

Marek ŚWISTAK

Jagiellonian University

ORCID: 0000-0001-6346-672X

Innovation Policy Governance in the European Union and China. Comparative Analysis

Abstract: The article presents a comparison of innovation policy governance in China and the European Union (EU), taking into account the impact of institutional configurations and interactions on mode of governance. It is based on a comparative method, analysing the specific governance solutions of both entities. The hierarchical governance model prevails in China, where the main role belongs to the central government, while in the EU there is a multi-level governance system involving central and regional institutions. The key result is the identification of differences and similarities in the approach to innovation policy governance. Centralisation in China favours efficient governance, while flexibility and adaptation to local needs are more pronounced in the EU. The conclusion suggests that the mode of governance of innovation policy should be adapted to the specific socio-economic and political contexts of each region in order to effectively support innovation and increase competitiveness.

Key words: public policy, innovation policy, governance, mode of governance, China, European Union

Introduction

The aim of this article is to answer the question of how various solutions and processes that make up governance can support or inhibit innovation in a comparative aspect, on the example of the EU and The People Republic of China (PRC). There are many studies on governance in terms of the functioning of states or specific policies (Torfing, Hartley, 2023). There are no comparative reviews of the governance of innovation policy in the EU and China. Examining governance innovation policy in a comparative view can help to better understand how governments respond to incentives within the political and bureaucratic system, socio-economic factors in democracy, and authoritarianism. Two entities were selected for the study, ie, China and the EU. China, as a country that is trying to return to the role of a key player in the international arena, is an essential point of reference for its main economic partners/rivals, i.e., the USA and the EU. After over 4 decades of rapid economic growth, China is moving from the position of a developing country basing its development model on cheap costs (including labour) towards a highly developed economy. The aim is to set the pace for the development of modern technologies. Future plans, as well as the results achieved in terms of building a competitive advantage based on innovations, according to the author, constitute a justification for including the Middle Kingdom in comparative research.

In turn, the European Union is one of the most competitive areas of the world economy. This 27-country international organisation coordinates activities that support competitiveness among 447 million inhabitants and is responsible for approximately 35% of global economic turnover (IMF, 2023). According to the Global Innovation Index 2022,

five EU member states are among the top 10 countries with the highest innovation rate (WIPO, 2022). The European Union sees the PRC as a strategic partner but also as a systemic rival (European Council..., 2023). One of the areas of rivalry is competition in the field of innovation. There is no doubt among European decision-makers that individual countries are not able to compete with China; hence, it is more appropriate to compare the potentials of China and the EU, even though in the former case we are dealing with a state and in the latter with an international organisation. Therefore, the subject of the study is innovation policy governance in the PRC and the EU.

Methodologically, the article adopts a comparative qualitative approach based on document analysis and literature review. It applies the Treib, Bähr, and Falkner (2007) framework to classify governance modes and uses institutional theory to interpret the role of actors and structures. The research problem focuses on how governance arrangements in democratic and authoritarian systems influence innovation policy outcomes. The main research question is focused on the following issue: How do governance models in the EU and China – based respectively on competitive markets and liberal-democratic values, and on hierarchical state control and strategic autonomy – determine the goals, instruments, and effects of their innovation policies?

In the context of the main research question, the following hypotheses were formulated. H1: The EU's innovation policy, grounded in liberal-democratic values and competitive market principles, primarily supports innovation through regulatory frameworks, supranational cooperation and openness. H2: China's innovation policy, shaped by state centralization and strategic industrial policy, supports innovation by directing resources to key sectors, promoting technological self-reliance. H3: Despite differences, both systems converge in recognizing innovation as crucial for economic growth, strategic autonomy, and resilience, but diverge in how governance structures balance freedom, control, and risk.

Theoretical background: Innovation policy and governance

This section constitutes the theoretical foundation of the article, outlining key concepts such as innovation policy instruments, governance structures, and institutional configurations. It sets the stage for the empirical comparison presented in subsequent sections. Innovation policy involves the use of various instruments by the state to stimulate new solutions, their implementation, and dissemination. These activities aim to strengthen the innovativeness of enterprises, improve the competitiveness of economies, and ultimately contribute to socio-economic development (Rothwell, Zegveld, 1982). The state's influence on the market includes the creation and dissemination of innovative solutions through regulations (including legal provisions) (Gómez-Barroso, 2021). This approach is often justified by market inefficiency, leading highly developed countries to invest public funds in knowledge creation, research, and development. Edler and Fagerber (2017) note that knowledge should be treated as a public good, available and used by everyone everywhere and free of charge. Although the returns from innovation for society may be relatively high, for private investors they may be questionable, leading to underinvestment in the creation of new knowledge compared to what would be desirable

for society as a whole. Such market failures may justify policy intervention to increase investment in science to socially optimal levels. This applies to countries with free-market economies, but there is no explanation for authoritarian countries.

In addition to the economic approach, the systemic approach emphasizes that innovation occurs where there is appropriate cooperation between key entities influencing the creation of knowledge, its development, product creation, and market positioning. Innovation systems exist at national, regional, or local levels (Smith, 2010). Studies on innovation from the perspective of specific places and entities, such as cities, regions (Heinelt, Egner, Hlepas, 2021), and enterprises (Voehl, Harrington, Fernandez, Trusko, 2018; Rothwell, 1994), are also relevant.

