

Chapter 8

Knowledge without Borders: Securing Technology and Data in Global Academic Collaboration

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Abstract: Academic cooperation between third countries and the European Union entails growing risks of unintended knowledge and technology leakage. This paper examines research security challenges arising from fragmented due-diligence practices and increasing internationalization of science. It analyzes institutional constraints, network dynamics, and policy trade-offs, and proposes best practices—including coordinated due diligence and security audits—to safeguard technology transfers while preserving openness and research excellence.

Keywords: Research security, due diligence, technology transfer, academic co-operation, EU research policy, internationalization of science, security audits

The transfer of knowledge and technology from third countries to the European Union within the framework of academic cooperation poses significant risks, such as data and technology leaks, which require proper risk management. The contemporary global exchange of technology necessitates careful preparation of supply chain transfers, encompassing not only logistical aspects but also the secure management of data and technologies. A key element is the implementation of security audits conducted by specialized institutions to identify and mitigate potential threats.

This paper will focus on strategies for minimizing risks by discussing and implementing best practices and procedures for safeguarding technology

transfers, with an emphasis on due diligence. Additionally, recommendations will be provided for conducting regular security audits to ensure the integrity of transfers and protect against leaks of strategic technologies. The paper revolves around three general points for discussion on the research security: (1) what is the aim? (2) what are the constraints? (3) if there is a room for spontaneous policy innovations in research security?

Empirical studies show vast evidence for the internationalization of science and therefore the growing risk of unintended errors in research security.¹ Existing international collaboration could be treated as a performance measurement and such factors as the number of third-country scholars or contractors has been quite often treated as a threshold for securing funding. Nevertheless national, and to some extent regional, science structures create powerful obstacles for technology transfer and science transfer, such as national languages, misunderstanding regarding working culture, and particular industrial policies that may treat selected policy areas as priorities for research. These border conditions, which are sometimes not well recognized, constitute both advantages, such as frequent personal contacts or knowledge-sharing in the given networks, and possible problems for research transfer. Without a well-constructed system for research security, a more open regional research community, as advocated by some scholars (Cooke, Gomez Uranga and Etxebarria 1997), is exposed to unintended errors and is perhaps path dependent. Moreover, science networks have, as every network has, all the problems and challenges coming from the uneven distribution of power, ties in the network, and access to resources. Thus, proper network management and analysis of research network capacities is more than relevant to providing research security. Although the EU Council states that “Openness, international cooperation, and academic freedom are at the core of world-class research and innovation,”² it also acknowledges the risk of the undesirable and somehow unintended transfer of critical knowledge and technology to countries where fundamental

¹ Stefan Hennemann and Ingo Liefner, “Global Science Collaboration,” in *The Handbook of Global Science, Technology, and Innovation*, eds. Daniele Archibugi and Andrea Filippetti (John Wiley & Sons, 2015), 343–363.

² Council of the European Union, *Council Recommendation on Enhancing Research Security*, 9097/1/24 REV 1 (Brussels: Council of the EU, May 14, 2024).

European values as well as international obligations can not only be challenged but may be used to strengthen their military capabilities. However, when a general assessment of the problems that may result from fragmented and patchworked national policies is correct, it raises delusive standards for risk assessment and the procedures for due diligence for cooperating institutions and partners. Thus, having a trans-European due diligence agency or portal is more than needed, although the criteria for due diligence are nonexistent. An analysis of the proposal says little about the true importance of such practices and opens a path for rent-seeking when real due diligence will not be performed. When such procedures have been adopted in several British universities, and for example, the University of Reading cannot support any project with third parties from North Korea, Iran, Sudan, South Sudan, Syria, and Crimea, such partners hardly cooperate with European partners. Widening due diligence on other countries' research institutions will be time-consuming and may have a profound impact on productivity and the quality of research. Without clear-cut criteria and the necessary information, EU research institutions risk being trapped in an endless loop. A decision-maker with the authority to grant final approval or veto the decision for moving the project forward will avoid taking any decision (they will "take a position") that would hinder the process of generating any promising research. More information does not necessarily result in better decision-making—also in research security—and therefore, any fundamental trade-offs for research security in the European research area would not happen. Any kind of structured political incentives in order to support or stimulate policymakers in their pursuit of improving policy outcomes are in fact irrelevant without thorough analysis of relevance and the importance of well-crafted structures for due diligence.³ To gauge the overall magnitude of due diligence for research security and guide further steps, there is an urgent need to establish the role of due diligence actors, and the way they participate in the European science area, either as delegated stakeholders or entrepreneurs. If they have to make rules on behalf of the EU—since a patchworked system of national policies, and perhaps institutions, have

