

# Test Economics:

## Who is winning?

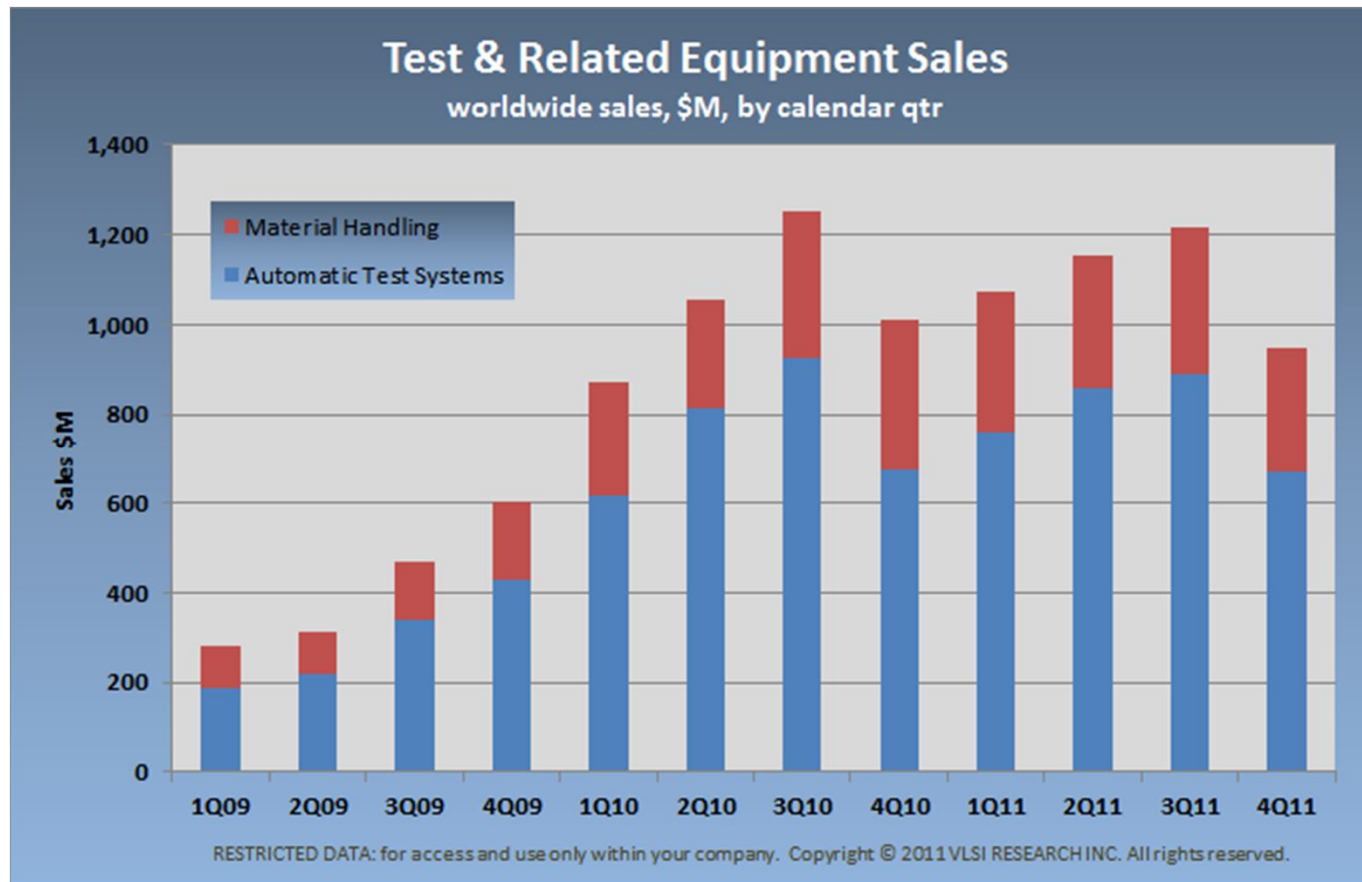
Risto Puhakka

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