

WB Webinar

Innovation Policy in the Post-Covid World #4, Technology Sovereignty

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

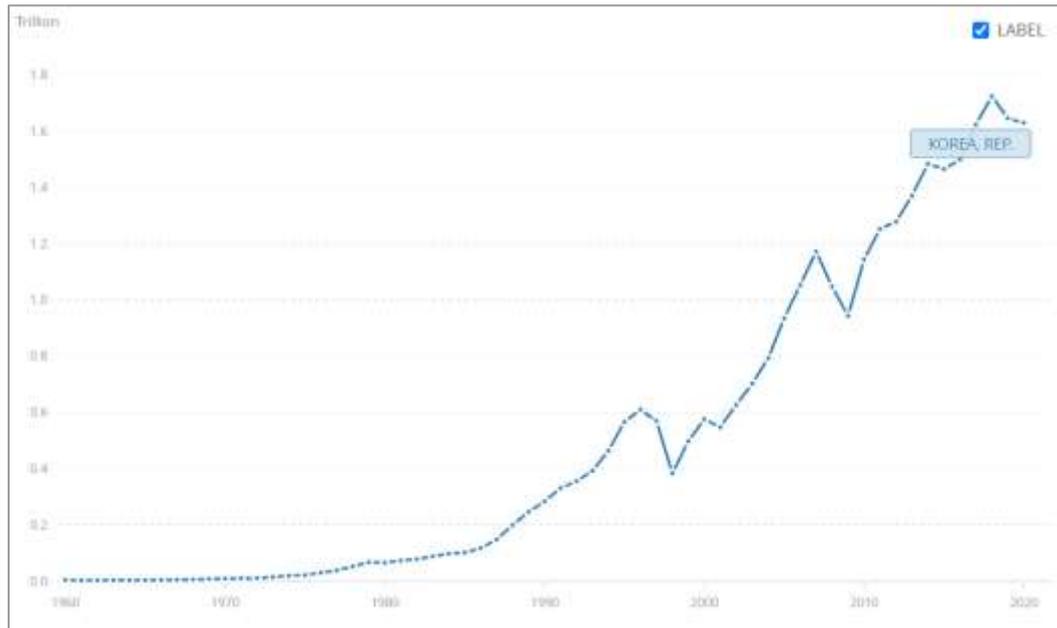
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Presidential Office, Republic of Korea

