Title
Technology as an Economic Engine for Southern California

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Technology as an Economic Engine for Southern California

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The Future of Southern California’s Economy
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Overview

• High-Tech are Fastest-Growing Industries
• Who are Leading High-Tech Clusters?
• Southern California’s Technology Position
• Technology and Science Index
  – Research and Development Inputs
  – Risk Capital and Entrepreneurial Infrastructure
  – Human Capital Investment
  – Technology and Science Workforce
  – Technology Concentration and Dynamism
• Statistical Relationships on Outcomes Measures
• Important Issues for Los Angeles and Southern CA
## High-Tech Leads All Industries

GIO, Compound Annual Growth Rate, 1976-2002

<table>
<thead>
<tr>
<th>Rank</th>
<th>Industry</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Computer &amp; Data Processing Services</td>
<td>11.7</td>
</tr>
<tr>
<td>2.</td>
<td>Electronic Components and Accessories</td>
<td>10.9</td>
</tr>
<tr>
<td>3.</td>
<td>Communications Equipment</td>
<td>10.5</td>
</tr>
<tr>
<td>4.</td>
<td>Motion Pictures</td>
<td>7.4</td>
</tr>
<tr>
<td>5.</td>
<td>Computer &amp; Office Equipment</td>
<td>7.2</td>
</tr>
<tr>
<td>6.</td>
<td>Drugs</td>
<td>5.4</td>
</tr>
<tr>
<td>7.</td>
<td>Telephone Communications Services</td>
<td>4.7</td>
</tr>
<tr>
<td>8.</td>
<td>Medical Equipment, Instruments, and Supplies</td>
<td>4.7</td>
</tr>
<tr>
<td>9.</td>
<td>Research &amp; Testing Services</td>
<td>4.3</td>
</tr>
<tr>
<td>10.</td>
<td>Engineering &amp; Architectural Services</td>
<td>3.1</td>
</tr>
<tr>
<td>11.</td>
<td>Measuring &amp; Controlling Devices</td>
<td>2.4</td>
</tr>
<tr>
<td>12.</td>
<td>Total for United States</td>
<td>2.4</td>
</tr>
<tr>
<td>13.</td>
<td>Aerospace</td>
<td>0.0</td>
</tr>
<tr>
<td>14.</td>
<td>Search &amp; Navigation Equipment</td>
<td>-0.8</td>
</tr>
</tbody>
</table>

*Source: Milken Institute*
Agglomeration and Dispersion Forces in Competition

- **Agglomeration or Centripetal Forces**
  - Labor-Force Pooling
  - Supplier Networks
  - Technology Spillovers

- **Dispersion or Centrifugal Forces**
  - Immobile Factors
  - Supply-Side Factors
  - Demand-Side Factors
Metro Growth Explained by High-Tech
Actual vs. Predicted (Cross-sectional)
What Attracts and Sustains High-Tech Industries

- Existing High-Tech Presence Helps
- Traditional Cost-of-Doing Business
  - Tax Structure, Compensation Costs, Space Costs, Capital Costs, and Business Climate
- Specific to High-Tech
  - Proximity to Excellent Research Institutions
  - Access to Venture Capital
  - Educated Workforce
  - Network of Suppliers
  - Technology Spillovers
  - Climate and “Quality of Life”
U.S. Growth Higher Than SoCal
High Tech Employment Growth

Index 1992 = 100

- Southern California
- Southern California excluding Los Angeles
- United States

92 93 94 95 96 97 98 99 00 01 02

80 90 100 110 120 130 140
<table>
<thead>
<tr>
<th>Location</th>
<th>Composite Index</th>
<th>Location Quotient</th>
<th>Percent of Total U.S. High-Tech Employment</th>
<th>High-Tech Employment (Thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles-Long Beach, CA</td>
<td>6.39</td>
<td>1.43</td>
<td>4.46</td>
<td>352.74</td>
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<tr>
<td>San Diego, CA</td>
<td>2.34</td>
<td>1.57</td>
<td>1.49</td>
<td>118.06</td>
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<tr>
<td>Orange County, CA</td>
<td>2.15</td>
<td>1.40</td>
<td>1.53</td>
<td>120.90</td>
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<tr>
<td>Ventura, CA</td>
<td>0.45</td>
<td>1.44</td>
<td>0.31</td>
<td>24.56</td>
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<tr>
<td>Riverside-San Bernardino, CA</td>
<td>0.12</td>
<td>0.39</td>
<td>0.32</td>
<td>25.16</td>
</tr>
</tbody>
</table>
Human Capital Investment
2003 Index

Rank: 7

Top Ten
2nd Tier
3rd Tier
Bottom Tier

MILKEN INSTITUTE
Technology & Science Workforce
2003 Index

Rank: 3

Top Ten
2nd Tier
3rd Tier
Bottom Tier
Technology Concentration & Dynamism
2003 Index

Rank: 4

Top Ten
2nd Tier
3rd Tier
Bottom Tier

Milken Institute
State Technology & Science Index
Overall Ranking, 2003

Rank: 2
Tech Outcomes vs. Other Components
Score 0 - 100

Level
100
80
60
40
20
0

Actual
Predicted

AL AZ CO DE GA IA IL KS LA MD MI MO MT ND NH NM NY OK PA SC TN UT VT WI WV
AK AR CA CT FL HI ID IN KY MA ME MN MS NC NE NJ NV OH OR RI SD TX VA WA WV

MILKEN INSTITUTE
Per Capita Inc. & Tech and Science Index

Income Relative to Working Age Population, 2001

$US Thousands

Actual
Predicted

Milken Institute
Issues for LA and Southern California

Tech-Based Economic Development

• Develop Strategic Vision for Economic Development
• Proactive Targeting and Nurturing Emerging-21st-Century Industries
• Promote University Research Commercialization
• Support and Foster Entrepreneurial Infrastructure
• Increase Science and Technology Workforce
• Quality of Place and Social Capital