Demand-side innovation policy for technology development: The case of Korea

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Overview of the Korean economic growth

- GDP has grown rapidly

(Source: World Bank database)
Overview of the Korean economic growth

- But, growth rate has decreased consistently
Overview of the Korean economic growth

- labor productivity growth has been stagnating
Innovation policy to promote technological Development

- Technological development as a key sources of productivity
- Importance of innovation policy to promote technological development
Taxonomy of innovation policy instruments

- Two sources of technological change: Technology push vs. demand pull
Taxonomy of innovation policy instruments

- Supply side innovation policies vs. demand side innovation policies
Innovation policy instruments

- Supply side policies
  - R&D subsidies to firm innovation (including tax credit)
  - Support for university education and research
  - Support for public research institutes
  - Policies for training and skills
  - Policies to support collaboration and networking
  - Investment for research infrastructure

- Demand side policies
  - Subsidies for customers
  - Market regulation
  - Standards
  - Pre-commercial procurement
  - Public procurement for innovation
Demand side innovation policy

● Objective
  ○ to increase demand for innovation so as to create bigger incentives for innovation, to improve conditions for the uptake of innovations, and to speed up the diffusion of new technologies (OECD, 2017)

● Tools
  ○ Public procurement can stimulate innovation in private firms, when the government acts as a lead user of new technologies.
  ○ Governments can stimulate private demand by offering subsidies and tax incentives to consumers that purchase new products resulting from innovation.
  ○ Governments set up the regulations for markets and industries, and these regulations influence the articulation of demand for innovation
Public procurement for innovation (PPI)

- **Definition**
  - Any kind of public procurement practice (pre-commercial or commercial) that is intended to stimulate innovation through research and development and the market uptake of innovative products and services. (European Council, 2015).

- **Potential**
  - Public procurement represents 12% of gross domestic product (GDP) and 29% of total government expenditures on average across OECD countries, a clear sign of its potential to support broader policy objectives, including the fostering of innovation. (OECD, 2017)
Public procurement for innovation (PPI)

- Entrepreneurial State by M. Mazzucato
Public procurement for innovation (PPI)

- A representative policy tool for demand-side innovation policy

**Government**
(with public mission and budget)

**Private company**
(with solution collaborated by universities and research institutes)

Call for Solution
Innovative Tech/Product
Money for the Solution
Public procurement for innovation (PPI)

- Policy recommendations by OECD for successful PPI
  - Set up a legal framework, including understandable definitions, guidelines and templates to facilitate its implementation.
  - Designate “transformational” leaders with specialised knowledge to create skilled multidisciplinary teams, so as to encourage sound management. In addition, “intermediaries“, e.g. an innovation agency, could help to bring together buyers and suppliers.
  - Dedicate sufficient budgets, funds and other financial incentives, as lack of financial support is one of the main challenges in procurement for innovation.
Public procurement for innovation (PPI)

- Conditions for successful PPI (Policy recommendation by OECD)
  - Promote professionalisation by providing specific training to build staff capabilities and skills, setting up multidisciplinary teams and competence centres focused on public procurement for innovation.
  - Raise awareness by publishing good practice cases, creating a dedicated knowledge-sharing platform and/or hosting workshops and seminars to share and build success. Early stakeholder engagement should also not be underestimated.
  - Undertake risk management and measure impact to reduce possible loss and damage, and increase trust.
  - Define test standards, methods and quality certificates, using standardisation as a catalyst for innovation.
The case of Korea for PPI from 2019

- Size of Public Procurement in Korea
  - Annual GDP: about 1,700 billion USD
  - Annual government budget: 550 billion USD (except for the budget by public enterprises)
  - Annual public procurement: more than 120 billion USD

- Set up PPI as one of the six top priority policies for the government innovation (2019.2.26)
  - Innovation-led growth based on PPI
  - Agreed by the State Council presided by the President
Formulation of PPI

- Announcement of PPI policy by the State Council (2019.7.2) presided by the President
  - “Government invests to the innovation made by the innovative firms to upgrade public service”
  - Policy will be led by the Ministry of Planning and Finance
  - Key agendas
    - Promotion of PPI by the Central Procurement Agency
    - Active exploration of innovative solution and problem
    - Institutional support focusing on indemnification and a negotiated contract
Formulation of PPI

