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The Japanese

Pharmaceutical Industry:

The Innovation Bubble, the Drug Lag,  
& the Failure of Industrial Policy

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# Outline of Topics

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Initial Promise of Japan in Pharmaceuticals

Industrial Policy for Pharmaceuticals

US Ecosystem in Pharmaceuticals

Japanese Ecosystem in Pharmaceuticals

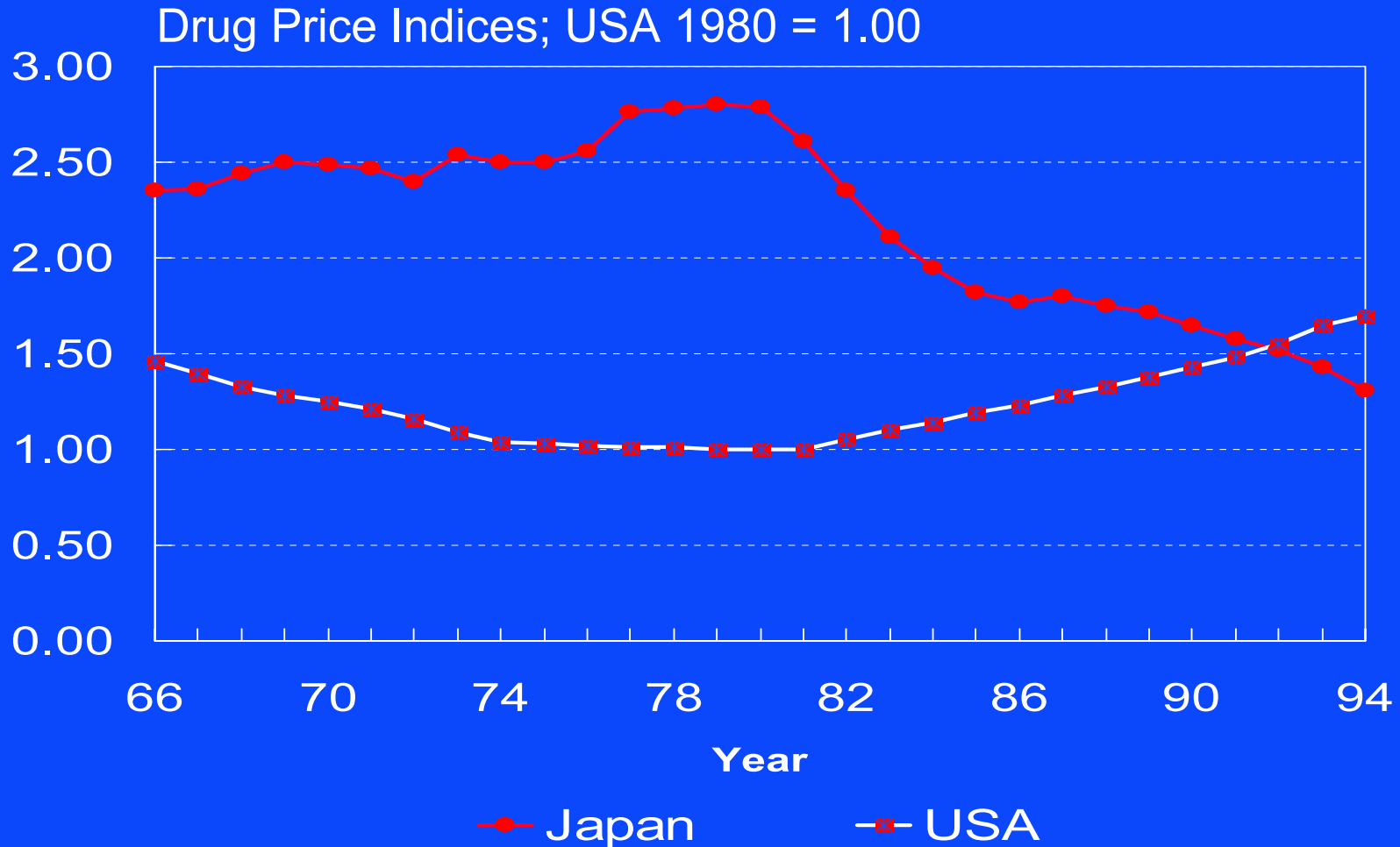
Pathologies of the Japanese Ecosystem

The Innovation Bubble

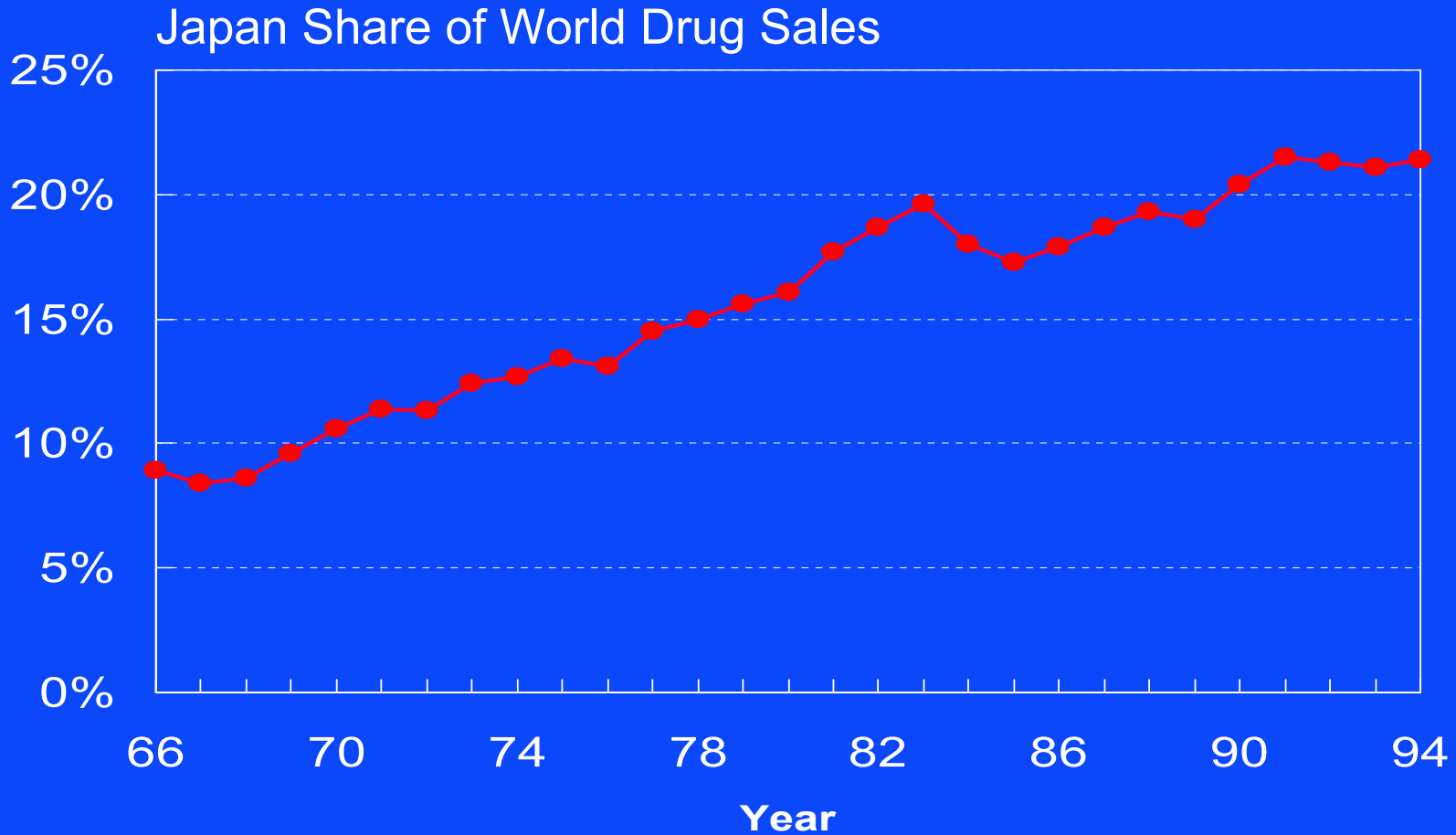
The New Drug Lag

Social Construction of Industries

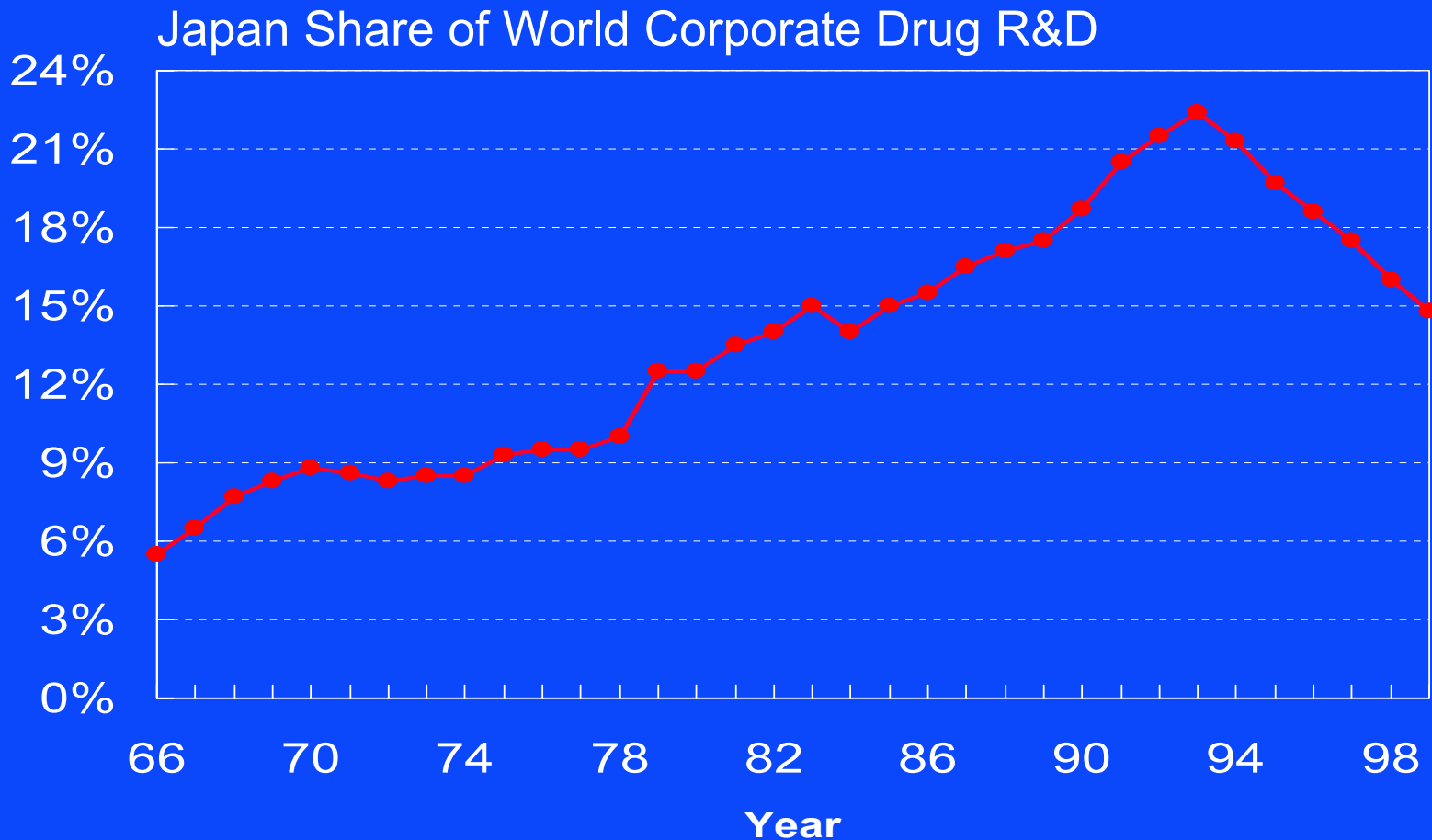
# High Domestic Prices



# Large Domestic Sales



# Large Corporate R&D

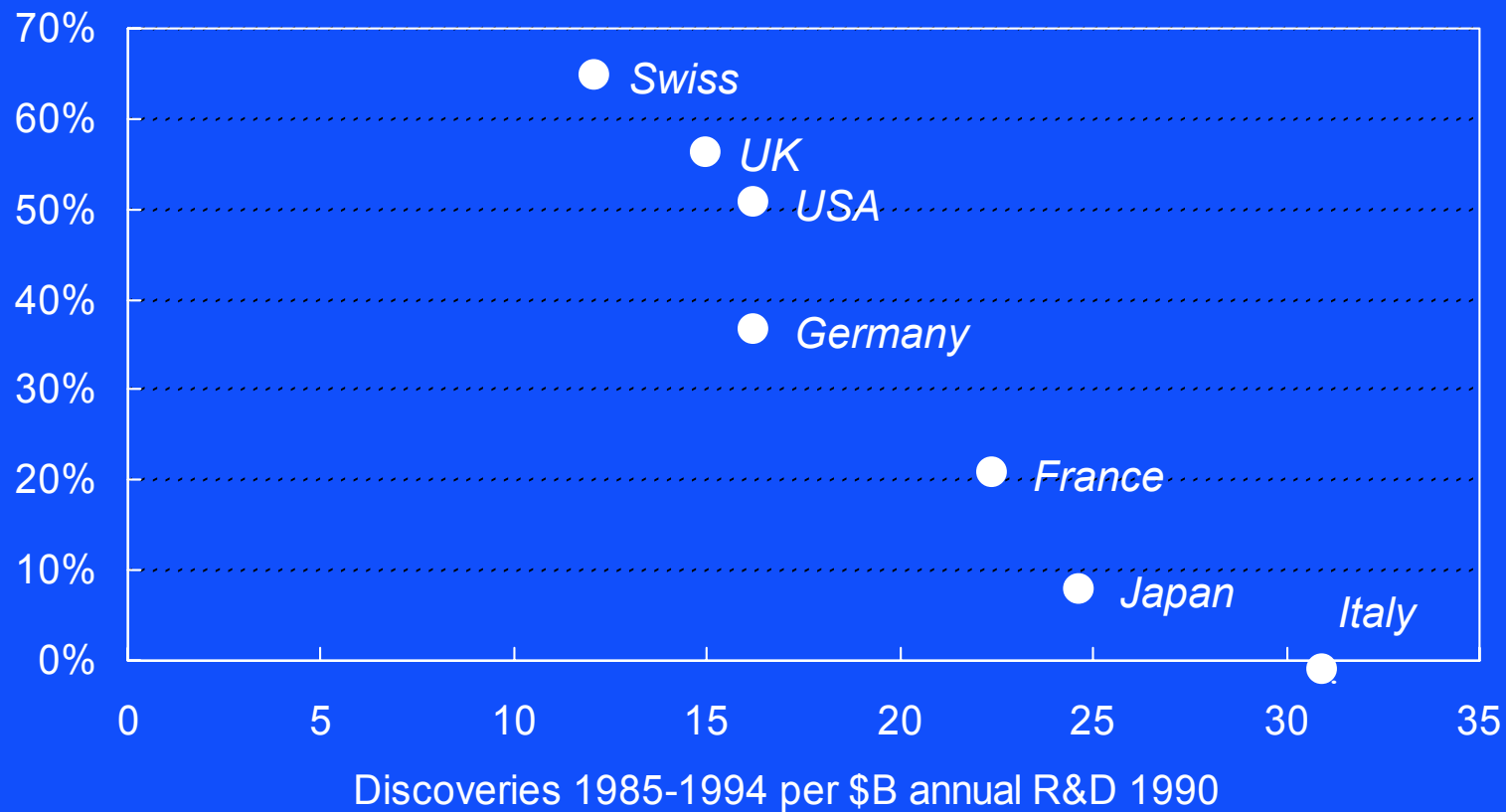


# Innovative Firms from Japan

Leading Firm	Global Drugs	Developers Abroad	Subsidiaries Abroad
Chugai	<i>Neutrogin</i>	Upjohn Rhone Poulenc Rorer	US: Gen-Probe (1992) EC: Chugai Pharma Europe
Daiichi	<i>Tarivid</i>	Johnson & Johnson Hoechst Marion Roussel	US: EC:
Eisai	<i>Aricept</i>	Pfizer Sandoz	US: Eisai Inc EC: Eisai Europe Ltd. Eisai Sandoz GmbH
Fujisawa	<i>Prograf</i> <i>Cefzon</i>	Fujisawa Warner Lambert	US: Lyphomed (1989) EC: Klinge (1988)
Sankyo	<i>Mevalotin</i> <i>Banan</i>	Bristol Myers Squibb Pharmacia & Upjohn Hoechst Marion Roussel	US: Sankyo Parke-Davis EC: Luitpold (1991)
Shionogi	<i>Seftem</i>	Schering Plough	US: capsule maker (1991) EC: Shionogi GmbH
Takeda	<i>Leuplin</i> <i>Takepron</i>	Takeda-Abbott (TAP) ventures with Roussel, Grunenthal, Cyanamid	US: Takeda Abbott (TAP) EC: ventures in France, Germany, and Italy
Yamanouchi	<i>Gaster</i> <i>Harnal</i> <i>Atock</i>	Merck Boehringer Ingelheim Novartis	US: Shaklee (1989) EC: Gist-Brocades (1991)

# Innovation Strategies

Global Products as Share of Discoveries



# Successful Strategies

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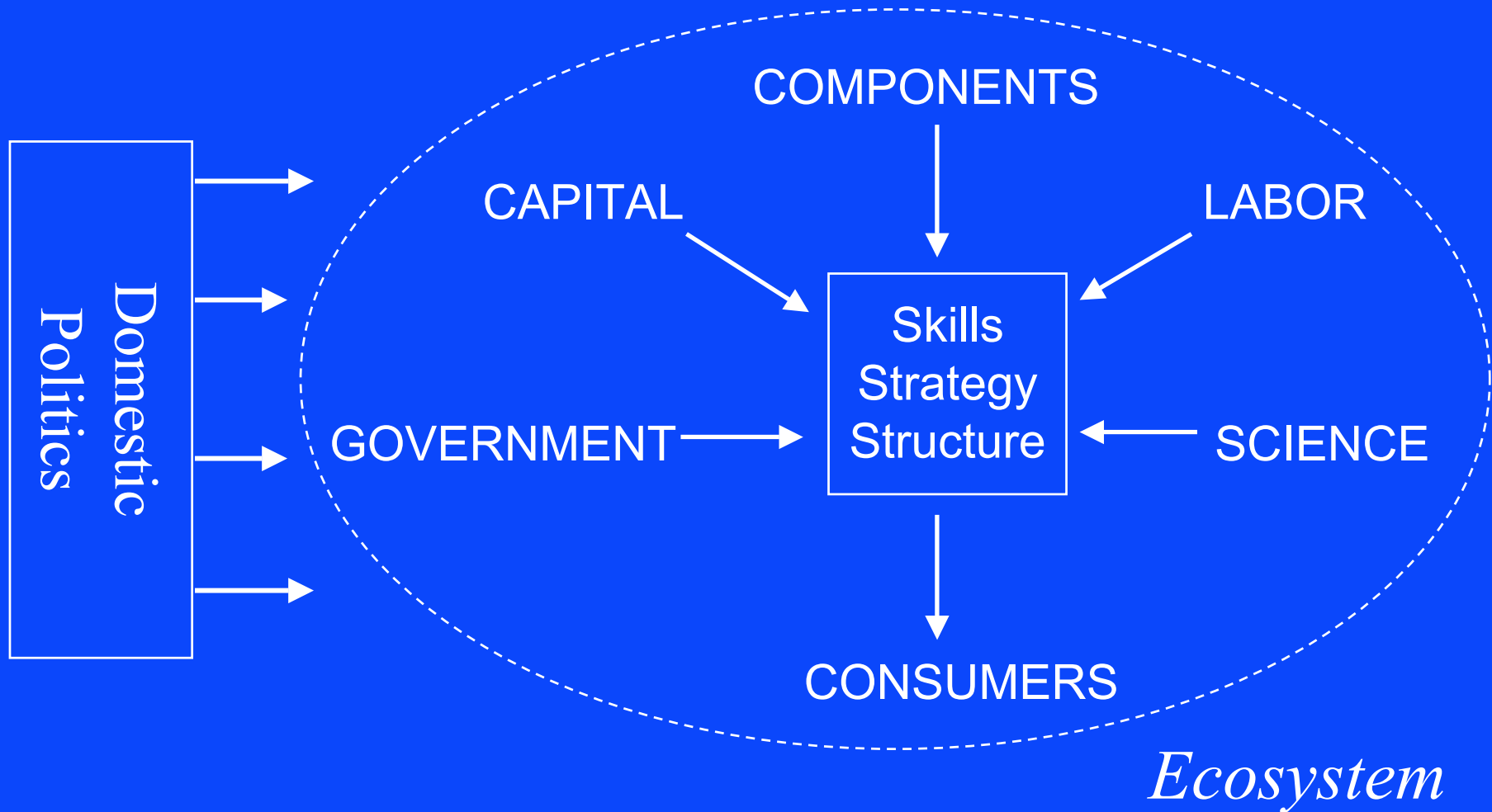
## Successful Industrial Policy in Domestic Market

- Sophisticated Demand =  
Stringent, Prompt Regulation &  
Evidence Based Demand
- Sophisticated Supply =  
Strong Basic Sciences
- Adequate Pricing / Funds Innovation
- Vigorous Rivalry / Dynamic Competition

