1. Introduction: Japan’s Overall Competitiveness in Science & Engineering
2. IT Industry
3. Why So Few S&E Migrants?
4. Policy Developments
5. Future Challenges for S&E Migration in Japan
Japan’s Competitiveness in Science

- Japan’s Overall Competitiveness = 26th in the World
- High Competitiveness in Science

<table>
<thead>
<tr>
<th>Index</th>
<th>IMD Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of R&amp;D Professionals</td>
<td>1</td>
</tr>
<tr>
<td>Number of Patents Granted</td>
<td>1</td>
</tr>
<tr>
<td>Scientific Infrastructure</td>
<td>2</td>
</tr>
<tr>
<td>R&amp;D Expenditure ($)</td>
<td>2</td>
</tr>
<tr>
<td>Number of Scientific Publications</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: World Competitiveness Yearbook (2011)
Japan’s Competitiveness in Human Resources in Science & Engineering

<table>
<thead>
<tr>
<th>Index</th>
<th>IMD Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of R&amp;D Workers in Business</td>
<td>2</td>
</tr>
<tr>
<td>% of University Degrees in Science &amp; Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Availability of Qualified Engineers</td>
<td>11</td>
</tr>
<tr>
<td>Attractiveness to Researchers &amp; Scientists</td>
<td>17</td>
</tr>
<tr>
<td>Availability of IT Skills</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: World Competitiveness Yearbook (2011)
IT Industry Size

- **IT Market Size:** US$255 billion
  - The 4th largest industry after retailing, electronics, and wholesale trade
  - Software: 70% of the ICT sales
- **Labor Force:** 1.5% of Japan’s Total Labor Force (984,000 workers)
  - 42% System Engineers
  - 19% Programmers
  - 19% Managers & Sales Staff
- **R&D:** 625,300 workers – The 2nd largest in the world
Migrant Engineers in Japan

- **Total Number**: 42,634 (2011) = Approximately 8% of Engineers in Japan

- **Data on the Newly-Registered Migrant Engineers**
  - 70+% are Men (combined with Int’l Affairs Visa Holders)
  - The Graduates of Japanese Universities
  - 74% in Non-Manufacturing Industries – Computer-related companies (62%), Finance/Insurance (5.4%), Human Resources (4.9%)
  - 26% in Manufacturing Industry (Automobile, Electronics, and Machinery)
  - 68.3% work in the Kanto region (Tokyo) followed by Chubu 12% (Nagoya, Toyota), Kinki (Osaka, Kobe) 9%
Recent Trends in HRST Migration

- Specialists in Humanities & Int’l Affairs
- Engineers
- Inter-Company Transferees
Migrant Engineers: Countries of Origin

- China: 53.9%
- Korea: 12.8%
- India: 15.1%
- Vietnam: 7.5%
- Philippines: 4.7%
- USA: 4.2%
- Others: 1.7%
Corporate Size of Migrant Engineers

- < 9 employees: 21%
- 10-99 employees: 30%
- 100-299 employees: 14%
- 300-999 employees: 14%
- 1,000-4,999 employees: 8%
- 5,000+ employees: 2%
- Unknown: 11%

Source: Ministry of Justice (2011)
Migrant Engineers: The Age Cohorts

- 26.7% for 20-29 years
- 65.0% for 30-39 years
- 5.9% for 40-49 years
- 1.9% for 50-59 years
- 0.4% for Others

Source: Ministry of Justice (2005-2010)
Migrant Engineers: Income Level

Source: Ministry of Justice (2011)
Why So Few Migrant Engineers?

1. Demand-Side Factors

- Limited Demand for Highly-Skilled Migrants
  - 40% of major Japanese corporations have never hired highly-skilled foreigners (MOWL, 2008)
  - Only 10% have hired foreign graduates (JILPT, 2008)

- Why?
  - Concerns for Communication Ability in Japanese
  - Concerns for High Turn-Over Rates
  - Difficulty in Capability Assessment
  - Limited Assignment Options due to the Immigration Status
Why So Few Migrant Engineers?

