Higher Education, Skills and Innovation in East Asia

Findings from the East Asia Higher Education Regional Study
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Outline

1. Introduction: context and impact of higher education
2. Is higher education meeting its premises?
3. Why not? Critical disconnects and constraints
4. Main lessons and policy implications (how to move forward)
The East Asian Context: Significant Productivity Gaps across Countries

Output per worker, constant 1990 US$

Source: International Labour Organization (2007)
Higher Education contributes to Productivity through Skills and Research

- Graduates with high standard of proficiency
- Subset with skills for innovation
- Basic and applied research
- Technology transfer

Productivity and growth
Higher Education and Skills for Growth

As the technology becomes more skill biased, demand for tertiary graduates increases

Wage Education Premiums in East Asia – Tertiary/Primary

Source: Labor Force Surveys
Higher Education and Skills for Growth

Share of tertiary educated workers by technological intensity of firm

An innovative firm is associated with an increase of about 25% points in its share of workers with more than 12 years of schooling.

Source: Investment Climate Surveys
Is Higher Education meetings its Promises?
Skill Bottlenecks in Critical Sectors

Share of Firms Reporting Skills of Workforce as an Obstacle by Technological Intensity

Share of Firms Reporting Skills of Workforce as an Obstacle, by Exporting Intensity

Source: Investment Climate Surveys
Is Higher Education meetings its Promises? Quantity is an Issue...

Tertiary GER below OECD and upper income East Asia

Source: EdStats, UIS, LFS
But not with the same Urgency Everywhere...

Vietnam: Supply Constrained

Philippines: Demand Constrained
Is Higher Education meetings its Promises? Lack of Inclusiveness depletes the Talent Pool

- Predicted Ratio of Urban to Rural Enrollments and Completions, Tertiary

Source: Labor Force Surveys, latest year
Is Higher Education meetings its Promises? Most Important of all are the Functional Skills of Higher Education Graduates

Technical, thinking and behavioral skills are judged to be critical by employers and employees alike.

Importance of technical, thinking, and behavioral skills for professionals (from 1 to 7)

Source: ICS, skills surveys
Is Higher Education meetings its Promises? And there is Evidence that these are Weak

- Multiple gaps in thinking skills, including creativity

- Gaps in technical skills acquired in higher education: high level practice; engineering; English
  - Professionals with good English in Thailand and Malaysia make about 30% more than others
  - Low S&E share in several countries and only 10% of science and engineering graduates with acceptable skills according to employer surveys in Vietnam and China

- Need for retraining tertiary graduates
  - 80% of university graduates need retraining in the Philippines
Is Higher Education meetings its Promises? R&D is Insufficient and not Very Productive

Correlation between Higher Education R&D and Patents

Correlation between Higher Education R&D and Scientific and Technical Journals

Source: WDI, UIS

Source: WDI, UIS, USPTO
Why is Higher Education not Fulfilling its Skill and Research Potential? Five Critical Disconnects

1. Skill Users (employers, employees)
2. Research Provision
3. Research Users (firms)
4. Higher Education Institutions
5. Skill Providers (earlier education)
Disconnect 1: Between Higher Education Institutions and Skill Users (employers, employees)

- **Teaching practices do not reflect needs for generic skills**

- **Curriculum are insufficiently diversified creating skill gaps for manufacturing**
  - Cambodia, Mongolia, Philippines have half or more of their students pursuing social science degrees

- **Misalignment of institutional mix**
  - TVET offerings sub-optimal in Cambodia, Mongolia
  - College offerings insufficient in some other countries
  - Post-graduate degrees do not match demand needs in Indonesia, the Philippines
**Disconnects 2 and 3: Between Higher Education Institutions and Research Users (firms) and Providers**

Wide disconnect between teaching and research

- In Indonesia, Philippines, China share of R&D undertaken by HE is below 10%
- Malaysia: only 17 of the 254 research and development agencies are within universities

17% of R&D by universities in Vietnam but less than 5% of product innovation comes from university

Source: VCCI
**Disconnects 4 and 5: Between Higher Education Institutions and other Skill Providers - The Case of Earlier Education**

**Gaps in access and completion start early and get worse**

- Secondary and tertiary education completion, urban/rural area

Source: Labor Force Surveys, most recent year
Behind the Disconnects: Information, Capacity, Incentives

- **Information**
  - Providers and users may not have the information needed to make relevant decisions
    - Labor market returns; employment trends; UIL modalities which work; groups at risk; etc

- **Capacity**
  - Limited human and financial resources

- **Incentives**
  - Lack of incentives to adapt curriculums, interact with firms, undertake research, innovate, etc
## Behind the Disconnects: Human Resources: Too Few and/or Insufficiently Qualified or Both