Home Market Dominated by Global Drugs

# Strategies and Ecosystems

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# National Ecosystems

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## Modern View of Firms

- Internal Capabilities
- Network of Relations

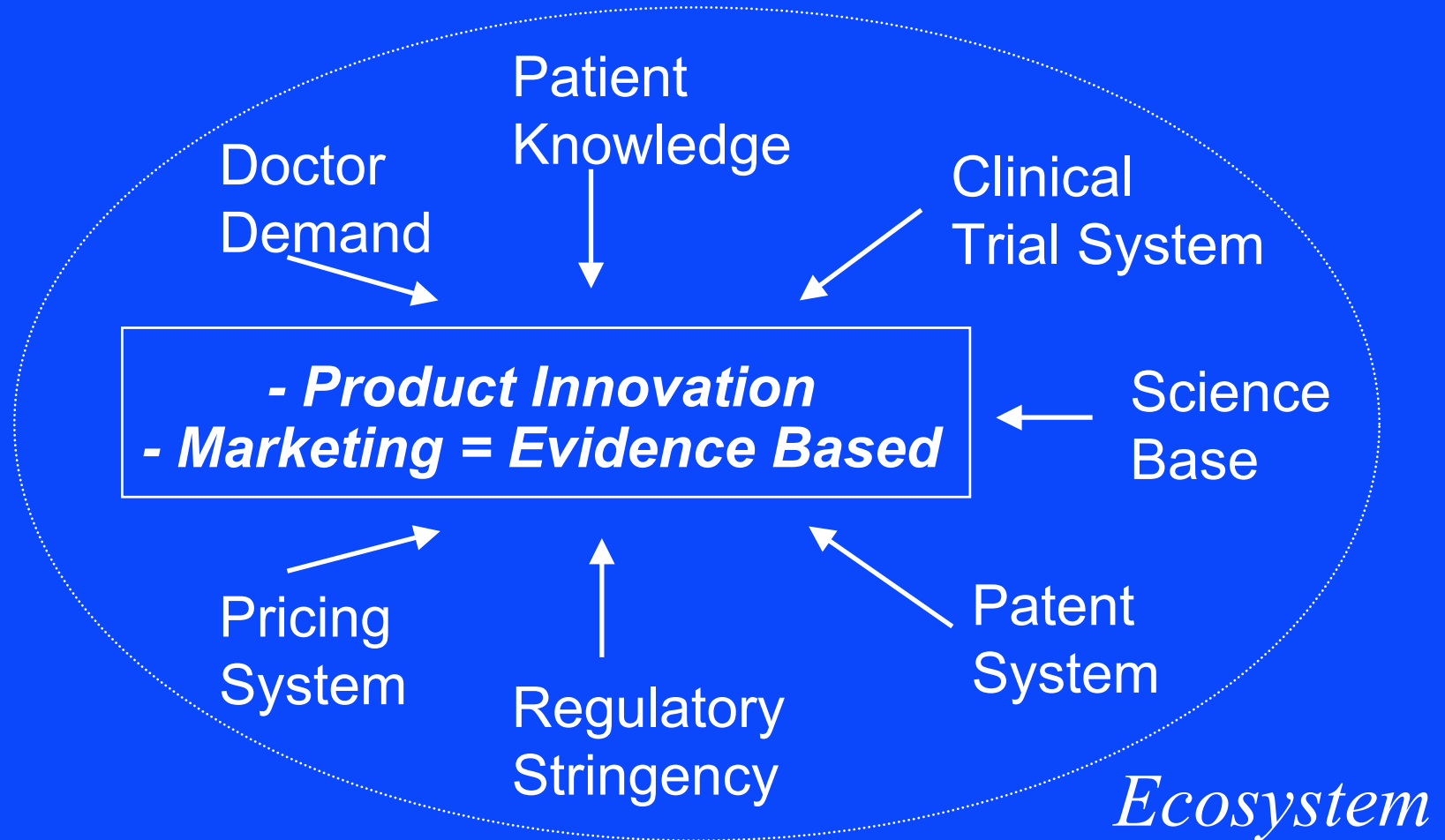
## Modern View of Industrial Policy

- Implicit vs. Explicit
- Systemic vs. Isolated
- Challenge AND Resources

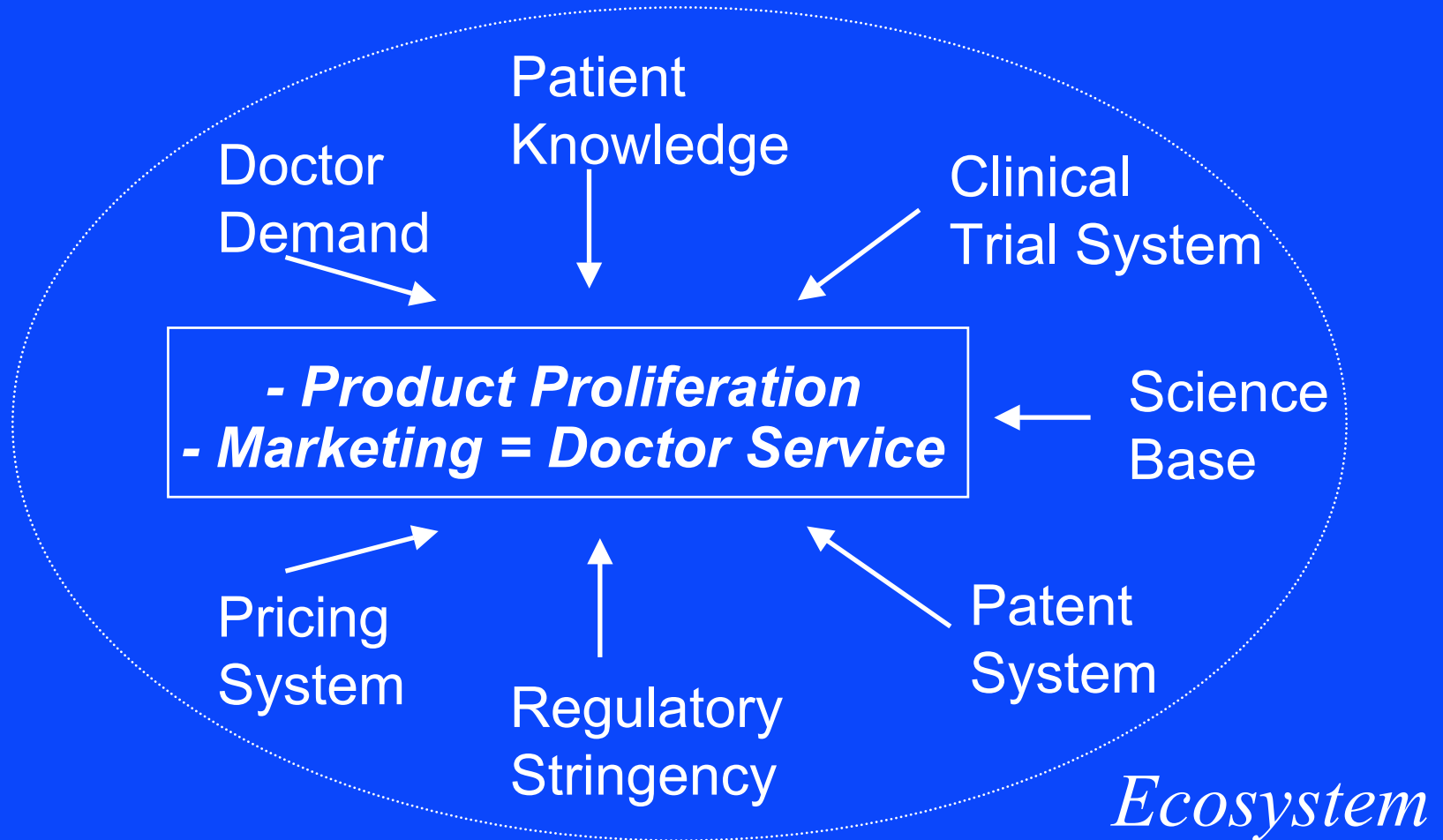
Local Competition Shapes Capabilities

# American Ecosystem

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# Japanese Ecosystem



# Ecosystem: Clinical Trials

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A Unique National Standard for Japan

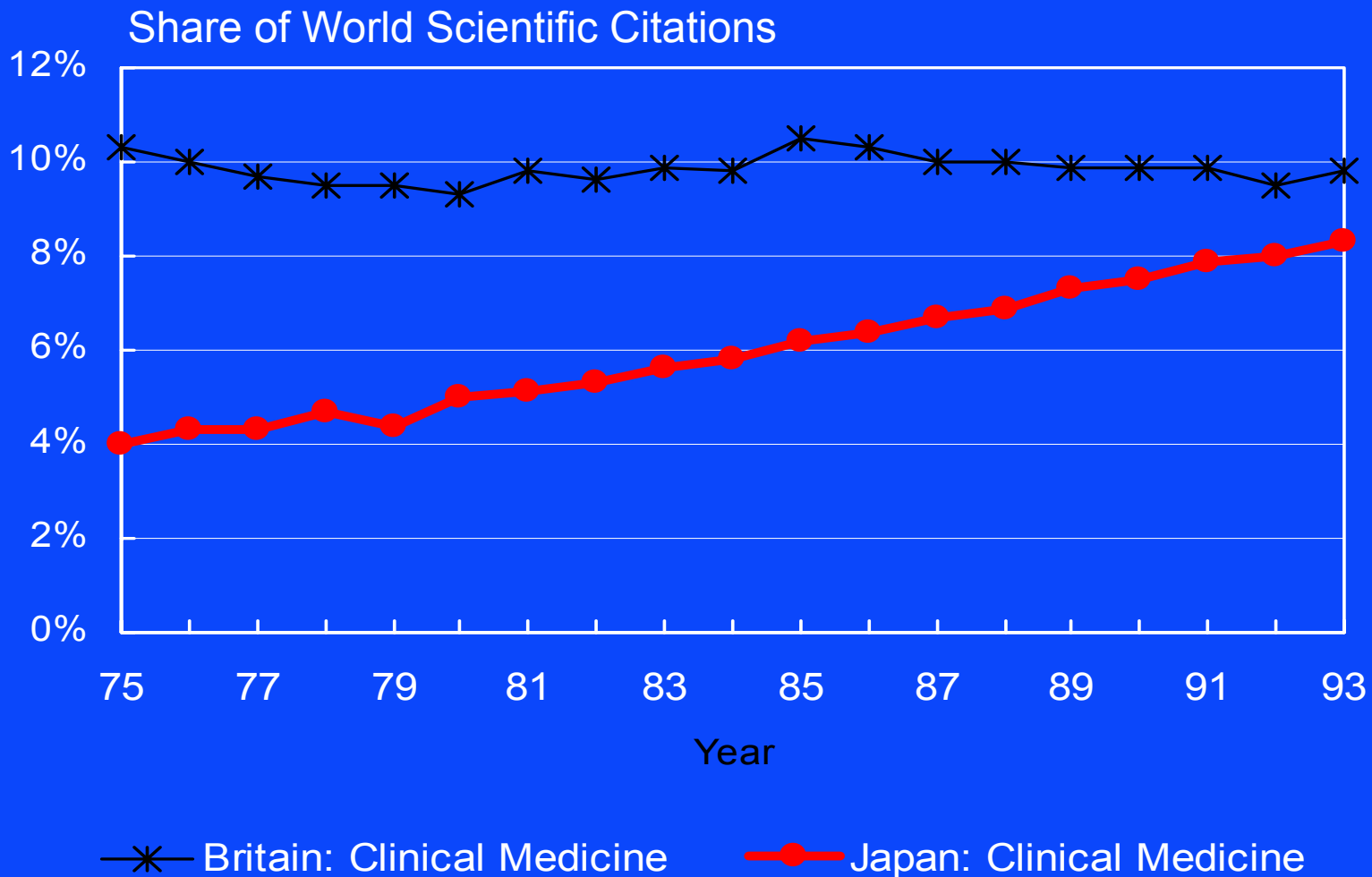
FDA = Microsoft

MHLW = NEC

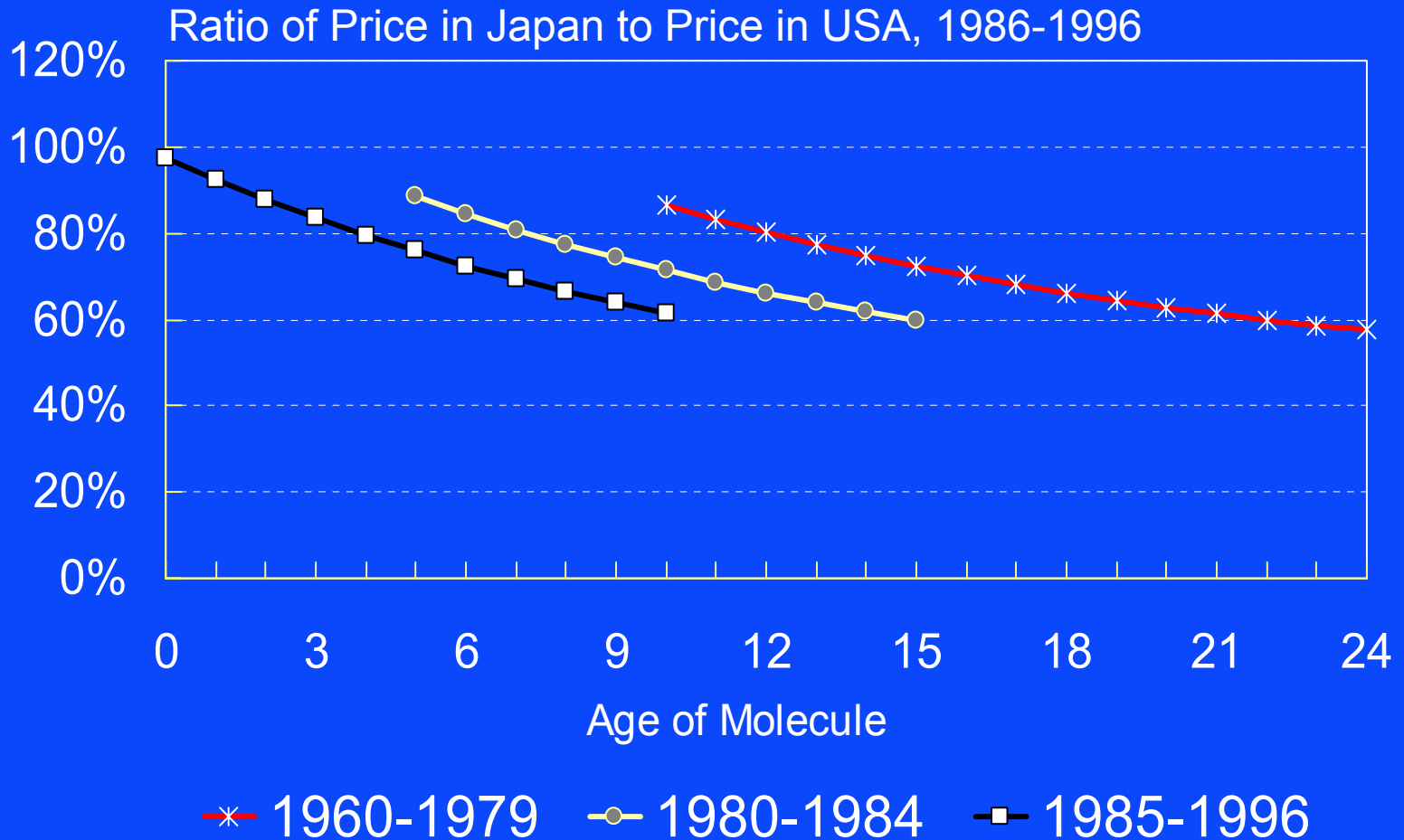
Key Differences for Clinical Trials:

- fragmented sites
- limited communication
- adherence to protocol
- measurement of efficacy
- informed consent

