

**ENTREPRENEURSHIP AND ECONOMIC EFFECTS OF
INNOVATION POLICY OF THE EUROPEAN UNION:
INTERNATIONAL TRADE AND ECONOMIC GROWTH**

**CAMBRIDGE JOURNAL OF REGIONS, ECONOMY, AND
SOCIETY ANNUAL CONFERENCE, 11-12 JULY 2024,
ST. CATHARINE'S COLLEGE, UNIVERSITY OF CAMBRIDGE**

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OVERVIEW

- **(1) RELATIONS BETWEEN TECHNOLOGIES AND INTERNATIONAL TRADE.**
- **(2) CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY.**
- **(3) EU INNOVATION POLICY TOOLS.**
- **(4) TRADE FLOWS-EMPIRICAL ANALYSIS**
- **(5) CONCLUSIONS.**

RELATIONS BETWEEN TECHNOLOGIES AND INTERNATIONAL TRADE

- **In the global economy, there is a strong interdependence between the use of technology and the volume of international trade.**
- **Technologies contribute to the creation of product diversity on a global scale.**
- **The use of technology in the economy leads to an increase in the competitiveness of companies in international trade.**

INTERNATIONAL TRADE AND THE DEVELOPMENT OF ADVANCED TECHNOLOGIES

- **The intensification of trade increases the process of creating innovations and advanced technologies. There is a flow of technology from developed countries to developing countries.**
- **As a result of the learning effect, there is an increase in the demand for highly qualified workforce. There will be wage inequalities between the skilled and less-skilled workforce, there will be a decline in the share of labor in GDP.**
- **The development of innovation leads to the concentration of companies in many industries. (Author, Dorn, Katz, Patterson, Reenenm 2017).**

INTERNATIONAL TRADE AND THE DEVELOPMENT OF ADVANCED TECHNOLOGIES

- **There are close correlations between innovation and economic growth. Innovations are endogenous to future profits (Melitz, Redding 2022).**
- **New technologies replaced by the latest technologies create the benefits of trade. According to Schumpeter's theory, larger companies have a greater capacity for innovation processes (Schumpeter 1942).**

INTERNATIONAL TRADE AND THE DEVELOPMENT OF ADVANCED TECHNOLOGIES

- **The increase in the size of the international market as a result of the liberalization of international trade leads to the development of innovations (Burstein, Melitz 2011).**
- **Liberalization of international trade increases competition in domestic markets, stimulating innovation (Akcigit, Kerr 2018).**
- **Subsequent scientific studies have confirmed the enormous importance of foreign competition on the development of innovations and increasing the number of patents (Coelli et al. 2022; Aghion et al. 2005).**

INTERNATIONAL TRADE AND THE DEVELOPMENT OF ADVANCED TECHNOLOGIES

- **The number of inventions depends on the size of the market (Coelli et al. 2022).**
- **Opening international markets and greater access to markets will increase the effects of innovation processes.**