- Amendment of Procurement Law (2020. 3. 10)
  - Introducing the concept of PPI in the law
  - reflecting clauses for indemnification and a negotiated contract

- Support from the lawmakers (2020.7.23)
  - Inquiry by the lawmakers to the Prime Minister to push the PPI and link it with other national policies, such as Korean New Deal initiative
Formulation of PPI

- **Inter-ministry Task Force for PPI**
  - Led by Vice Minister of Ministry of Planning and Finance

- **Actions by Provincial governments**
  - A province, Kyungsang-namdo, start to support the local SMEs to be engaged with the central government PPI initiative (2020.6)

- **Actions by government gencies**
  - MOU between the Central Procurement Agency (CPA) and The Korean Intellectual Property Office (KIPO)
Policy Structure

- **Fast Track I**
  - Outcome of government R&D by SMEs within 5 years without market sales

- **Fast Track II**
  - Call for innovative solution by the public agencies
  - Call for public demand by the SMEs
  - Financial support for pilot test by the Central Procurement Agency

- **Fast Track III**
  - Other PPI related activities by public agencies
Policy Structure

- **Target for PPI**
  - Every public agency should spend at least 1% of procurement as for PPI
  - About USD 500 million by the end of 2021
  - Monitored by the Ministry of Planning and Finance

- **Evaluation**
  - Every public agency should report about the PPI activity for their annual performance evaluation
  - 4 categories: Central ministries, Public enterprises and agencies under central government, Local governments, Public agencies under local governments
  - Annual monetary incentive will be based on the evaluation results

- **Award**
  - National competition and award every year
Policy Structure

- Linkage with R&D policy (Pre-commercial PPI)
  - managed by Ministry of Science and Technology, Ministry of Industry, and Ministry of SMEs from 2021
  - 3-5 years program
  - Based on the public demand
  - Under budget review process
  - In total about 100 million USD
Policy Implementation

- The Committee for Public Procurement Policy was established on Oct 29, 2020.
  - The Committee was established based on the revision of the Procurement Law on March 10, 2020.
  - The members of the committee consist of the Minister of Finance (Deputy Prime Minister), 7 Vice Ministers from Ministries of Science and Technology, Internal Affairs, Industry, SMEs, Environment, Land, and Ocean and Fisheries.
  - Also 6 representatives from private sectors including venture company association, innovation policy expert, etc.
  - The committee will give a final endorsement for the selected products as targets for PPI. The first meeting on Oct 29 officially confirmed 345 products for PPI. These products can enjoy legal benefits and protection by the revised procurement law.
Policy Implementation

- On Oct. 29, 2021, a forum was held in the National Assembly regarding PPI.
  - The forum was organized by National Assembly Member Gwangjae Lee who is leading the national investment plan “The Korean New Deal”.
  - The Korean New Deal is a revitalizing plan having USD 160 billion as a total amount of investment for the next 5 years. In 2021, the government will spend more than 20 billion as a budget. The plan will focus on digital and green transformation and is expected mostly to be linked with public procurement.
  - Thus the National Assembly, specifically the ruling party, is very much interested in having PPI as one of the important policy tool.
Consensus Making
Consensus Making

- Competition among public officers for PPI demand (Nov. 23, 2021)
  - The Prime minister joined
  - Competition among cases and selected ones awarded
Internet portal for PPI
Cases
Impact of PPI for firm productivity
Impact of PPI for firm productivity

- Methodology
  - Propensity Score Matching between firms with PPI and firms without PPI

- Results
  - Firms with PPI show a higher growth rate of value-added by approximately 7.6% compared to the general procurement firms after 1 year of procurement contract. When dividing this into TFP, labour input, and capital input, PPI does not lead to significant changes in labour and capital input; however, a significant positive relationship was found between PPI and TFP. Specifically, the firms with PPI experiences approximately 4.5% higher TFP change rate than those with general procurement after 2 years of the contract.
Technology Sovereignty and PPI

- Strategy for technology sovereignty
  - Clear vision on the strategic technology
  - Strong basic research to nurture the seed of the strategic technology
  - Strong international collaboration

- The role of PPI for technology sovereignty
  - Test market for the strategic technology
  - PPI based R&D support for the strategic technology

- Implication for developing countries
  - Need for strong integration with global value chain to be part of PPI in advanced countries
Thank you!