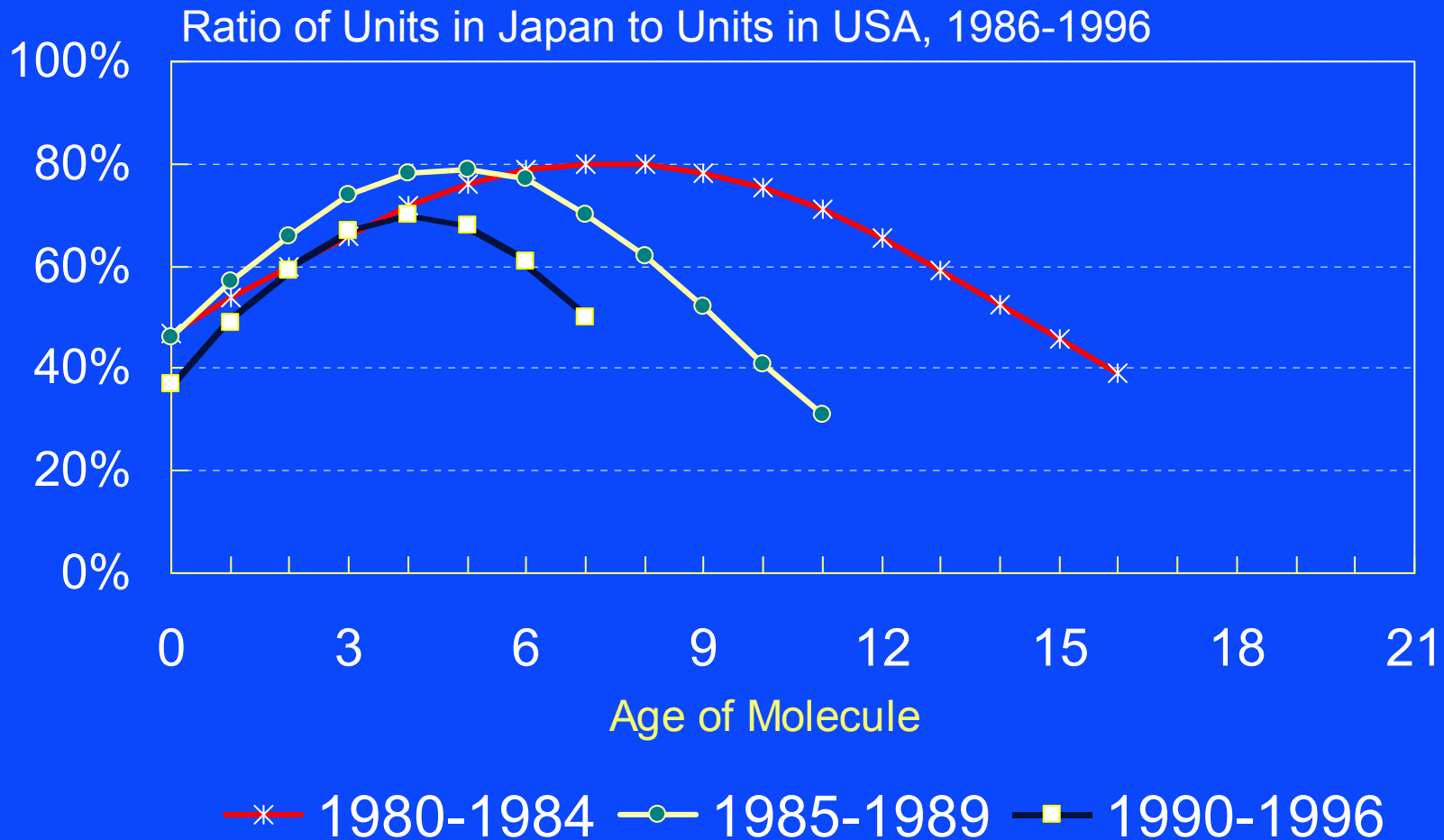
# Ecosystem: Science Base



# Ecosystem: Pricing

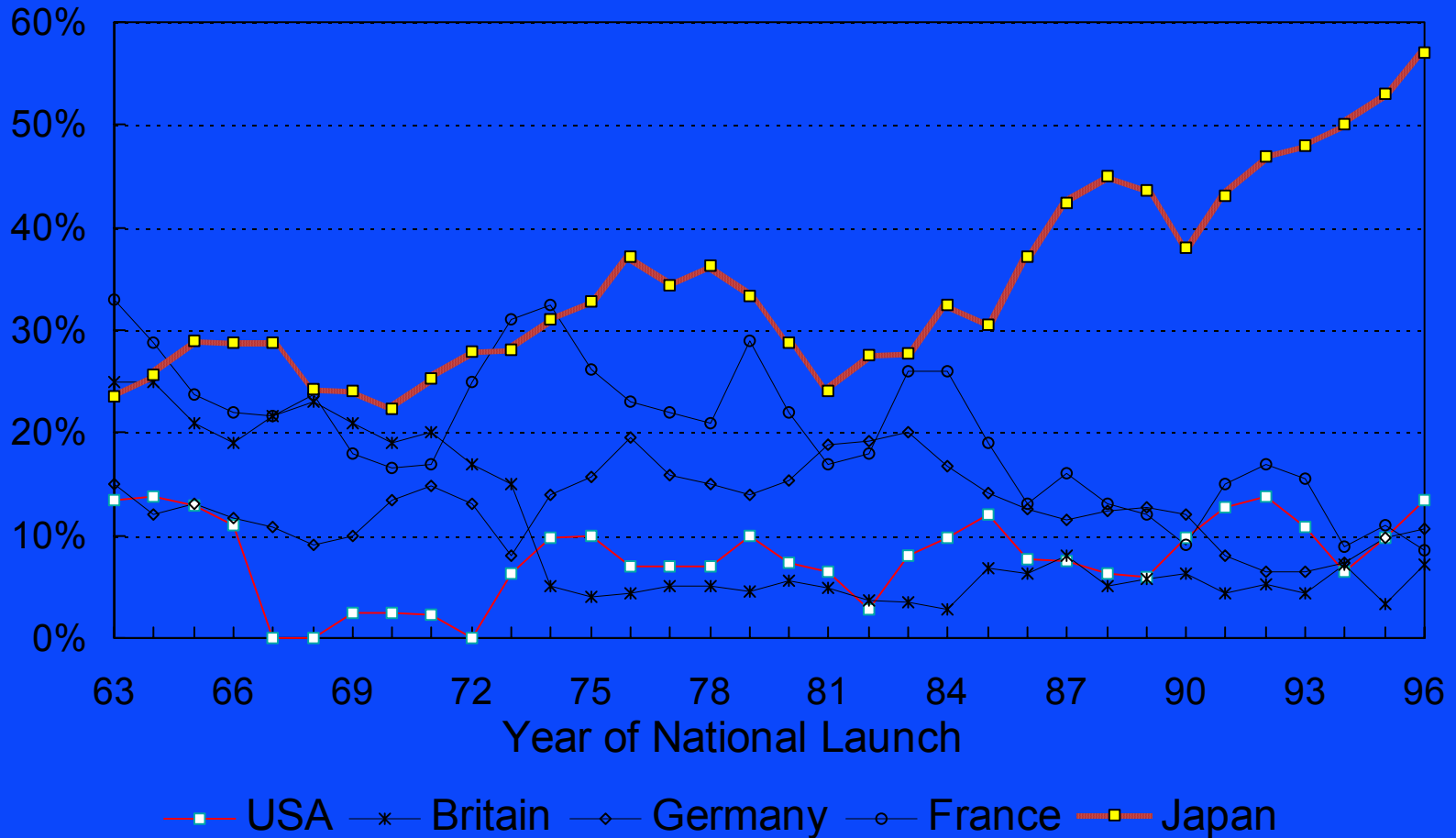


# Innovation Bubble: Brief Life Cycles

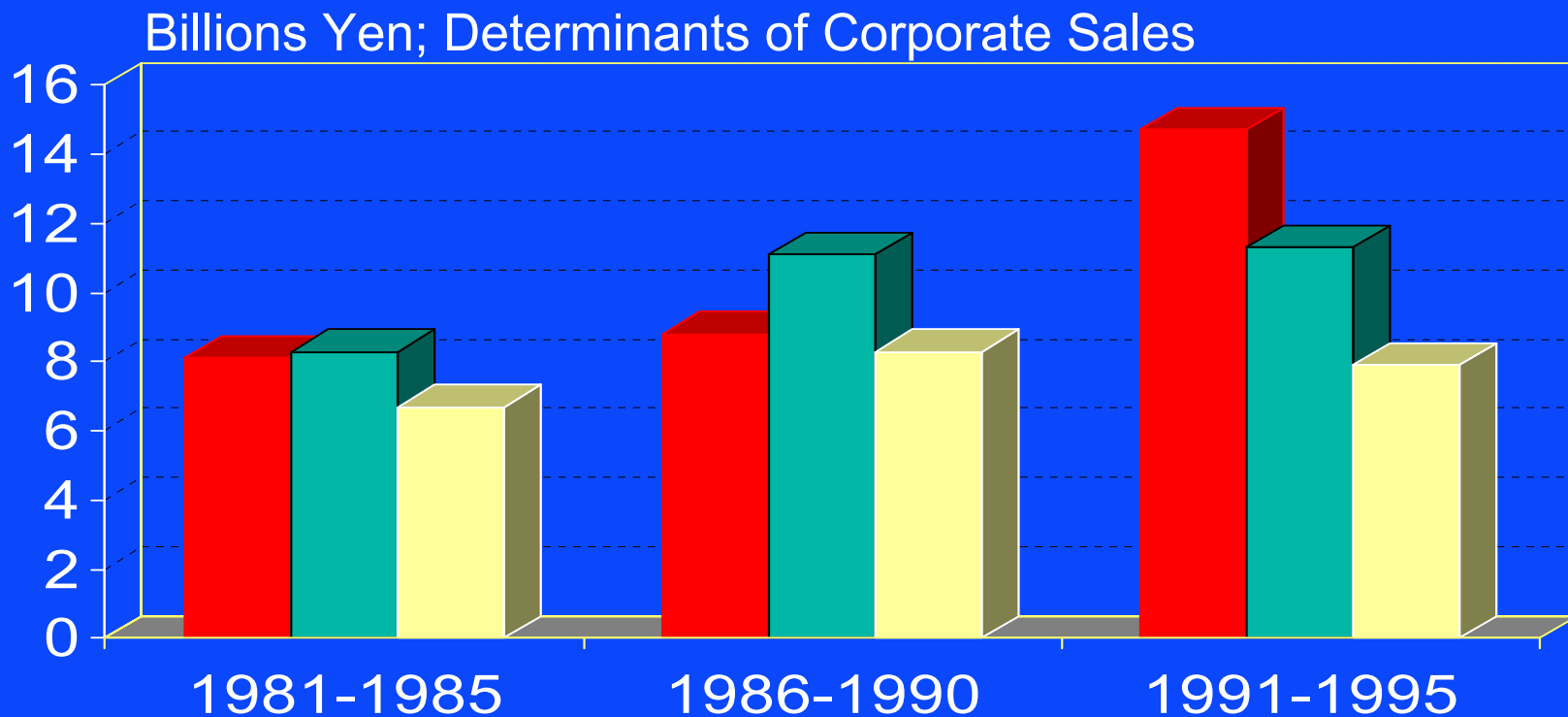


# Innovation Bubble: Minor Products

Percent of Products Launched in Each Nation



# Bubble Drives Firm Sales

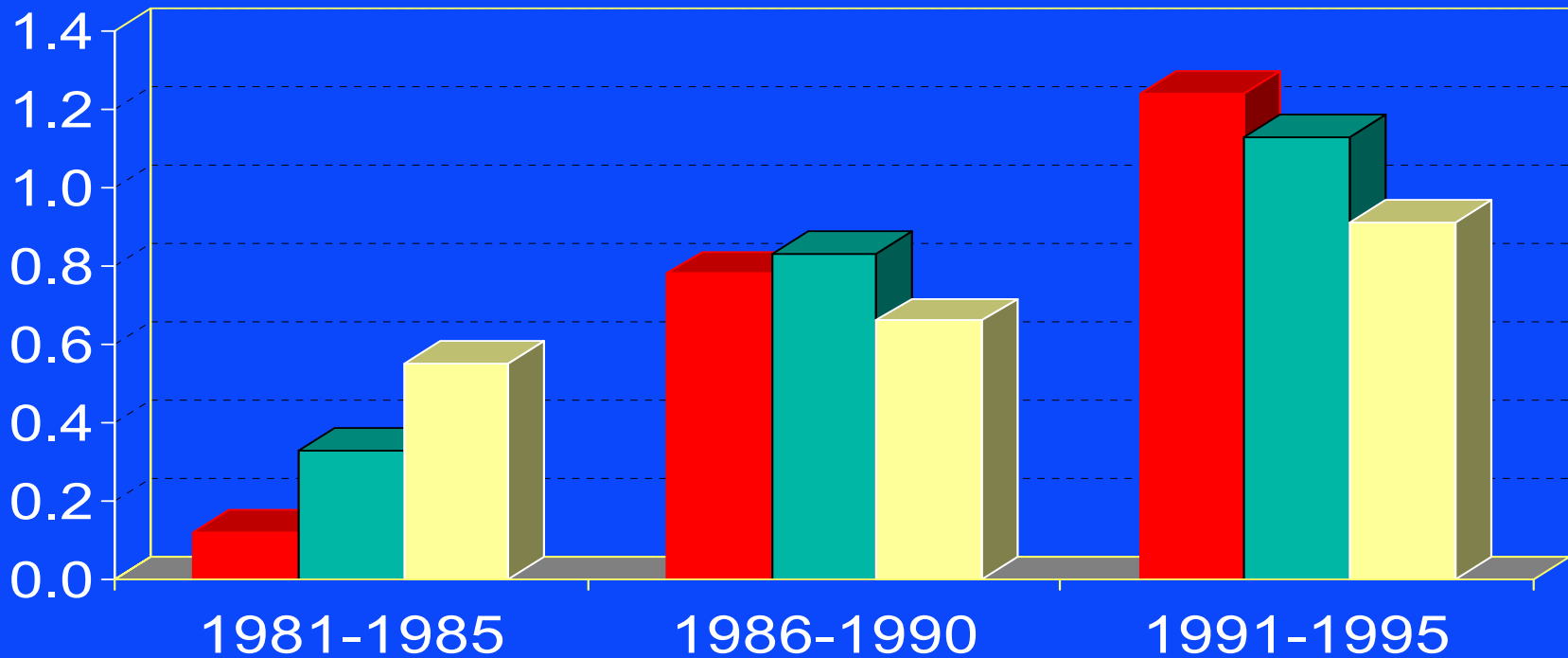


Drugs Launched by Firm in These Years

■ Years 0 / -2 ■ Years -3 / -5 ■ Years -6 / -8

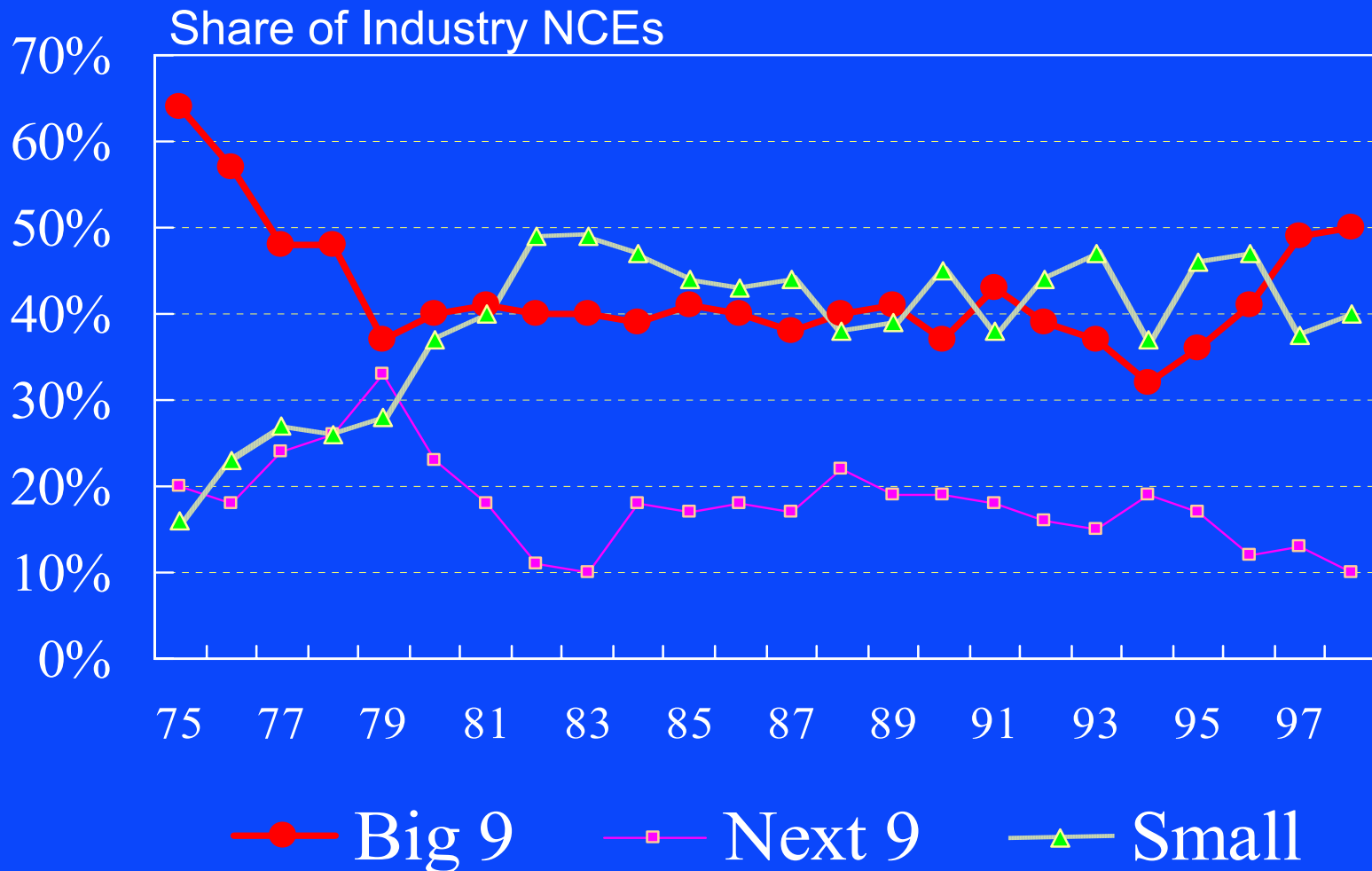