³ European Commission, *Proposal for a Council Recommendation on Enhancing Research Security*, COM (2024) 26 final (Brussels: European Commission, January 24, 2024).

been considered ineffective—it will lead to a classical transfer of competences at the EU level. Such a classical principal-agent problem raises the question of the selection of agents and their previous performance. In general agents are selected for their ability to reduce transaction costs,⁴ while the critical initial condition in research security should be their expertise. In that case, without having experienced agents and a hammered-out procedure, it may be difficult to evaluate the extent to which private agents are autonomous. In consequence, endogenous factors (i.e., lack of clear-cut criteria) may hinder any successful policy of establishing research security. Given that research security does not function as a standalone policy, research institutions cooperate with the business community on knowledge transfer, best practices in data protection, and due diligence instruments. This, in turn, moves us away from a biased policy learning problem, since the business community, which has some level of risk embedded in the business, largely avoids costly experiments or at least learns from their competitors' business choices. Having a good number of cases, when proper due diligence procedures are strongly associated with overall economic performance, we can assume that the entrepreneurial perspective on proper security due diligence would be a promising path for policymaking, with two important comments. First, any kind of policy experiment that gives private authorities full authority in the field of research security, when most due diligence actors have a limited knowledge in the field, may result in a rolling uncertainty on the results. When research institutions and due diligence actors do not agree on the aim and scope of due diligence, any kind of research policy will be put on trial. With learning by doing, which is necessary with such an uncharted area of security policy, the specific objectives (i.e., research security) would not be reached. Second, the degree of complexity, measured by the number of actors involved in the due diligence, could be high, and due diligence actors will tend to lower the number of trials, checks, and question to avoid excessive costs. However, it seems to be necessary to find out a proper ratio between the time and cost of due diligence. If research institutions are involved in the continuous adaptation and tailoring of policies for research

⁴ European Commission, *Proposal for a Council Recommendation on Enhancing Research Security*, COM (2024) 26 final (Brussels: European Commission, January 24, 2024).

security, eventually good practices will be established (with a strong emphasis on the complexity of the problem).

The problem of the cost of research security is strictly combined with experience in the field of research security and the lack of effective control of all the inputs. When the quality of research, or institution research capabilities, are controlled (or driven) by the fiat or disciplinary action,⁵ any input on research security is controlled by other market actors. The research institution, as a consumer of information, may try avoiding such problem by setting its own research security stewards or separate units in the structure of the institution. However, “reliable information about expected performance is both a costly and a valuable good.”⁶ What if the cost of gathering further information surpasses both the expected profits from the research outcomes or cumulate the cost of waiting for the final decision? That, again, turns our attention toward the structural problem—perhaps it would more effective if research institutions shared the information on due diligence among partners from the area of research. Gathering information and relevant expertise on security threats through due diligence can be time-consuming and resource intensive. Repeatedly carrying out such due-diligence tasks would place a significant strain on institutional resources. Resource pooling can be an effective instrument for mitigating cost, but effective competition in the research area may lead to competition over relevant information on security. If research actors are tasked with solving coordination problems over defining due diligence, adjusting their behavior, and promoting a certain set of rules for due diligence, this would obviate the need for EU regulations. However, constant emphasis on performance, competitiveness, and building comparative advantage in science opens the way for unnecessary activity.

Policy Recommendations

1. **Establish a Centralized EU Due Diligence Agency:** Create an EU-wide body dedicated to managing and standardizing due diligence practices

⁵ Armen A. Alchian and Harold Demsetz, “Production, Information Costs, and Economic Organization,” *The American Economic Review* 62, no. 5 (1972), 777.

⁶ *Ibid.*, 778.

for technology and data transfers in academic collaborations, ensuring consistent and rigorous security measures across member states.

2. **Implement Comprehensive Security Audits:** Mandate regular, independent security audits for all academic collaborations involving technology transfer to identify vulnerabilities and ensure the integrity of research and data management processes.
3. **Harmonize National Policies:** Address the fragmentation of national policies by developing EU-wide guidelines for research security, balancing the need for openness in academic collaboration with the protection of sensitive technologies and intellectual property.

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