INTERNATIONAL TRADE AND THE DEVELOPMENT OF ADVANCED TECHNOLOGIES

- **The importance of exports for introducing innovations is enormous, because innovations increase the productivity of companies producing for export. Companies remaining on the domestic market achieve lower results in the form of productivity (Bernard and Jensen 1999).**
- **There is a relationship between the development of innovation and the growth of companies' exports. The liberalization of international trade increases the productivity of the entire industry as a result of the self-selection effect resulting from increased export opportunities of companies (Melitz 2003).**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **The following motives and challenges for the implementation of the European Union's innovation policy can be mentioned:**
 - **Increasing the competitiveness of the European Union economy. Geo-economics – as a motivation for introducing the European Union's industrial policy and innovation policy.**
 - **The European Union's transition to a knowledge-based economy.**
 - **Increased subsidization of companies' economic initiatives by entities in the global economy.**
 - **Expenditures on subsidies of countries require reforms in the regulation of the use of subsidies in the World Trade Organization.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **Increasing the competitiveness of the European Union economy. Geo-economics – as a motivation for introducing the European Union's industrial policy and innovation policy.**
 - **There is an urgent need to implement the EU's innovation policy and increase the role of regulation and economic interventionism.**
 - **In the New European Agenda, the European Commission called for greater coherence and synergy between EU policies and innovation support mechanisms.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **Geo-economics – as a motivation for introducing the European Union's industrial policy and innovation policy.**
 - **Industrialization in the European Union weakened in the post-war period with the introduction of the Lisbon Strategy, aimed at developing the service sector and creating a knowledge-based society.**
 - **The continuation of the implementation of the assumptions of the Lisbon Strategy within the Europe 2020 Strategy concerns the EU's application of the social market economy, and the need for structural transformations in the economy and strengthening the EU's competitive position in the face of geo-economic challenges.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **Luttwak (1990, p. 17) introduced the term "geo-economics", arguing that the subject of state competition should be economic issues, achieving competitiveness and comparative advantages of states based on capital resources, the use of civilian innovations instead of the use of military force and technical progress.**
- **The United States also made a shift towards industrial policy.**
- **Despite the significant openness of the economy, the situation related to geo-economics and the trade war with China led to the adoption by the administration of President Biden of an industrial policy referring to support in the form of subsidies for domestic technologically advanced industries.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **President Biden presented a package of trade policy principles in 2023 called the "New Washington Consensus", with key points about the need for the United States to implement strategic trade and industrial policy, even in conflict with World Trade Organization rules.**
- **The "New Washington Consensus" clearly differs from previous documents: the Washington Consensus and the Post-Washington Consensus, based on liberal solutions.**
- **President Biden considered the development of the industrial sector in accordance with the principle of "Manufacturing America Great Again" to be a priority issue for the economy. Re-industrialization results from the growing dissatisfaction of industrial sectors with the liberalization of trade and the weak effects of increasing the level of customs protection during Donald Trump's presidency.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

IN THE LAST DECADE, THE EUROPEAN UNION HAS RECORDED A MAJOR ECONOMIC SLOWDOWN.

REAL GDP GROWTH IN %

	2018	2019	2020	2021	2022	2023
EU	2,1	1,8	-5,6	6,0	3,4	0,5
USA	3	2,5	-2,2	5,8	1,9	2,5
China	6,7	6	2,2	8,4	3	5,2

Source: OECD

THE EUROPEAN UNION'S TRANSITION TO A KNOWLEDGE-BASED ECONOMY

- **In the New Innovation Agenda document, the European Union pointed out the great importance of "deep tech" that is created in the group of start-up enterprises.**
- **The network of European Digital Innovation Hubs will support digital innovation in small and medium-sized enterprises in the European Single Market.**

THE EUROPEAN UNION'S TRANSITION TO A KNOWLEDGE-BASED ECONOMY

- **China has a competitive advantage in low-tech industries. China ranks second in the world in terms of research and development spending.**
- **Unfortunately, the European Union does not lead the world in patent applications.**
- **China shows an increasing trend, while the United States, Japan and the EU have reduced the number of patent applications. In 2019, patent offices from China, the USA, Japan, South Korea, and the EU collected the largest number of patents in the world, 84.7% worldwide.**

THE EUROPEAN UNION'S TRANSITION TO A KNOWLEDGE-BASED ECONOMY

- **China ranked first in the world in 2022 in terms of patent applications (46.8%), followed by the United States in second place (17.2%), and Japan in third place (8.4%).**
- **South Korea took fourth place in terms of patent applications. (6.9%), in fifth place the European Union (5.6%).**

INCREASED SUBSIDIZATION OF COMPANIES' ECONOMIC INITIATIVES BY ENTITIES IN THE GLOBAL ECONOMY

- **Another challenge for the European Union is the increase in subsidizing the economic initiatives of companies by entities in the global economy.**
- **These challenges result from China's growing role and attempts to gain technological advantage and the United States' implementation of large-scale industrial policy.**