Few studies link innovation with governance in a comparative setting. Governance involves not only the system of institutions and organizations shaping innovation policy but also the creation of rules, selection of decision-makers, and methods of establishing strategies. Even less space in the literature has been devoted to comparing how governance solutions and processes in democratic and authoritarian countries support or inhibit innovation. Democracy and authoritarianism are two political systems that differ in how they establish rules and choose decision-makers. In a democracy, decision-makers are usually elected for set terms and must follow rules set by the legislature. In an authoritarian regime, term limits are not a main feature, and public support is not a key condition for legitimizing power. In a democracy, the adoption of new solutions and allocation of resources are usually preceded by open deliberation, while in authoritarianism, the discussion is not transparent and involves only the power elite (Brouwer, 2008). I focus on a broader understanding of innovation policy governance, which includes organizational and functional solutions that contribute to improving excellence in innovation.

Research design and methods

The article compares governance in innovation policy in China and the EU, focusing on the impact of institutional configurations and interactions. We identify specific approaches to innovation policy governance in both entities, considering differences in decision-making structures and processes in democratic and authoritarian countries. This approach focuses on innovation policy governance, examining the dynamic functioning of state and social actors, institutions, ideas, areas of interaction, and policy instruments in China and the EU (Cavalcante, 2021; Zhang, 2022). While Western paradigms emphasize openness and transparency, China relies on hierarchy and state dominance, achieving notable economic growth. We identify governance practices within innovation policy in China and the EU using the Treib, Bähr, and Falkner (2007) approach. This involves examining the balance between state intervention and social autonomy, focusing on six key dimensions relevant to innovation policy. These are:

- 1) **Legal bindingness versus soft law.** Innovation policy can be implemented using various instruments, which can be divided into binding instruments such as law (regulations) (Howlett, 2011) and non-binding instruments such as recommendations. There is a controversy about the scope, legality, and binding force of soft law. It is an undeniable fact that soft law is increasingly used in public governance in various

countries, including Chinese legal culture. Command and control measures implemented by state coercion are treated as binding law (Cheng, 2021). Legally binding governance practices may take the form of laws, regulations, directives, decisions, and notices, while “non-binding” ones include instruments such as recommendations, comments, opinions, and guidelines, incentives, and standards. However, there may be a combination of binding and non-binding elements within a single policy instrument (Sun, Baker, 2021).

- 2) **Rigid versus flexible approach to implementation.** Policy outcomes may either be based on a rigid implementation mode, setting detailed standards without much flexibility, or they may allow the recipients of standards and implementers greater freedom to adapt them to local conditions or individual interests (e.g. by providing a range of alternative options to choose from, by offering the possibility of derogating from particular provisions or excluding certain groups of people or sectors of the economy from the scope of application of the provisions).
- 3) **Material versus procedural regulation.** Policies may set substantive standards or focus on procedures, partly addressing the issue of how, not just what is to be achieved).
- 4) **Only public actors involved versus only private actors involved.** Two extreme poles can be distinguished here: either only public entities or only private entities are involved in policy-making. On the one hand, the hierarchical state leaves the process involved in the self-regulation of companies without state intervention or in the self-organisation of communities. Between these two poles, there are several modes of governance that involve both public and private actors, such as various forms of “political networks.”
- 5) **Hierarchy versus market.** The structure of interactions in this dimension may be either hierarchical, which gives one or several entities the opportunity to make jointly binding decisions without the consent of the others, or it may resemble a market structure in which entities retain relative freedom in choosing the desired courses of action. Several other types of institutional structures may exist between these opposing extremes. The most characteristic of them is the network structure.
- 6) **Central locus of authority versus dispersed loci of authority.** Innovation policy is also a spatial policy supporting development in the dimension of place. An important institutional dimension is whether power is centralised or dispersed. This applies to both the horizontal dimension (among central state actors) and the vertical dimension (between territorial units or state borders).

The analytical approach applied above is used to classify modes of government. Among the factors underlying the evolution of individual governance solutions, attention is paid to: context and institutions. Institutions are the rules of the game, norms of behavior, practices, and organizations are the players, which are determined by the rules of the game. (Brouwer 2008). It is assumed that actors demonstrating agency consist of both institutions and organisations (structure). For example, in authoritarian China, state institutions may be key, while in EU countries they may also be non-governmental entities (e.g. investors, private entities, residents benefiting from innovations) (Griffin, 2010). The identified dimensions allow for capturing contextual factors, including socio-political trends, without judging that democratic ones are only positive and authori-

tarian ones are only negative. Since innovation policy is implemented at many different organisational levels, it is also important to take into account the national and regional context in which a given governance system is located. arrangement is situated) (Sun, Baker, 2021).

The results of research are based primarily on two types of data sources, i.e. documents and literature. In total, about 40 policy documents (such as laws, regulations, statutory plans, special plans, five-year plans, policy directives, suggestions, notices, guidelines, strategies) were downloaded from official websites, mainly related to China and EU innovation policies. The review process was based mainly on a brief generalisation of the policy themes and characteristics in relation to the analytical framework identified above, rather than on a detailed content analysis of individual policy documents. The review was used to formulate synthetic conclusions.

Divergent pathways to innovation: strategic autonomy in the EU and technological self-reliance in China

Analyzing the main development directions and the goals of innovation policies in the EU and China, there is no doubt that the intention of both entities is to support innovative abilities. China has been focusing on innovations for years aimed at the endogenous development of the country and relying on their own abilities in key technologies and reduction of foreign dependencies, as exemplified by the Made in China 2025 program or the last editions of five –year plans. An important element is the modernization of industry, which is to guarantee upgrade in supply chains, through production in advanced industries, mainly technological (CET, 2022). Meanwhile, the EU also focuses on building innovative abilities, recognizing as a driver of development, achieving excellence in technologies supporting green order, digital transformation, healthcare system and economic resistance. The EU focusses on an open strategic autonomy by strengthening the industrial abilities and resilience of the supply chain while maintaining participation for the rules of openness and competition (European Commission, 2021). China focusses more on building specific technological skills through industrial policy in the form of centrally coordinated public interventions, including the support of state-owned enterprises. To achieve this, the PRC focusses on state orders, direct subsidies, and creating national champions. In the EU, programs and regulatory mix (e.g. sectoral law, the act on artificial intelligence) play a big role. These are large programs in the field of scientific research and innovation (“Horizon Europe”), stimulating the competitiveness of public-private partnerships and supranational projects (so-called common interest).

