

# State of the North American Pulp & Paper Industry – *An Update & Outlook* –



## *Industry Competitiveness & The Innovation Imperative*

*-- October 2005 --*

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# The North American Pulp & Paper Industry -- *Preview*

- How Competitive?
- The Innovation Imperative
- The Innovation Shutdown
- Restarting The Innovation Machine

# How Competitive?

# How Competitive?

## ■ North American Paper Industry:

- ✓ Remains one of the largest world regions for paper consumption and enjoys significant fiber resources...
- ✓ Competitiveness has been boosted by weaker U.S. dollar...
- ✓ Has enjoyed a moderate, cyclical upturn...
- ✓ With prices, volume and financial performance improving – maybe can extend into 2006...
- ✓ ...Many companies will have -- *for a time* -- more resources and opportunities to invest in their businesses since 1995.



# How Competitive?

**Volume & Price Performance Is Improving --**

<b>North American Grade</b>	<b>2005 Expected Change In NA Production</b>	<b>2005 vs. 2004 Change In Average Price</b>
<b>Printing &amp; Writing</b>	<b>-2.4%</b>	<b>0% to +10.5%</b>
<b>Boxboard</b>	<b>+0.8%</b>	<b>-2% to 0%</b>
<b>Containerboard</b>	<b>-0.5%</b>	<b>-1% to 0%</b>
<b>Newsprint</b>	<b>-4.6%</b>	<b>+10%</b>
<b>Chemical Paper Grade Pulp</b>	<b>+6.0%</b>	<b>-5% to -1%</b>



# How Competitive?

- Competitiveness Is Multidimensional:
  - ✓ Mill Performance vs. International Competition (*i.e. North American vs. South Am. vs. European vs. Asian mills' productivity and quality*)
  - ✓ Product Performance vs. Substitutes (*i.e. paperboard folding cartons vs. plastic packaging – newspaper vs. TV, etc.*)
  - ✓ End-User Performance vs. International Competitors (*i.e. domestic vs. international manufacturers*)
  - ✓ Financial Performance vs. Other Investments (*i.e. returns on paper investment vs. alternatives of similar risk*)

# How Competitive?

- Based on these dimensions, industry participants must recognize:
  - ✓ Off-shoring and substitution by alternative mediums *are driving long-term demand below current levels*
  - ✓ North America *has become increasingly uncompetitive* in pulp and paper production
  - ✓ The industry's cost based competition and capital rationing strategies *have eroded its asset base.*
  - ✓ The composite financial performance of the industry has been pitiful looking back -- and without a sustained upturn will further dissuade future investment – *even with the improved short-term environment...*



# How Competitive?

**Absent Strength of the US Dollar Issues – *North America Does Not Enjoy Low Cost Producer Status In Most Grades***

Grade Category	Low Cost Production Centers
Pulp	<b>Brazil</b> , Chile, Argentina, Indonesia and <b>Canada</b> (selected)
Printing & Writing Papers	<b>Brazil</b> , Russia, Indonesia, Thailand, Scandinavia, Western Europe
Newsprint	Eastern Europe, <b>Brazil</b> , Chile and <b>Canada</b>
Premium Folding Carton Grades	<b>Brazil</b> , Russia, Sweden, Chile and Finland



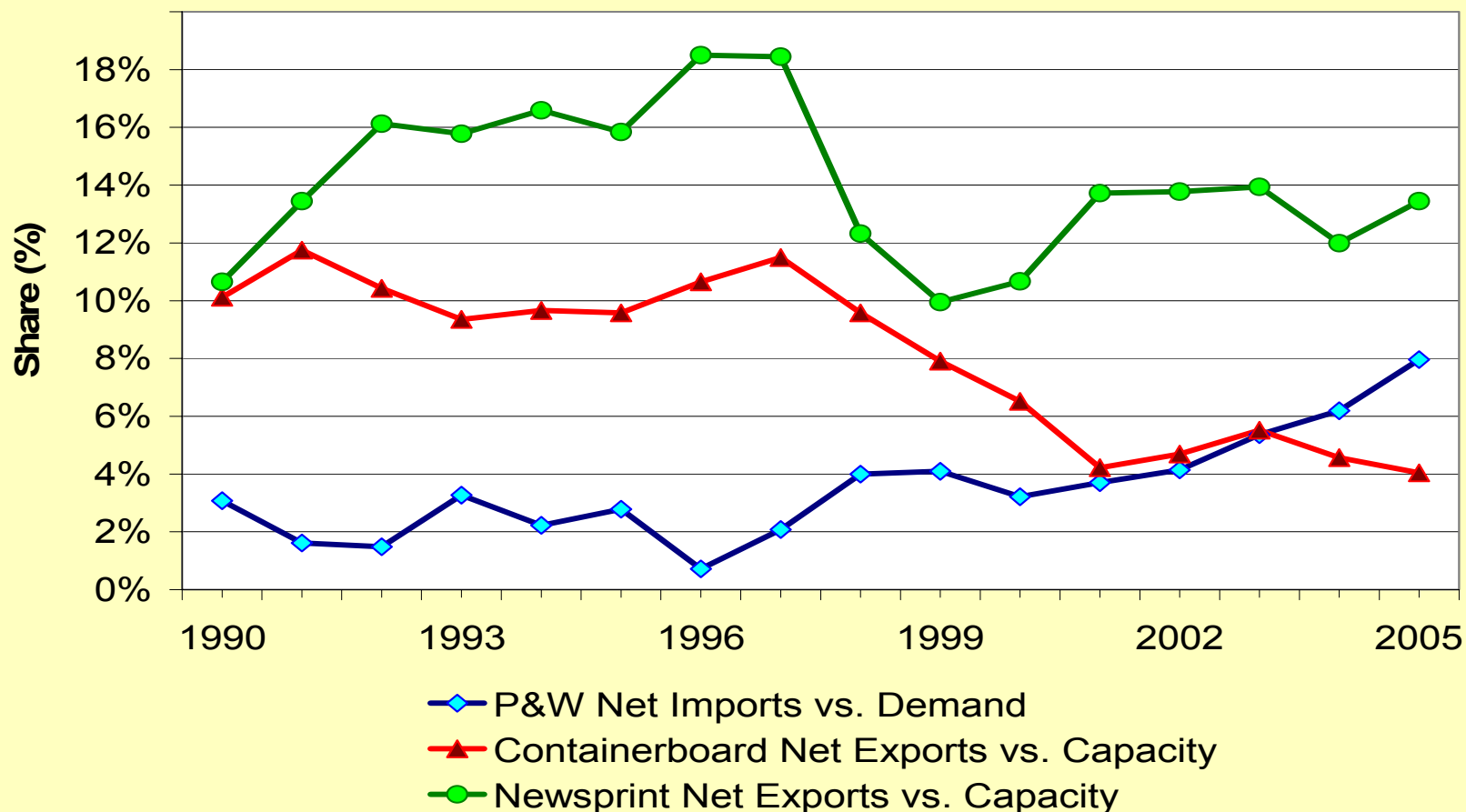
# How Competitive?

**High Volume North American Grades  
*Have Significant Substitution Threats***

Grade Category	Substitutes
Containerboard	Re-usable shipping containers, offshoring of manufacturing
Packaging Grades	Flexible packaging, offshoring of manufacturing
Printing & Writing Papers	Electronic communications, alternative advertising mediums
Newsprint	Electronic communications, alternative advertising mediums
Tissue	<i>No major substitutes</i>

# How Competitive?

*Trade Patterns Have Weakened For North American Producers In P&W, Containerboard and Newsprint*

