How to Silence Researchers?
Evidence from Illiberal Policies in Hungary *

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Abstract

We show how attacks against academic freedom have detrimental effects on the production of ideas, focusing on academic research in Hungary after the election of Viktor Orbán in 2010. Combining rich national research repositories and international bibliometric data, we show that academics' research outputs diverge sharply depending on their political alignment towards the government, as inferred from their institutional affiliations and research topics. Academics perceived as political opponents experience a large decrease in their productivity and the quality of their publications. We explain this loss by a decline in their number of co-authors and in their scientific influence. These academics respond strongly by leaving the country, by expressing dissent against the government, or by self-censoring in their academic work. Individual-level cross-country comparisons show that all Hungarian researchers, not only perceived political opponents, shift their publications toward lower-ranked national-language journals and are more likely to leave the country.

Keywords: Academia, Illiberalism, Innovation, Scientific productivity, Hungary

JEL codes: I20, I23, J24, N14, O38

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1 Introduction

Explanations of long-run growth generally point to a small list of fundamental causes: luck, geography, culture and institutions (Acemoglu, 2009). This paper studies how institutions, a society's "rules of the game" (North and Thomas, 1973; North, 1990), shape the production of scientific knowledge. Several features of the institutional environment matter for the production of new ideas: the distribution of political power, which shapes incentives to innovate (Acemoglu et al., 2005); the free and low-cost circulation of ideas (Mokyr, 2002); and a culture that values useful knowledge (Mokyr, 2017). Because scientific knowledge and new ideas are the main drivers of long-run growth (Romer, 1990; Aghion and Howitt, 1992), political shifts that concentrate power and restrict individual freedoms, including those of scientists, may threaten not only the production of ideas but also long-run development.

The fall of the Soviet Union and the end of the Cold War fostered the common expectation that liberal democracy would spread and eventually prevail (Fukuyama, 1989). Yet many democracies have since seen the rise of what Zakaria (1997) called "illiberal democracies": democratically elected regimes that continue to organise elections while restricting civil liberties and weakening the rule of law. In 2014, Viktor Orbán, Prime Minister of Hungary, openly embraced this term, which thus became a self-description rather than only a pejorative label used by critics.[1] The Hungarian case matters beyond its borders. Several right-wing and far-right leaders, including in France, Italy and Germany, have explicitly presented Orbán's Hungary as a model (Camus, 2022), and other governments have introduced similar restrictions. For instance, in the United States, the second Trump administration has cut funding to universities and research projects on political grounds, drawing on Orbán's policies (Secen and Kılınç, 2026). While the political dimensions of this shift are well documented, we know less about the consequences of illiberal policies for science and innovation.

This paper examines the consequences of political threats and declining academic freedom for the production of ideas, with a particular focus on the mechanisms through which academia and scientists are affected. Hungary under Orbán (2010–2026) provides a unique quasi-natural experiment setting to measure these consequences in a contemporary democracy.

Our analysis progresses through three successive and complementary research questions. First, how does political pressure affect the productivity of researchers targeted by the government? Second, how do researchers respond when targeted by political threats? Finally, what is the overall impact of illiberal policies on scientific production, beyond the researchers and fields that are direct political targets?

[1] The term *illiberal* first appeared in the literature to describe developments in South-East Asia (Bell et al., 1995), before it came into wider use after the publication of Zakaria (1997). Orbán explicitly described his governance model as an "illiberal democracy" in July 2014, in a public speech at the 25th Bálványos Summer Free University and Student Camp (see Viktor Orbán's speech). In the Hungarian context, we expand on detailed qualitative descriptions of regime change (Bánkuti et al., 2012; Boda et al., 2015; Halmai, 2018; Buzogány, 2020) and more particularly of the constraints on academic freedom (Kováts, 2015; Kováts and Rónay, 2021; Kováts et al., 2024). See section 2 for more details.