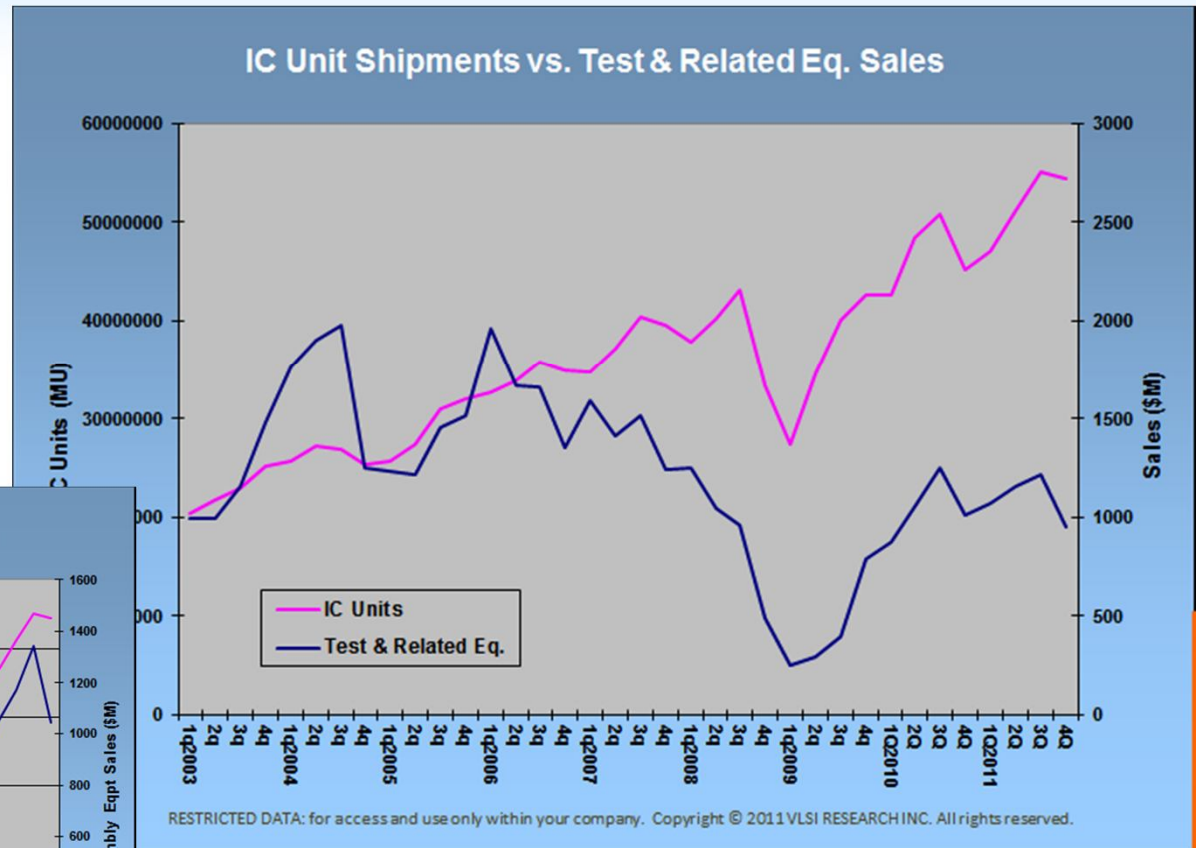
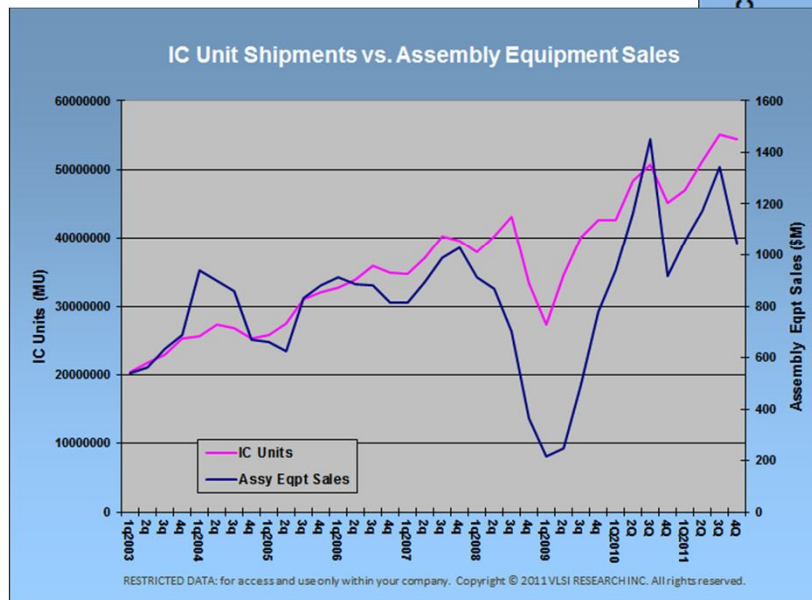
# Test Was Hit Hard in Recession