# □ Overview of the Korean economic growth

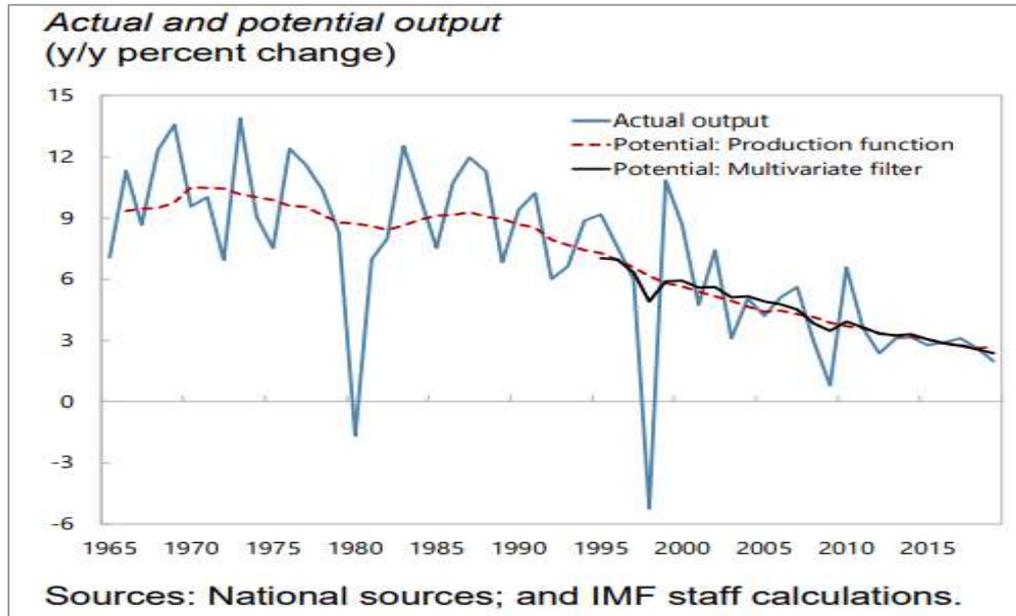
- GDP has grown rapidly



(Source: World Bank database)

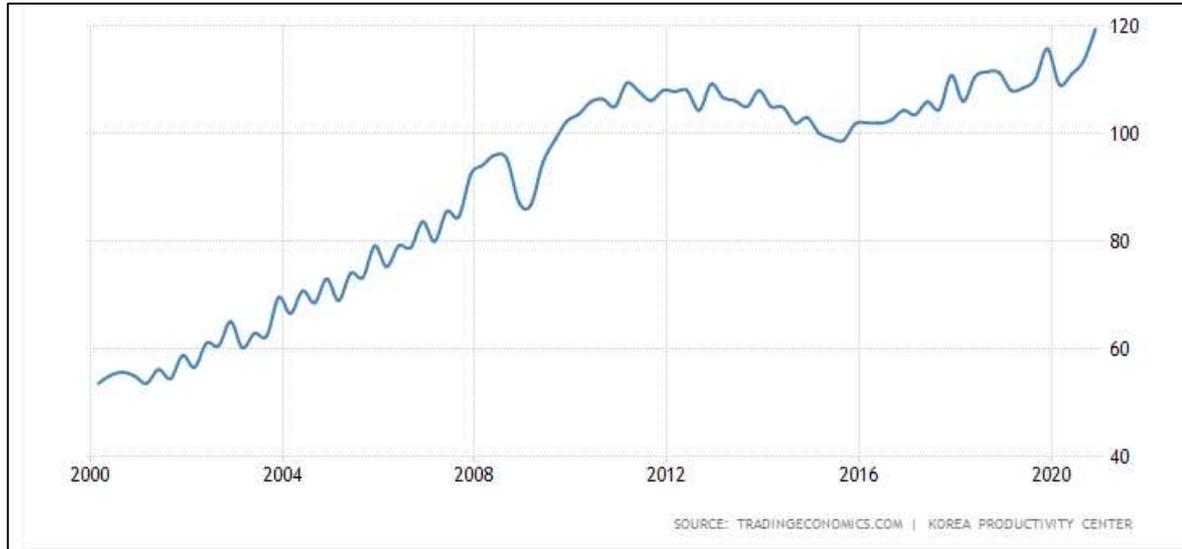
# □ Overview of the Korean economic growth

- But, growth rate has decreased consistently



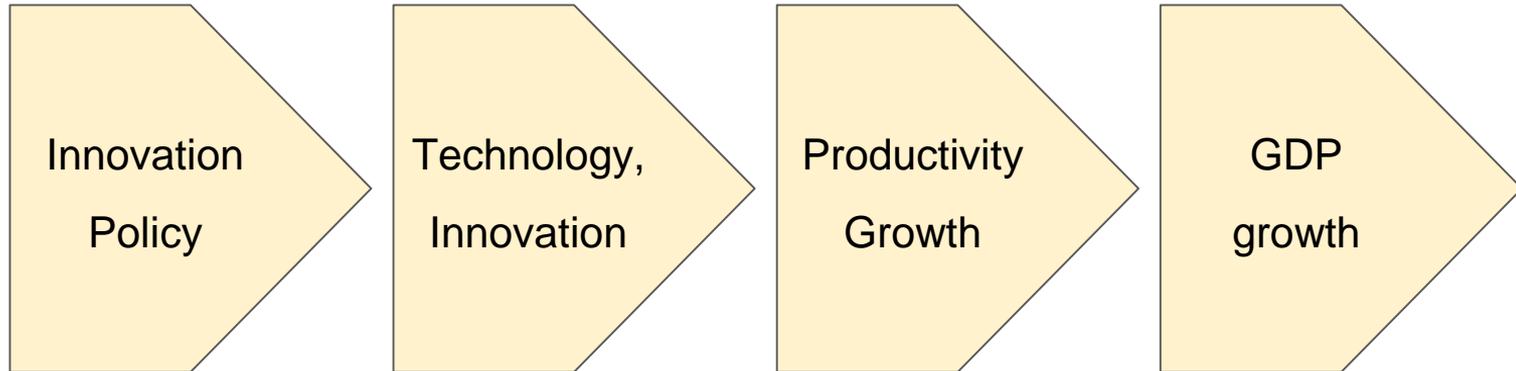
## □ Overview of the Korean economic growth