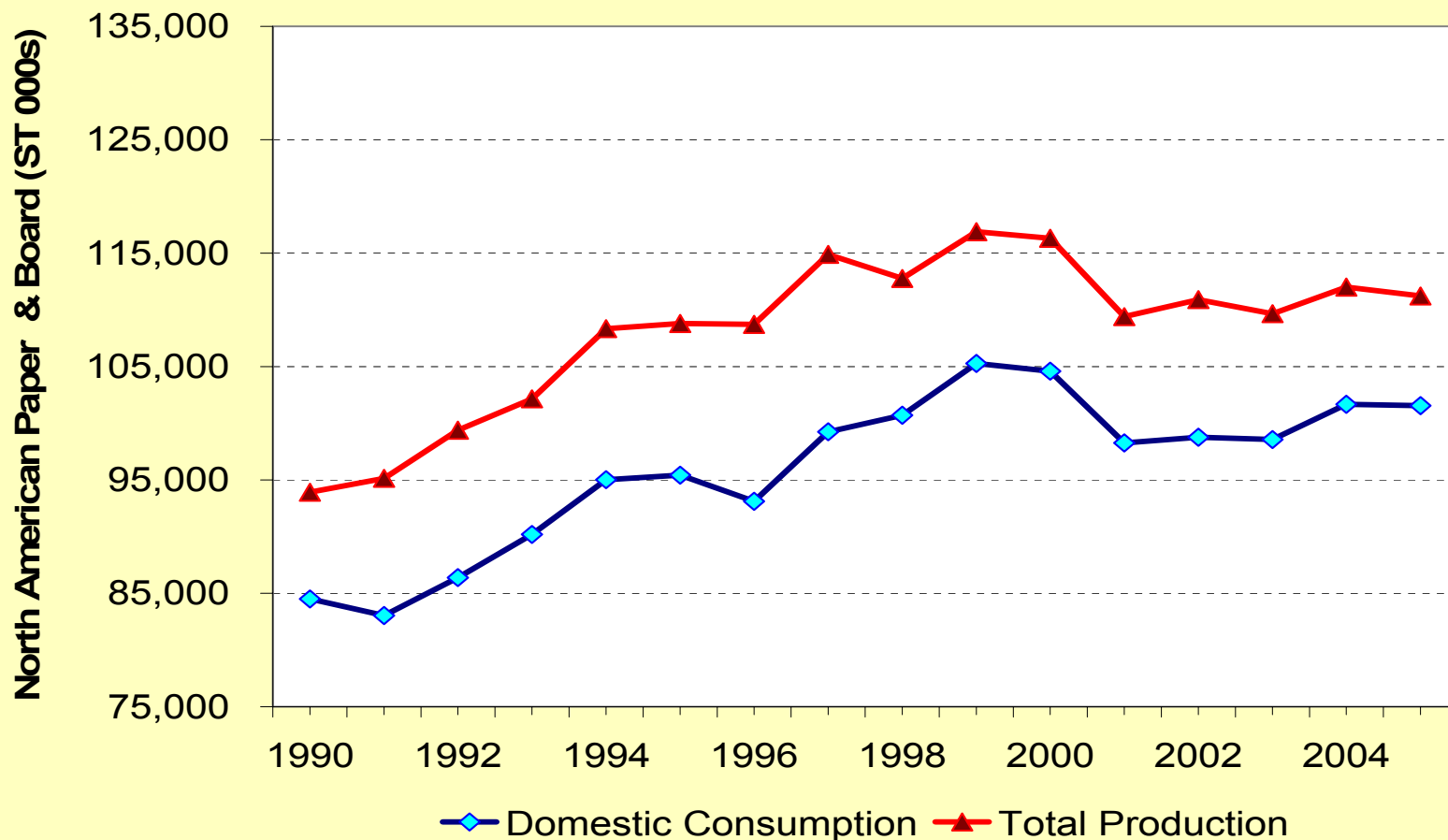




# How Competitive?

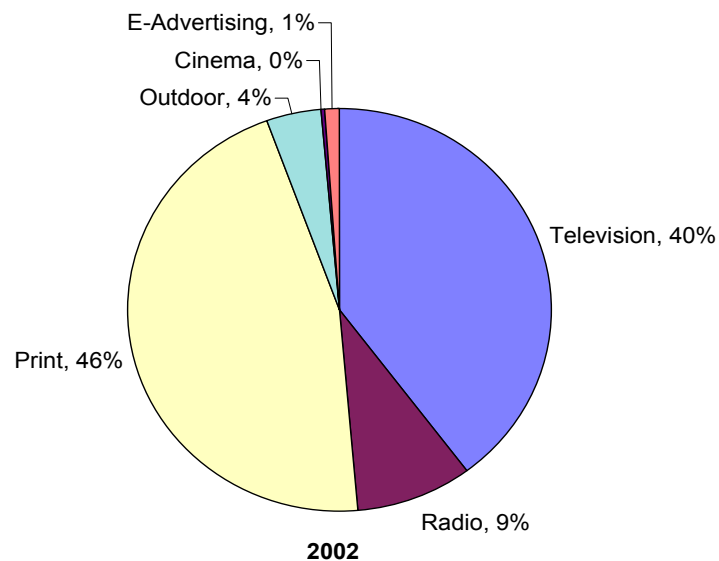
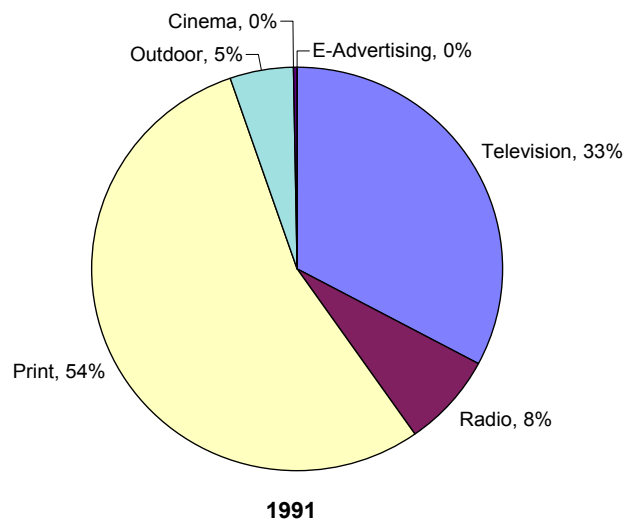
*Substitutes, The Recession & International Competition Have Suppressed Production and Domestic Consumption*

*- Off 3% to 4% in 2005 From Its 1999 Peak – In Spite Of The Recent Rebound*



# How Competitive?

***Worldwide Print Advertising Has Lost Nearly 10 Points of Market Share Since 1991 – And Expectations Are For This Trend to Continue***

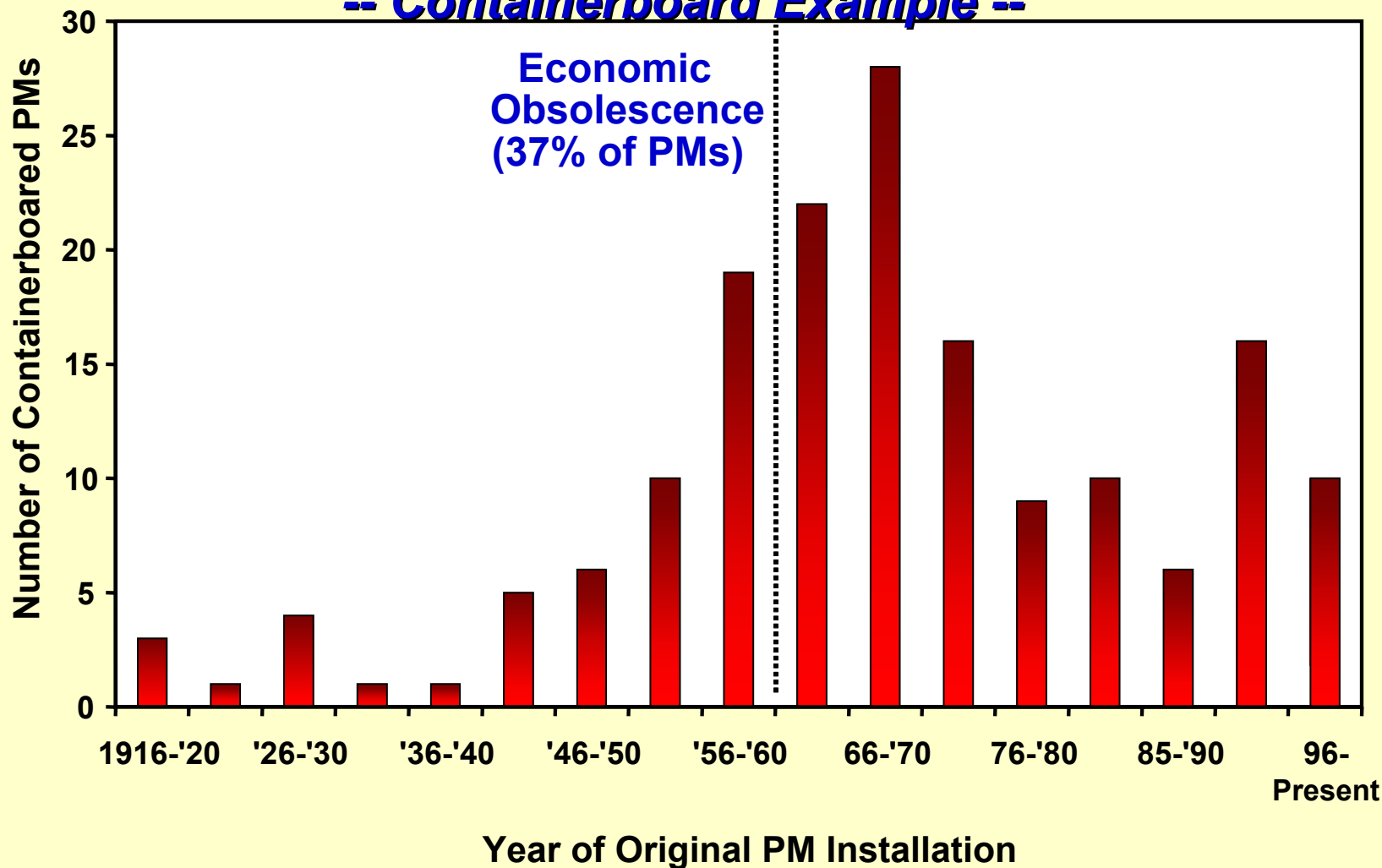




# How Competitive?

Large Share of North American Assets Are Approaching The End of Their Economic Lives