- Sales dropped to a fraction in 2009
- Memory test was non-existent
- It appeared that customers could move on without test

# Spectacular Sales Recovery



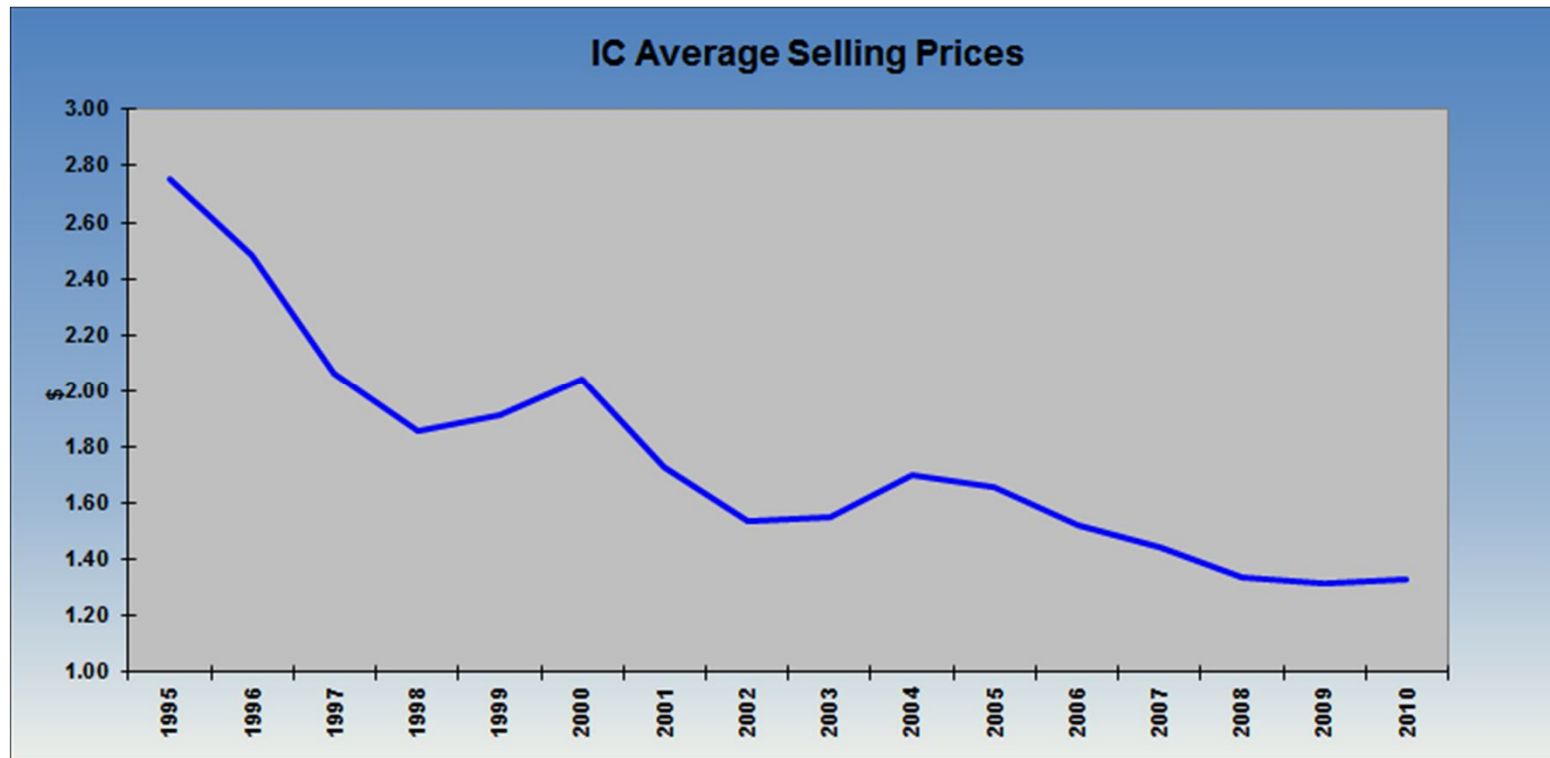
# Long Term Trends Are Discouraging



# Opportunities for the Customer

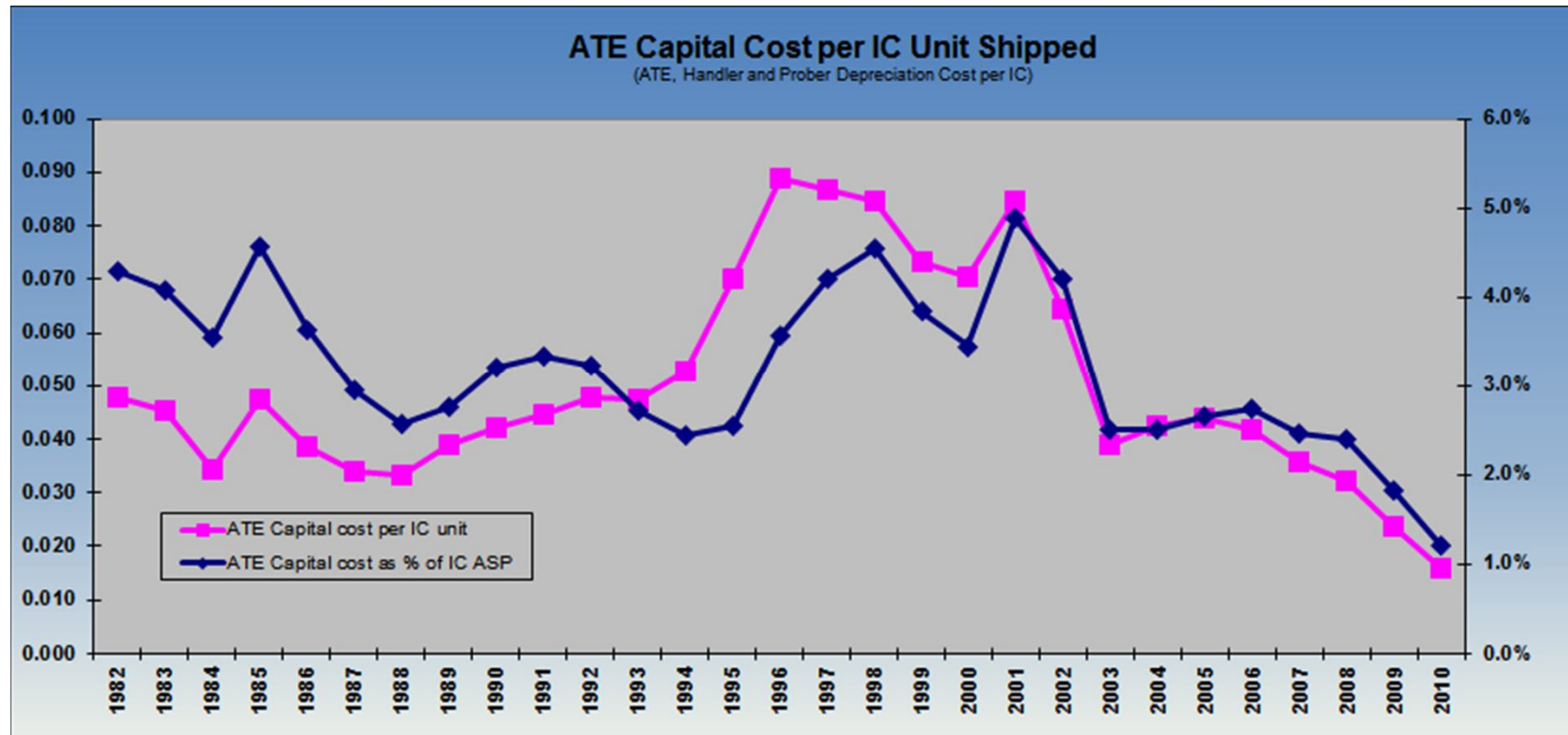
- Large fleets of used testers became available
  - Low asps, outside OEMs
- High end digital test has been using more and more DFT
  - To enable test
  - And lower cost
- Tester productivity has gone up significantly
  - Increased parallel test
  - Increased use of DFT
  - Smarter test strategies