2. Supply-Side Factors

- Limited Supply of Highly-Skilled Engineers
  - Japan as a non-English working environment
- Japan as an Unattractive Country for Employment
  - 35% of Foreign Students in Japan are planning to work in their home country or a third country.
  - Japan ranked 44th in the Attractiveness Ranking
The Attractiveness for the Highly-Skilled

IMD, World Competitive Yearbook 2009
1. Career Development

- Unattractive Remuneration Package
  - 57% of new migrants (engineers & humanities/int’l services) received a monthly salary of $1,800-$2,800
  - Significant Differences in Average Annual Income of Engineers in Japan and other industrialized countries

- Lack of Transparency & Rigidity in Promotions

- Inflexible Labor Market -- Difficult to change jobs/positions

- Japan-Specific Business Practices
  - Assignment in Japan as a “Career Killer” (Tsukazaki, 2009)
    - The Japanese business practices are so different that even managers who succeeded elsewhere would find them difficult to cope with.
  - “Japanese Trap” – Even those who succeeded in Japan feel that they became trapped because the skills that they acquired in Japan are not useful elsewhere and thus their employability has declined.
2. Integration at Workplace

- Difficulty in Communications
  - Not only the language Acquisition
  - Limited social contacts even among Japanese
- Lack of Role Models
- Feelings of Isolation & Marginalization
  - Even when not being discriminated, many of them feel isolated and marginalized at their workplaces.
- Lack of Work-Life Balance
  - Stuart Chambers (a British CEO of Japan Sheet Glass) resigned because of the “need to prioritize time with family.”
3. Social Integration

- Integration of Children
  - Lack of Diversity/Multicultural Education in Japanese Schools
  - Tuition for International Schools = 2 million yen/year
    - No subsidies from Japanese corporations
  - “Japanese Trap” vs. “Global Professionals”
  - Declining Quality of Japanese Education

- Integration of Spouses
  - Social Isolation in the Communities
  - Limited Employment Opportunities

- Common-Law Partners
  - No legal entry as a family member
4. Institutional Barriers

- Social Security System
  - 25 years of membership required to receive benefits
    → Less incentives for settlement if migrants are not eligible or if they cannot commit themselves to stay for life.
  - Withdrawal → Lump sum Payment of $2,600 (National Pension Plan) or 2-month salaries (Employees Pension Insurance)

- Tax Agreements
  - Over 5 years of residency in Japan
    → Tax on the Overseas Assets

- Limited International Agreements on Social Security
# Social Security Agreements

<table>
<thead>
<tr>
<th>Country</th>
<th>The Number of SS Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>386</td>
</tr>
<tr>
<td>Germany</td>
<td>226</td>
</tr>
<tr>
<td>Canada</td>
<td>180</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>157</td>
</tr>
<tr>
<td>United States</td>
<td>97</td>
</tr>
<tr>
<td>Japan*</td>
<td>10</td>
</tr>
</tbody>
</table>

The Major Concerns for Policy Makers & Corporate Leaders

- Global Competition for Talent
- Population Aging
  - Labor Force decline by 45% in 2055
  - Dependency Ratio to reach 1.3 in 2055
- Highly-Skilled Migration Identified as a Growth Strategy
  - Knowledge Economy & Creative Economy
  - Innovation-driven growth
Policy Development 1

- Japan as an “Open Country” for Highly-Skilled Migration
  - Promoted since 1988
  - No Labor Market Test or Numerical Quota

  **2001: “E-Japan Strategies”**
  - “Accept 30,000 highly-skilled migrants (IT workers) by 2005” \( \rightarrow \) Not Achieved

  **2006: The Revision of the Immigration Control and Refugee Recognition Law**
  - Facilitating the Inflows of IT Workers from Overseas
Policy Development II