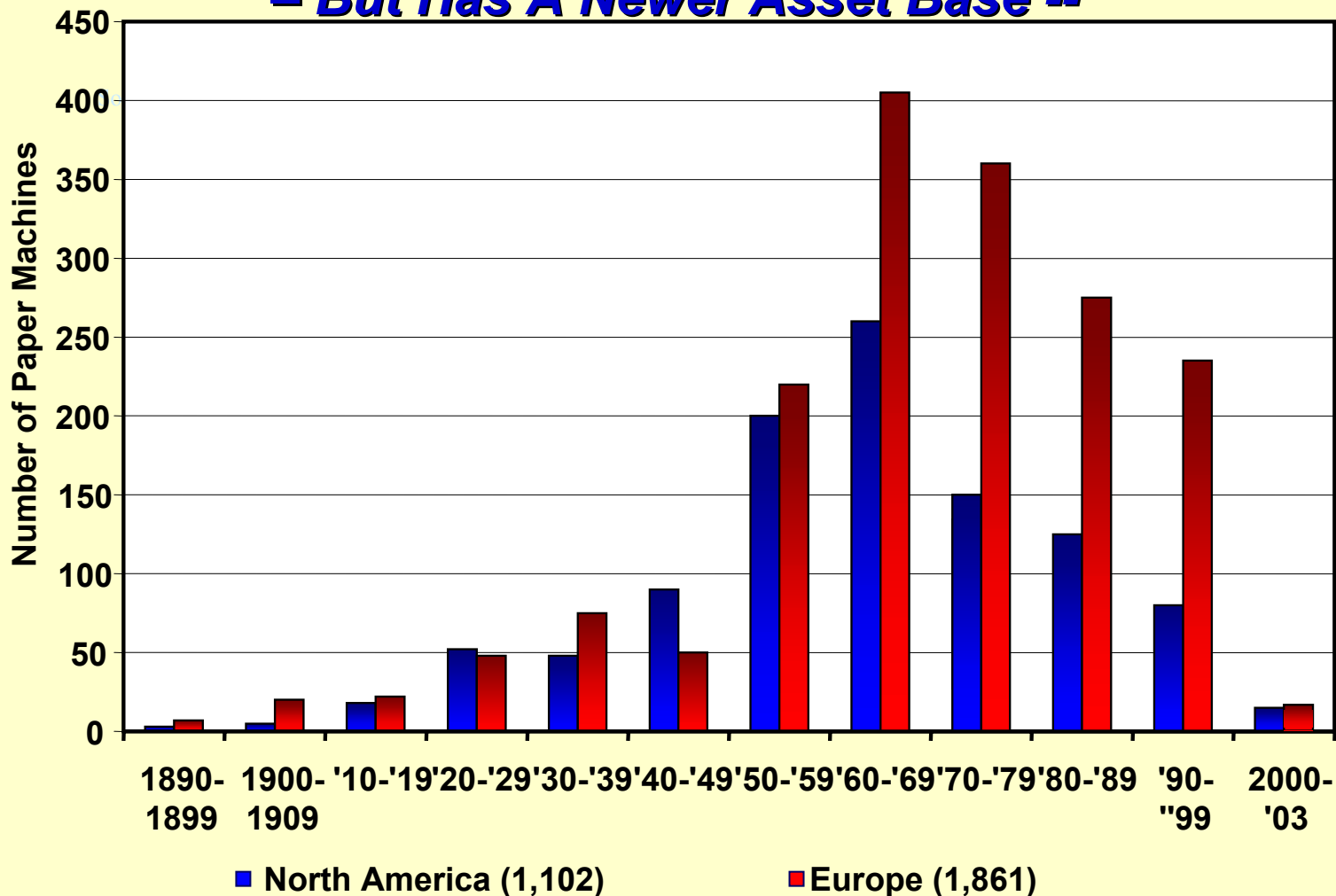
**-- Containerboard Example --**



# How Competitive?

Europe Is Facing Similar Demand Issues

***– But Has A Newer Asset Base --***

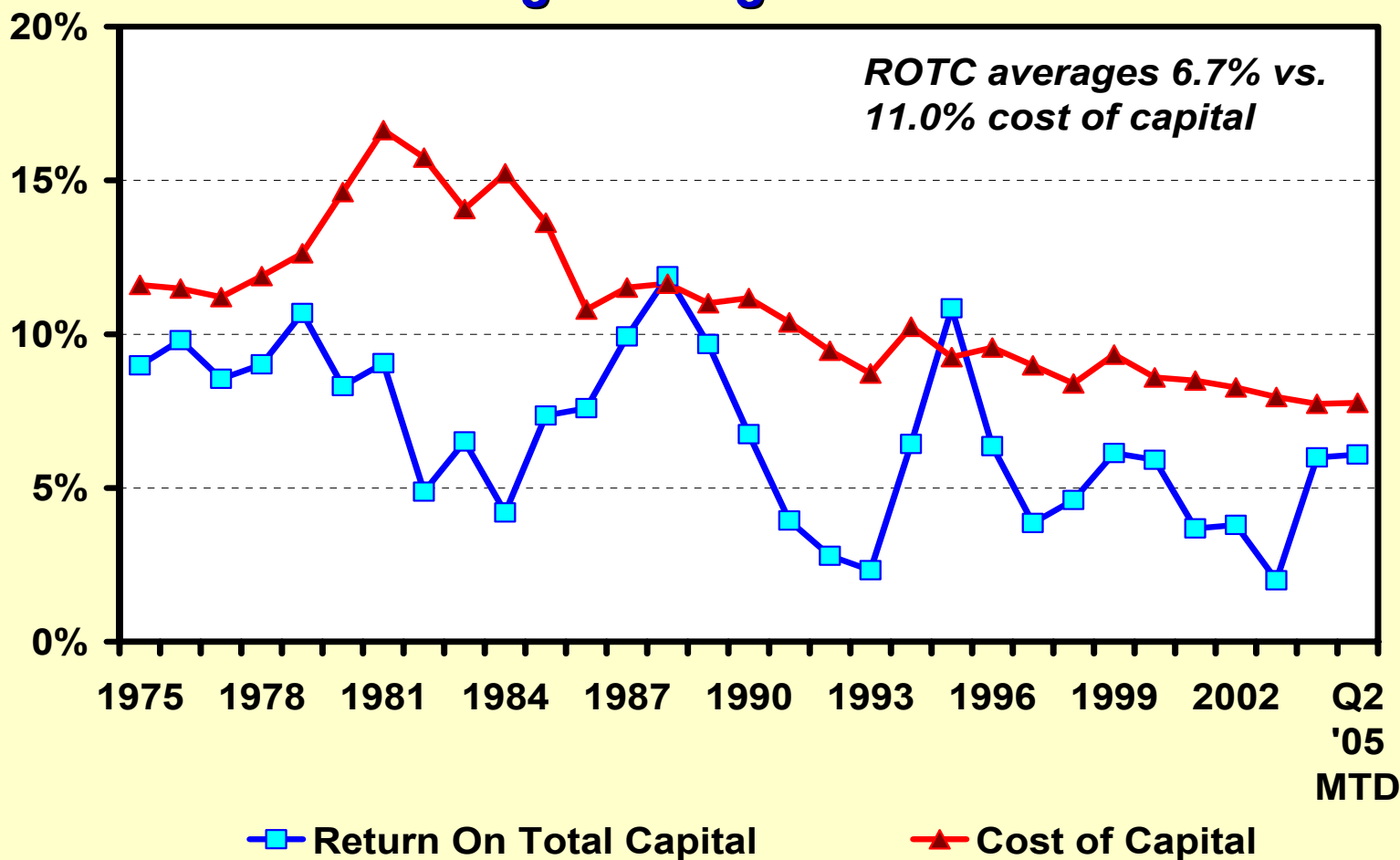




# How Competitive?

Average U.S. Industry Returns Can Service Debt

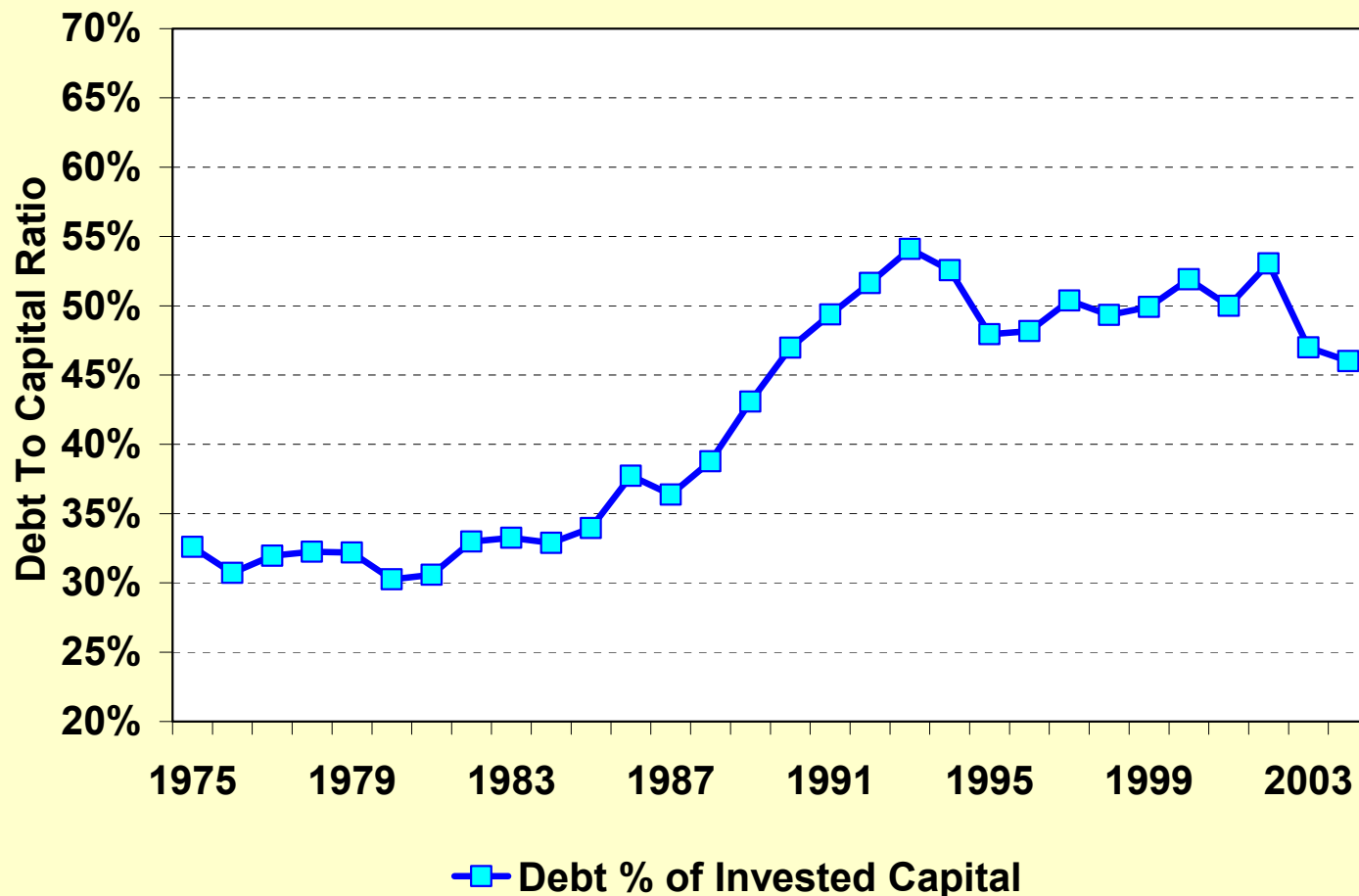
**-- But Still Not High Enough To Create Value --**