# IC ASP Decline is Key Driver



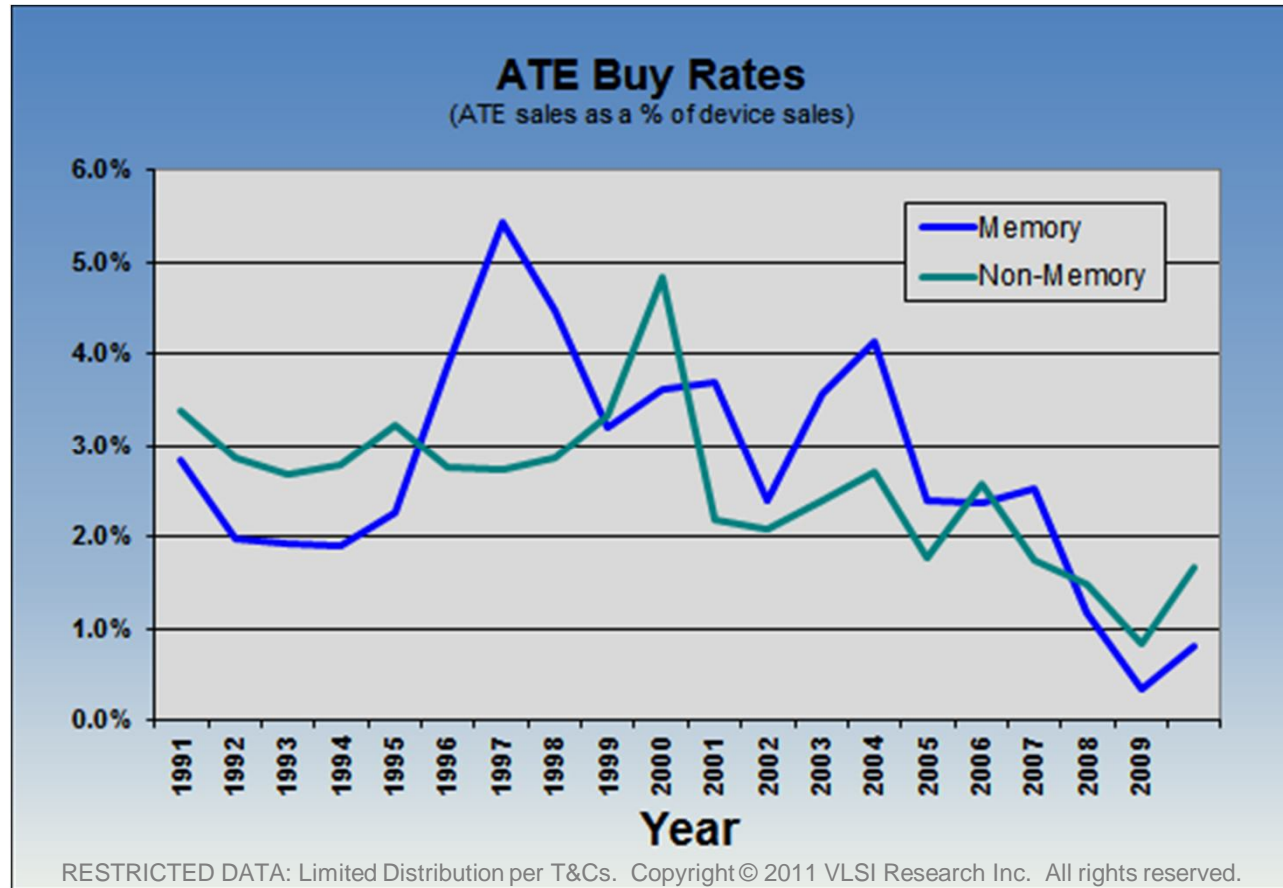
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# Test Share of IC Cost Continues to Decline