The innovation policies of the EU, China differ notably across key dimensions such as freedom to direct research, censorship and information flow, and approaches to risk and failure, though both focus heavily on advancing technological progress and economic growth. European innovation policy promotes freedom in scientific research with a competitive, excellence-driven approach. The EU research funding often involves expert-selection of projects based on expected social returns, blending scientific freedom with strategic targeting of key areas for societal impact. The EU upholds principles such as freedom of scientific research and encourages open scientific exploration within

a framework of ethics, gender equality, and social responsibility. In contrast, China's policy explicitly guarantees freedom for scientific research and encourages original innovation, but this is balanced with strong state direction prioritizing strategic, goal-oriented research aligned with national security, economic, and social development goals. China combines free exploration with targeted technology breakthroughs, often with significant government planning and investment in core technologies for self-reliance (PRC National People's Congress, 2021). The EU emphasizes the free flow of knowledge, scientists and data above the borders as crucial for innovation, supported by policies ensuring open scientific communication and data cooperation throughout the EU. On the other hand, PRC imposes significant censorship and control over internet platforms and information flow, citing national security and social stability. This includes online filtering, content moderation and data location requirements that limit external access to Chinese digital ecosystems and complicate international cooperation (Borggreen, 2016).

Another key dimension of innovation policy is approach to risk and failure. The approach to risk and failure in innovation policies of the EU and China reflects distinct cultural, regulatory, and economic frameworks that shape the environment for startups, scaleups, and technological breakthroughs. EU innovation policies reflect a relatively low appetite for risk in financial markets, with high costs associated with failure or restructuring for innovative firms. Meanwhile, China's approach is culturally influenced by a strong aversion to failure, known as "losing face" which can dampen risk-taking in innovation sectors. Despite this, China's state-directed policies aggressively push for rapid technological self-sufficiency and resilience, though cultural norms may hinder openness to experimentation and failure necessary for breakthroughs in areas like AI (Levine, 2025). These contrasting frameworks influence how innovative ventures emerge, fail, and succeed in each region.

Results

Governance in the dimension of policy making. Both China and the EU represent a fundamentally different mode of governance. In the first case, we are dealing with an authoritarian country in which the China Communist Party (CCP) and state institutions take priority. The UE, as an international organisation, is an association of not only 27 democratic states, but also entities with various systemic solutions. At the EU level, actions are taken to support better use of the industrial potential of innovation, research, and technological development policies (TFEU, 2012). The Union pursues a coherent innovation policy in cooperation with Member States and with the participation of other stakeholders.

Legal bindingness versus soft law. China and the EU regulate and promote innovation through different types of legal instruments, ranging from mandatory regulations to recommendations and voluntary standards. China's innovation policy is centralised, reflecting the CCP's strong leadership role over the state apparatus and the national economic sector (Teets, Noesselt, 2020; Guanghua Yu, 2014; Cheng, 2021; Youqi, Zhikun, 2019).

China uses less soft-law instruments, such as guidelines, strategies, and recommendations, to promote innovation. For example, the Chinese government is developing

strategic plans for specific industrial sectors or technological areas that are more flexible in nature and can be adapted to changing economic conditions (Piergiuseppe, 2020). In the EU, innovation policy is treated as an element of economic policy that is of interest to EU institutions, Member States, enterprises, and research and development organisations. The binding legal regulations used in the EU mainly concern the protection of intellectual property, trade and industrial policy, patent law, technology transfer, and standardisation (Granieri, Renda, 2012; Arup, 1993).

Implementing the EU innovation policy involves creating conditions, frameworks and access to financing for research and development in order to create new products or services. The EU, unlike China, attaches less importance to command-and-control mechanisms and more to the system of incentives that, when properly structured, stimulate actors to behave in accordance with the goal of innovation policy (e.g. financial incentives). A policy formulated in this way, created on the basis of non-binding instruments, faces the key challenge of appropriately setting incentives. The EU uses both binding law and soft instruments (European Commission, 2020). The implementation of EU innovation policy in Member States is not mandatory. The EU establishes investment priorities within the multiannual financial framework, often related to supporting research and development (e.g. Horizon Europe, operational programmes), but these instruments are not obligatory for Member States. The situation is similar in the case of other instruments supporting innovation in the EU, i.e. cohesion policy funds, coordination in the field of common research infrastructure (European Strategy Forum on Research Infrastructures, 2017), research funding. Part of the funds are intended to increase competitiveness and build innovative potential.

Rigid versus flexible approach to implementation. China's innovation policy relies on binding law to create a framework for supporting innovation, protecting intellectual property, and guiding technological development. The new rules streamline the standardisation system by providing a clear distinction between mandatory and voluntary standards (Piergiuseppe, 2020). A much more flexible approach is to manage individual aspects of innovation policy using soft law. Soft law does not solely rely on enforcement mechanisms of administrative and judicial systems, but can also be implemented through non-mandatory means, such as incentives and guidelines adopted by non-state and state actors (Cheng, 2021). This type of measure is also increasingly present in the implementation of China's innovation policy.