# How Competitive?

Increased Debt Levels Across Time – But Improving

***Significantly Limit Investment Opportunities & Flexibility***





# How Competitive?

- The industry has been a poor performer since the 1970's – it faces an increasingly tough environment -- *in spite of today's decent upturn*
- Participants must continue to learn to thrive under these very difficult conditions
- The overall N. Am. industry will likely not fare well . . .

**...but the individual companies can thrive if they use the current upturn to embrace and leverage innovation!**

# The Innovation Imperative



# The Innovation Imperative

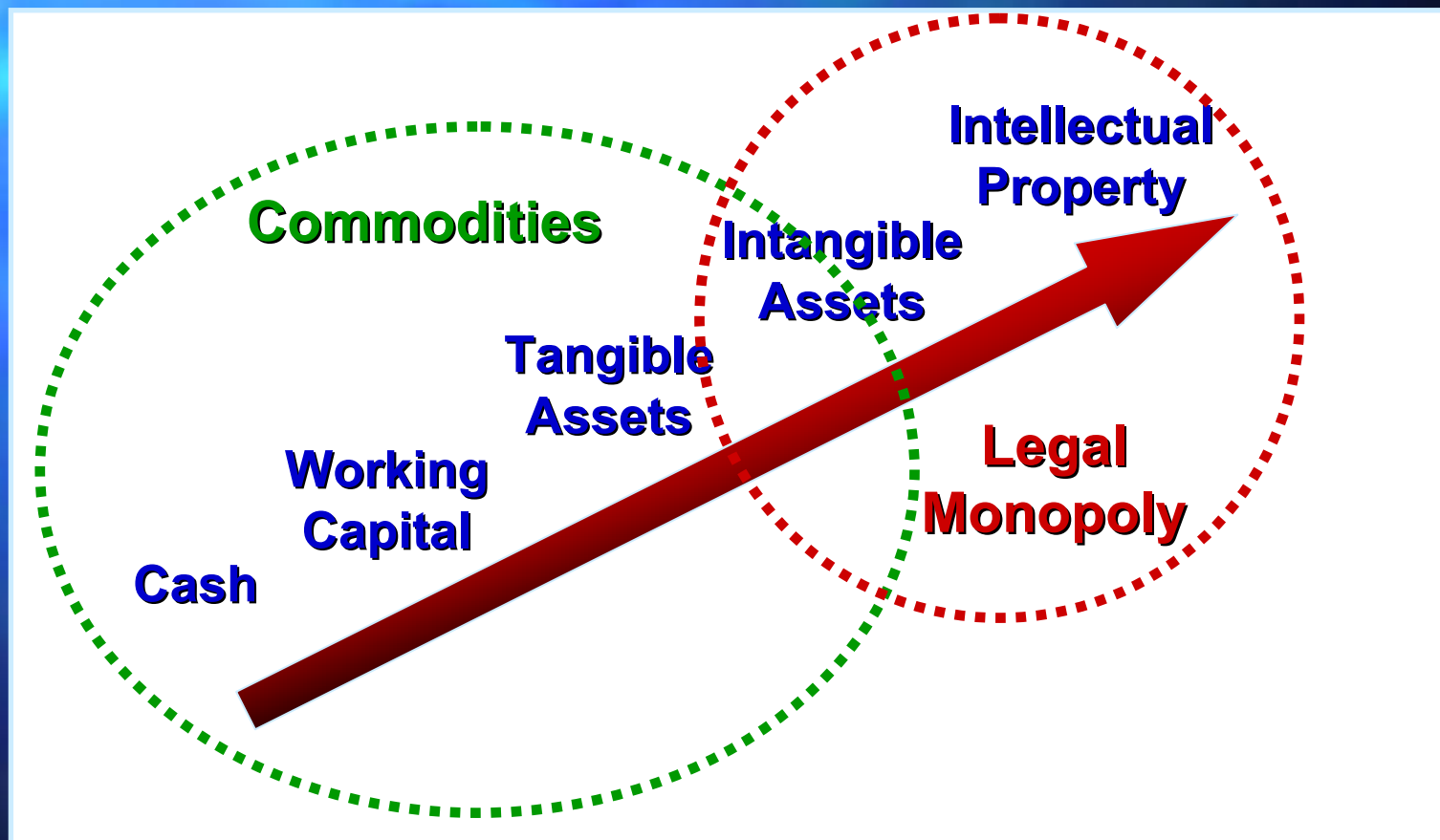
- As participants in, and suppliers to, the North American Paper Industry, we all want to enjoy the benefits of strong financial performance
- We want to grow, be profitable, generate good returns, etc. – *we want to create value!*
- The value created in a business is generated by acquiring, building, maintaining and exploiting assets.

**Not All Assets Are Created Equal!**

# The Innovation Imperative

Intellectual Property Is Risky, But Required  
To Sustain Superior Returns

Expected  
Return



Risk



# The Innovation Imperative

- Companies that are limited to ownership of commodity assets will NOT be able to create value for any sustained period of time due to the competitive nature of commodities...
- They must have something special – intellectual property in the form of patented technology, trademarks, copyrights or trade secrets.

# The Innovation Imperative

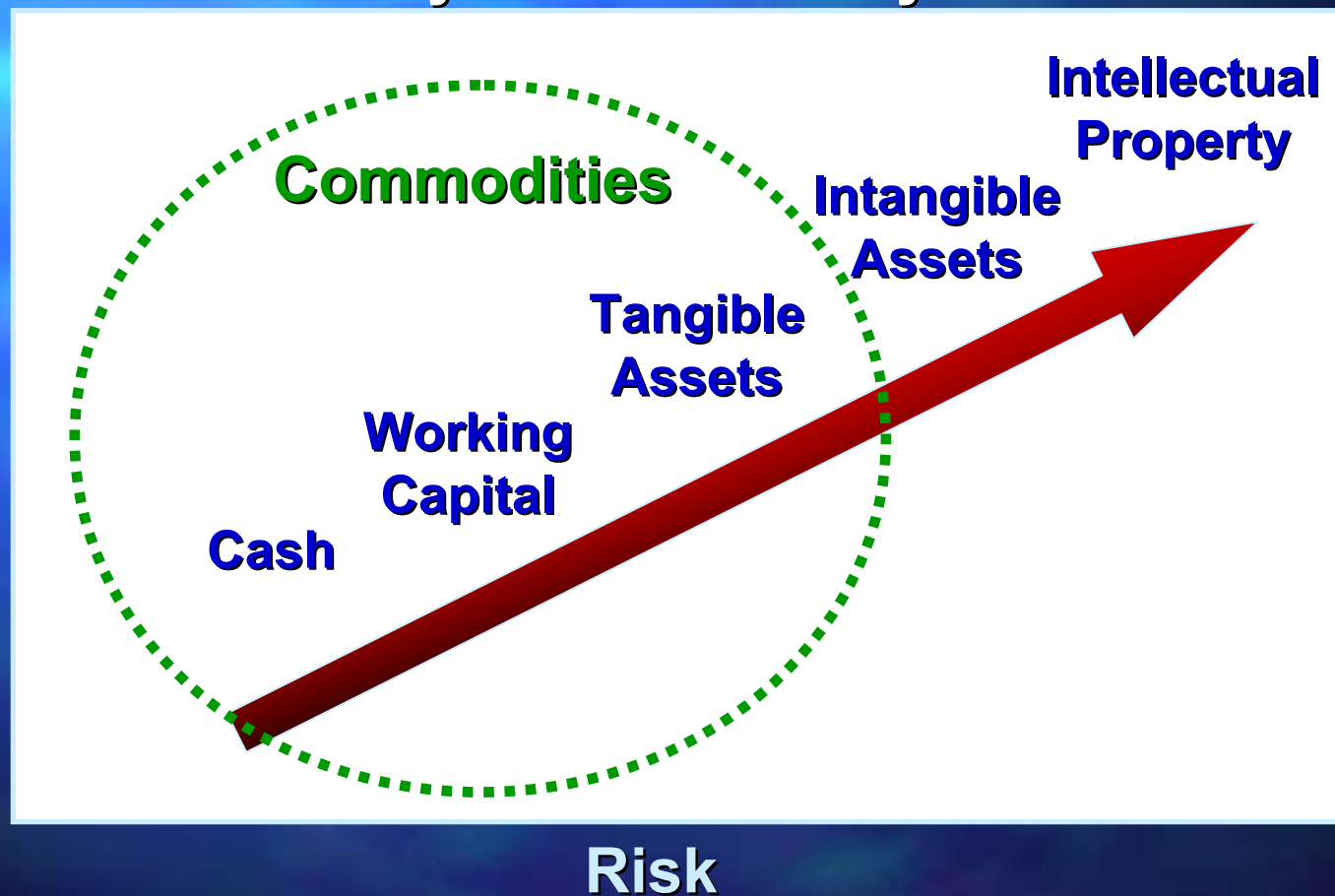
- No intellectual property – *no sustained value creation*
- No innovation – *no intellectual property*