INNOVATION POLICY IN CHINA

- **Effects of China's WTO membership:**
- **China has increased its economy's innovativeness as a result of its participation in global supply chains.**
- **China's innovation policy and the inflow of foreign direct investment.**

- **Plan „Made in China 2025” - China has changed its innovation policy and introduced an innovation policy of independence from foreign direct investment.**

CHALLENGES FOR THE EUROPEAN UNION'S INNOVATION POLICY

- **China's use of subsidies in the economy causes external effects for other countries in the global economy.**
- **Research and development spending and other subsidies used by China pose a competitive threat to European companies.**

EXPENDITURES ON SUBSIDIES OF COUNTRIES REQUIRE REFORMS IN THE REGULATION OF THE USE OF SUBSIDIES IN THE WORLD TRADE ORGANIZATION

- **The use of subsidies by states in order to improve the competitiveness of the economy, companies operating in the economy is regulated in the WTO regulations, in the Agreement on Subsidies and Countervailing Measures.**
- **The WTO rules on subsidies have been covered by the single undertaking principle.**

WTO RULES - THE AGREEMENT ON SUBSIDIES AND COUNTERVAILING MEASURES

- **The single undertaking principle:**
- **The single undertaking means that the ASCM rules apply to all WTO member states.**
- **The contemporary problem of the use of industrial subsidies results from the model of China's non-market economy and the financing of state-owned enterprises.**



Photo Source: www.wto.org
(access July 12, 2024)

THE CONCEPT OF A SUBSIDY IN THE WTO

- **In the Agreement on Subsidies and Countervailing Measures is defined in Article I the term subsidy. The term of subsidy is defined as a government financial contribution or any public body.**
- **The ASCM includes the following forms of subsidies:**
 - **A direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfer or liabilities (e.g. loan guarantees),**
 - **Government revenue (e.g. fiscal incentives, tax credits)**
 - **Purchase of goods; provisions of goods and services other than general infrastructure.**

WTO RULES ON SUBSIDIES

- **Two categories of subsidies in the international trade regulations of the WTO:**
 - **Prohibited Subsidies (included in ASCM Article 3.1 as the red light category), such as Export Subsidies. For a detailed list of prohibited export subsidies, in Annex I to the ASCM.**
 - **Contingent subsidies.**
- **Subsidies applied by WTO member states are actionable (Part III: Actionable Subsidies of the ASCM agreement). Member State subsidies can:**
 - **first be challenged in the WTO dispute settlement system;**
 - **second, it may be subject to countervailing measures.**
- **Subsidies are actionable where (Article 5 of ASCM): there is injury to a domestic industry; nullification or impairment the benefits of GATT 1994; serious prejudice to the interests of another Members.**

WTO RULES ON SUBSIDIES

According to the WTO regulations, serious prejudice as a result of the use of subsidies occurs when one of the following conditions is met:

- a) The effect of the subsidy is to displace or impede the import of a like product of one of the WTO Member States into the market of the subsidizing country,
- b) The effect of the subsidy is to displace or impede the export of a like product of one WTO Member State from the market of a third country,
- (c) the effect of the subsidy is to significantly the price undercutting of the subsidized product compared to the price of the like product in the market of another WTO Member State in the same market, or to significantly reduce prices; price depression or lost of sales in the same market;
- (d) The subsidy will lead to an increase in the subsidizing country's share of the world market for the subsidized products compared to its average share over the previous three years.

THE CONFLICT OVER THE INTERPRETATION OF THE DEFINITION OF SUBSIDIES

- **The USA objected to the WTO's interpretation of the ASCM definition of a subsidy.**
- **The WTO Dispute Settlement Appellate Body considered that the public body granting the subsidies should perform governmental functions.**
- **The Appellate Body's interpretation in favor of China has allowed on a larger scale use of production subsidies by SOEs in China.**

THE TRADE CONFLICT USA-CHINA

- **The conflict over the interpretation of the definition of subsidies led the United States to block the activities of the Appellate Body in 2019.**
- **The trade conflict between the USA and China over subsidies is undermining the WTO's activities.**
- **Long-term attempts to initiate the Doha Round in 2001, which was to deal with further liberalization of international trade, sparked the WTO crisis.**