# Bubble Drives Firm Profits

Billions Yen; Determinants of Corporate Profits

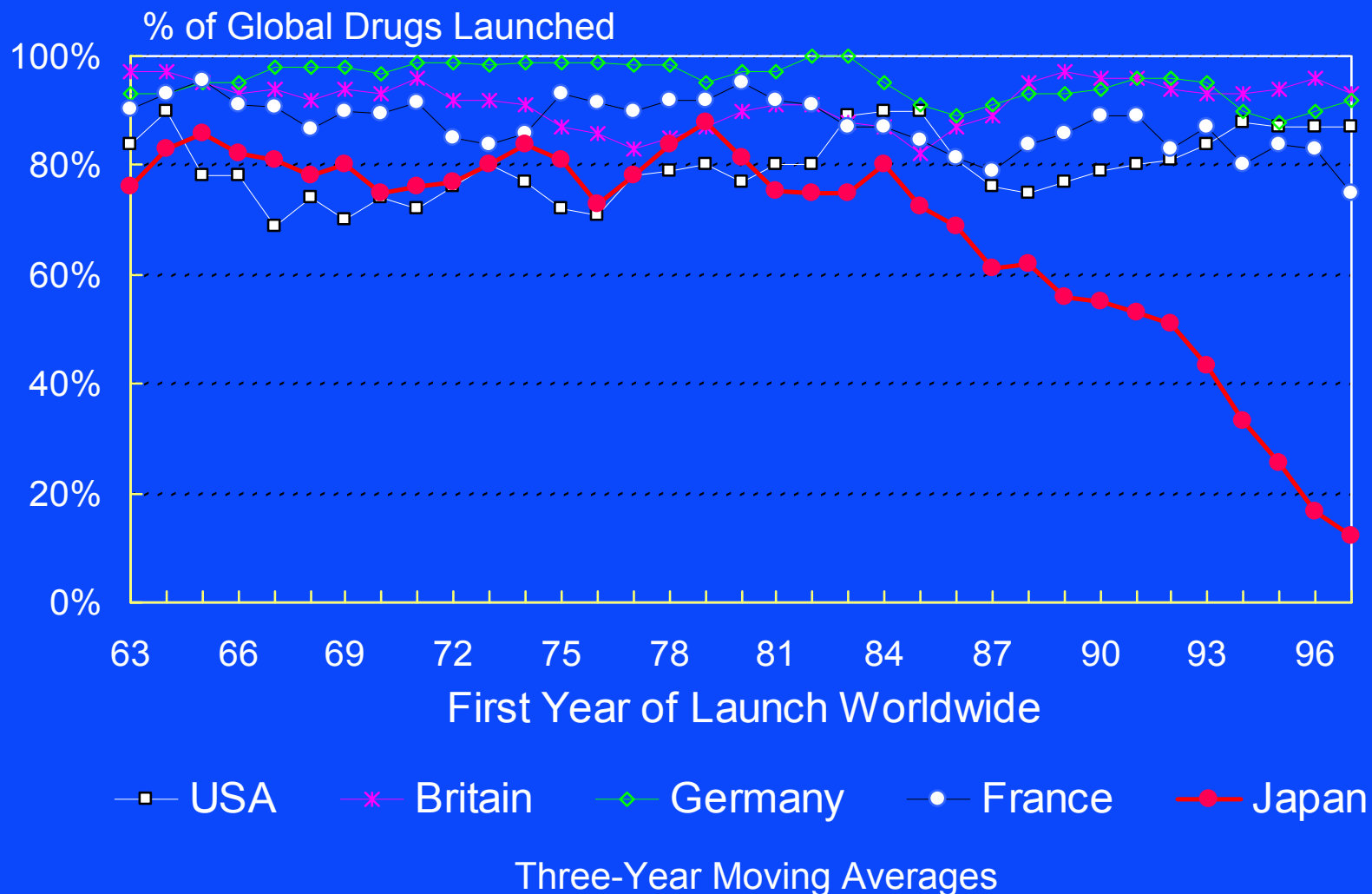


Drugs Launched by Firm in These Years  
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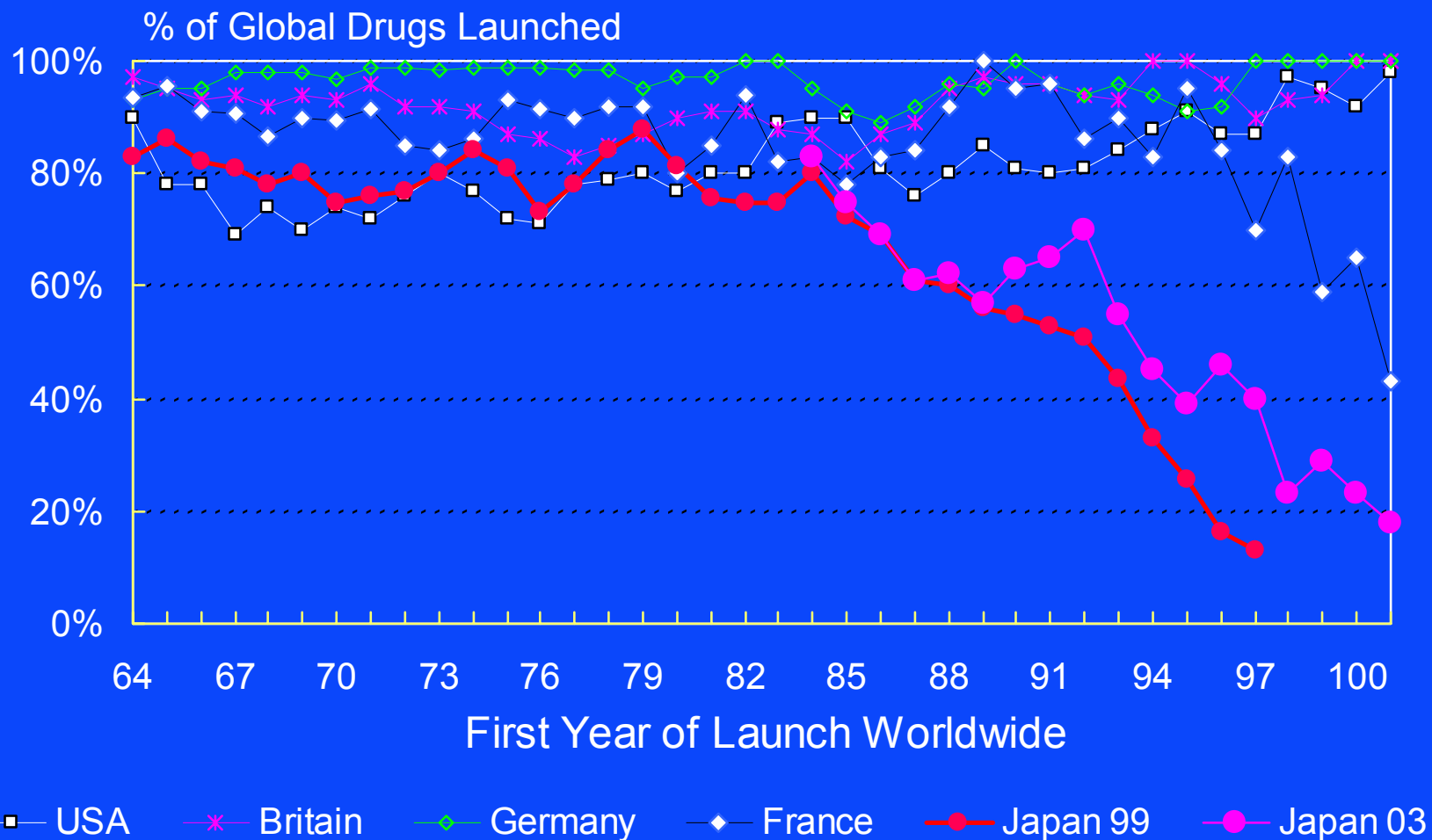
# Bubble: Rise of Small Firms



# Drug Lag: Delay & Exclusion

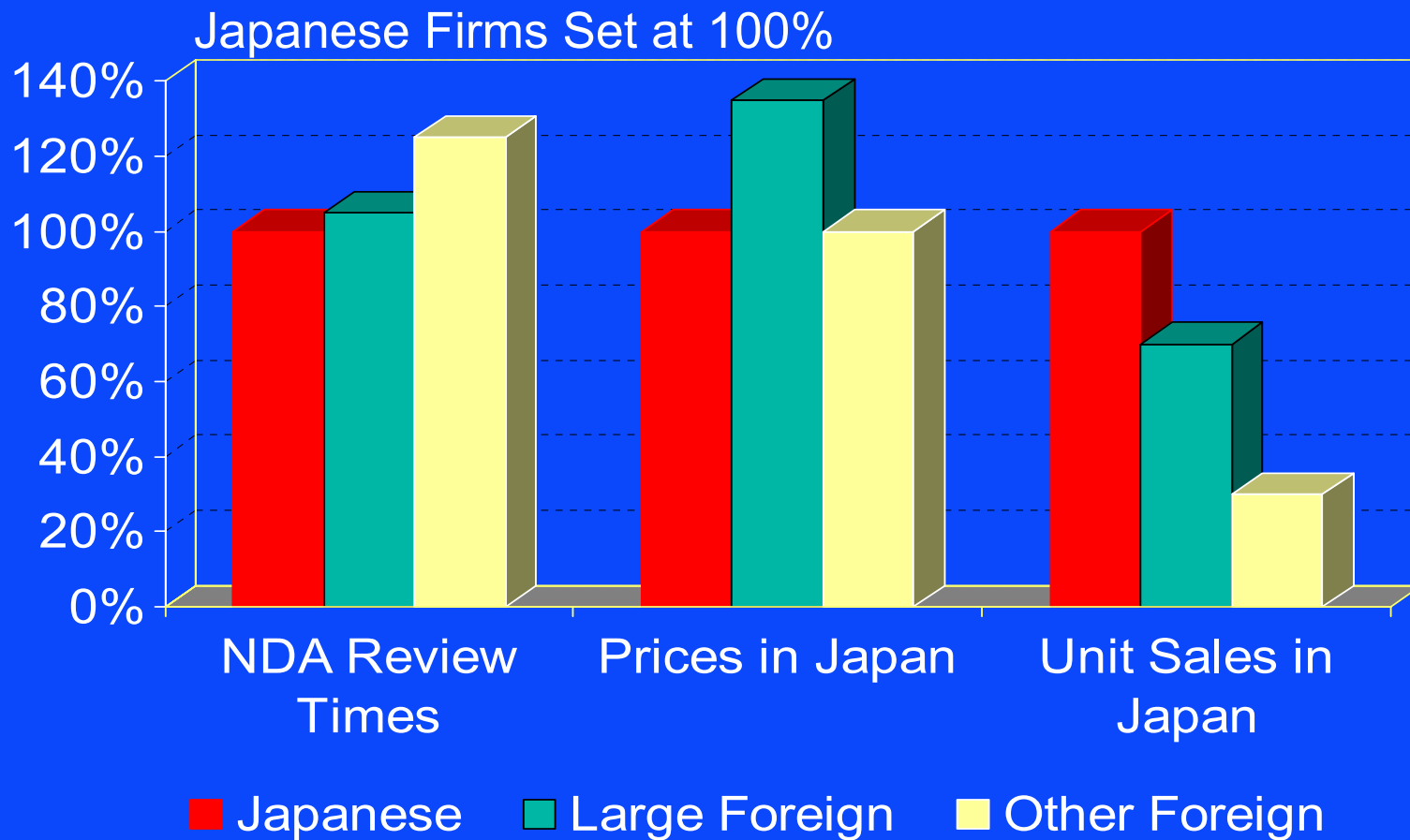


# Drug Lag: Delay & Exclusion



Three-Year Moving Averages, Based on 2003 Data (except Japan 99)