- labor productivity growth has been stagnating



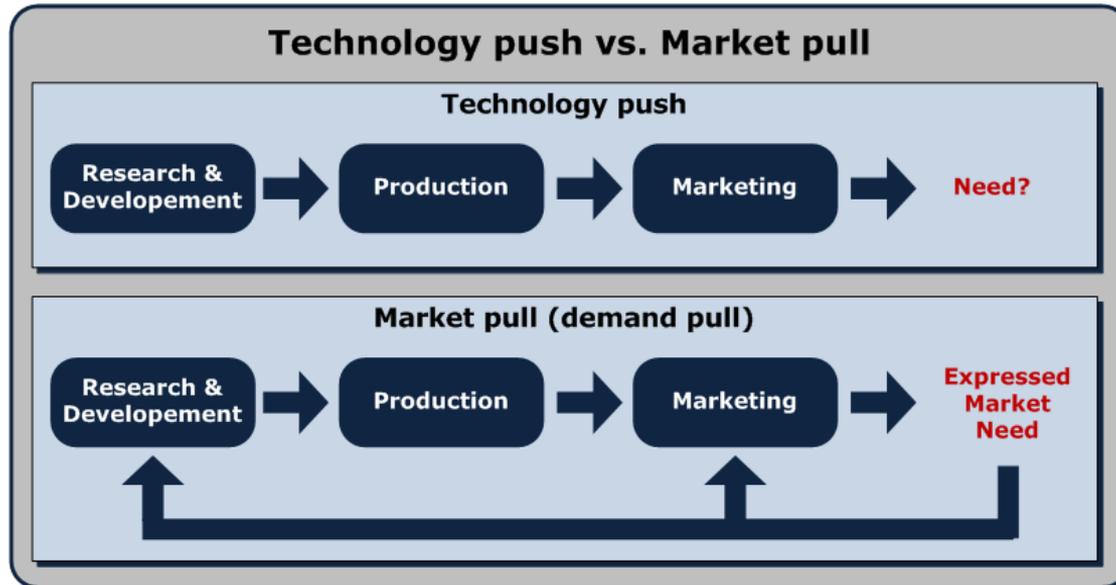
# □ Innovation policy to promote technological Development