To answer these questions, we use rich bibliometric data that allow us to measure scientific outcomes for researchers based in Central European countries. Our primary dataset is constructed from the national research repositories of three Central European countries, namely Hungary, Slovenia and Croatia. These repositories, known as Current Research Information Systems (CRIS), are national bibliographic databases in which researchers and their institutions record their publications, in all languages and document types. They provide near-complete coverage of all research activities of researchers working in these countries. We translate and harmonise them to create a comprehensive dataset of scientific publications and researchers in these countries. In addition, we rely on OpenAlex, an international, centralised database with detailed information on co-authorship networks and institutional affiliations, which allows us to analyse outcomes that cannot be observed in the national data, in particular international collaborations and researcher mobility. From these two types of sources, we construct a broad author-year-level panel dataset covering the period from 1990 to today, allowing us to track academic outcomes over several decades.

We address the first question by studying whether, within Hungary, researchers are affected differently depending on their perceived political positions. Our empirical strategy relies on our ability to identify the perceived political alignment of researchers using information prior to Viktor Orbán's election in 2010, in particular their membership of, or proximity to, groups and institutions with a known political orientation, and the topics they work on. We then split academia into three groups. *Ally* researchers are perceived as supportive of the government, because they belonged before 2010 to political groups or institutions close to it. *Non-aligned* researchers are perceived as opposed to the government. They include two subgroups: *political opponents*, i.e. researchers who belonged before 2010 to political groups or institutions perceived as opposed to the government, and researchers who work on topics at odds with the government's agenda, such as gender studies. *Neutral* researchers, who represent the majority of Hungarian academia, have no collaboration ties with either aligned or non-aligned groups. These categories reflect how researchers are likely to be perceived, not their actual political opinions or engagement. To account for spillovers, we also build a continuous measure of proximity to political opponents in the collaboration network, which allows us to study researchers who are not directly targeted but collaborate with them. Then, using a difference-in-differences design, we compare non-aligned and aligned researchers with neutral ones. We find that researchers who are perceived as non-aligned experience a significant drop in their total number of publications, in their number of publications in top journals, and in the citations they receive. After 2010, political opponents publish 18% fewer papers than neutral researchers, and 59% fewer papers in the top 10% most-cited journals. These findings are consistent across both subgroups of non-aligned researchers, political opponents and researchers working on sensitive topics.

We investigate the mechanisms through which this drop in academic productivity occurs. Funding does not appear to be the main channel: the penalty we measure on academic outcomes is similar for researchers affiliated to public and private institutions, and access to outside funding does not offset it.

Instead, we show that the decline is likely due to the negative impact on researchers' networks: political opponents have 16% fewer co-authors and form 15% fewer new collaborations after 2010. Conversely, researchers who are perceived as politically aligned do not experience the same decrease in their productivity. All these effects intensify over the years and across Viktor Orbán's successive terms, suggesting that the stronger the pressure on researchers becomes and the longer it lasts, the larger the consequences for their performance. These consequences are not confined to the core network of non-aligned researchers: their co-authors also publish 15% fewer papers and 17% fewer papers in top 10% journals, although the effect fades as the distance from clearly identified political opponents increases.

Second, we show that researchers perceived as political opponents have strong behavioural responses to political pressure. We draw explicitly on the *Exit, Voice, and Loyalty* framework of Hirschman (1972), adapted to the context of academic freedom backsliding, in which scholars facing political pressure may choose to adopt different strategies. We first develop a static theoretical framework, in which each researcher is characterised by two parameters, her return to migration and her political alignment, and we derive empirical prediction on researchers' choice of strategy. We then show show that political opponents are more likely to leave Hungary and to obtain affiliations abroad, without leaving academia. This exit is concentrated among the researchers who are targeted by the government and who are at the top of the distribution in terms of pre-2010 academic outcomes. We also analyse the content of publications and show that these researchers are more likely to *voice*, that is, to publicly express dissent in their academic work, for instance by publishing on democratic backsliding, academic freedom or the rule of law. This *voicing* behaviour is strategic: researchers express their dissent mainly in English and reduce it in Hungarian. Finally, we document *self-censorship* as a fourth strategy, distinct from both *voice* and *loyalty*. Scholars working on politically sensitive topics, such as gender studies, move away from their previous research topics in their Hungarian-language publications, while maintaining them in their English-language publications. They do so without converging towards the research of government-allied researchers. Like strategic *voicing*, self-censorship thus reduces the domestic visibility of politically sensitive research rather than abandoning it.