# Drug Lag: Who Suffers Exclusion



# Is It Too Late For Japan?

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## Domestic Market

- R&D Share Dropping
- Prices No Longer High
- Foreign Firms Well Established
- Consumption Dropping

Japanese Firms = Small and Domestic  
with Unsophisticated  
Home Base

# Social Construction of Industry

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Industry form is not given

- Size and Boundaries of Firms
- Core Capabilities of Firms
- Nature of Innovations
- Nature of Consumption

Industry basis

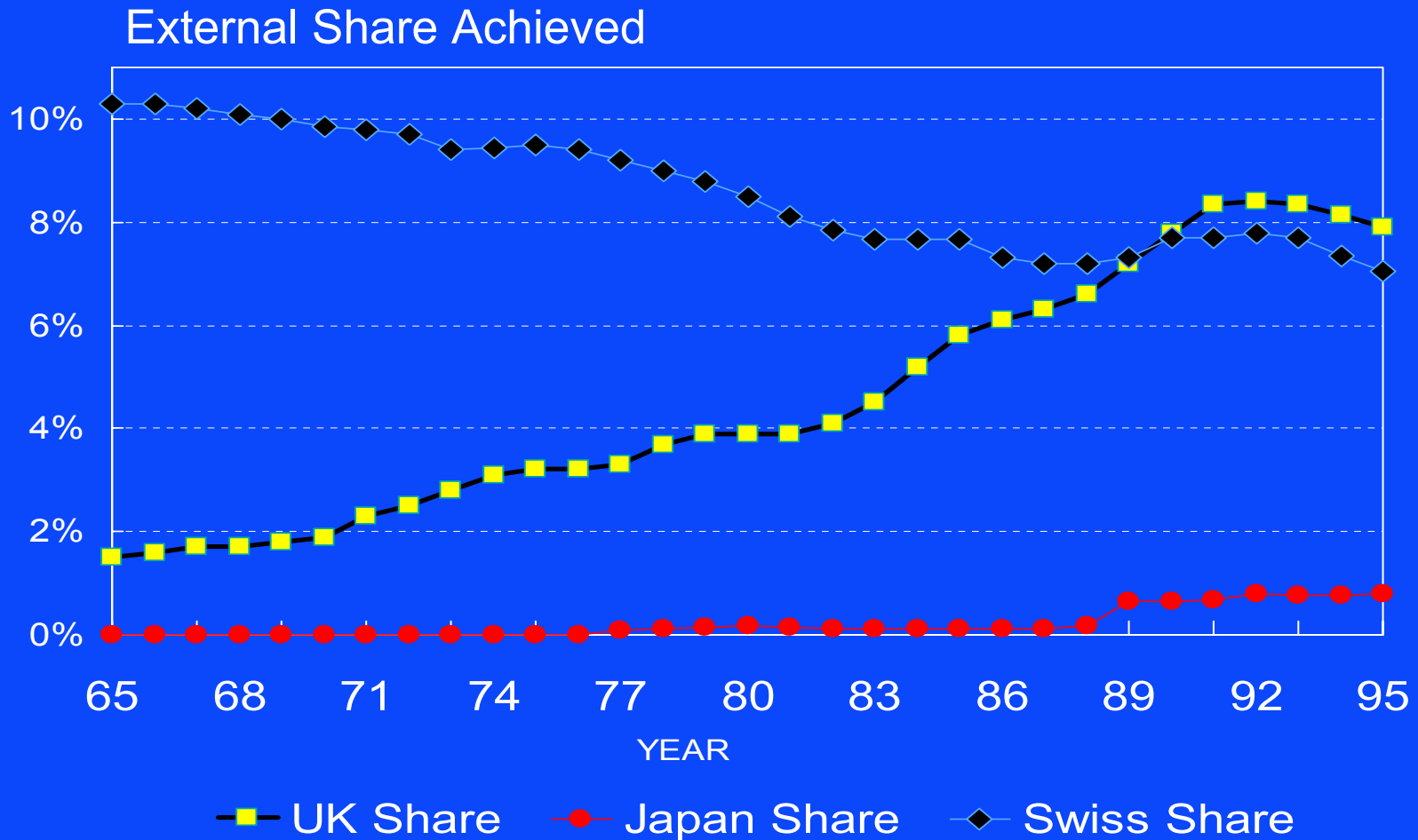
- Social Routines & Norms
- Political Power