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



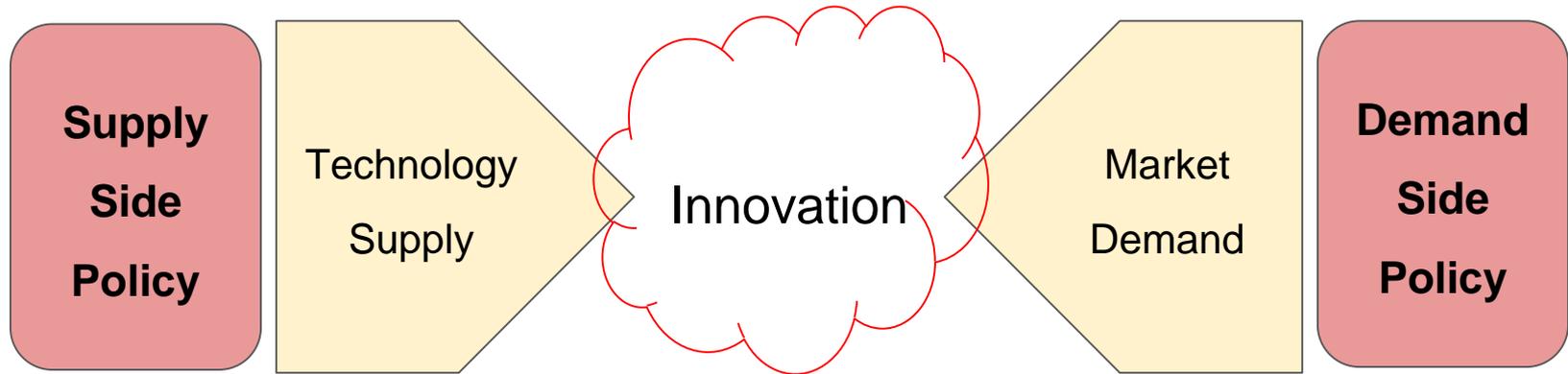
# □ Taxonomy of innovation policy instruments

- 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

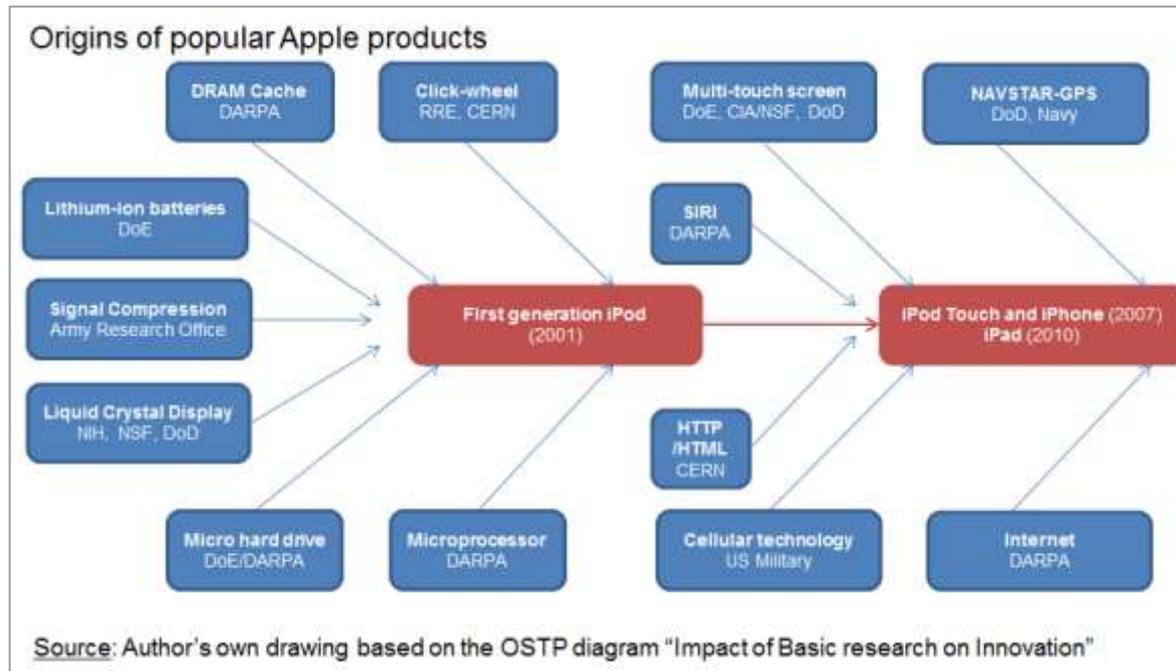
- Any kind of public procurement practice (pre-commercial or commercial) that is intended to stimulate innovation through research and development and the market uptake of innovative products and services. (European Council, 2015).