Finally, we assess whether declining academic freedom also has a cost for researchers who are identified neither as political opponents nor as allies. We compare neutral Hungarian researchers with matched researchers in two neighbouring Central European countries, Slovenia and Croatia, using a difference-in-differences strategy. This comparison captures the effect of the policy environment common to all Hungarian researchers, whereas the within-Hungary analysis captures the additional effect of being perceived as non-aligned.Surprisingly, the main effect of illiberal policies on Hungarian academia as a whole is an increase in the number of publications, mostly in Hungarian. At the same time, Hungarian researchers become increasingly isolated: their national collaborations expand while their international collaborations contract. The quality of their research also declines, as their publications in the top 10% most-cited journals fall by about 60% during Orbán's third mandate. Finally, researchers working in

Hungary before 2010 become more likely to move abroad durably and to leave academia, by about 25 to 30% relative to their pre-2010 baseline. These effects are not confined to the social sciences: we also find a decline in research quality and more exits among researchers in the life and health sciences. Our results suggest that illiberalism in Hungary did not reduce the number of publications, but changed how the same researchers do research: they publish more in Hungarian, less in top international journals, and collaborate more at home than abroad, and that exit, either abroad or out of academia, is an increasing alternative for some of them.

Our work contributes to several strands of the literature.

First, building on a broad literature linking political institutions and economic growth (Acemoglu, 2009; Papaioannou and Siourounis, 2008; Funke et al., 2023), prior work has studied the impact of political shifts on science and innovation. Hager et al. (2026) show the importance of academic freedom and democratic institutions in shaping the creation of knowledge in the long run. From a historical perspective, political conflicts or pressure have also had a large impact on researchers' academic performance, as during the First World War (Iaria et al., 2018), the Second World War and the Nazi regime (Waldinger, 2012; Moser et al., 2014; Waldinger, 2016), and the Inquisition (Dewitte et al., 2022; Cox and Figueroa, 2025). Prior work has also measured the impact of Catholic censorship on scientific publication, for instance in modern Italy (Blasutto and de la Croix, 2023) or on the mobility of "thinkers" (Becker et al., 2021). China has attracted particular attention, as it seems to reconcile tight political control over science with fast-growing innovation (Bergeaud and Verluise, 2022), although its academia has been affected by US sanctions (Aghion et al., 2026). Acemoglu et al. (2021) show that, through changes in university leadership, Communist Party leaders exert pressure on Chinese universities, significantly changing research direction, while censorship has had lasting effects (Bai et al., 2024). Beraja et al. (2023) highlight the reverse relationship, showing how innovation can in turn reinforce autocratic power. More recently, and in a democratic context, Rohner et al. (2026) find that economists respond strongly to political threats to funding after the US government published a list of undesirable words in 2025. Our paper contributes to this literature on the influence of politics on science and innovation in three ways. First, rather than an authoritarian dictatorship, we focus on a more contemporary form of repression, illiberal democracy, and explore its effects over a longer time horizon and across a wider set of domains. Second, we extend the analysis of the innovation costs of political repression from a small targeted group to the entire population of researchers within a country. Third, we provide an empirical application of the Hirschman (1972) framework in a contemporary political context: we precisely measure strong reactions from researchers and document new types of behaviour among scientists, such as expressing dissent and self-censoring.

Second, we contribute to the growing literature on the costs of political engagement for researchers. Aside from research on trust in science and political opinion (Cologna et al., 2025), our work is closely related to Alabrese et al. (2024), who quantify the cost in credibility incurred by researchers who publicise

their political opinions online. Here, we quantify the productivity costs for researchers whose political opinions are publicly known, or merely inferred from their affiliations or research topics: in our context, researchers do not need to express political views to bear these costs, as being perceived as politically opposed is enough.

Third, we build on the literature on the location choices and high-skilled migration of researchers and inventors to assess the effect of the regime change on migration behaviour. A large strand of this literature focuses on the impact of high-skilled immigration on the destination country or university (Borjas and Doran, 2012; Moser et al., 2014; Lerner et al., 2024). Another strand has also examined the determinants of emigration from the country of origin, including women's rights (Nejad and Young, 2014), rising taxes (Akcigit et al., 2016), and network connections (Choudhury et al., 2023; Becker et al., 2024). A related body of work has instead considered gains for both sides, in particular for the country of origin, through knowledge or productivity diffusion (Bahar et al., 2022; Batista et al., 2025; Prato, 2025). Our paper lies at the intersection of these last two strands: for contemporary Central European countries, we quantify both the political determinants of emigration and its costs for scientific production in the country of origin.