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Backup  
Slides

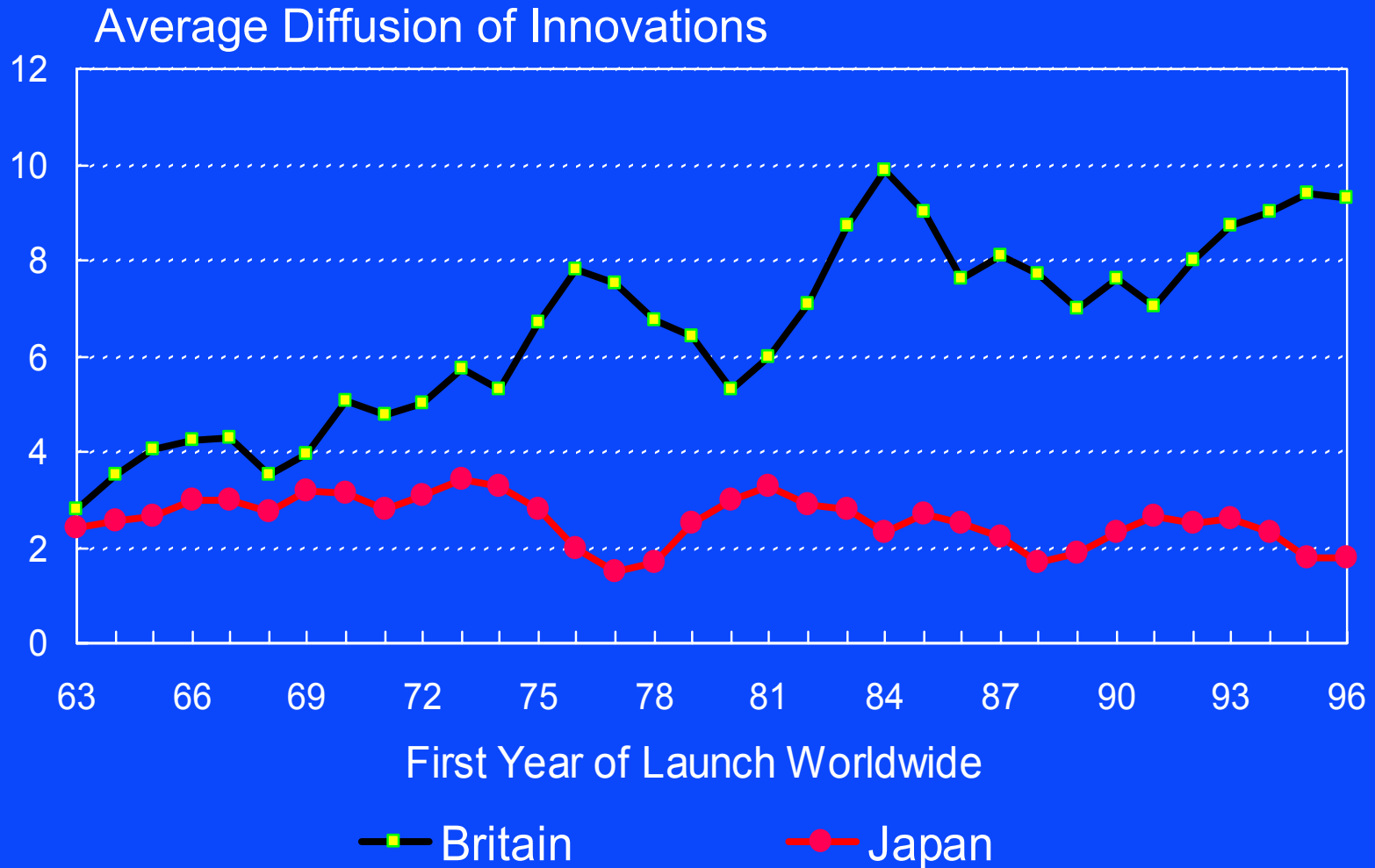
Do Not  
Printout

# the UK as Role Model?

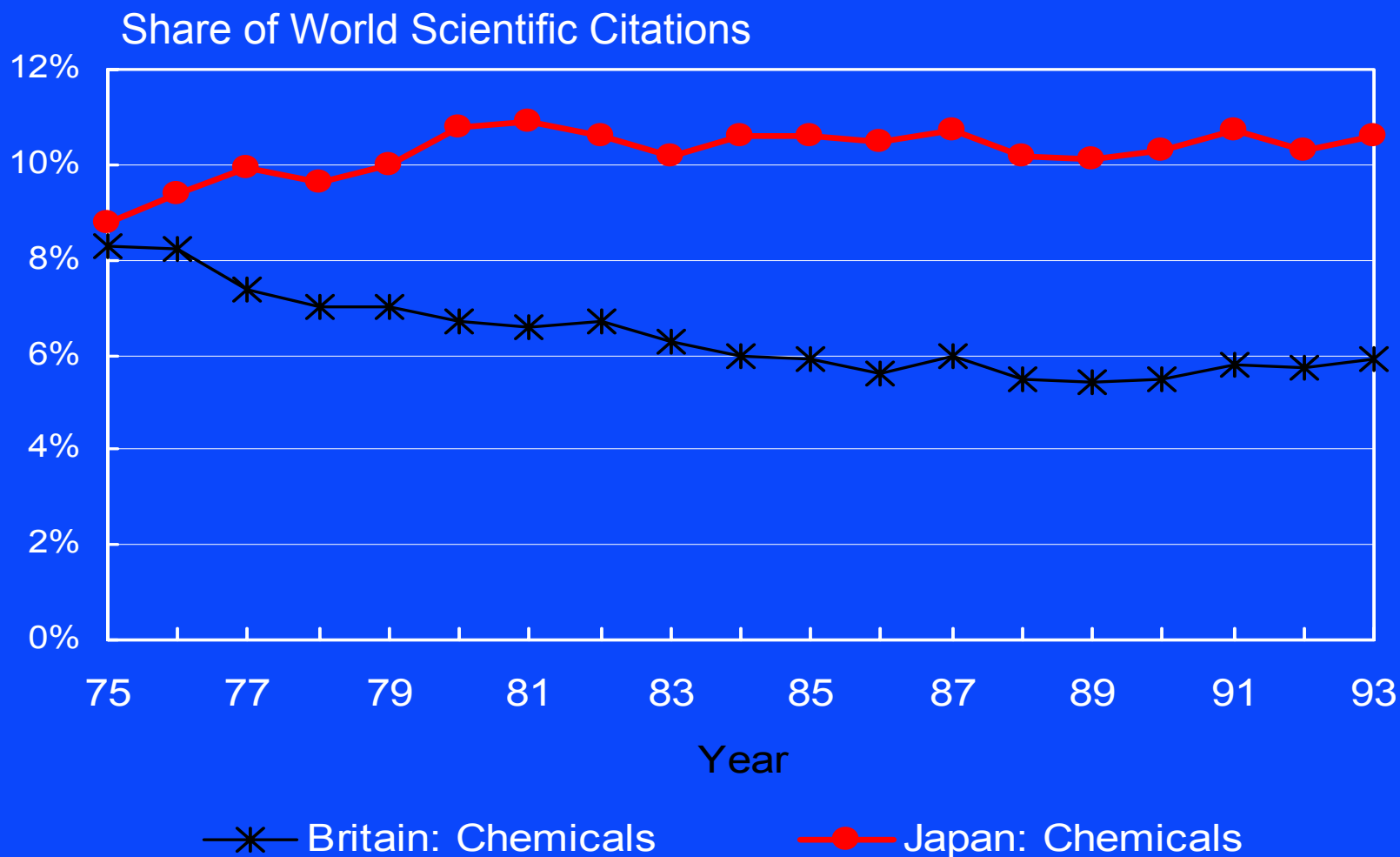


External = World minus Domestic

# the UK as Role Model?

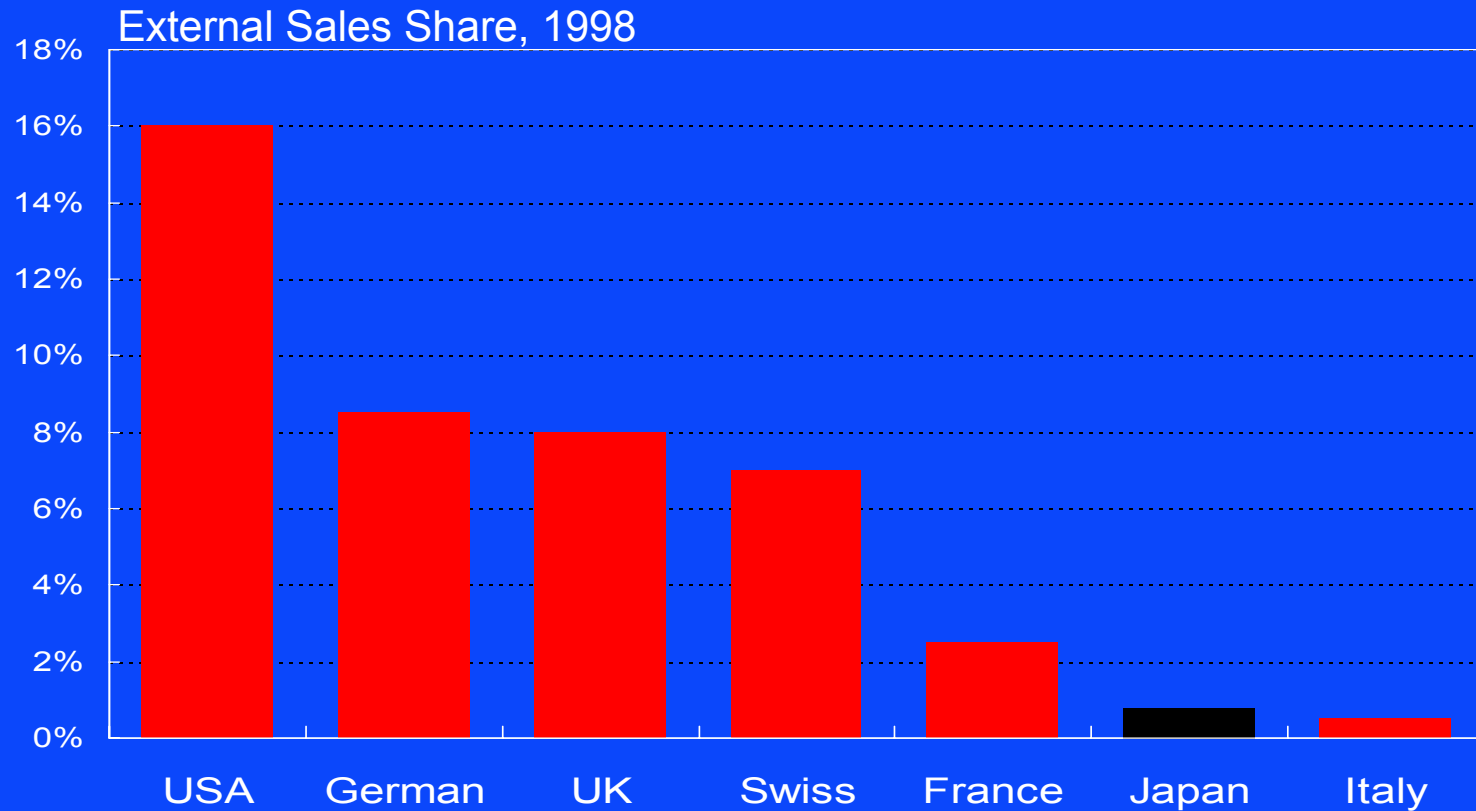