Managing the public policies of the EU consisting of 27 Member States is a big challenge because different political priorities. Hence, there is a need to use flexible solutions in addition to the binding law. They are used very often in areas where there is no political agreement. If we look at the implementation of innovation policy from the multi-level governance, the policy is implemented in three dimensions: EU, national, and regional. At each of these levels, we can find instruments and solutions that support flexibility. Starting from the EU level, stakeholders have the opportunity to participate in discussions and consultations on the priorities of European innovation policy. At this level, general priorities are set up, which allows Member States to prepare their own (specific) priorities and strategic documents in the form of smart specialisation strategies (European Commission, 2010). Countries prepare a strategy based on their own strengths and weaknesses in the areas and industries they want to develop. Strategies de-

fine smart specialisations, which are then targeted support. The process is repeated at the regional level if a given country, e.g. due to the size of its territory, decides to participate in this activity (Regulation, 2021; Council, 2021).

Material versus procedural regulation. Compared to the European model, innovation policy governance is characterised by greater attention to material regulations with less procedural flexibility (Teets, Noesselt, 2020). The regulations concern industrial policy, fiscal policy, research and development, and financing, with a focus on specific technologies such as artificial intelligence and biotechnology (CSET, 2021). China has extensive experience in trying new ways of solving public problems, including in the economic sphere, known as experimentation. Experiments are used to test new solutions, most often at the local level, and transfer those that prove effective to the regional or national level. In this process, cities, regions, and even the central government explore policy alternatives and test policy instruments through adaptations (Zhang et al., 2024). An element of this process is the adoption of experimental regulations, which constitute quasi-law and are increasingly used, especially in the economic sphere. This gives some freedom in implementation at the local level but also control by higher-level entities (e.g. provinces, central government). It involves the application of regulations in force in a strictly defined area of the country; sometimes, they may be special regulations granting specific rights or, in other cases, an exemption for local authorities from the application of specific regulations facilitating experimentation. Between 2004 and 2014, the share of experimental economic regulations fluctuated between 17–21% of economic legislation (Świstak, 2023).

The EU has developed a comprehensive framework for the governance of innovation policy, including substantive and procedural regulations. If treated European innovation policy governance in terms of standards or procedures, there is no doubt that this policy focusses mostly on organisational issues. It is a policy aimed at extracting internal resources in order to build the innovative position of countries and regions. The EU is moving away from a sectoral approach focused on one or another industry in favour of integrated activities in a specific area, e.g., at the regional level. In this approach, procedural issues, i.e., how to do things, have priority over how things are supposed to be (the material dimension). An innovative place is not just this or that company, but rather a system of cooperating entities from various industries and sectors. The European Union makes more frequent use of procedural regulations. It pursues a policy aimed at stimulating the multi-sectoral involvement of science, industry, social technology and stakeholders. Moreover, a multi-sectoral approach creates conditions for more flexible implementation. This is important because it means that Smart Specialisation Strategies are characterised by less risk aversion and greater comfort in implementing ideas and experiments (Regulation, 2021a). It also allows to change and improve the strategy throughout the implementation period.

Only public actors are involved, versus only private actors are involved. Public actors play a decisive role in supporting science, technology, and innovation in China. Cooperation takes place within the public sector, controlled by the Party, with knowledge exchange between entities within an institutionalised network (Fan, Peijie, 2019). The Chinese innovation system based on the activity of public actors has been successful for example in modern high-speed railways or large passenger planes. However, the state's

influence is not always effective, when it comes to consumer-focused sectors (including the automotive industry), or market-focused or exploration areas without clearly established goals. In this context, public institutions behave like an entrepreneurial state), which must take risks and create the basis for innovation, that is, a networked research and development system within a specific time horizon (Sun, Cao, 2021). The influence of state and public actors is a well-established practice in Chinese political system, as evidenced by the scale of intervention as a result of the global financial crisis. China has significantly increased direct government intervention to develop its industry through a stimulus programme (Naughton, 2021).

State activities in the field of science and technology are determined by the behaviour of central institutions, such as ministries and central agencies. Only in 2011–2027, 24 government units implemented various types of instruments, including 56 of instruments State Council (The World Bank, 2020). Similarly, to the EU, China uses a wide range of instruments, such as fiscal incentives, subsidies, loan guarantees, vouchers, equity capital, public procurement, technology extension services, incubators, accelerators, competitive grants, and science and technology parks.

The EU focusses on open innovation, cooperation, and that is why a diverse group of entities are involved in the policy. These are public, but also private entities. Among public entities, the role of the European Commission should be mentioned, which develops and proposes regulations on the implementation of innovation policy and organises financial resources. Member states' national governments play a key role in implementing EU innovation policy at national level, shaping, but also adapting and influencing their actions to European policy. Member States play an important role with regard to the territorial dimension of innovation policy. Because innovations take place in a specific space, regional authorities have been equipped with instruments with which they can influence cooperation in the field of research and development with entrepreneurs (Regulation, 2021b).

Governance in the institutional dimension

Hierarchy versus market. China's innovation policy is shaped hierarchically, with central five-year plans setting the framework for directional action (State Council, 2016). The state manages the science and technology system and allocates resources (Fang, 2010). Therefore, if we consider that creating innovation is the domain of a hierarchical state, attention should be paid to its effectiveness in the administrative mechanisms for managing the science and technology system in China. Chinese innovation policy financing focuses on public entities, with support targeted at state-owned enterprises (SOEs) and public research institutes demonstrating significant achievements (Wonglimpiyarat, 2015; Dieterle, 2020). China engages private companies in developing technology and offering products or services, aiming to make them independent of Western technologies (Ling, 2018; Wübbecke et al., 2016). The market plays an important but instrumental role. It is a tool that the state deploys and steers. Private firms and markets are essential for diffusion and scaling, but their autonomy is subordinated to Party-state priorities (e.g., targeted support for "hard tech," national champions, and direction of capital flows).