Finally, our paper builds on the science of science literature that measures scientific outcomes. Prior works have studied the impact of external determinants on researchers' output (Azoulay et al., 2010, 2011; Aghion et al., 2023; Carayol et al., 2025), both in terms of quantity and quality of their research. We also rely on previous scientometric work on academic outcomes (Kronegger et al., 2011) and on work evaluating international databases (Boyack et al., 2014) and national research information systems, notably in Central Europe (Hladík and Renisio, 2025). We contribute to this literature in two ways. First, while Kwiek (2016) shows that top European researchers are comparable across countries, we document that political choices can have lasting effects that make researchers systematically different from those in countries where such choices were not made. Second, unlike previous comparisons of global and national systems (van Leeuwen et al., 2016; Háló and Demeter, 2023), we are, to our knowledge, the first to combine an international database with several national ones across all disciplines, at the level of both researchers and publications. This allows us to cover non-English publications and the social sciences and humanities, which are usually excluded because international databases cover them poorly, yet are the primary targets of anti-intellectual rhetoric.

The remainder of the paper is organised as follows. Section 2 describes the political and academic context of Hungary after Viktor Orbán's election in 2010. In Section 3, we detail our data collection work and define the variables we use in the analysis. Section 4 details the empirical strategy we implement. Section 5 presents our first set of results, explaining to what extent and how political pressure affects scientific outcomes for researchers in Hungary. Section 6 presents our second set of results, investigating the behavioural responses of scientists to political threats. Section 7 presents our results regarding the global impact of illiberal policies on researchers. Finally, Section 8 concludes.

2 Political Context, Illiberalism and Threats to Academic Freedom

During the general election of April 2010, Viktor Orbán's party, the Fiatal Demokraták Szövetsége (*Alliance of Young Democrats*, Fidesz), unexpectedly obtained a supermajority, receiving 53% of the vote and 68% of the seats in Parliament, defeating the incumbent socialist majority. These electoral results marked a turning point in Hungary's modern political history. At the time of the election, Fidesz proposed a right-wing and conservative program aimed at creating a "new social contract for the country." The party's large electoral victory was interpreted by its leaders as a general rejection of liberal values by the Hungarian people, opening the way for structural changes in the state's organization to reflect new conservative values (Pap, 2017). Viktor Orbán, as leader of Fidesz, became Prime Minister of Hungary in May 2010. His government quickly began implementing reforms aligned with what he described as "non-liberal" principles.

According to several international organizations and NGOs, there are multiple dimensions through which post-2010 governments have facilitated Hungary's transition from a "liberal" to an "illiberal" democracy.[2] A new Fundamental Law is promulgated on April 25, 2011, which weakens several components of the system of checks and balances that previously limited governmental power. In several independent authorities (in particular the judiciary and the media authority), the Parliament dismissed existing leadership and replaced it with party affiliates, while expanding the authority's powers and making their removal procedures significantly more restrictive (Bánkuti et al., 2012). More generally, since the 2014 general elections, Hungary's electoral process has been characterized as "free but unfair" (Bíró-Nagy, 2017), particularly due to restrictions on political advertising that have created unequal conditions for electoral competitors.[3] For instance, Kelemen (2017) highlights the chilling effect of Article 81 of Act CLXXXV on Media (2010), which grants regulators broad discretionary authority to sanction journalists whose content is deemed not "balanced, accurate, thorough, objective, and responsible". The European Commission for Democracy through Law has similarly criticized this law as overly broad and discretionary.[4]

Throughout all of the steps towards illiberalism, academic freedom in particular was increasingly targeted through different means. While its state had been constant since the fall of the Eastern Bloc, Hungary experienced a sharp decline in academic freedom after 2010.[5] In this paper, we consider that academic freedom has two dimensions. First, we use the researcher-centric definition given by Russell (1993), who defines it as the "freedom to question and test and develop new ideas without undue harassment or in-

[2] Human Rights Watch or Amnesty International consistently report on threats to the rule of law in Hungary and the threats to democratic institutions.