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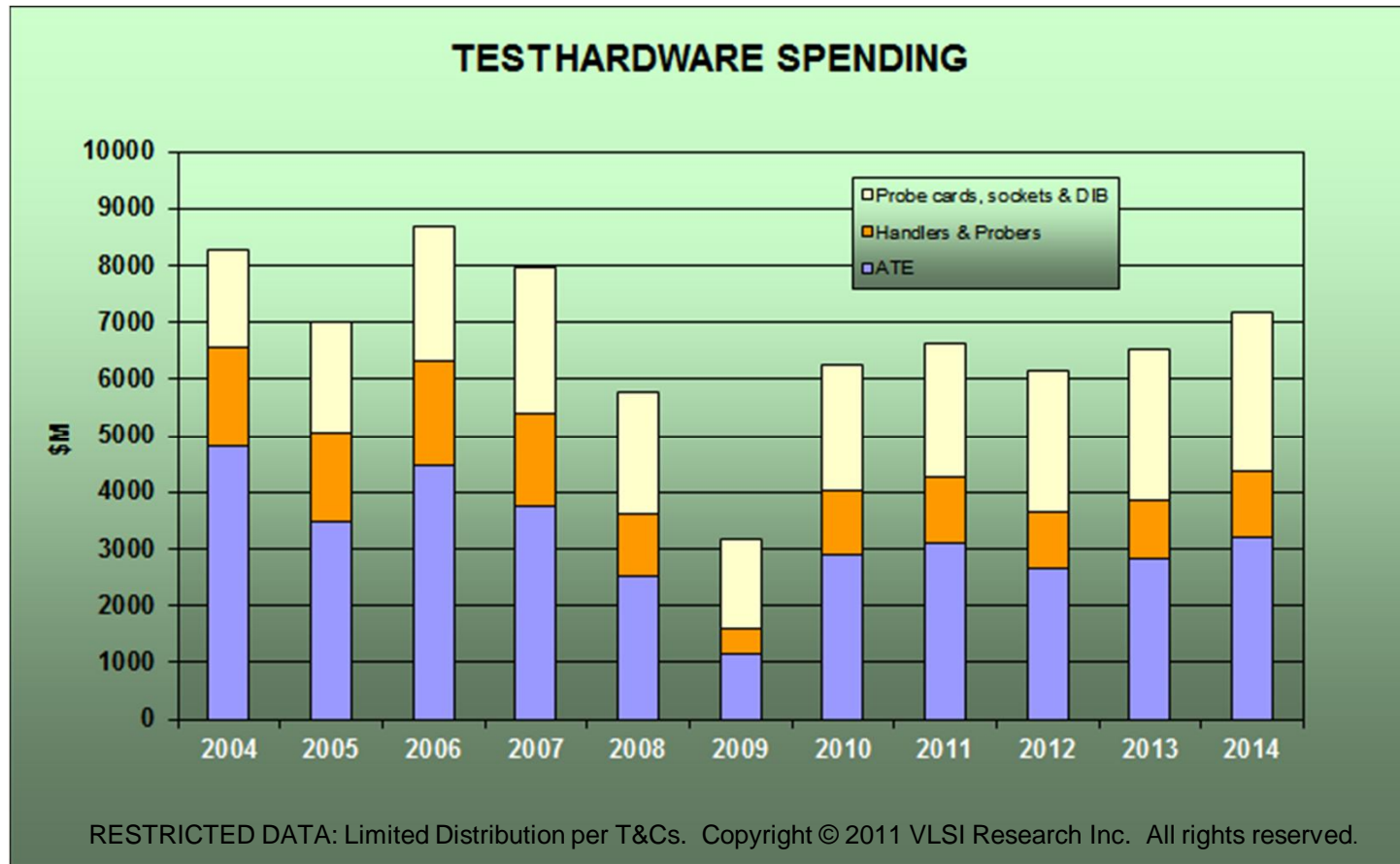
# Resulting Depressed ATE Buy Rates