# Ecosystem: Science Base

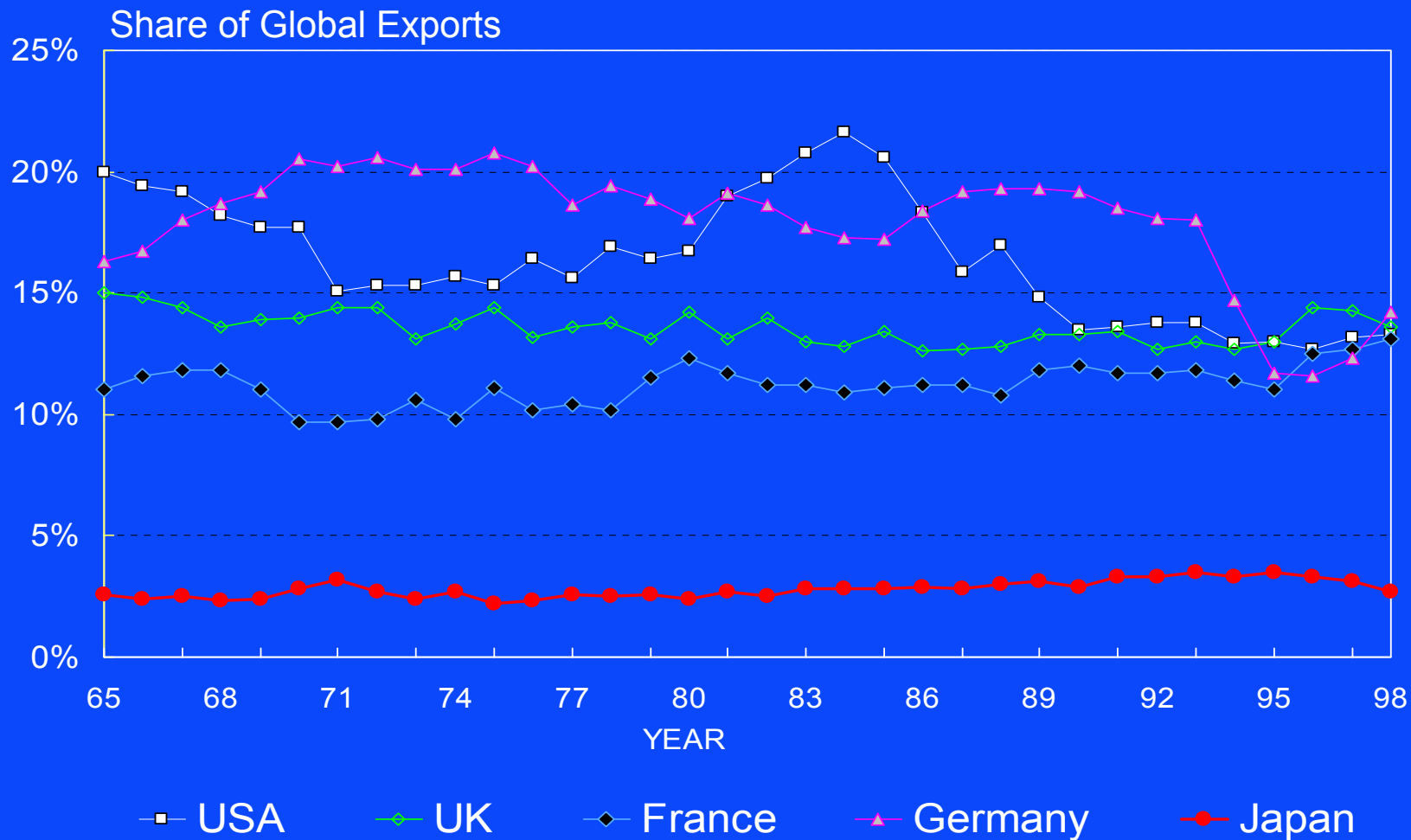


# Failure: External Sales Share

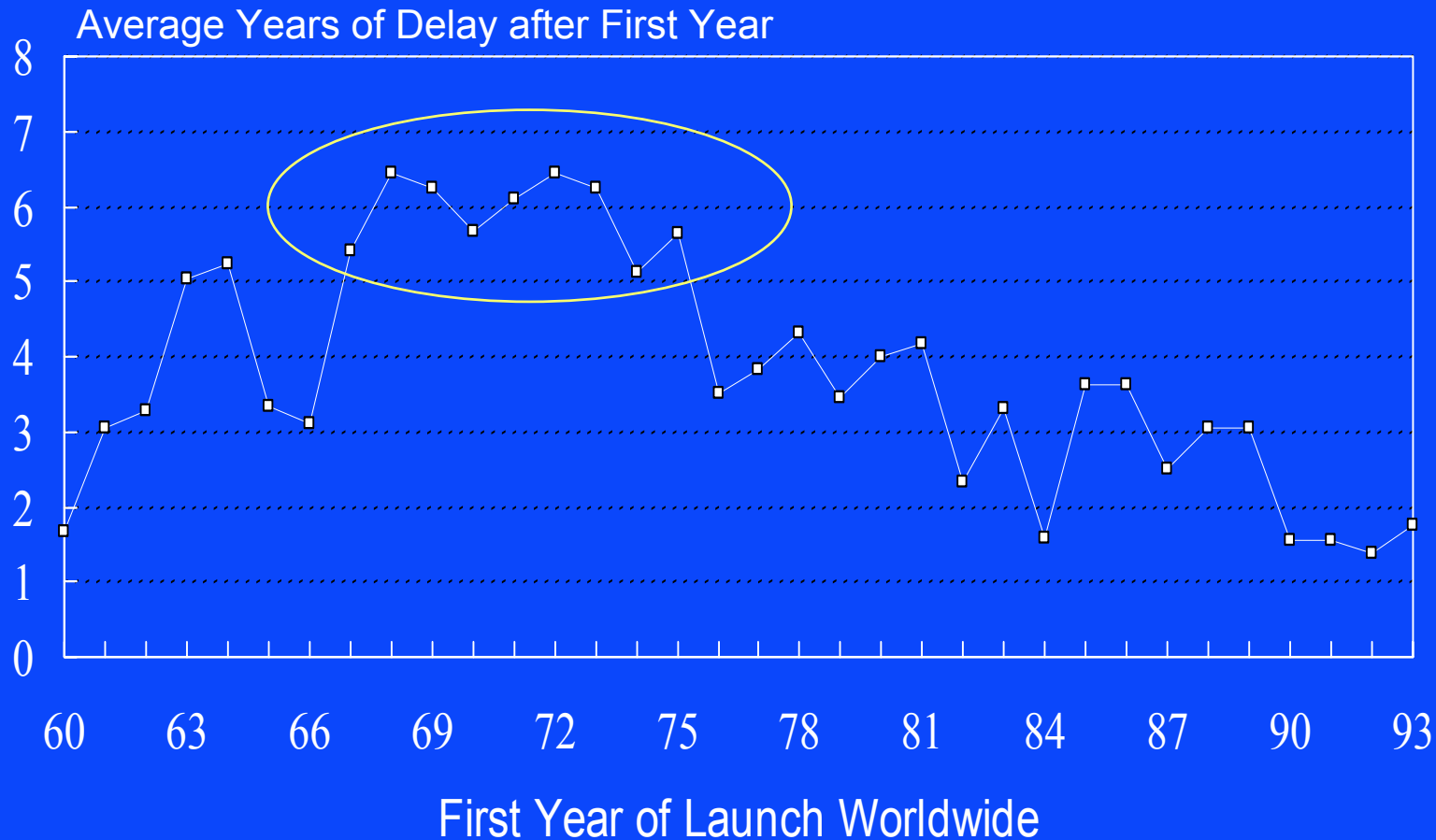
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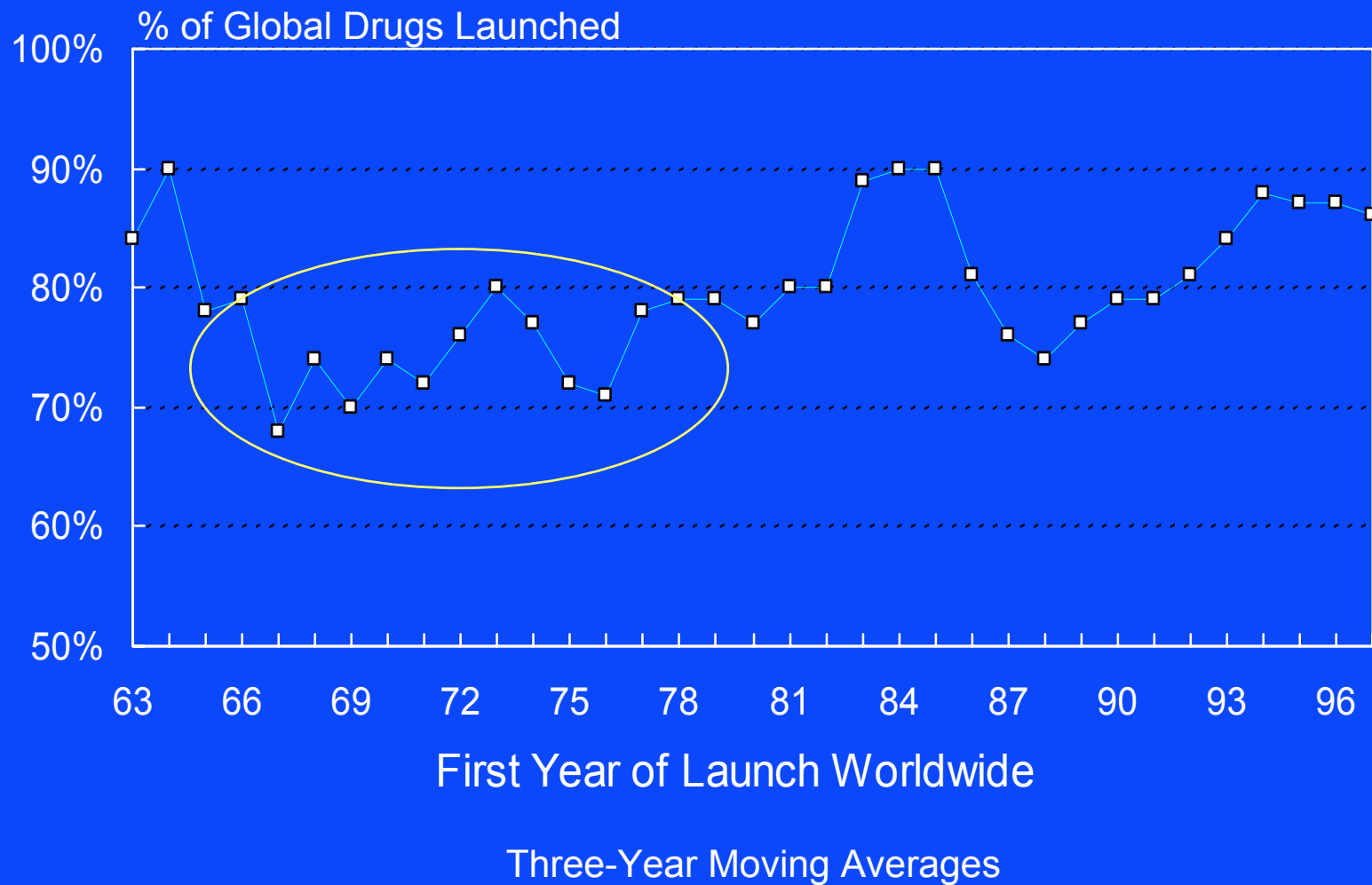
# Failure: Share of Global Exports