[3] See the OSCE / ODIHR Limited Election Observation Mission report.

[4] Opinion No. 798/2015 of the Venice Commission.

[5] This is particularly striking when considering the Academic Freedom Index (AFI) developed by V-Dem for Hungary. While it is constant between 1991 and 2010 at 0.95, it drops to 0.63 already in 2011 and keeps declining down to 0.3 in 2022, the lowest level among all the members of the European Union. See Figure A.1.1 and Figure A.1.2.

terference". In addition, we also consider a university-centric definition, from a historical perspective, in which we define academic freedom as the institutional right to autonomy for academic institutions. While we can consider the first dimension to be continuously threatened since 2010, this section focuses on three salient reforms during which the second was breached, all linked to electoral cycles. First, while the new Act on Higher Education in 2011[6] was already a major turning point, it was replaced in 2014 by another method of control of universities through a new position, still appointed directly by the Prime Minister. Chancellors have the responsibility of managing the university's financial resources, which undermines the power of rectors and allows the State to maintain a certain level of control over the university's choices. Moreover, up to a third of the appointed chancellors have a connection to the ruling party (Kováts, 2015). Although this position was somewhat mitigated by the introduction of a supervisory board to which both the rector and the chancellor belonged in 2015, its introduction led to an outcry in public universities, as it amply limits the power of rectors and muddies the line between university management and the government (Rónay, 2018). This process was furthered by the introduction of consistories in 2015, financial boards in which four out of five members were named by the government. Secondly, as part of the campaign leading up to the 2018 legislative elections, the Central European University (CEU), founded and funded by billionaire George Soros, was targeted as early as late 2017. This led to a legal battle that forced the university to permanently relocate to Vienna in 2019. Directors and more generally all professors affiliated to the University were accused of being both agents of external forces and of "social degeneracy", especially due to the existence of gender studies classes (Enyedi, 2022). The final and largest changes imposed on public higher education by the government have been the "regime change" started in 2018, when the Budapest University of Economic Sciences, now called Corvinus University Budapest, became owned by a public interest foundation. This model was then applied to twenty other public universities comprising the majority of university students in the country until 2022. While this seems to relax the State constraints on universities, the boards of these public interest universities comprise many Fidesz-aligned trustees (Szent-Iványi and Tétényi, 2022), meaning that up to a third of these trustees are Fidesz politicians, not including others who are supportive of the party (Kováts et al., 2024).

Although organizational reforms have been the primary lever used to undermine academic freedom, the threats to its individual aspect should not be minimized. Reforms have indeed been accompanied by increased pressure on researchers through State-aligned media, which labels government critics as wasteful or politically motivated, rather than driven by science (Kováts and Rónay, 2021). Fidesz and pro-Orbán media have pressured researchers through campaigns that accuse them of collaborating with NGOs or affiliating with institutions perceived as opponents. These campaigns have been particularly

[6]Act CCIV of 2011, in which "autonomy" and "freedom" were no longer guaranteed but replaced by the necessity of "the spiritual and intellectual renewal of the nation". Furthermore, university rectors – who are responsible for professor recruitment, formerly elected by their peers, had to be appointed by the Prime Minister.

aggressive against academics, often using traditional populist rhetoric targeting elites and minorities, for instance in the campaign against Central European University, directed toward scholars and frequently employing antisemitic rhetoric (Jenne et al., 2022).[7] We provide more details on the political context and the threats to researchers and academic freedom in Appendix A.

3 Academic Data Collection

We conduct our analysis using bibliometric data coming primarily from two types of sources. The first type consists of several national-level databases on research activities, that are specific to each country included in our analysis. The second is OpenAlex, an open-access, world-wide publications database constructed from Microsoft Academic. We combine these sources to build our final datasets.