SUBSIDIES IN THE DOHA ROUND

- **Sessions of Ministerial Conferences during the Doha Round failed, because of different interests of member countries of the WTO.**
 - **Seattle (1999),**
 - **Cancun (2003),**
 - **Hong Kong (2005),**
 - **Davos (2006),**
 - **Potsdam (2007),**
 - **Geneva (2008),**
 - **Nairobi (2015),**
 - **Buenos Aires (2017),**
 - **Geneva (2022),**
 - **Abu Dhabi (2024).**
- **The WTO member countries did not reform the Agreement on Subsidies and Countervailing Measures.**

THE TRADE CONFLICT BETWEEN THE UNITED STATES AND CHINA

- **The trade conflict between the United States and China is mainly related to maintaining a competitive position in the global economy.**
- **The use of subsidies by China as part of its industrial policy and the development of new technologies raise concerns among other countries in the world economy about the possibility of increasing exports in the future.**
- **The problem of the use of subsidies is very important today due to the functioning of non-market economy principles in China.**

REFORM OF THE WTO RULES ON SUBSIDIES

- **Consensus of developed countries on reforms of the World Trade Organization's subsidy regulations.**
- **The United States, Japan and the European Union presented in 2020 a common position on strengthening WTO regulations on the use of industrial subsidies. The USA, Japan and the European Union have proposed to extend the list of prohibited subsidies to the following categories:**
 - **Unlimited guarantees;**
 - **Subsidies to an insolvent or ailing enterprise in the absence of a credible restructuring plan,**
 - **Subsidies to enterprises unable to obtain long-term financing or investment from independent commercial sources.**

THE FOLLOWING CONDITIONS ARE NECESSARY TO RESOLVE THE TRADE CONFLICT BETWEEN THE UNITED STATES AND CHINA:

- **Reform of the ASCM initiated by the USA, EU and Japan failed.**
- **Necessary reforms:**
- **Transparency in the use of production subsidies in China, the application of market economy rules,**
- **Reform of the WTO Subsidies and Countervailing Measures Agreement. The reform of the ASCM is difficult to implement due to the weak interest of China.**
- **Retreat from single undertaking for the ASCM. The ASCM rules would create states with market economies.**

HORIZON EUROPE FRAMEWORK PROGRAMS

- **The main goal of EU innovation policy is mission-oriented grants, promoting excellence in research.**
- **The European Union has established the European Innovation Council, whose aim is to support the development of advanced technologies.**

EU INNOVATION POLICY TOOLS

- **Tax incentives (tax relief for research and innovation) – include reduced tax rates on enterprises' revenues from research and innovation (e.g. for small and medium-sized enterprises).**
- **Subsidies (research grants) – paid in individual EU member states as a key instrument of innovation policy. Companies conducting research and innovation activities apply for tax incentives.**
- **Research loans and public venture capital – the state provides loans, loan guarantees and financing for the development of innovations.**
- **Public procurement for research and innovation – the state government conducts scientific research at universities.**



NEW EUROPEAN INNOVATION AGENDA

- **New European Innovation Agenda includes 25 actions under five areas**
- **(1) Funding scale-ups,**
- **(2) Enabling innovation through experimentation spaces and public procurment,**
- **(3) Accelerating and stenghtening innovation in European innovation ecosystems across the EU and adressing the innovation divide,**
- **(4) Fostering, attracting and retaining talent,**
- **(5) Improving polic-making tools.**



Photo Source: European Commission https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en (access July 12, 2024)