Recent policies and state-bank funds illustrate active state financialisation of innovation (Reuters, 2025). The dominance of hierarchy in creating innovation policy does not mean that the market is absent, but rather that the market operates under strong state guidance.

The main motivation for shaping innovation policy in the EU comes from the market and the belief that innovation strengthens competitiveness, sustainable development, and even the achievement of social goals. Thus, the market is a driving force, but it is surrounded by various regulations intended to correct imperfections. The EU innovation policy is not just a single policy, but rather a set of policies and instruments at the European, national, and regional levels. Some elements of the policy mix mainly support the innovation process, for example, by supporting knowledge creation, training activities, or stimulating the production of goods or the creation of new services. These elements are called supply policy. On the other hand, some policies and instruments will create demand for innovation, for example, new regulations resulting in the improvement of existing goods or intellectual property rights supporting the production and commercialisation of knowledge. These are called demand-side policies (European Parliament, 2016). Therefore European innovation policy is a hybrid solution, it is neither hierarchical nor purely market-orientated. Interactions between innovation policy actors are determined by hierarchical instruments, as well as those based on network cooperation or a transactional approach. Legal regulations are hierarchical, certainly those that are binding (hard law) and, to a lesser extent, non-binding (soft law), but have a similar effect.

The innovation policy framework based on law such as treaties, regulations, and directives is hierarchical in nature, insofar as it determines the principles of social and market interactions. (European Parliament, 2016). Many activities on both the demand and supply sides are based on voluntary cooperation (e.g. benchmarking, voluntary agreements, partnerships, alliances), in which, in addition to public entities, also enterprises participate. An example of such action is the European Innovation Council (EIC) established under the EU Horizon Europe programme (Memorandum, 2021).

Central locus of authority versus dispersed loci of authority. China's innovation policy is oriented towards the centre, with central legal acts, industrial development plans, and guidelines dominating (Ahlers, 2018). Regional or local authorities are treated more as objects of policy: principal – agent relationship (Xueguang Zhou, 2022). The priority is to promote specific sectors from the central level, supporting excellence in science and technology and technology transfer. Key prerogatives in supporting the development of science and technology are assigned to central authorities, mainly the State Council and its departments, and consist of macro-management, general coordination, provision of services, and supervision (CSET, 2021a).

In the context of decentralized innovation policy governance in China, it is worth noting that local cadres promotions and fiscal performance are often linked to indicators of economic growth and technology. Consequently, local authorities use strong tax incentives (land, subsidies, direct grants, housing/talent packages e.g., the Shenzhen Peacock Plan) and establish experimental policy institutions (national laboratories, special zones). Research documents strong local experimentation and responsiveness to central incentives (Min Zhang, Rodríguez-Pose, 2024).

Both national and regional entities participate in shaping the EU innovation policy. The EU approach assigns a key role to the diffusion of innovation at the regional level (Sánchez-Carreira, 2020). This is achieved through a policy based on Smart Specialisation Strategies. In this process, regions become entities that co-create solutions for cooperation focused on innovation. They create an environment conducive to innovation by coordinating activities between various stakeholders, including universities, research units, enterprises, and government agencies. The activities of regions allow for better adaptation of instruments to the unique characteristics of a given place, taking into account factors such as available resources, infrastructure, and human capital. Regions can use EU funds, especially those focused on cohesion policy. By developing programmes co-financed from European funds, regions have the opportunity to prepare and implement smart specialisation strategies. In this way, regional authorities contribute to the building of an innovation ecosystem within their jurisdiction.

In the case of regions that are lagging behind in development, i.e. those that have a less developed business sector and a weaker research and development base, greater support is necessary at the national and supranational level, which is provided by European Union Funds for innovation. The detailed competences of the regions are determined by the level of centralisation and decentralisation of power in a given area. Different regions of EU Member States have different regional approaches to innovation governance, different institutional frameworks, and governance systems (Jiang, Zhang, 2020). Over the last few decades, the importance of regional innovation governance in the EU has gradually increased (Dodescu, Chirila, 2012). Coordination mechanisms play a key role in multi-level European innovation policy. Intensive interaction between institutions and levels of governance serves as a learning channel to absorb knowledge and experiences from outside, so that governance at the local/regional level can continuously adapt to changes at the national or EU level (Świstak, 2019). The EU emphasises place-based strategies within a multi-level governance framework (member-states, regions, EU conditionality). The PRC combines central direction with intense local competition and strong fiscal/administrative activation of subnational authorities.

Conclusion

The comparative analysis of innovation policy governance in the EU and the PRC demonstrates that while both entities regard innovation as a cornerstone of economic competitiveness, resilience, and strategic autonomy, their governance models differ fundamentally in design, implementation, and outcomes. These differences are rooted in their broader political and institutional contexts: the EU as a union of democratic states shaped by market principles, openness, and supranational coordination; and China as an authoritarian state guided by hierarchical control, industrial policy, and centralised strategic planning.

The research confirmed hypothesis 1, showing that the EU's innovation policy is largely driven by liberal-democratic values and market competitiveness. Innovation is supported primarily through regulatory frameworks, supranational programmes like *Horizon Europe*, and multi-level governance arrangements that engage both public and

private actors. The EU's model emphasises freedom of scientific research, ethical standards, and the free flow of knowledge across borders. However, the EU's fragmented governance, risk-averse financial systems, and reliance on consensus-building may at times inhibit rapid innovation or scaling of breakthrough technologies.