- **2008:** MEXT Plan for International Students
  - Increase the Number to 300,000 by 2020
- **2009:** MEXT “Global 30 Program”
  - Allocate Financial Resources for Universities Willing to Globalize
- **2010:** “The New Growth Strategy”
  - Double the number of Highly-Skilled Migrants
  - Increase International Studies
Policy Development III

- **2012: The Point System for the Highly-Skilled**
  - Additional Incentives for Highly-Skilled Migrants
  - **70 points** needed
    - The annual income of ¥10 million ($80,000) or more (40 points), Ph.D. (30 points), MA/MSc (20 points), 10+ years of work experience (20 points)
  - **Permanent Residency after 5 years** (now 10 years)
  - **Work Permit for a Spouse**
  - **Residential Permits for Parents and Domestic Workers**
    - Various Restrictions Applied (Annual income of 10 million for a parental permit and 15 million yen for a DW permit)
Future Challenges for S& E Migration:
1. The Impact of 3.11

- “Exodus” after the Greater East Japan Earthquake on March 11, 2011
  - 531,370 migrants (1/4 of all migrants) left Japan between 3/12-4/8, 2011

- Inflows Resumed in May/June 2011 but….?
  - Overall Decline of Migrant Engineers (▲8.5%) & International Students (▲6.4%)
  - Acceleration of Corporate Relocations to China, Hong Kong, Singapore (Structural Issues)
Future Challenges for S&E Migration

2. Long-term Sustainability

- China as a No.1 Supply Source of S&E Migrants
- China Emerging as a “Brain Magnet”
  - The World’s No 2 in the Publication of Scientific Articles
  - Higher Citation Ranking on Scientific Articles than Japan
  - No.1 Research Collaborator of American Scientists
- State Strategies for Global Talent Acquisition
  - Attracting 1,000 World’s Top Scientists with 1 million Yuan (US$160,000) -- PLUS Annual Income of $370,000-$500,000
Future Challenges for S&E Migration

2. Long-term Sustainability - continued

- **Dependency on China?**
  - Only “the Moderately Highly-Skilled” Available for Japan?
  - 1 Million “Excess College Graduates” in China
  - High Unemployment among College Graduates = 18% (30%?)
  - The “Only-Child” Generation has a Higher Inclination to Return Home

- **Dependency on Asia?**
  - Declining Birthrates and Working-Age Populations in Korea, Singapore, HK, Taiwan
  - Narrowing Economic Gap between Japan and other Asian Countries
Future Challenges for S& E Migration:  
4. Attracting International Students

- The Government’s Plan to Increase International Students to 300,000 by 2020 – challenging in post-3.11 Japan
- Globalization of Japanese Universities (“Global 30”)
  - More courses in English
  - Institutional Adjustment (e.g. Change in Academic Year)
- More Incentives for Science/Technology Majors
  - Only 17% are in Science & Technology
- Supporting International Students for Employment
  - 62% want to stay on for employment, but find it challenging to obtain the information on job hunting procedures
Future Challenges for S& E Migration: 5. Globalization of J Corporations

- More Extensive Recruitment Period for Newly Grads
- More Labor Market Flexibility
- Multilingual Work Environment
  - (e.g. Mitsubishi Corp – Chinese, Uniqlo & Rakuten – English)
- More Transparency in Performance Evaluations and Promotions
- Removing Institutional Barriers (SS, Tax, Education)
Future Challenges for S& E Migration:  
5. Policy Strategies  

4. Diversification of Highly-Skilled Migrants  
- Highly-Skilled Migrants: 75% from Asia  
- Students: 92% from Asia (China 59%, Korea 15%)  
- Too much dependency on Asia (esp. China) may not result in successful innovation based on diversity.  
  - Forthcoming Population Decline in Asia

5. Retention of Highly-Skilled Migrants  
- 47% of Foreign Students with Ph.D. Plan to Leave Japan  
- More Incentives & Multicultural Programs