### Qualifications and availability of faculty in higher education

<table>
<thead>
<tr>
<th>P-T Ratio</th>
<th>% of PhDs</th>
<th>Thailand, Mongolia, Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;28</td>
<td>&gt;30</td>
<td>20-30</td>
</tr>
<tr>
<td>23-28</td>
<td>20-30</td>
<td>Cambodia (*), Philippines</td>
</tr>
<tr>
<td>17-22</td>
<td>20-30</td>
<td>Malaysia (<em>), China (</em>)</td>
</tr>
<tr>
<td>&lt;17</td>
<td>&lt;20</td>
<td>Japan, SG (<em>), Korea (</em>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indonesia</td>
</tr>
</tbody>
</table>

+ outdated pedagogical practices, lack of creativity in research and management skills

Has led to low teaching quality, lack of curriculum diversification, poor capacity and incentives for research
**Behind the Disconnects: Financing:** Resource Mobilization still a Challenge in some Countries

Public spending and tuition share in public higher education institutions

<table>
<thead>
<tr>
<th>Tuition Share</th>
<th>Tertiary Public Education Exp/GDP</th>
</tr>
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<tbody>
<tr>
<td>&gt;40</td>
<td>&gt;1</td>
</tr>
<tr>
<td>20-39</td>
<td>0.5-1</td>
</tr>
<tr>
<td>&lt;20</td>
<td>&lt;05</td>
</tr>
<tr>
<td></td>
<td>Vietnam</td>
</tr>
<tr>
<td></td>
<td>Mongolia</td>
</tr>
<tr>
<td></td>
<td>Indonesia, China (*)</td>
</tr>
<tr>
<td></td>
<td>Japan, Korea</td>
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<td></td>
<td>Cambodia</td>
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<td></td>
<td>Thailand</td>
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<td></td>
<td>Malaysia</td>
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<td></td>
<td>Philippines</td>
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Behind the Disconnects: Financing: Most Importantly Public Resources are often not used Strategically

Use and allocation of public financing in higher education

<table>
<thead>
<tr>
<th>Equity</th>
<th>Quality Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Japan, Korea, SG</td>
</tr>
<tr>
<td>M/H</td>
<td></td>
</tr>
<tr>
<td>M/L</td>
<td>China</td>
</tr>
<tr>
<td>Low</td>
<td></td>
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</tbody>
</table>

Notes: Quality enhancement proxied by focus on R&D and use of performance-based allocation; Equity proxied by extent and coverage of equity-enhancing mechanisms

Financing issues have contributed to many of the disconnects through lower curriculum diversification, lower research capacity, lower access of vulnerable groups, etc
**Behind the Disconnects: Service Delivery:**
Public Providers have Limited Autonomy and Accountability

### Decision-making autonomy and accountability of HE institutions

<table>
<thead>
<tr>
<th>Acct.</th>
<th>Autonomy</th>
<th>High</th>
<th>Medium</th>
<th>M/L</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full (CL+L/IL)</td>
<td>Singapore</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To CL + some Local/Instit.</td>
<td>Japan, HK</td>
<td>China</td>
<td>Indonesia, THA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Central Level (CL)</td>
<td></td>
<td></td>
<td>Philippines, MYS</td>
<td>Korea</td>
<td>Vietnam, Cambodia, Laos</td>
</tr>
</tbody>
</table>

Autonomy rankings reflect share of institutions with autonomy and intensity of autonomy; Accountability to L/IL reflects boards role; representativeness; and QA disclosure.

Incomplete autonomy and accountability have contributed to most of the disconnects (directly or through human and financial resources).
Main Lessons and Policy Implications: Systemic Approach

Need to “fix” higher education system:

- BY supporting core actors and their interactions through adequate incentives, capacity and information
- AND THEREFORE address constraints in human resources, financing and governance for higher education
- PLUS other constraints…
Main Lessons and Policy Implications: Tailoring Priorities and Policies

- Type and intensity of challenges and constraints varies across countries
  - So reform scope, sequencing and speed will vary
  - Report suggests different *illustrative* pathways by income group and technology level
Main Lessons and Policy Implications: **Human Resources**

- **Building the human capital stock while maximizing the performance of the existing stock:**
  - Make use of the international HE market
    - Thailand, Malaysia, etc
  - Autonomy in setting salaries and fees
    - Hong Kong, Singapore, etc
  - Curriculum reform
    - Generic skills, competency based, etc
Mobilizing more and more diversified resources:
- Public financing? Cambodia, Philippines, Mongolia, Thailand but potential varies
- Private funding: private sector delivery; variable fees and income-contingent loans but limits

Using and allocating public funding more strategically:
- Supporting R&D, STEM, equity (needs-based scholarships)
  - China (R&D); Vietnam, Thailand, Mongolia (equity)
- Performance-based allocation
  - Korea, Singapore, China, etc
Main Lessons and Policy Implications: **Governance**

- **Completing autonomy:**
  - Aligning substantive and procedural autonomy
  - Separating governments’ operational role from policy role

- **Moving to full accountability:**
  - Empowering governing boards
  - Strengthening QA through disclosure policies and funding for performance

- **Managing the private sector**
- **Managing UILs**