Hypothesis 2 is also verified. China's governance of innovation policy reflects a strong role for the state, with central authorities directing resources toward strategic sectors, supporting national champions, and promoting technological self-reliance through long-term plans such as *Made in China 2025* and successive Five-Year Plans. This centralisation allows for rapid mobilisation of resources and alignment of industrial policy with strategic objectives. Yet, the same mechanisms introduce constraints: censorship, restrictions on information flows, and limited tolerance for risk-taking can inhibit openness, cross-border cooperation, and the experimentation needed for disruptive innovation. Hypothesis 3 is partly confirmed. Both the EU and China converge in their recognition of innovation as vital to economic growth and geopolitical positioning. Nevertheless, they diverge in how governance balances freedom, control, and risk. The EU promotes diversity of actors and regional adaptation, while China prioritises uniformity, top-down steering, and state control.

Ultimately, the study confirms the adequacy of the research question. Governance arrangements can both support and inhibit innovation, depending on the institutional and political setting. For the EU, the challenge lies in overcoming structural barriers to risk-taking and ensuring coherence across multi-level governance. For China, the challenge is to reconcile strategic centralisation with the need for openness and tolerance for failure. In both cases, modes of governance are context-dependent and reflect deeper societal values and political systems. These findings contribute to the broader debate on how governance structures shape innovation outcomes and suggest that there is no universal model, but rather the necessity of tailoring innovation policy governance to specific political, institutional, and socio-economic conditions.

Bibliography

- Ahlers A. L. (2018), *Introduction: Chinese governance in the era of 'top-level design'*, "Journal of Chinese Governance", vol. 3, no. 3, <https://doi.org/10.1080/23812346.2018.1487738>.
- Albury D. (2005), *Fostering Innovation in Public Services*, "Public Money & Management", vol. 25, no. 1, <https://doi.org/10.1111/j.1467-9302.2005.00450.x>.
- Arup C. (1993), *Innovation, Policy and Law*, Cambridge University Press.
- Benner M. (2022), *An institutionalist perspective on smart specialization: Towards a political economy of regional innovation policy*, "Science and Public Policy", vol. 49, no. 6.
- Borggreen C. (2016), *EU Trade Commissioner Criticises Online Censorship in China*, <https://project-disco.org/european-union/071216-eu-trade-commissioner-criticises-online-censorship-china/>.
- Brouwer M. (2008), *Governance and Innovation. A historical view*, Routledge.
- Cavalcante P. L. C. (2021), *Innovation Policy Governance*, in: *Global Encyclopedia of Public Administration, Public Policy, and Governance*, ed. A. Farazmand, Springer, https://doi.org/10.1007/978-3-319-31816-5_4234-1.

- Cheng X. (2021). *Soft Law in the Prevention and Control of the COVID-19 Pandemic in China: Between Legality Concerns and Limited Participatory Possibilities*, “European Journal of Risk Regulation”, vol. 12, no. 1, <https://doi.org/10.1017/err.2020.111>.
- Council (2021), Decision (EU) 2021/764 of 10 May 2021 establishing the Specific Programme implementing Horizon Europe – the Framework Programme for Research and Innovation, and repealing Decision 2013/743/EU (Text with EEA relevance), Official Journal of the European Union, L1 167.
- CSET (2021a), Law of the People’s Republic of China on Progress of Science and Technology, https://cset.georgetown.edu/wp-content/uploads/t0430_tech_progress_law_EN.pdf.
- CSET (2021), Outline of the People’s Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035, https://cset.georgetown.edu/wp-content/uploads/t0284_14th_Five_Year_Plan_EN.pdf.
- CSET (2022), PRC State Council, 2015, Notice of the State Council on the Publication of “Made in China 2025”, https://cset.georgetown.edu/wp-content/uploads/t0432_made_in_china_2025_EN.pdf?utm_source=chatgpt.com.
- Dieterle D. A. (2020), *Economic Rules of the Global Economy*, in: *The Global Economy*, Greenwood, Bloomsbury Academic.
- Dodescu A., Chirila L. F. (2012), *Regional innovation governance in the context of European integration and multi-level governance challenges. A Case Study of North-West Region of Romania*, “Procedia Economics and Finance”, vol. 3, [https://doi.org/10.1016/S2212-5671\(12\)00293-6](https://doi.org/10.1016/S2212-5671(12)00293-6).
- Edler J., Fagerberg J. (2017), *Innovation policy: what, why, and how*, “Oxford Review of Economic Policy”, vol. 33, no. 1, <https://doi.org/10.1093/oxrep/grx001>.
- European Commission (2010), Communication from The Commission, Europe 2020 A strategy for smart, sustainable and inclusive growth, COM(2010) 2020 final.
- European Commission (2020), Strategic Plan 2020–2024, Dg Research and Innovation, https://commission.europa.eu/document/download/5ac1ff20-d41e-4c10-9a05-048b7339292e_en.
- European Commission (2021), Horizon Europe strategic plan (2021–2024) Analysis, https://research-and-innovation.ec.europa.eu/system/files/2021-03/ec_rtd_horizon-europe-strategic-plan-2021-24-analysis.pdf?utm_source=chatgpt.com.
- European Council conclusions on China, (2023), <https://www.consilium.europa.eu/en/press/press-releases/2023/06/30/european-council-conclusions-on-china-30-june-2023/>.
- European Innovation Council (2021), *Memorandum of Understanding (MoU) between the European Institute of Innovation and Technology (EIT) and the European Innovation Council (EIC)*, https://eic.ec.europa.eu/document/download/59605d83-a43b-4e60-a50d-4c29f8fb9004_en?filename=memorandum_of_understanding-eic-eit_08012021_signed.pdf.
- European Parliament (2016), EU Innovation Policy – Part, Building the EU innovation policy mix, https://www.europarl.europa.eu/RegData/etudes/IDAN/2016/583778/EPRS_IDA%282016%29583778_EN.pdf.
- European Strategy Forum on Research Infrastructures (2017), Activities and Procedural Guidelines for the European Strategy Forum on Research Infrastructures, https://research-and-innovation.ec.europa.eu/document/download/29c7e67d-bded-4ee8-b90d-4992804bb5d5_en?filename=esfri_procedures_mandate.pdf.
- Fang X. (2010), *Re-examining the reform of China’s science and technology system: a historical perspective*, “Journal of Science and Technology Policy in China”, vol. 1, no.1, <https://doi.org/10.1108/17585521011032513>.
- Fukuyama F. (2013), *What is Governance?*, CGD Working Paper 314, Center for Global Development, 17, Washington, DC, <http://www.cgdev.org/content/publications/detail/1426906>.
- Gómez-Barroso J. L. (2021), *Public Economics: A Concise Introduction*, Routledge, <https://doi.org/10.4324/9781003173731>.

