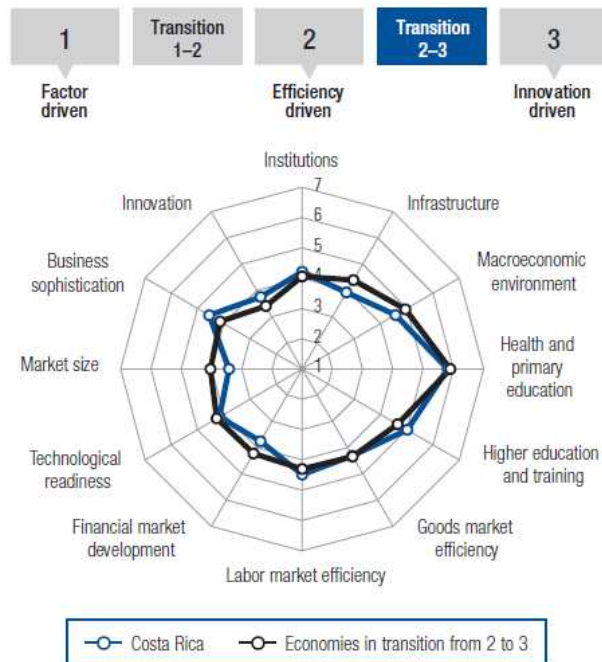


Intersectoral Collaboration Strategies toward the Development of Creative Sectors and Innovation Capability

Stage of development



Jaemin Park

Professor

Konkuk University, Seoul

May 22, 2014

Introduction



- **The rapid growth and recent stagnation are two key words describing the history of Costa Rican economy**
- **Many strategies and many different views on how to overcome**
- **Reflecting growth experience of Korea, KSP propositions will be developed**

The Purpose



- **Reflecting growth experience of Korea, propose some strategies and programs to bring up innovation and intersectoral collaboration among Costa Rican universities and industries**
- **In the course,**
 - **Survey relevant theories and Korean experiences**
 - **Assessed to reports and analysis on competency and collaboration**
 - **Targeted factors enhancing competency and interaction among university and industry**

What we have learned from



- **Extensive search found that the brightest minds in innovation studies point out three key factors in successful intersectoral collaboration**
 - **absorption capacity and innovation actors' own capabilities are important (Cohen, Levinthal, Kim)**
 - **the social factors and institutional arrangement and agreement (Freeman, Lundvall, Ezzkowitz)**
 - **the vibrant flow of information and knowledge (Kline, Rosenberg, Chesbrough)**

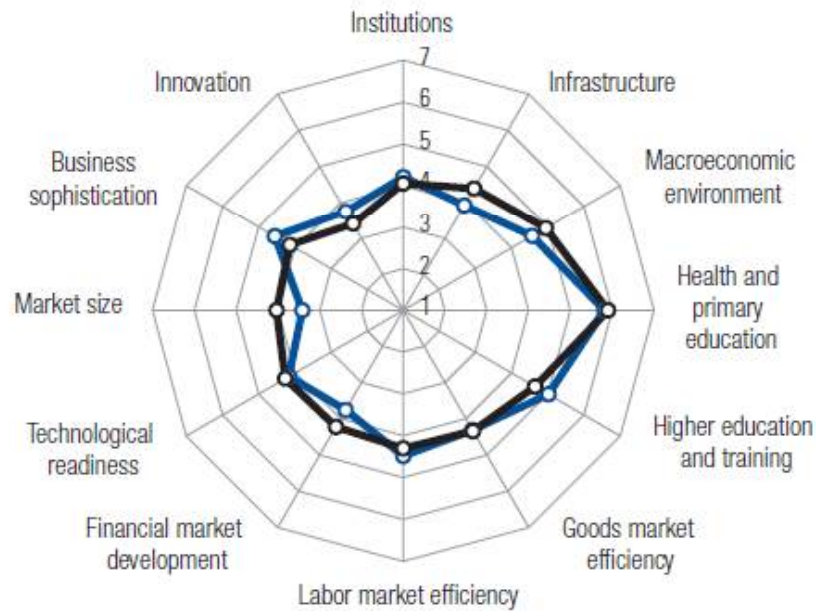
Current State of Innovation Capacity



- World data shows innovation capacity of Costa Rica is improving.
- Costa Rica has jumped from “efficiency-driven stage(level 3)” to “transition 2-3 stage(level 4)”
 - WEF reports shows while Costa Rica has high score on health and primary education; market size, innovation, financial market development, infrastructures are fairly low compare to the average “innovation-driven” economies
 - Improving overall infrastructure is exigent