THE AIM OF THE ARTICLE

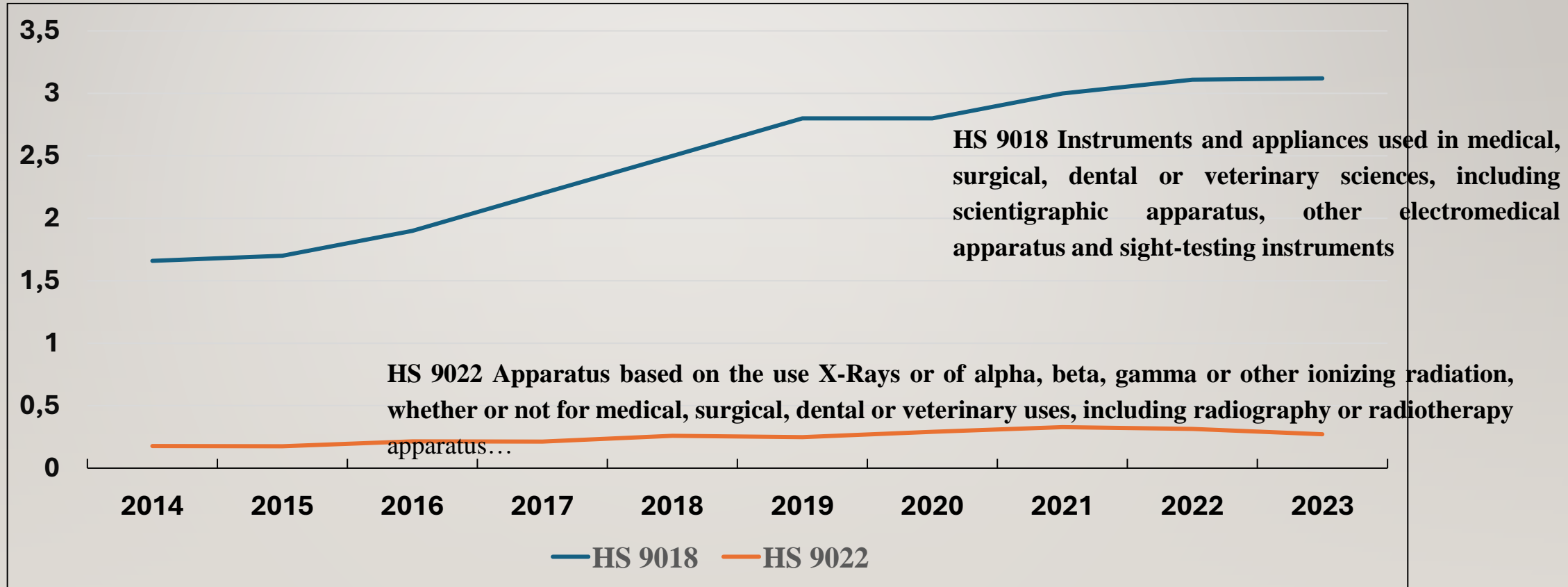
- **The aim of the article is to present the effectiveness of the European Union's innovation policy for economic growth in a given region, taking into account the dynamics and increase in the export potential of European companies and the entrepreneurship level.**
- **The analysis covered changes in European Union trade flows for the products of a given industry receiving financial support under the EU innovation policy.**
- **The subject of the research in the article are trade flows: exports and imports of the EU for the years 2015-2023 with selected countries (The United States, Japan, China) and the total trade in the products of the analyzed industry.**

SELECTED REGIONAL INNOVATION VALLEYS – TRADE EFFECTS

- **The first Strategic Plan for Horizon Europe assumes the development of geographical clusters.**
- **Regional Innovation Valleys – 151 regions in the European Union**

CLUSTER 1 – HEALTH (EXAMPLE)

TRADE FLOWS EU-CHINA – EXPORT, (IN BLN USD)



Own calculations based on UN Comtrade Database

CONCLUSIONS

- **The EU's mission-oriented innovation policy has included economic policy measures concerning the development of advanced technologies.**
- **The EU's innovation policy is one of the most important elements of industrial policy, through which the European Union intends to increase the competitiveness of foreign trade, especially the export of high-tech goods.**
- **In most of the cases examined, EU trade has increased exports as a result of financial support under the EU's innovation policy.**

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