- Granieri M., Renda A. (2012), *Innovation Law and Policy in the European Union Towards Horizon 2020*, Springer Milan, <https://doi.org/10.1007/978-88-470-1917-1>.
- Griffin L. (2010), *Governance Innovation for Sustainability: Exploring the Tensions and Dilemmas*, "Environmental Policy and Governance", vol. 20, no. 6, <https://doi:10.1002/eet.555>.
- Guanghua Y. (2014), *The Roles of Law and Politics in China's Development*, Singapore.
- Heinelt H., Egner B., Hlepas N.-K. (eds.) (2021), *The Politics of Local Innovation: Conditions for the Development of Innovations* (1st ed.), Routledge, <https://doi.org/10.4324/9781003084006>.
- Howlett M. (2011), *Designing Public Policies Principles and Instruments*, Routledge.
- International Monetary Fund (2023), *Regional economic outlook. Asia and Pacific: challenges to sustaining growth and disinflation*, Washington.
- Jiang X., Zhang P. (2020), *Institutions, policies and diverse innovation systems: experiences from the US, Germany and South Korea*, "Journal of Asian Public Policy", 13(2), pp. 241–255, <https://doi.org/10.1080/17516234.2018.1541116>.
- Levine D. (2025), *Why China's Fear of Failure Will Keep It Behind in the AI Race*, <https://thediplomat.com/2025/08/why-chinas-fear-of-failure-will-keep-it-behind-in-the-ai-race/>.
- Li Fan, Wang Peijie (2019), *China's organization and governance of innovation – A policy foresight perspective*. *Technological Forecasting and Social Change*, 146, <https://doi.org/10.1016/j.techfore.2019.05.029>.
- Ling L. (2018), *China's manufacturing locus in 2025: With a comparison of „Made-in-China 2025” and „Industry 4.0”*, *Technological Forecasting and Social Change*, 135.
- Molnar M. (2017), *Boosting firm dynamism and performance in China*, OECD Economics Department, Working Papers, 1408, OECD Publishing, 12.
- Naughton B. (2021), *The Rise of China's Industrial Policy, 1978–2020*, https://dusselpeters.com/CECHIMEX/Naughton2021_Industrial_Policy_in_China_CECHIMEX.pdf.
- PRC National People's Congress (2021), *Law of the People's Republic of China on Progress of Science and Technology*, https://cset.georgetown.edu/wp-content/uploads/t0430_tech_progress_law_EN.pdf.
- Pusceddu P. (2020), *Hic sunt dracones? Mapping the Legal Framework of China's Innovation Policy: Standardization and IPRs*, "International Review of Intellectual Property and Competition Law", vol. 51, <https://doi.org/10.1007/s40319-020-00945-8>.
- Regulation (2021), 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013 (Text with EEA relevance), Official Journal of the European Union, L 170.
- Regulation (2021a), Regulation (EU) 2021/819 of the European Parliament and of the Council of 20 May 2021 on the European Institute of Innovation and Technology (recast) (Text with EEA relevance), Official Journal of the European Union, L 189.
- Regulation (2021b). 2021/1060 of the European Parliament And of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and financial rules for those and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for Financial Support for Border Management and Visa Policy, Official Journal of the European Union, L 231.
- Reuters (2025), *China's ICBC launches \$11 billion technology innovation fund*, March 12, 2025, https://www.reuters.com/business/finance/chinas-icbc-launches-11-billion-technology-innovation-fund-2025-03-12/?utm_source=chatgpt.com.
- Rothwell R., Zegveld W. (1982), *Industrial innovation and public policy*, Pinter.