- 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)

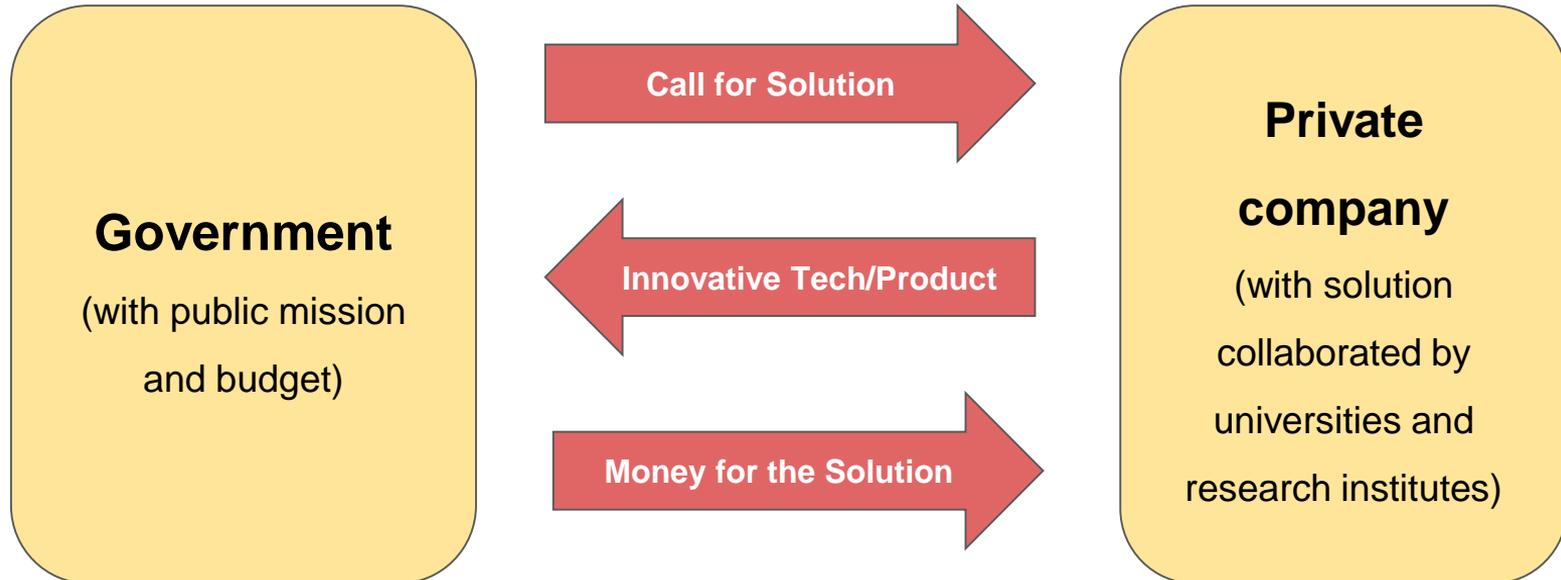
# □ Public procurement for innovation (PPI)

- Entrepreneurial State by M. Mazzucato



## □ Public procurement for innovation (PPI)

- A representative policy tool for demand-side innovation policy



# □ 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 to 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 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



◆ 퍼블릭 코리아 송 ◆



송기문을 비롯한 정치권인사들이 서울 서울 강남구 사당로 101번길 101호 10층 1010호에서 열린 2024년 1차 공약조달 회의에 참석하고 있다. (Yonhap)

기타 문체부를 본 한국 조세는 퍼블릭(반등)한다. 이 과정에서 정부 조달시스템의 역할이 중요하다



## □ 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

The screenshot displays the homepage of the Korean Innovation Center (혁신장터). At the top, there is a navigation menu with categories like '혁신장터', '주요기능', '회원가입', '마이페이지', and '상호정보시스템'. A search bar is prominently featured with a dropdown menu set to '전체' and a search icon. Below the search bar, a horizontal menu lists various services: '혁신제품 전용물', '혁신시제품 지정', '혁신제품 시범구매', 'R&D 수요조사', '혁신수요 발굴', '경쟁력 대외계약', and '참여기관 업무'.