3.1 Current Research Information Systems

Our first type of data source is an aggregation of several national Current Research Information System (CRIS) databases. These datasets are national-level repositories that document all research activities within a country, typically established in the 2000s as part of a global effort to enhance research transparency. These datasets generally contain either data about researchers and their publications or project-level data, though some are publication-level databases. In addition to Hungary, we also consider several countries from Central-Eastern Europe, specifically Croatia and Slovenia.[8] All of these databases are part of the EuroCRIS initiative, ensuring they comply with similar standards,[9] and thus converge to adhering to the Common European Research Information Format, which allows us to exploit these databases together in spite of their idiosyncrasies. Researchers also have some level of control over the information which appears on their profile and the publications that are listed in the repositories.[10]

For each source, we download data in the available format and apply a translation and harmonization process in order to be able to append all different datasets into one. We then use the data we collect in order to build panel data, at the author-year level, that accounts for the academic performances of

[7] Jenne et al. (2022) give the following reason for this "Sorosozás", which they translate as "Soros-bashing": capitalizing on existing antisemitic tropes to compete against the explicit far-right party Jobbik during the general elections campaign of 2018, including antisemitic rhetoric already directed at Soros from the 1990s emanating from Csurka's MDF against which Orbán pushed back at the time. Authors explain that this campaign was instrumental in helping Fidesz secure a third veto-proof majority in 2018. We further link this battle with the ban for all Hungarian universities (but applying only in practice to Eötvös Loránd University) to offer a master's degree in gender studies, considered to be progressive propaganda pushed by George Soros.

[8] We do not consider Poland, due to the fact that the country was led by the right-wing populist Law and Justice party from 2015 to 2020, again with direct reference to Orbán's governance. We also do not consider Austria due to the relocation of the Central European University in Vienna that could create a bias in our estimation. In addition, we exclude Czechia and Slovakia due to incompatibility of the data with panel analysis at the other level.

[9] See `https://eurocris.org/` for more information.

[10] While this gives us confidence in the accuracy of author-level profile information, there could be a selection bias in the publications that indeed appear to be linked to each author. We address this concern with several robustness checks in our results section and in Appendix B.

each researcher. In addition to publication-level data, CRIS databases collect extensive author-level information, including full names, fields of research, PhD completion year, and unique identifiers for each author. For authors for whom we have the information, we harmonise the field of research across CRIS data bases.[11] This process results in a large sample of academics from the three countries: in its raw form, the dataset includes information on over 60,000 researchers in Hungary, 40,000 in Slovenia, and 50,000 in Croatia, who entered Academia after 1950. To the best of our knowledge, we are the first to use these CRIS data sources in the science of science and innovation economics literature. These data offer broader, more accurate coverage of research activities in smaller countries, without introducing bias related to researchers' fields or productivity that could occur in international bibliometric data bases. We believe these specificities allow us to precisely identify the effect of political pressures on academic performance. Additionally, these national repositories are mainly used by researchers who are citizens of the countries in which they work. We argue that this nationality-based selection is not an issue for our analysis, as "national" researchers still make up the vast majority of academics in all the countries considered. Moreover, political pressure is likely to have a stronger impact on national researchers, while affecting foreign academics in Hungary differently.

3.2 International Bibliometric Data

The second major data source we use is OpenAlex, an open-access bibliometric database created from Microsoft Academic in 2021. It contains data on 247 million works, 90 million authors, and 60,000 concepts (Priem et al., 2022). We use OpenAlex data for publications from 1990 onward. While Scopus and Web of Science have often been considered more detailed in terms of co-author networks, Microsoft Academic was regarded as one of the most comprehensive databases, particularly for publications not written in English (Visser et al., 2021).

Using both publication-level and author-level data from OpenAlex, and after correcting for some measurement errors[12], we construct a panel of authors active in Hungary and other Central European countries we take into account prior to 2010. This database allows us to create an author-year level panel that includes various measures of research quantity and quality for each author, as well as data on their co-author networks and academic affiliations. While national CRIS databases already provide extensive information on individual researchers' activities, OpenAlex is crucial for capturing *international* outcomes. Specifically, it enables us to track researchers' international mobility through their affiliation and their collaborations with foreign researchers who are not included in the national repositories data.[13]

[11] We provide more details on the collection of the data, its harmonization and the construction of our final panel data set in Appendix B

[12] See Appendix B.3.

[13] In national repositories, names of researchers who do not work in the corresponding country often appear in the list of co-authors. They however do not have any unique author ID, and we thus use OpenAlex in order to be sure they are affiliated to a foreign-based institution.