**Innovation Is Imperative To  
Create Value!**



# The Innovation Imperative

The North American Industry Has Focused Almost Exclusively On Commodity Assets!



# The Innovation Imperative

**A NA Paper Industry's  
Continued Focus on A  
Commodity Asset  
Strategy *Can Not Result In  
Acceptable Performance***

# The Innovation Shutdown



# The Innovation Shutdown

## *How did we get here?*

- A dynamic mix of:
  1. Industry market realities
  2. Financial market realities
  3. Industry culture
  4. Good intentions...

**That Resulted In The Shutdown  
of Our Innovation Capacity**

# The Innovation Shutdown

## Industry Market Realities

- Maturing demand
- Substitute products
- Offshore growth

## Financial Market Realities

- Capital portability
- Short-term earnings focus
- R&D “expensed” & curtailed
- Shift from Industrial to Service to Knowledge economy

## Poor Decisions In The Pursuit of Cost Based Competition

## Industry Culture

- Low Conflict Tolerance
- Risk Averse – Marginal Behavior
- Management From Operating Background – Enamored With Equipment & Improved Technology
- Implementation Oriented
- Parochial vs. System Thinking

## Good Intentions

- Perform well
- Be “World Class”
- Increase Productivity

# The Innovation Shutdown

- Cost Based Competition:
  - ✓ R&D is an expense – *cut it!* – push it off on suppliers and research consortiums!
  - ✓ Risk is bad – *reduce it!*
  - ✓ Profits are down, debt is up – *cut capital spending!*
  - ✓ Build market power – *spend to acquire!*
  - ✓ Lower cost – *spend to increase scale!*
  - ✓ One major outcome – *stagnation of capital investment!*

**Lost Proprietary Assets!**



# The Innovation Shutdown

- ***The RESULT:*** no innovation = low risk projects, old and commodity assets = poor performance = no investment = industry decline.
- ***IS IT THAT BAD?*** Initial evidence says ***YES:***
  - ✓ Industry statistics say ***YES.***
  - ✓ Industry management says ***YES.***

# The Innovation Shutdown

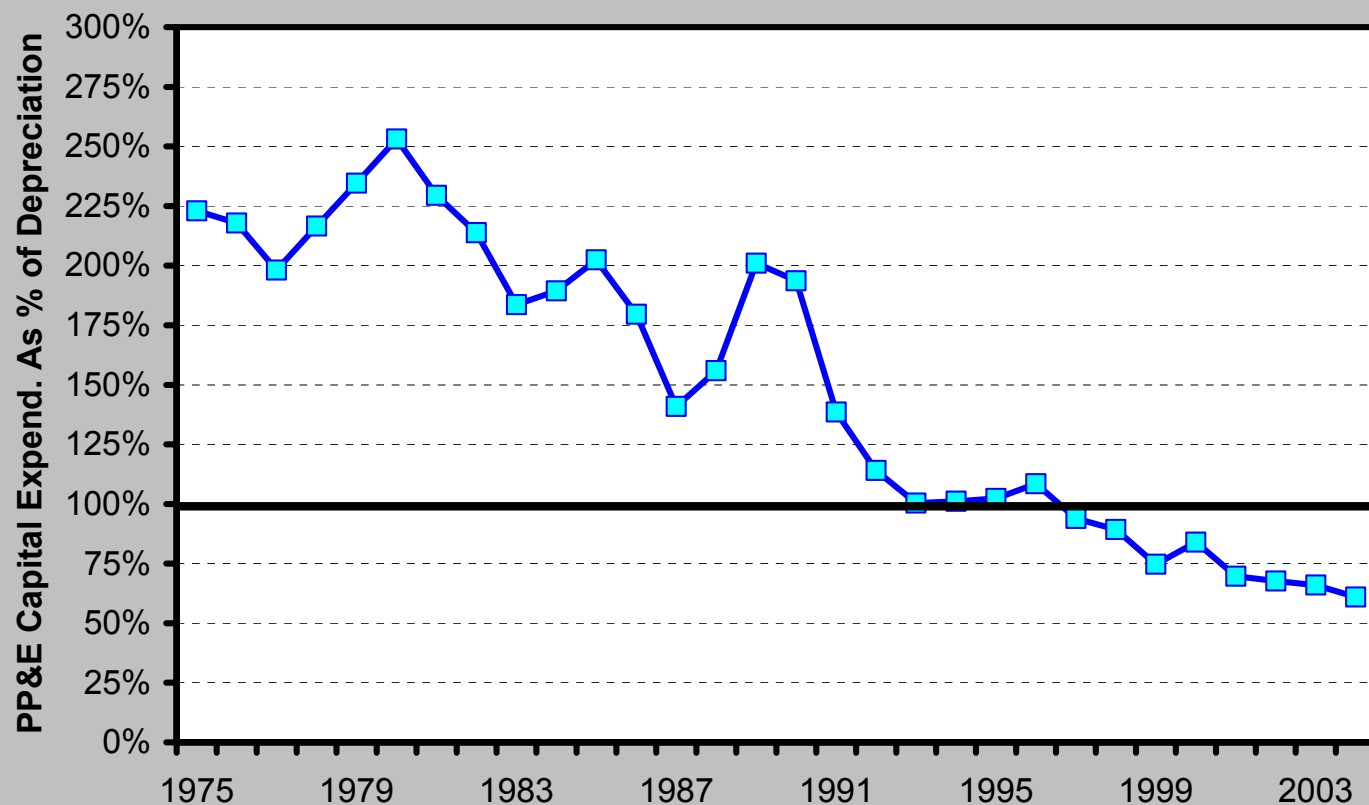
- To illustrate, we selected a basket of companies inside and outside the paper industry and looked at *key statistics*
- Then -- did an *informal survey* of 20 high-level industry executives and managers.

***“There are two kinds of statistics, the kind you look up, and the kind you make up.”*** - Rex Stout -

***“There are lies, damned lies, and statistics.”*** - Mark Twain -

# The Innovation Shutdown

Capital Expenditures Have Fallen Well Below Depreciation Levels -- *And Are Staying There*





# The Innovation Shutdown

Relative Paper Industry Returns Are  
*Minimal to Negative*

Company	12 Month ROTC	5-Year ROTC
Coca-Cola Corp.	2.9%	24.0%
Microsoft	14.2%	21.6%
P&G	18.8%	16.0%
Kimberly-Clark	13.3%	15.7%
Intel	18.6%	15.5%
Nucor	25.9%	5.5%
Weyerhaeuser	5.0%	2.9%
GP	3.9%	1.4%
Mead-Westvaco	-3.2%	1.2%
Smurfit-Stone	-1.5%	0.6%
IP	1.9%	0.6%
Bowater	-1.9%	0.3%
U.S. Steel	16.5%	-1.6%

Source: Multex Investor – For 2004 Data

# The Innovation Shutdown

**Paper Industry R&D Spending Levels Are Minimal –  
*Most Companies Don't Even Report***

Company	2003 R&D % of Sales	2001 R&D % of Sales	2003 Total R&D (\$ Millions)
Intel	14.3%	14.3%	\$4,300
Microsoft	13.7%	15.2%	\$4,400
P&G	3.8%	4.0%	\$1,665
Kimberly-Clark	1.9%	2.0%	\$281
Mead-Westvaco	0.9%	1.2%	\$71
International Paper	0.3%	0.3%	\$73
Weyerhaeuser	0.3%	0.4%	\$51
Smurfit-Stone	0.1%	0.1%	\$5

Source: Company Annual Reports

# The Innovation Shutdown

The Level of Paper Company Patent Activity Is Generally Low (Less Than 3.5% = *Erosion*)

Company	Issued Patents (1976-2004)	Patent Applications Pending (2004)	Applications % of Issued
Intel	7,075	606	8.6%
P&G	6,304	889	14.1%
Kimberly-Clark	2,849	392	13.8%
Microsoft	2,801	798	28.5%
Mead-Westvaco	2,096	37	1.8%
Coca-Cola Corp.	799	13	1.6%
IP	750	14	1.9%
GP	582	39	6.7%
U.S. Steel	505	2	0.4%
Weyerhaeuser	497	79	15.9%
Smurfit-Stone	160	2	1.3%
Bowater	16	-	0.0%
Nucor	11	-	0.0%



