Is the Tech World Flat?

A Careful Look at Globalization and the U.S. Tech Industry

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Overview

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  - “Benedict Arnold” firms
Types of Global Flow

- Offshoring of software development.
- Importation of software developers, via H-1B and L-1 work visas.
- Work on onshore-only projects.
- Work as liaisons between onshore and offshore groups.

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- Others: Ireland, Israel etc., maybe even Mexico.
Size of the Flows

Impact on U.S. software jobs:

- Est. 104,000 American IT jobs lost during 2000-2003 due to offshoring (Global Insight).

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- “But isn’t offshore labor cheaper than importing H-1Bs?”
H-1B Wage Savings

- Covariate issues (job type, education, type of industry, geography, etc.).

Type I: Paying an H-1B less than comparable Americans (USCs, LPRs).

Type II: Hiring younger/cheaper H-1Bs to avoid hiring older/more expensive Americans. (88% of Tata H-1Bs under 30.)

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- 14%: Matloff, Type I, 2000 census
- 21%: Type I/II, 2000 BLS/INS
GAO on H-1B Wages

- GAO employer survey, 2003:

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- H-1B prevailing wage law riddled with gaping loopholes. Wage savings attained with full compliance with the law and regs.
NRC on H-1B Wages

NRC employer survey, 2000:

“[Employers said that some H-1Bs] received lower wages, less senior job titles, smaller signing bonuses, and smaller pay and compensation increases than would be typical for the work they actually did.”
Immobility

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• H-1B “loyalty” of very high value to employers, often more than wage savings.
## Savings from Offshoring

<table>
<thead>
<tr>
<th>savings</th>
<th>source</th>
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</thead>
<tbody>
<tr>
<td>10-44%</td>
<td>Rubin/Jaramillo</td>
</tr>
<tr>
<td>15-40%</td>
<td>Sand Hill Group</td>
</tr>
<tr>
<td>20-40%</td>
<td><em>CIO Magazine</em></td>
</tr>
<tr>
<td>25-50%</td>
<td>Gartner Group</td>
</tr>
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<td>DiamondCluster International</td>
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Gartner survey found that 18% had 0 savings, 9% negative “savings.”
Quality of Offshored Work

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- Time zone problems (*The Odd Couple*).
H-1B/Offshoring Tradeoff

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- Interaction benefit of having the work done onsite is huge.
- Hence preference of U.S. firms for H-1B instead of offshoring (earlier slide)—at least for now.
Current U.S. IT Labor Impact

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- Offshoring currently less of an issue, but could be devastating long-term (later slides).
Global Insight Studies

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- Projects that offshoring will cause IT sector to shrink, but IT jobs will grow in non-IT sectors.
- Projects that overall GDP will grow, especially in construction and finance.
Analysis of GI Findings

If “intellectual content” jobs become routinely offshored:

- Growth in construction projected by GI will be carpenters, not architects.
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- Growth of IT jobs in non-IT sectors will be in computer technicians, not computer programmers.
Long-Term Impact on the U.S.

Again assuming “intellectual content” jobs become routinely offshored:

- The overall impact of offshoring will be to lose jobs requiring higher levels of education, while gaining jobs requiring lesser levels.
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- UCB survey: Ex-CS students changing majors to psych., history—the “talking majors.”
Move Up the Food Chain?

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• Industry claim: “U.S. IT workers can be become IT managers, system designers.”
• Indeed a viable option for some current displaced IT workers.
• But not a long term option, as one generally needs to work as a programmer first. Without programmer jobs, can’t even enter the “food chain.”
Focus on Innovation?

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• Not realistic. Innovation is serendipitous, needing a large programmer base. Without that base, innovation is lost.
Retraining?

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- This has been the case for the retraining programs funded by the H-1B employer fees (Dept. of Commerce study).
Impact on Academia

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• About 40% of U.S. S&E PhDS go to foreign students (50% in CS).

• Yet foreign student applications down sharply in recent years, nationwide, causing alarm.
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- Salary premium paid to PhDs over Bachelor’s:
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  - political science: 150%
  - computer science: 40%

Nationwide professor salaries:
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- life sciences: $63,988
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- Result: NSF projection was correct.
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- If PhD wages do not rise (and career prospects improve), “big science” research at U.S. universities will become untenable.