To jointly use these data sources, we proceed as follows. First, we normalize publication titles[14] and collect common external identifiers (Digital Object Identifier (DOI) and Scopus identifiers) for publications across all databases, both national repositories and OpenAlex. We then merge the databases pairwise, matching publications based on identifiers, titles, and publication year, keeping only unique matches. These matched publications are then used to link author profiles across databases using author names. Additionally, we perform a second round of matching based on authors' names, affiliations, and research areas. We treat the national databases as the primary source of truth in this process, as they are curated directly by researchers and/or universities, whereas OpenAlex relies on a clustering algorithm to generate author profiles due to its larger scope[15]. Using this method, we for instance match 52,172 author profiles from the Hungarian CRIS to 57,536 OpenAlex profiles and 15,954 profiles from the Slovenian CRIS to 19,432 OpenAlex profiles. We are also able to match 360,155 publications from the Hungarian CRIS and 112,328 from the Slovenian one.

3.3 Measures of Academic Performance and Mobility

3.3.1 Quantity, Quality and Network

The main outcome of interest is the quantity of research that is produced. As baseline outcome of interest, we use the raw number of publications by a given author in a given year. We then subdivide this number depending on the language of the publication. More precisely, we distinguish the number of publications in English from the number of publications in the "national language" of the country[16].

To account for the quality of research outputs, we use the rank of the journal in which an article is published. Specifically, we compute the average journal rank in OpenAlex using the Scopus CiteScore methodology, which is based on citations[17]. Journals are categorized into the following groups: bottom 50%, top 10%, top 5%, and top 1% cited journals. We then count the number of publications per author, per year, in each journal category. This method is particularly useful since citation counts per publication are not consistently available across all CRIS sources. Additionally, citations are only considered within national repositories, which makes them primarily a proxy for the influence of research within the national

[14] Specifically, we convert titles to lowercase ASCII characters, remove stop-words, and eliminate non-alphanumeric characters.

[15] We give further details on our data analysis and decisions regarding multi-profile authors in OpenAlex in Appendix B.3.

[16] For instance one publication in Hungarian for a Hungarian researcher is counted equivalently to one publication in Slovenian for a Slovenian researcher.

[17] Following James et al. (2019), we compute the journal rank by considering citations received by each journal relative to the total document counts over a four-year window in OpenAlex. This ranking is then merged with each publication in the CRIS data using the ISSN of the publication source. The rank is taken at the field level. We do not use the impact factor provided by OpenAlex due to its limited availability prior to 2012.

research community, rather than an indicator of overall quality[18].

We further measure the impact of the political shock on researchers' collaboration networks. For this, we count the number of collaborations per researcher per year. We define a collaboration as co-authorship link between two researchers; multiple joint publications within the same year between the same authors are counted as a single collaboration during a given year. We also count the number of new collaborations, defined as first-time co-authorships. For these variables, in OpenAlex, we also distinguish collaborations *within the country* from co-authors that we identify as being from a different country, thus constructing a measure for international collaborations.

3.3.2 Research Direction

We also measure research direction by encoding the titles of researchers' articles using a sentence transformer BERT model trained on a multilingual corpus. Similarly to the method of Arts et al. (2025) for all of OpenAlex, we then compute for each researcher present in all CRIS the average cosine similarity between the titles of the articles published each year and the titles of the articles published in the last year in which she published. We call this measure similarity with past research. We also compute the cosine similarity with the average embedding of political allies and opponents in the current year, either those who work in the same domain (Social Sciences, Health Sciences, etc.), field (Economics, Chemistry, etc.) or subfield (Applied Mathematics, Genetics, etc.) as defined in the OpenAlex classification. We provide more information about these measures in Appendix E.

3.3.3 Researcher Mobility

Finally, we measure researchers' mobility, considering only migration out of their *home* country, defined as the country in which the researcher is listed in the CRIS data or identified through their affiliation in OpenAlex. OpenAlex provides affiliation data for each year an author publishes, allowing us to track their mobility between affiliations. We create the following indicator variables: whether the author has published in their home country that year; whether the author has published outside their home country that year[19]; whether the author has not published in their home country for a specified number of years; and whether the author has stopped publishing in their home country, meaning they are no longer seen in the home country after that year. Additionally, we account for exits from research altogether, measured by whether a researcher leaves academia, based on the last year they published.