# The Innovation Shutdown

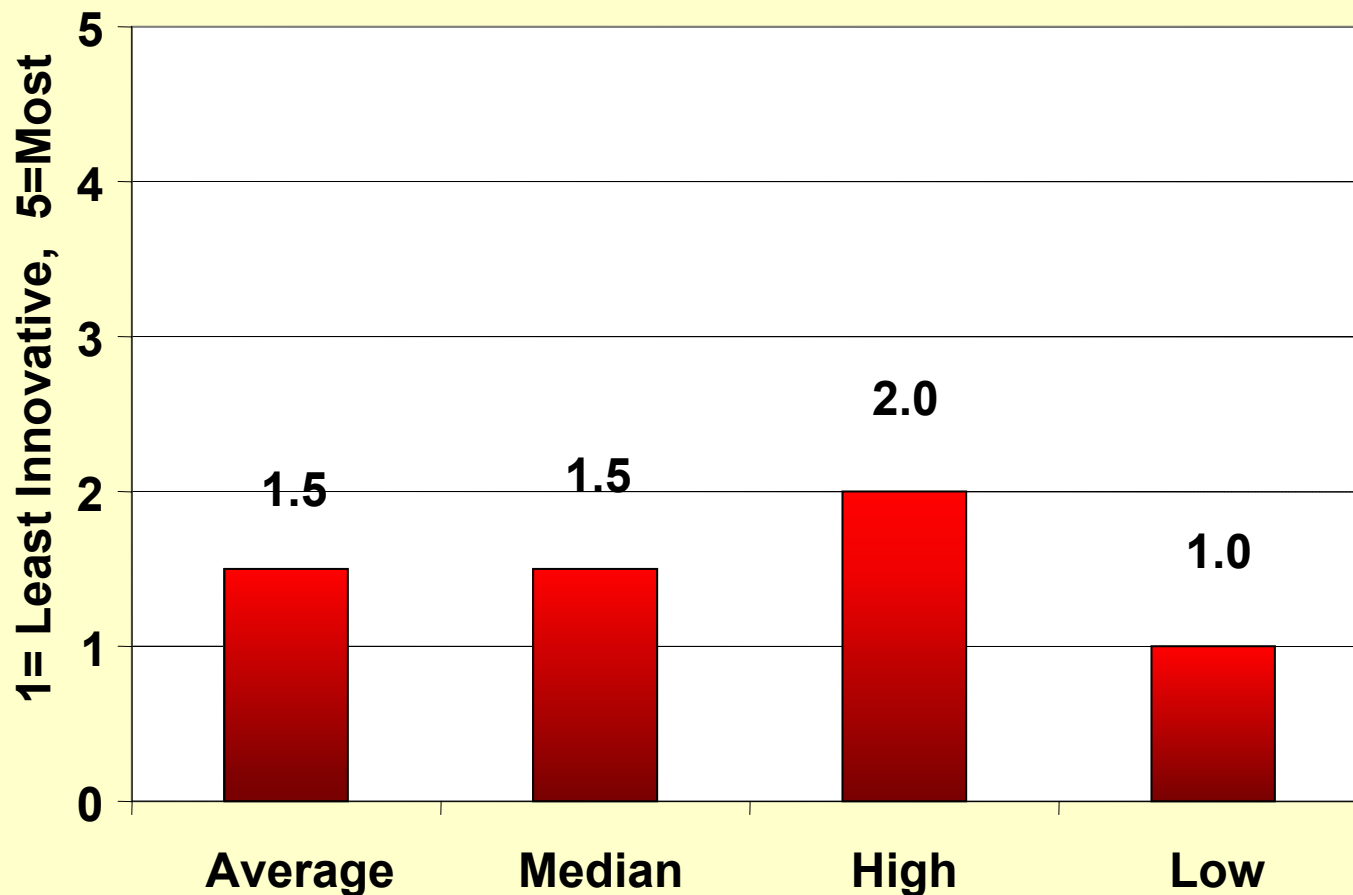
The Quality of The Paper Industry's Intangibles Is *Very Low*

Company	IP & Intangible Value % of Total
Coca-Cola Corp.	84%
Microsoft	80%
P&G	78%
Intel	66%
Kimberly-Clark	60%
Mead-Westvaco	25%
Nucor	9%
Weyerhaeuser	5%
International Paper	-2%
Bowater	-7%
Smurfit-Stone	-9%
GP	-20%
U.S. Steel	-122%

Source: VRG, equals (Total Market Value Less Total Invested Capital) / Total Market Value