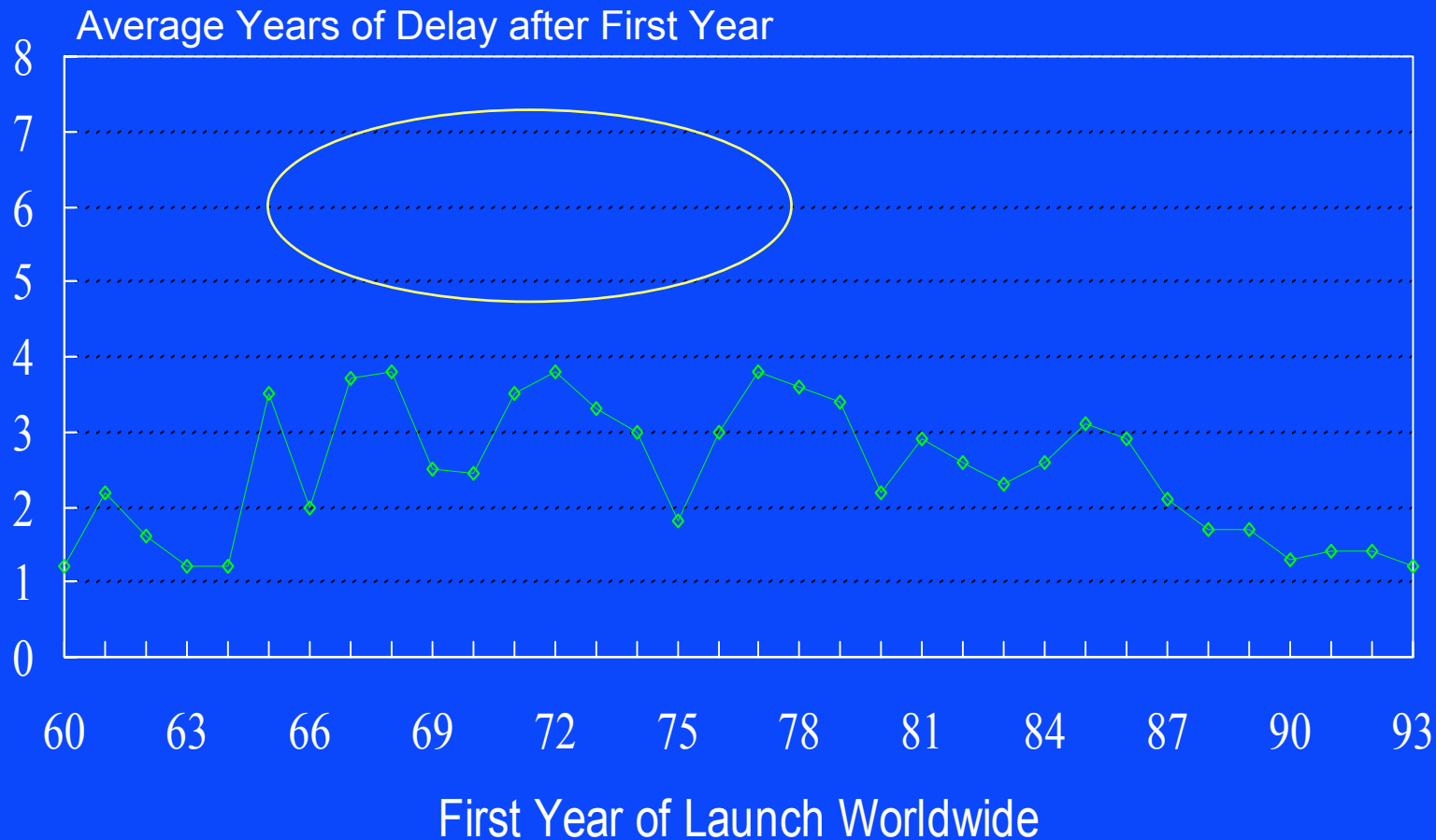
# Drug Lag: US Experience



# Drug Lag: US Experience

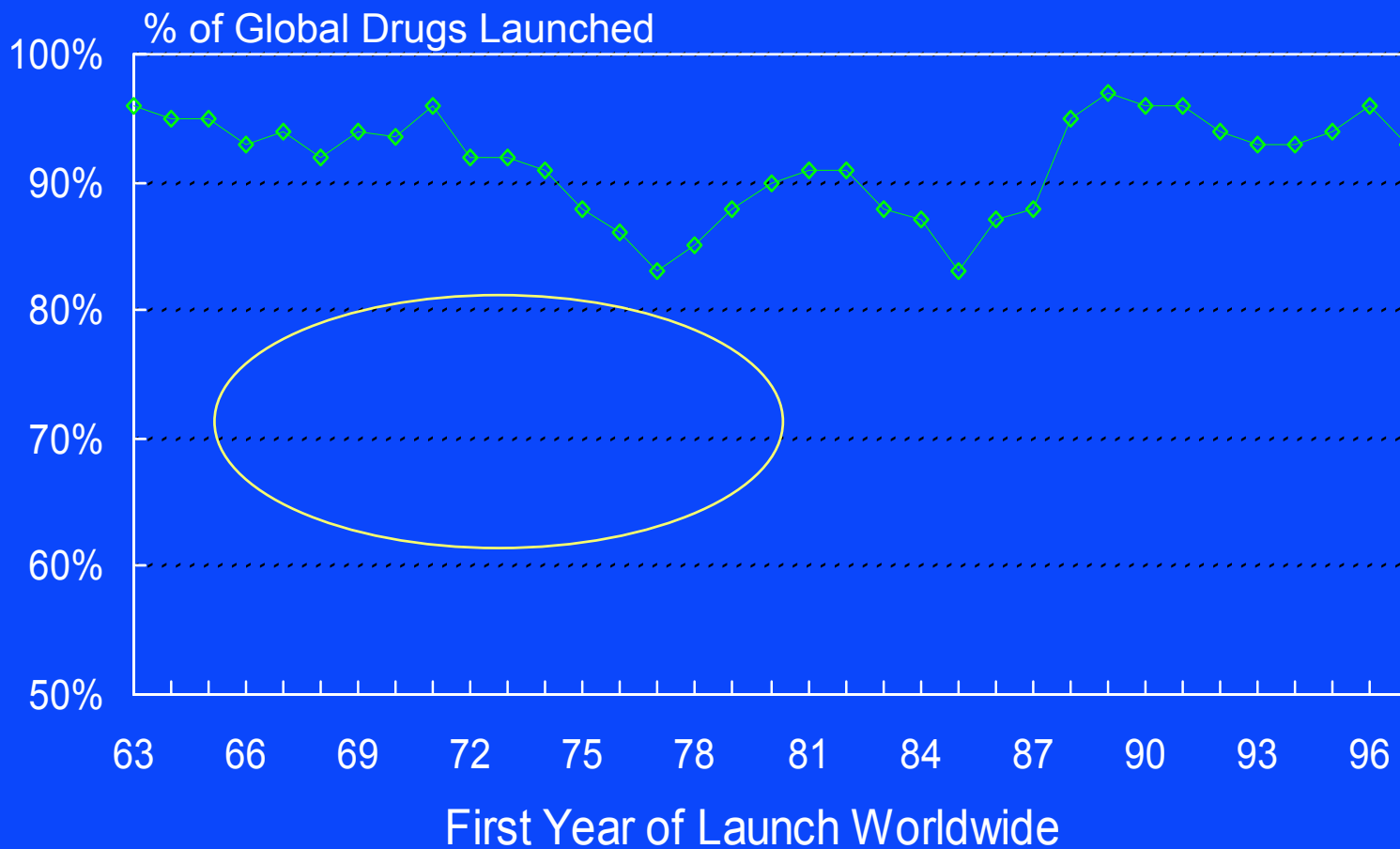


# Drug Lag: British Experience



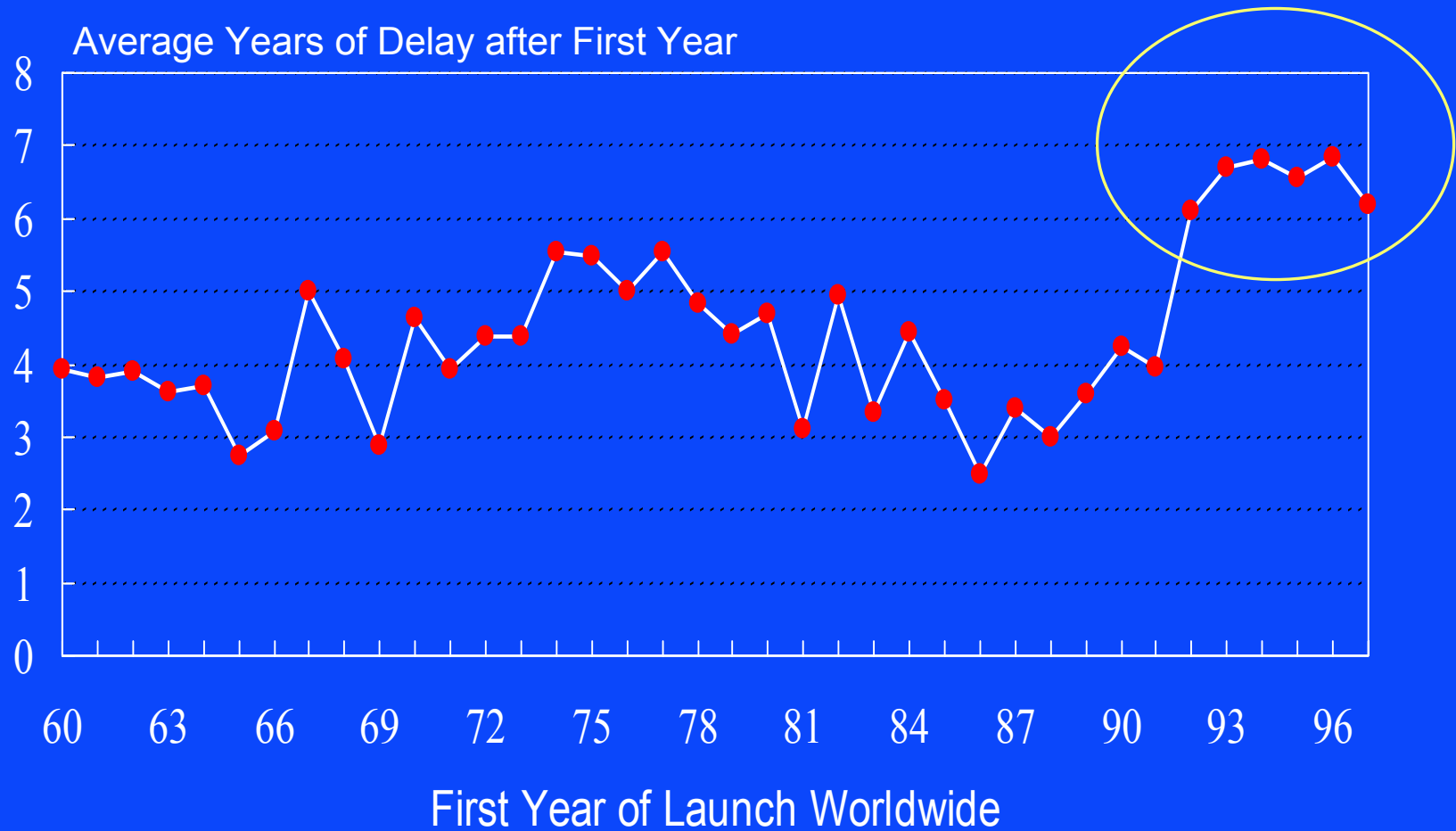
Excludes Local Products

# Drug Lag: British Experience



Three-Year Moving Averages

# Drug Lag: Japan Forecast



Excludes Local Products

# Drug Lag: Japan Forecast