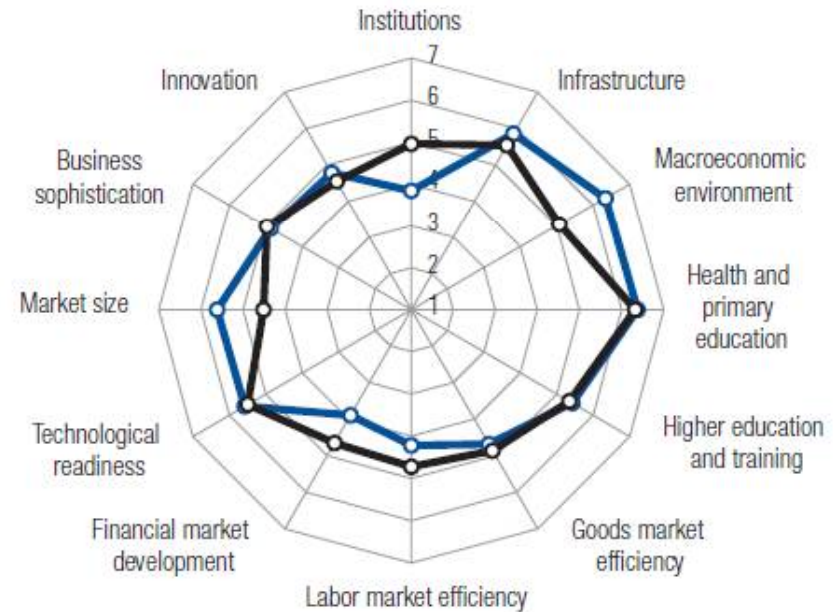
World Economic Forum says

Stage of development



—○— Costa Rica —○— Economies in transition from 2 to 3

Stage of development



—○— Korea, Rep. —○— Innovation-driven economies

Current State of Collaborative Activity



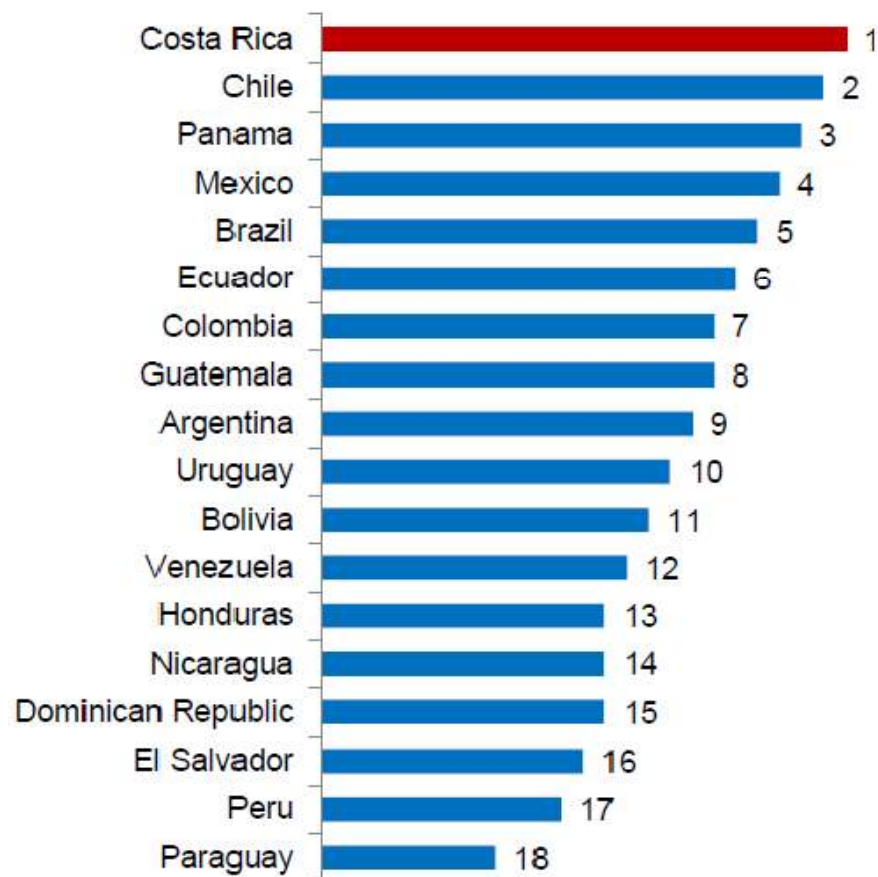
- **Also, Costa Rica ranks first in Latin America for University-Industry collaboration (34th in the world)**
 - **“Costa Rican government has huge efforts for achieving effective NIS through intersectoral collaborations (WEF, The Global Competitiveness Report)”**

World Economic Forum says



University-industry collaboration in R&D

Latin American Rank



Current State of Collaborative Activity



- In other words, data shows Costa Rica owns great potential
- However, some weaknesses and imbalances among sectors are also observed
 - Tertiary population is low
 - Only 13% of university students major in Science & Engineering (less than surrounding nations)
 - Most of R&D budget and academic-industrial cooperation is limited in PROPYME
 - Total Investment on R&D is only 0.4% of GDP
 - Competency gap between local firms and FDI firms are large

Diagnosis



- From these analysis, could conclude that biggest weakness in intersectoral collaboration lies in the imbalances in innovation capabilities between sectors
 - FDI-driven sectors vs. local sectors
 - Foreign MNCs vs. domestic SMEs

