Higher Education and the Indian Software Industry

Rafiq Dossani
Dossani@stanford.edu
Research Questions

• What is the cost and timetable for developing an affordable, accessible education system?

• How should developed countries respond to the educational achievements of India?
  – Innovation, research competence, technical competence, entrepreneurship, project management

• Are there models of governance that are critical for quality?
  – Institutional decentralization/autonomy
  – University-industry linkages
  – Time-frame
  – Political/Civic elite-led v bureaucracy-led, as driver of change
Institutional background

• Education is a ‘concurrent’ subject:
  – New Delhi sets system, measures standards; states provide and maintain
  – Finance is shared (80% states, 20% ND)
  – Exception: 18 national universities (out of 300+) (including IITs) - centers of excellence (COE)

• Snapshot 1997: gross enrollment: 7%, gap between COEs and rest due to crowding out, cost 0.6% of GDP, 60K engg. graduates p.a., low research competence
  – Upto 1997, New Delhi political elite decided system
  – In 1997, regional politicians led support for non-profit private provision

• Snapshot 2008: GE:12%, cost (to govt) 0.8%, 400K grads p.a. (most headed for IT industry), private provision:85%, 1 new p.d.
Study of 19 colleges in Bangalore IT cluster’s catchment, 2006-07

- Study of internal functioning of colleges
  - Recruitment, faculty autonomy, costs, infrastructure, industry linkages, student profile
  - Mapped against IT firms’ quality rankings

- Findings
  - COE model successful
    - High funding
    - US curricula and teaching.

- Private providers
  - Filled quality gap between COE and state colleges
  - Greater faculty autonomy, industry linkages raise quality

- India now has a good ‘undergraduate factory’ model
Noteworthy features

• Access wider, more affordable.
  – Every town in Karnataka has at least a Tier 3 private college; many have Tier 2
• Catch-up in less than a decade
  – US curricula
  – Same bandwidth and access to journals as US
• Private faculty salaries 2x-4x state colleges
• 90% of students’ final year projects in industry
• Large IT firms are ‘market makers’
• Private colleges add to system viability
  – System is a PPP and successful private providers are non-profit, but ‘unaided’
<table>
<thead>
<tr>
<th>Name</th>
<th>Tuition</th>
<th>Cost</th>
<th>State Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PES Inst Tech – Tier 2</td>
<td>50,000</td>
<td>45,000</td>
<td>0%</td>
</tr>
<tr>
<td>($1=Rs.47)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devi Ahilya Indore – Tier 3</td>
<td>25,000</td>
<td>75,000</td>
<td>50%</td>
</tr>
<tr>
<td>IIT – Tier 1</td>
<td>30,000</td>
<td>200,000</td>
<td>75%</td>
</tr>
<tr>
<td>Average US – Tier 1 State</td>
<td>$7,000</td>
<td>$20,000</td>
<td>30%</td>
</tr>
<tr>
<td>Average China – Tier 1</td>
<td>$1000</td>
<td>$2000</td>
<td>40%</td>
</tr>
<tr>
<td>Average Russia – Tier 1</td>
<td>$2500</td>
<td>$7500</td>
<td>60%</td>
</tr>
</tbody>
</table>
Summary - 1

• Implications for India:
  – Quality, affordability, system viability within 10 years
    • Quality means technical competence
      – Entrepreneurship, global project management skills
    • ‘Undergraduate factory’ & low research competence
      – COEs can shift to research
    – Firms play the role of market makers

• Implications for governance model:
  • Privatization, decentralization & industry linkages

• Implications for developed countries and MNEs:
  – Leverage technical skills in India, support higher
Research Questions

• What is the cost (private and public) of higher education as a share of GDP?
• To what extent is India’s success in engineering education due to its unusual success in IT exports?
• How to create research competence?
• Have we discovered a new approach to higher education for emerging economies, consisting of:
  – PPP
  – Not-for-profit private provision
  – Regulatory intrusiveness in faculty and student selection exists, though is flexible
  – Low development costs