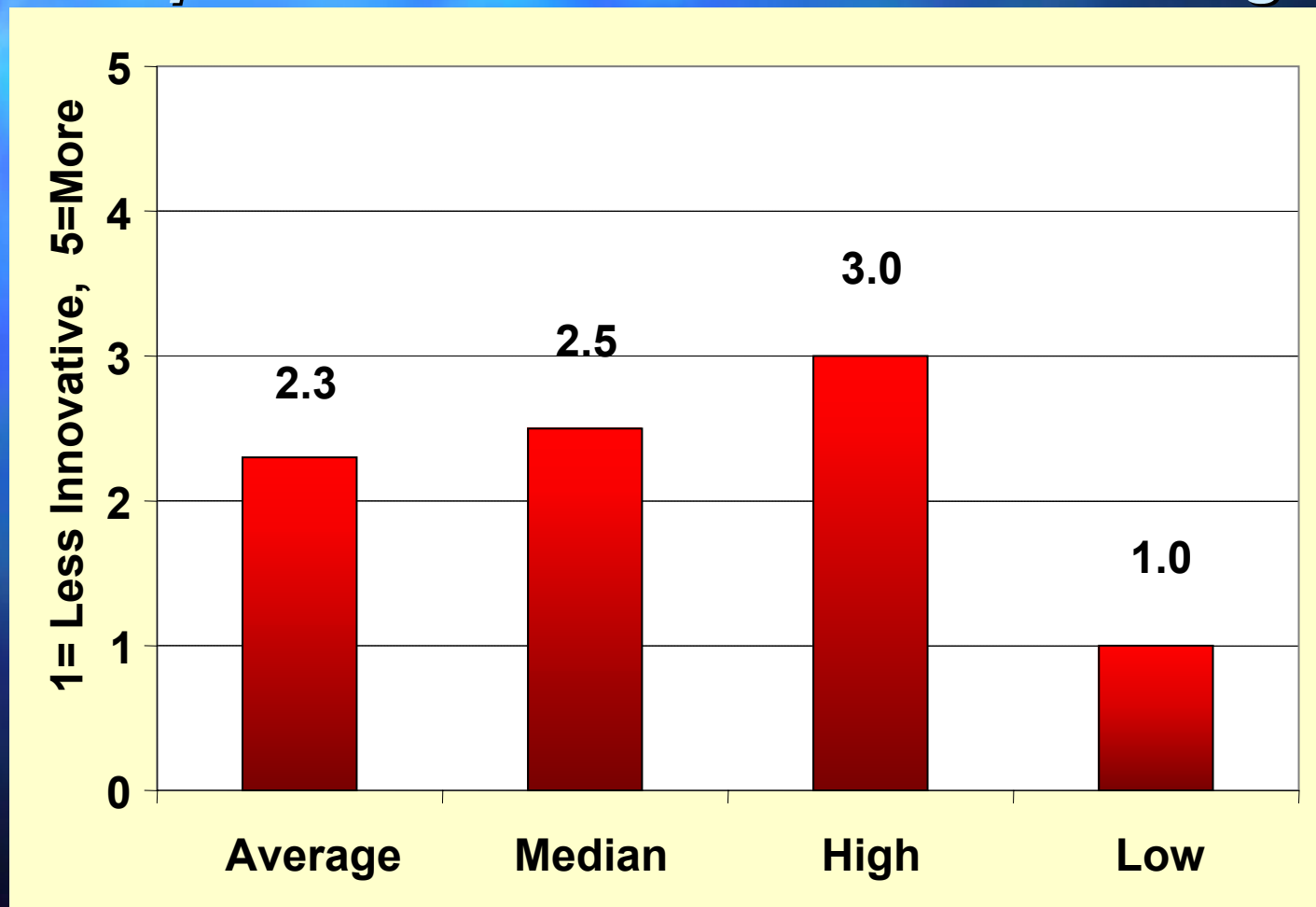
# The Innovation Shutdown

Management Doesn't *Think The Industry Is Innovative*



# The Innovation Shutdown

Yet -- Management Perceives *Their Own Companies' To Be Better Than Average*

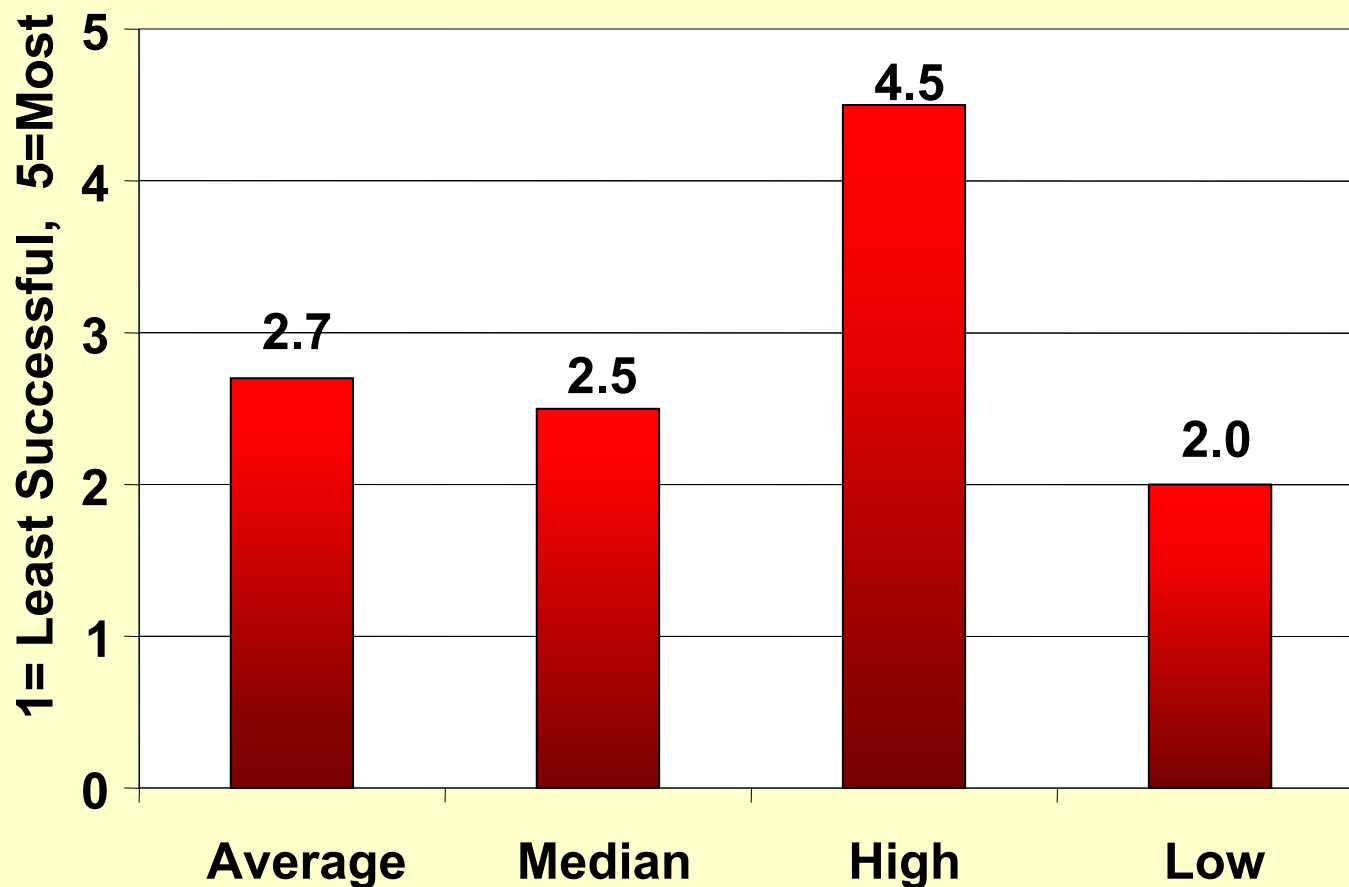


Source: VRG phone survey



# The Innovation Shutdown

## And They Believe Themselves To Be Relatively Successful When They Innovate



Source: VRG phone survey

# Restarting The Innovation Machine

# Restarting The Innovation Machine

*Creativity involves breaking out of established patterns in order to look at things differently.* - Edward De Bono -

*Creativity is the sudden cessation of stupidity.* - Edwin H. Land -



# Restarting The Innovation Machine

- The chance of the entire industry rediscovering innovation *is unlikely*
- Changes have and will happen *at individual companies*
- There are many things we can do, both grandiose and pedestrian -- *to capture value through Innovation.*

# Restarting The Innovation Machine

## Keys To Innovation:

*1. Open Our Culture*



*3. Get Intellectual*

*2. Become Investors*

# Restarting The Machine

## 1. *Open Our Culture:*

### Typical Culture Stifles Innovation:

- The norms and attitudes that are required to excel in execution *are damaging to innovation*
- Desiring and rewarding innovation *does not necessarily increase its appearance*
- Motivation may drive variations on a theme but is *unlikely to generate major changes in perspective or reformulation*



# Restarting The Machine

## 1. *Open Our Culture (Continued):*

There are three major sources of innovation that work alone or in combination.

*Innovation From*  
*The Top*

i.e. Visionary  
leaders like Steve  
Wynn – Mirage  
Resorts

*Innovation From*  
*Within*

i.e. creative  
organizations or  
cultures like 3M

*Innovation From*  
*Without*

Example: Teaming  
with others, venture  
development spin-  
outs

This is the area where  
we typically have the  
greatest impact

# Restarting The Innovation Machine

## 1. *Open Our Culture (Continued):*

To become “*Creative From Within*”, open your culture to Innovation oriented practices.

### Practices That Drive Innovation

Decide to do something that will probably *fail*, then convince everyone else *that success is certain*.

*Reward success and failure*; punish inaction

Take your past successes and *forget* them

Seek out ways to avoid, distract and bore customers, critics and anyone who *just wants to talk about money*.

Find some happy people and *get them to fight*.

Note: Adapted from “The Weird Rules of Creativity” by Robert I. Sutton, *Harvard Business Review*, 2001

# Restarting The Innovation Machine

## 1. *Open Our Culture (Continued):*

### Practices That Drive Innovation

Hire *slow learners* of the organizational code.

Hire people who make you *uncomfortable*, even those you dislike.

Encourage people to ignore and *defy* their bosses and peers.

Ignore people who *have solved* the exact problem you face.

Hire people you probably *don't need*.

Note: Adapted from "The Weird Rules of Creativity" by Robert I. Sutton, *Harvard Business Review*, 2001



# Restarting The Innovation Machine

## 1. *Open Our Culture* (Continued):

**Innovative companies and teams  
are *inefficient and often annoying*  
places to work.**

Note: Adapted from “The Weird Rules of Creativity” by Robert I. Sutton, *Harvard Business Review*, 2001

# Restarting The Innovation Machine

## 1. *Open Our Culture (Continued):*

The actions required to build and protect your intellectual property are complex – *training is essential for personnel all across the organization:*

- Sales
- Marketing
- Product Development
- Technology
- General Management
- Legal (if you don't have Patent Counsel)

# Restarting The Innovation Machine

## 1. *Open Our Culture* (Continued):

Consider innovation *in many different areas*:

- Product – main focus today
- Service
- Market
- Process
- Strategy
- Organization
- Supply Chain
- Commercial and Financial

# Restarting The Innovation Machine

## 2. *Become Investors:*

### An Investment Mentality Is Required:

- Capital spending  $\neq$  Investment
- Investment = spending with a *potential to generate returns beyond the current period* (i.e. training, R&D, trade secret, patent, trademark, etc.)
- Just because accountants expense it *doesn't mean its not an investment.*