Diagnosis



- **Coordination and leadership efforts are less than enough**
- **Furthermore, lagging national R&D budget and low innovation in local firms hampers intersectoral collaboration**

6 Strategies to be considered



1. Create adequate incentive schemes to promote research and innovation in domestic companies
2. Explore universities as “innovation centers” and “technology warehouse” for industries
3. Implement public programs bringing universities and industries together constantly

6 Strategic Approaches



4. Find a way to raise national R&D investment and R&D funds for local SMEs
5. Government must solve coordination failure problem
6. Promote a cultural change in private sectors and universities.
 - University needs to recognize technology transfer is their role
 - Firms should share their problems with universities and research centers

Korean Cases(I)



- **Korea Small Business Innovation Research(KOSBIR) programs**
 - Was implemented to overcome lack of R&D funds for SMEs
 - It encourages ministries and public sectors to invest on SME's R&D project
 - It enforced 14 public sectors to invest a fixed portion of own R&D budget
 - ⇒ In consequence, government R&D support for SME's has been largely increased

Korean Cases(II)



•Engineering House Program

- Originally designed to give on-site R&D experience for undergraduate students
- Later, R&D projects from private sectors are attracted and it become a contract research scheme using university facilities
- By acting like a satellite research lab for firms
 - ⇒ It can compensate lack of research facility and physical accommodations of SMEs

Korean Cases(III)



•Sector Council - Systematization of the collaboration network

- Was originated from “Sector Skills Council (SSC) in the UK
 - The benefit of sector council is it bands firms altogether and operates sector-specific collaboration with universities
 - The organization of Sector Council makes the formation of intersectoral collaboration much easier
- ⇒ Allows stable linkages with universities

Korean Cases(IV)



- **The best collaborative learning practice – Co-op scheme**
 - **Bill Gates highly praised that “it is the world BEST curriculum”**
 - **The scheme incorporate 6 months internship program into regular curriculum**
 - **So students have to take in-class lectures and field internship back and forth**

Korean Cases(IV)



- ⇒ **University of Waterloo program allows around 16,000 students per a year global access to the companies like MS, Google, Apple, etc**
- ⇒ **It becomes a leading incubator in North American region**

Korean Cases(V)



- **Securing high quality technicians and engineers – National Qualification System (NQS)**
 - Korean government operate a National Qualification System(NQS) last 30 years
 - Among them, 512 is technology qualifications including Professional Engineer(PE)
 - Also, it comes with National Competency Standards(NCS) which was developed in cooperation with industries

Korean Cases(V)



- **It is tri-lateral collaboration effort designed to deliver high quality technician and engineers**
 - **Industry sector provides competency information required for certain occupation**
 - **University designs educational training programs according to standards**
 - **Government designs NCS and NQF and supports them financially**
- ⇒ **So it allows efficient quality control for technicians and engineers from the outset**

Recommendations



1. Initiate Costa Rica's own SBIR program

- Under this scheme, participating institutes have to secure fixed rate of (R&D) budget
- So it can create a funds for domestic SMEs
- Modify original KOSBIR scheme allowing universities and research labs to be part of joint projects

Recommendations(II)



2. Support formation of Sector Councils

- **To do this universities, local companies, FDI enterprises in a leading sector(*e.g., biohealth, pharmaceuticals*) should be attracted as a member**
- **Initially sector councils support education and training**
- **Expand its activities to improve industry's competitiveness and collaborative activities**

Recommendations(III)



3. Support installation of co-op programs

- Government have to support the adoption of co-op program
- It should support establishing a co-op center in major universities
- Also, government needs to participate searching processes for global cooperators

Recommendations(IV)



4. Support company-affiliated university research lab

- Enhancing R&D activities of domestic companies is urgent
- SMEs are still incompetent to operate their own R&D labs.
- Government must supply the necessary incentives when SMEs designate university labs as “Cite Labs”
- This scheme can compensate the lack of absorption capacity in domestic companies

Recommendations(V)



5. Design Costa Rica's own National Qualification System

- Adopting National Qualification Systems(NQS) in technology field will help securing high quality engineers
- In addition, developing National Competency Standards(NCS) allows the needs of industry can be applied immediately to the curriculum
- Therefore, government can effectively control the quality of engineers and technicians
- Also the qualification system can be linked with Academic Accreditation system

Final Comments



- **Costa Rica is a country with a great potential.**
- **The main reason of lagging sectoral collaboration is competency gaps and lack of experience**
- **However, by supporting interactions and implementing collaborative scheme, the problem can be resolve.**
- **Also, motivating private sectors and mobilizing more resources for innovation will raise competency level of domestic companies**

Final Comments



- **However, changing university from “ivory tower” to “entrepreneurial one” may be a huge task**
- **Conflicts between ministries and agencies will be deepened during the reformulation.**
- **By overcoming these obstacles, Costa Rica will be “the 1st innovation-driven” country in the Central America.**



MUCHAS GRACIAS

