36,425,039	51,320,880
35.6%	27.3%	31.7%	22.9%	22.4%	24.6%	2.9%	5.0%	97,600,899	113,557,898
0.0%	5.6%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	253,778	240,000
100.0%	100.0%	95.0%	92.9%	80.0%	100.0%	10.0%	17.0%	450,000,000	495,585,342
23	21	20	21	18	17	13	16	22	19

Transaction Volume 2008			Transportation	
# of Internal Parts Requests	# of Parts Transactions with Outside Vendors	% Transactions on AOG Basis	Material Transportation Cost as a % of Purchase Price	% of Parts Shipped Via Own Aircraft?
4,296,504	761,798	N/A	N/A	N/A
179,021	33,122	7.8%	8.1%	41.6%
289,685	79,316	7.4%	5.7%	36.5%
680	1	0.0%	0.0%	1.0%
1,000,000	358,684	30.0%	21.0%	100.0%
24	23	26	28	16