Global Sourcing & High-Tech Jobs: Productivity Gains & Policy Challenges

Dr. Catherine L. Mann
Senior Fellow, Institute for International Economics
CLMann@IIE.com

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The Job Picture: A Struggling Economy

Assessment of remedies requires disaggregation and cutting through boom and bust

The Current Employment Situation, Thousands

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Current, February 2004(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing¹</td>
<td>17,277</td>
<td>17,175</td>
<td>15,702</td>
<td>14,899</td>
<td>14,324</td>
<td>14,308</td>
</tr>
<tr>
<td>Private Service Providing¹</td>
<td>85,417</td>
<td>87,071</td>
<td>86,227</td>
<td>86,332</td>
<td>86,623</td>
<td>86,931</td>
</tr>
<tr>
<td>Business and Financial Occupations²</td>
<td>na</td>
<td>5,180</td>
<td>5,389</td>
<td>5,320</td>
<td>5,568</td>
<td>5,637</td>
</tr>
<tr>
<td>Computer and Mathematical Occupations²</td>
<td>na</td>
<td>3,325</td>
<td>3,397</td>
<td>3,032</td>
<td>3,291</td>
<td>3,137</td>
</tr>
<tr>
<td>Architecture and Engineering Occupations²</td>
<td>na</td>
<td>3,012</td>
<td>2,839</td>
<td>2,798</td>
<td>2,606</td>
<td>2,628</td>
</tr>
<tr>
<td>Unemployment Rate (16y and above)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>4.2%</td>
<td>4.0%</td>
<td>4.8%</td>
<td>5.8%</td>
<td>6.0%</td>
<td>na</td>
</tr>
<tr>
<td>End-of Period</td>
<td>4.0%</td>
<td>3.9%</td>
<td>5.8%</td>
<td>6.0%</td>
<td>5.7%</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

¹ Data from the BLS Current Employment Survey. Annual data from the month December, seasonally adjusted
² Data from the BLS Current Population Survey. Annual data from the month of February, seasonally unadjusted


Manufacturing continued decline => adjustment policies
White collar & high skills reviving => skill-matching policies
Two-Pronged Policy Strategy

• Domestic strategy: Match workers to changing jobs
  – Adjustment to new careers
  – Entry and up-skilling within career

• Global strategy: Negotiate two-way trade
  – Open markets abroad, especially for competitive services
  – Macro policies abroad

⇒ Combined strategy: New wave of productivity, growth, and job creation
Global sourcing of IT hardware

Macroeconomic gains and trade overview

.... Reduced IT hardware prices by 10-30% more
.... Diffused IT investment through US industry sectors
.... Accelerated productivity growth
.... Raised GDP growth 0.3% /yr
.... Added at least $230 billion to GDP
.... Net positive trade in IT hardware exports from US multinational firms
But what about IT jobs?

- IT investment & IT jobs: move in lock-step
- Diffusion of IT throughout: 2/3 of IT jobs are in non-IT sectors
- Average salary in all IT occupations: $62,000
- Rising skill demands

### Evolution in IT Occupations and Demand for Skills 1999-2002

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Entry Keyers</td>
<td>-143250</td>
<td>$23,190</td>
<td>377,000</td>
</tr>
<tr>
<td>Computer Operators</td>
<td>-25660</td>
<td>$31,640</td>
<td>173,000</td>
</tr>
<tr>
<td>Computer Programmers</td>
<td>-71280</td>
<td>$63,690</td>
<td>457,000</td>
</tr>
<tr>
<td>Computer Software Engineer</td>
<td>115170</td>
<td>$74,615</td>
<td>612,000</td>
</tr>
<tr>
<td>Total &quot;White-Collar IT&quot; Occup</td>
<td>-144630</td>
<td>NA</td>
<td>5,492,000</td>
</tr>
</tbody>
</table>

Source: BLS 2002 Occupational Employment and Wage Estimates, National 4-digit NAICS Industry Specific Estimates
Which sectors lead the US economy?
Those that invest more in IT & employ more IT workers

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IT Intensity and Contribution to GDP per FTE Growth 1989-2000
(Size of bubbles indicate share of GDP By Individual Sector)

<table>
<thead>
<tr>
<th>Computer and Math Occupations</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Rank of 276 Industry Sectors</td>
<td></td>
</tr>
<tr>
<td>Rank</td>
<td>Sector</td>
</tr>
<tr>
<td>#2, 29</td>
<td>Securities Holding Activities</td>
</tr>
<tr>
<td>#4</td>
<td>Insurance Carriers</td>
</tr>
<tr>
<td>#5, 32, 43</td>
<td>Wholesale Activities</td>
</tr>
<tr>
<td>#14</td>
<td>Deposit Credit Institutions</td>
</tr>
<tr>
<td>#16, 17, 34, 37, 38 Telecommunications Activities</td>
<td></td>
</tr>
<tr>
<td>#25</td>
<td>Semiconductors/other Elec. Component Manuc.</td>
</tr>
<tr>
<td>#36</td>
<td>Electricity Transmission and Distribution</td>
</tr>
</tbody>
</table>

Source: BLS 2002 Occupational Employment and Wage Estimates, National 4-digit NAICS Industry Specific Estimates

IT Capital Intensity of Sector (LN of “ITEO/FTE Rank 1990”)
AND, post a trade surplus
despite slow growth and closed markets abroad

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Which sectors need to improve
For the next wave of productivity growth & job expansion

Software cost is an increasing share of the cost of the IT package (about 50% today).

Small firm size, culture, and regulations make writing software & service applications more costly for some of these sectors.

Outsourcing some IT jobs that do not involve design, marketing, integration will reduce the price of the software & applications, and re-start the IT innovation and growth drivers.

Source: BEA, DE2002 Table A.4.4
Re-Ignite American Innovation & Growth

• Domestic strategy: Better match workers to changing jobs
  – New-jobs policies for displaced workers:
    • Unemployment extension, Wage insurance
  – Entry and up-skilling policies within a career-ladder
    • Human-capital investment tax credit through firms
  – Movement/flexibility policies to mitigate costs of adjustment
    • Realistic and affordable health care and pension portability

• Outward strategy: Two-way trade in services
  – Open markets abroad for internationally competitive US services
  – Off-shoring of some products increases competitiveness of others
The Human-Capital Investment Tax Credit

Invest in people for a competitive economy

- The ITC instrument fits a ‘classical’ economics case
  - Private benefit captured by firms is less than national (social) benefit
  - Rationale for the R&D tax credit and the investment tax credit.

- H-ITC for incumbent workers to move up career ladder
  - An H-ITC mitigates the firm’s disincentive to train workers for fear of losing them to a rival firm that does not train

- H-ITC for entry level workers
  - A internship credit mitigates students’ concern about technical careers and recognizes that the ‘first job’ may no longer be US
The Human-Capital Investment Tax Credit

• How would it work?
  • Firm is the locus for the tax credit, assists in developing job and internship matches, but recycles the money to educational institutions, thus augmenting their funding too

• How much will it cost?
  • Cost: number of workers * training cost * credit % = reduction in taxes owed = ?
  – Compared to what: R&D and capital investment tax credits estimated to reduce tax receipts by approx. $25 B and $50B respectively to 2010.
  • Benefit: Supports next wave of productivity growth and internationally competitive knowledge economy

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