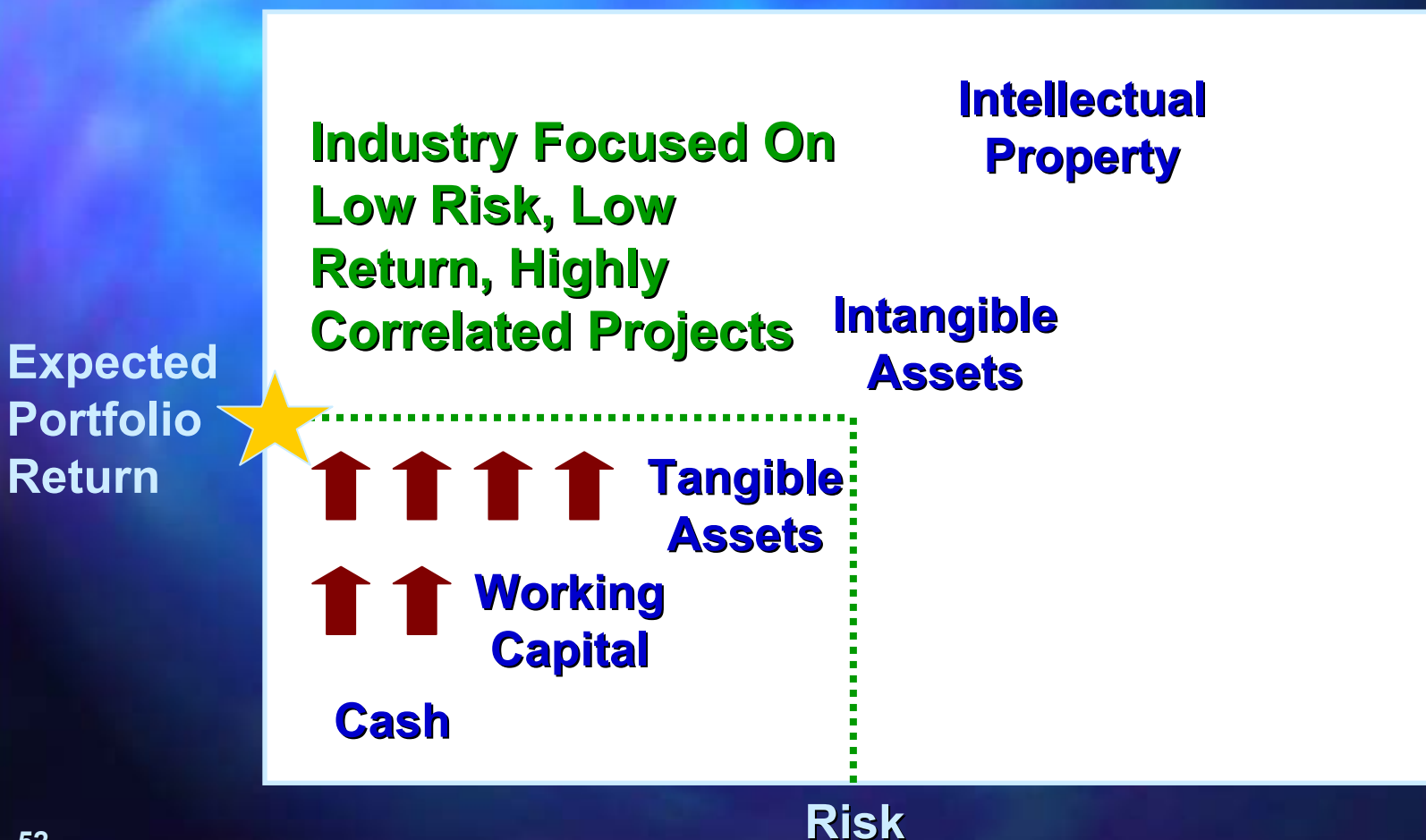
# Restarting The Innovation Machine

## 2. *Become Investors (Continued):*

- Investors are *portfolio* managers
- They mix a number of investments (projects) with a *range* of correlations, risks and expected returns
- They focus on the *return and risk* of their overall portfolio – *not the individual investments*

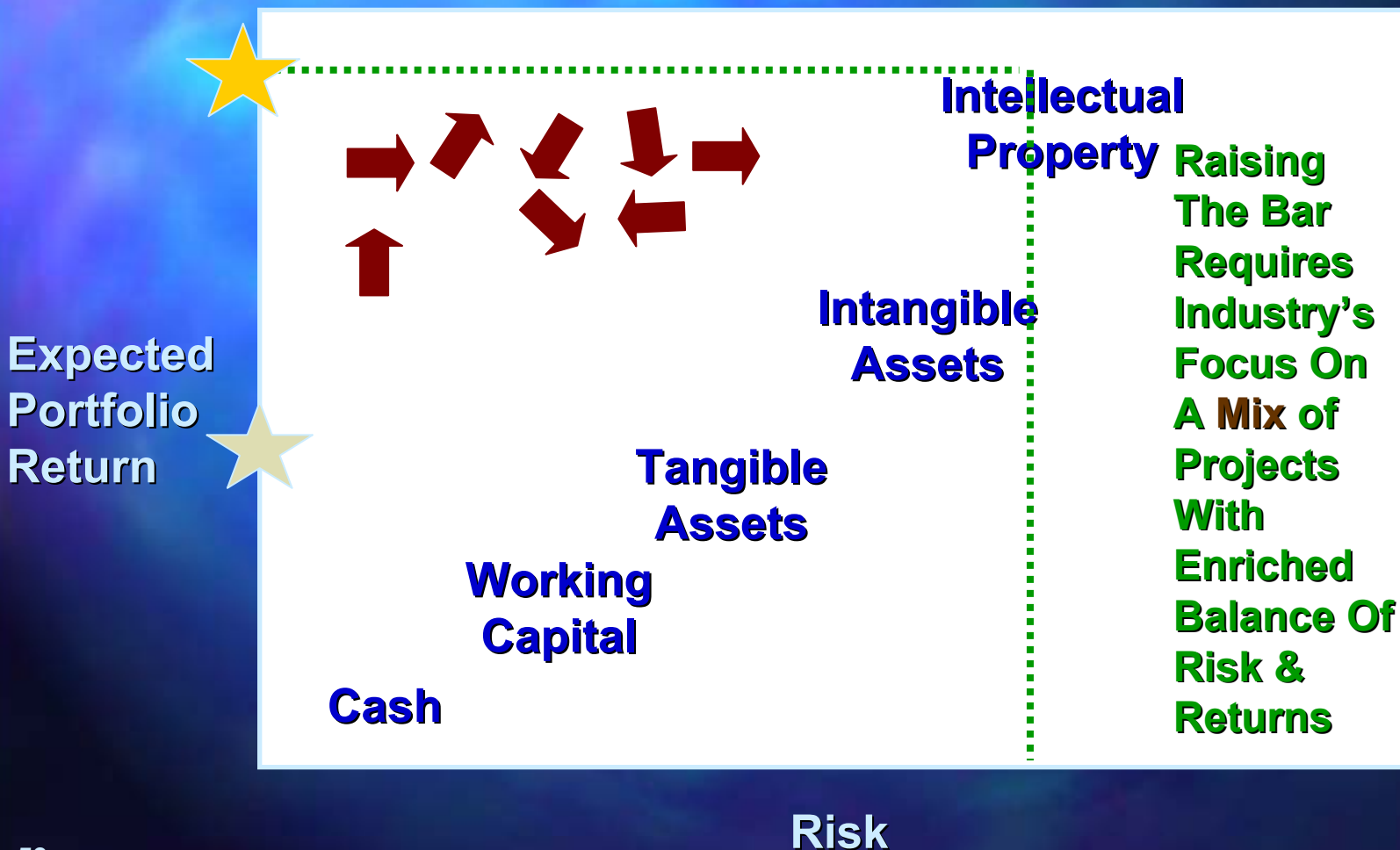
# Restarting The Innovation Machine

## 2. *Become Investors (Continued):*



# Restarting The Innovation Machine

## 2. *Become Investors (Continued):*



# Restarting The Innovation Machine

## 3. *Get Intellectual:*

### Intellectual Property Is Required:

*“Intellectual property is the central resource for creating wealth (value) in almost all industries. The foundation of commercial power has shifted from capital resources to intellectual property. In fact ... capital resources are now dominated by intellectual property such as know-how, patents, trademarks, copyrights and trade secrets.”*

-- Gordon Smith & Russell Par --



# Restarting The Innovation Machine

## 3. *Get Intellectual* (Continued) – **The Reality --**

- Low cost overseas competition probably precludes a “*low cost*” U.S. paper strategy long-term
- Creating and exploiting legal monopolies in technologies, products and processes in conjunction with non-proprietary assets *creates value*
- Focus more heavily on high-impact Patents, Trade Secrets, Rights & Relationships
- Paradigm shifting breakthroughs *are not necessary!*

# Restarting The Innovation Machine

## 3. *Get Intellectual* (Continued):

- Example: A child's disposable diaper has some 1,800 patents
- The assets used to exploit these patents (tissue machines, converting equipment) *are largely commodity in nature*
- Leading diaper producer's returns *are well above paper industry average* and their cost of capital
- Paragon Trade Brand's *infringement of one* of these 1,800 patents resulted in greater than a **\$300MM damages** award

# Restarting The Innovation Machine

## 3. *Get Intellectual* (Continued):

***Technology Pushed  
Inventing***

***Technologists***



***Patent Attorney's***



***Product Developers  
& Financial Experts***



***Marketer***

***Traditional  
Technology Pushed  
Inventing -- Results  
In A Low Hit Rate on  
Value Creating  
Intellectual Property***

# Restarting The Innovation Machine

## 3. *Get Intellectual* (Continued):

***Market Driven Inventing***  
Increases The Odds  
That Your Innovation  
Will Yield Value –  
Whether it is a product,  
service, process,  
organization or strategy  
innovation ... ***but still  
likely takes years to  
yield results***





# Restarting The Innovation Machine

## 3. *Get Intellectual* (Continued):

- ***Valuation and Portfolio Management Tools*** now exist to measure and manage the value created through innovation programs
- The financial benefit, risk, and target cost of R&D programs can be quantified with such tools as:
  - ✓ Option Approaches to Patent Valuation
  - ✓ Market Simulation
  - ✓ Competitive Simulation

# Recap & Final Thoughts

# Recap & Final Thoughts

- Innovation is *imperative to create value*
- *Typical* North American pulp and paper companies have *shutdown or lost* their innovative capacity
- As a result, in part, *industry performance has been dismal* by most measures
- Investment has spiraled downward and industry *competitiveness has eroded*
- *However, individual paper companies and suppliers* can leverage innovation to outperform *the industry and create value over time*

# Recap & Final Thoughts

How?

- Open Up Our Culture – accept that innovative companies are often inefficient and annoying places to work. Reward risk and failure, punish inactivity. Focus on more than just product development. *Train key participants on process to create and protect IP . . .*
- Become Investors – manage a portfolio of projects with a diverse range of expected returns, risks and correlations. Do all that you can to make each project a success but keep in mind that *it's the overall portfolio performance that matters . . .*



# Recap & Final Thoughts

How?

- *Get Intellectual* – Intellectual Property (IP) is the key to creating value. *A small dose of IP mixed with commodity assets can go a long way . . .*
  - ✓ **Leverage Market Driven Inventing to increase hit-rate . . .**
  - ✓ **Use best available Valuation and Portfolio management tools to ensure financial success . . .**

# Recap & Final Thoughts

*The essential part of creativity is not being afraid to fail.* - Edwin H. Land -

*If all else fails, immortality is guaranteed by one humongous error.* - Anonymous -

# Recap & Final Thoughts

Thank You! -- Copies Available At

[www.valueresolution.com](http://www.valueresolution.com) -- And -- [www.cpbis@gatech.edu](mailto:www.cpbis@gatech.edu)

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