- Rothwell R. (1994), *Towards the Fifth-generation Innovation Process*, “International Marketing Review”, vol. 11m, no. 1, <https://doi.org/10.1108/02651339410057491>.
- Sánchez-Carreira M. (2020), *An overview of the European Union innovation policy from the regional perspective*, in: *Regions and Innovation Policies in Europe Learning from the Margins New Horizons in Regional Science series*, eds. M. González-López, B. T. Asheim, Edward Elgar Publishing, <https://doi-org-1unwr6wyf0a5f.hps.bj.uj.edu.pl/10.4337/9781789904161.00011>.
- Smith D. (2010), *Exploring Innovation*, McGraw-Hill.
- State Council (2016), *The National Medium- and Long-Term Program for Science and Technology Development (2006–2020)*, https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/China_2006.pdf.
- Sun B., Baker M. (2021), *Towards an analytical governance framework within the policy dimension in China: the evolution of national climate policies since 1978*, “Journal of Environmental Planning and Management”, vol. 64, no. 2, <https://doi.org/10.1080/09640568.2020.1760800>.
- Sun Y., Cao C. (2021), *Planning for science: China’s “grand experiment” and global implications*, “Humanities and Social Sciences Communications”, vol. 8, no. 215, <https://doi.org/10.1057/s41599-021-00895-7>.
- Świstak M. (2023), *Regional Policy in China. Development and Strategic Challenges*, Vandenhoeck & Ruprecht Verlage, Göttingen.
- Świstak M. (2019), *Regional Policy of the European Union and the Stimulation of Innovation: The Role of the Operational Programmes in Poland*, “Studies in European Affairs”, vol. 23, no. 2, <https://doi.org/10.33067/SE.2.2019.7>.
- Teets J. C., Noesselt N. (2020), *The state of the field for governance and policy innovation in China*, “Journal of Chinese Governance”, vol. 5, no. 4, <https://doi.org/10.1080/23812346.2020.1799641>.
- TFEU (2012), *Treaty on the Functioning of the European Union*, “Official Journal of the European Union”, C 326.
- The World Bank (2020), *Promoting Innovation in China: Lessons from International Good Practice*, The World Bank.
- Torfin J., Hartley J. (2023), *Innovation*, in: *Handbook on Theories of Governance*, eds. C. K. Ansell, J. Torfin, Cheltenham.
- Treib O., Bähr H., Falkner G. (2007), *Modes of Governance: Towards a Conceptual Clarification*, “Journal of European Public Policy”, vol. 14, no. 1, <https://doi.org/10.1080/135017606061071406>.
- Voehl F., Harrington J., Fernandez R., Trusko B. (2018), *The Framework for Innovation An Entrepreneur’s Guide to the Body of Innovation Knowledge*, CRC Press, <https://doi.org/10.4324/9781315118994>.
- Wonglimpiyarat J., Khaemasunon P. (2015), *China’s innovation financing system: Triple Helix policy perspectives*, “Triple Helix”, vol. 2, no. 5, <https://doi.org/10.1186/s40604-014-0013-y>.
- World Intellectual Property Organization (WIPO) (2022), *Global Innovation Index 2022: What is the future of innovation-driven growth?*, WIPO, Geneva, <https://doi.org/10.34667/tind.46596>.
- Wübbecke J., Meissner M., Zenglein M., Jaqueline I., Björn K. (2016), *Made in China 2025 The making of a high-tech superpower and consequences for industrial countries*, “MERICS Papers on China”, vol. 2.
- Xueguang Zhou (2022), *The Logic of Governance in China: An Organizational Approach*, Cambridge University Press, Cambridge, <https://doi.org/10.1017/9781009159418>.
- Youqi S., Zhikun Y. (2019), *The Rule of Law Approach to Government Governance in China*, “Social Sciences in China”, vol. 40, no. 4, <https://doi.org/10.1080/02529203.2019.1674032>.
- Zhang Min, Rodríguez-Pose A. (2024), *Government reform and innovation performance in China*, “Papers in Regional Science”, vol. 103, Issue 3, <https://doi.org/10.1016/j.pirs.2024.100023>.

Zhang Wenguang, Ji Lu, Binbin Song, Hongping Lian (2022), *Experimentalist governance in China: The National Innovation System, 2003–2018*, “Journal of Chinese Governance”, vol. 7, no. 1, <https://doi.org/10.1080/23812346.2021.1934328>.

Zhang X. (2022), *Understanding innovation policy governance: A disaggregated approach*, “Review of Policy Research”, vol. 39, <https://doi.org/10.1111/ropr.12456>.

Zarządzanie polityką innowacyjną w Unii Europejskiej i Chinach: analiza porównawcza

Streszczenie

Artykuł przedstawia porównanie governance polityki innowacyjnej w Chinach i Unii Europejskiej (UE), biorąc pod uwagę wpływ konfiguracji instytucjonalnych i interakcji na sposób zarządzania. Opiera się na metodzie porównawczej, analizując konkretne rozwiązania zarządzania obu podmiotów. W Chinach przeważa hierarchiczny system zarządzania, gdzie główną rolę odgrywa rząd centralny, podczas gdy w UE istnieje wielopoziomowy system zarządzania obejmujący instytucje centralne i regionalne. Kluczowym wynikiem jest identyfikacja różnic i podobieństw w podejściu do zarządzania polityką innowacyjną. Centralizacja w Chinach sprzyja efektywnemu zarządzaniu, podczas gdy elastyczność i dostosowanie do lokalnych potrzeb są bardziej widoczne w UE. Wniosek sugeruje, że sposób zarządzania polityką innowacyjną powinien być dostosowany do konkretnych kontekstów społeczno-ekonomicznych i politycznych każdego regionu, aby skutecznie wspierać innowacje i zwiększać konkurencyjność.

Słowa kluczowe: polityka publiczna, polityka innowacyjna, sposób rządzenia, Chiny, Unia Europejska

Author Contributions

Conceptualization (Konceptualizacja): Marek Świstak

Data curation (Zestawienie danych): Marek Świstak

Formal analysis (Analiza formalna): Marek Świstak

Writing – original draft (Piśmiennictwo – oryginalny projekt): Marek Świstak

Writing – review & editing (Piśmiennictwo – sprawdzenie i edytowanie): Marek Świstak

Competing interests: The author have declared that no competing interests exist

(Sprzeczne interesy: Autor oświadczył, że nie istnieją żadne sprzeczne interesy)