# ATE Has Been Through Perfect Storm

- Declining IC ASPs drive less ATE spending
- DFT, instead of more complex testers enables
  - high end digital test
  - Memory test
- ATE Productivity is significantly higher
- Used testers postponed recovery from the recession

# Test Outlook is Reasonable



# Getting Signal In and Out of the Chip Is Getting More Difficult

- Share of test consumable spending is increasing
  - More complex sockets and probe cards
- Sales is driven by increasing IC unit demand
  - Underlying ~8% demand driver
- Fragmented market place provides opportunities for smaller technology oriented companies

# What Does This Mean for Suppliers

- Consolidation
- ATE OEMs are looking for other opportunities to grow sales
  - Test turnkey services
  - Instrumentation business
  - Other measurement/high density electronics
- Test consumable business
  - Differentiated and protected IP is key for long term prosperity

# Thank You

If you have further questions, e-mail us at:  
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# VLSI Corporate Backgrounder

- VLSI Research Inc is a leading provider of market research and economic analysis of high tech industries
- Known for its sharply focused insight into the rapidly changing landscapes of the industries covered.
- VLSI has been the only market research firm to consistently gauge the direction of growth since the early eighties.
- VLSI Research was founded in 1976.

# Appendix: *Web sites*

## **VLSI**research.com

- VLSI's market research page
- For research on the semiconductor supply chain

## **Chip**History.org

- Education site on semiconductors
- Virtual history museum
- Based on industry donations

## **we**SRCH.com

- Where Technology = Opportunity
- A virtual science & engineering conference
- Ads reach 200K visitors per month
  - 15-20mins & 35 page views / visit, >1 visit / week
  - High signature authority and income viewership
  - High Yield on Targets for your business

# Appendix: *Product Offerings*

- **Semiconductor Analytics**
  - *weekly market updates*
- **Chip Market Research Services**
  - *The Chip Insider<sup>®</sup>, ForecastPro, Semi & FPD*
- **PV Solar:** *The Database on PV Manufacturing Markets*
- **Critical Subsystems** *for Semiconductor, Flat Panel Display & Data Storage Manufacturing Equipment*
- **INDUSTRY PULSE PRO<sup>®</sup>** *entry level datapacket*
- **Customer Satisfaction** *Custom Internet surveys in multiple languages*

# *about Semiconductor Analytics*

- This is a new offering
  - Addresses the semiconductor supply chain
  - End demand focus
- Single Stop for Industry Fundamentals
  - All Industry Fundamentals readily available
    - Weekly and Monthly
  - Only source of
    - Weekly IC Sales statistics
    - Monthly capacity statistics
  - Knowing what's happening now with little latency
    - 3 business days instead of a month or quarter
  - Eliminate costly searching for “free data”— *Dan*

# *Semiconductor Analytics' TOC*

- **This Week** in the Supply Chain
  - IC Billings, Units, and ASP's
  - Semiconductor Sales
  - Electronics Sales Activity
  - Electronics Price Trends
- **This Month** in the Supply Chain
  - Electronics Sales and Growth with 3/12 - 12/12 Charts
  - Personal Tools: PC's, Tablets & Handsets
  - Consumer
  - IT Infrastructure
  - Automotive
  - Foundry capacity and production

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