The main content area is dominated by a large yellow banner for the '2022년 제 1차 혁신시제품 지정 공급자 제안형(혁신기업) 1차 혁신시제품 지정신청 접수 안내' (2022 1st Innovation Product Competition Designated Supplier Proposal-type (Innovation Enterprise) 1st Innovation Product Designated Application Submission Notice). The banner includes a woman holding a product and a deadline of '2022. 2. 4. ~ 3. 3. 까지'.

To the right of the banner is a '공지사항' (Notice) section with a date of '2022.02.17'. The notice text reads: '수요 기획 개발형 인큐베이터당 정량기관 모... 포함하여서는 공급기관을 중심으로 공급물체를 발굴 및 관료로 구매하고 불경쟁(solution) 항목을 지...'. Below the notice is a table of dates and events:

'혁신장터 2주년 기념 법인기부전, 참여기업 모집 ...	2022-02-07
2022년 혁신시제품 지정 계획 공고	2021-12-30
2022년도 혁신제품 시범구매사업 추진일정 안내	2021-12-24
혁신제품 시범사용 기본계획과 심사 접수 안내(2...)	2021-11-30

Below the banner and notice are several categorized sections: '국민(공통)' with icons for '혁신수요 관리대안공모', '혁신제품 지원현황', and '혁신제품 인증사업금'; '업체' with icons for '혁신시제품 지정신청', '기업/제품지정심사접수', and '혁신제품 시범사용신청'; and '수요기관' with icons for '혁신수요 발굴', '혁신제품 신청', and '혁신제품 지원공고'. To the right of these is a '혁신조달' (Innovation Procurement) section with the text '인증마크 디자인 가이드북 및 관련 파일 게시 안내'.

At the bottom, there is a '혁신을 창근동혁신품' (Innovation is the Foundation of Innovation Products) section featuring a grid of product cards. Each card shows a product image, a title, and a price:

- 최 곁형 방치용 욕조... 380,000원
- Leopard 스마트 물탱크... 18,800,000원
- 꽃으로 모뎀형 LED등... 195,000원
- 컴퓨터서버 KR580S3... 15,972,000원
- (키카오 / 커넥트북) 공... 449,900,000원
- 패널D 보호복 (Guard)... 11,000원

# □ Cases

**조달청 혁신시제품**

**추출 친환경 제설제**

The advertisement features a central image of a white snowplow clearing a snowy road. In the foreground, there are large, stylized images of a red starfish and a red, porous, spherical object. The text '조달청 혁신시제품' is in a blue and yellow circular logo at the top left. At the bottom, the text '추출 친환경 제설제' is written in large, bold, white Korean characters with a black outline. A small inset photo shows a man holding a white bag labeled 'ECO-STI'.

**KINOSUI 구성**

- ECO-Lite Form 10000**
  - 1.5톤 중형형 제설기
  - 3000리터 저장용량
  - 1000리터 1000리터 용량
- 2000 (19-16A)**
  - 2000리터 용량
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# □ Impact of PPI for firm productivity



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ECONOMICS  
LETTERS

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rael20>

**Applied Economics Letters**



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**Impact of public procurement for innovation on firm productivity**

**Kiyoon Shin & Jeong-Dong Lee**

To cite this article: Kiyoon Shin & Jeong-Dong Lee (2021): Impact of public procurement for innovation on firm productivity, Applied Economics Letters, DOI: [10.1080/13504851.2021.1904106](https://doi.org/10.1080/13504851.2021.1904106)

To link to this article: <https://doi.org/10.1080/13504851.2021.1904106>

# □ 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!