[18] Since this variable is available in the Hungarian national repositories, we mainly use it to assess academic influence among peers in Hungary.

[19] For both of these variables, the indicator takes the value 0 if the author has not published that year.

4 Empirical Strategy

4.1 Sample Selection

This paper addresses two distinct aspects of the impact of political pressure on innovation, and we therefore construct two sets of samples. The first focuses on identifying the direct effects of political repression on researchers within Hungary. The second concerns the broader impact of illiberal policies on the state of academia in Hungary, thus comparing Hungarian researchers, who were exposed to illiberal policies, and their counterparts in other Central and Eastern European countries.

4.1.1 Hungarian Scholars and Political Targets

We first focus on differences between researchers within Hungary based on their perceived political alignment. From the raw sample of researchers in the Hungarian CRIS database, we only keep those with at least one publication between 1990 and 2005, and whose entry year falls between 1990 and 2005. Among these researchers, we identify those who could be perceived as politically non-aligned or aligned with the government after the 2010 elections, relying exclusively on authors' individual characteristics measured before 2010[20].

(i) Political Opponents – This sample aims at understanding the trajectory of researchers that we have identified as perceived to be "political opponents" of the regime. We do so based on two different definitions. First we consider all researchers that are affiliated to the Central European University prior to 2010, as members of the CEU have always been identified by conservative politicians and members of the Fidesz as clear opponents of Viktor Orbán. Second, we establish a list of politically involved researchers that collaborate closely with Non-Governmental Organizations that are particularly hostile to Viktor Orbán's policies. In total, the list comprises 440 researchers. All researchers belonging to this political opponents group have been matched to their identifiers both in CRIS data and OpenAlex data by hand[21].

(ii) Non-aligned Topics. While scientists perceived as political opponents have been directly targeted through laws and media action, this is not the case for the vast majority of researchers. Others may still feel that they are indirectly a target of the regime, particularly due to the topics they focus on. We propose here an attempt to capture how working in a field of research negatively perceived by the Fidesz governments could expose an author to a chilling effect. We thus focus on researchers publishing on two types of topics. First, those who work on gender-related issues, a subject that has been demonized in the press, and forcibly excluded from the programs of universities. Gender is also a subject which

[20] For robustness, we consider alternative time windows to define researchers' alignment, restricting the definition to pre-2005 characteristics or extending it to characteristics measured up to 2010.

[21] We provide more details about how these researchers are chosen and how they are matched in all data bases in Appendix C.

spans more than one domain of science: gender and sexual differences have implications not only in social sciences, but also in health sciences and life sciences. Secondly, we define a set of authors working on *sensitive topics*, *ie* on topics that are often heavily politicized, dealing with issues that might go against the government-aligned speech on National History (Deportation, Antisemitism, Roma persecution) or on minorities (refugees, humanitarian crisis, etc.)[22]. We use a list of keywords to understand whether the title of a publication refers to gender and sexual issues or a *sensitive topic*. We consider that researchers with at least 3 publications or more in these topics between 2000 and 2005 are likely to be specialised. We find in total 1,082 researchers working on gender and 890 researchers working on *sensitive topics*[23].

(iii) Political Allies – This sample focuses on researchers who can be considered politically supportive of the regime. We identify these individuals using the membership list of the Batthyány Society of Professors[24], a conservative academic circle closely aligned with Fidesz, and the website of the Mathias Corvinus College, a think-tank closely linked to the regime. We treat membership in these organizations as indicative of being perceived as an ally to the government. This sample is of 171 researchers in our data set.

In summary, we distinguish 4 non-overlapping groups within the full raw sample of Hungarian researchers. On one hand, among non-aligned researchers, there are academics perceived as political opponents *(i)* and researchers working on non-aligned topics *(ii)*. On the other hand, conservative researchers, aligned with the regime and illiberal policies *(iii)* which are further named *Ally* academics. The remaining researchers belong to the *perceived as neutral researchers* group. This final group is the control group of our different politically aligned or non-aligned groups. In other words, we compare the research performance and career trajectories of political opponents and conservative researchers to their neutral counterparts, matched based on similar observable characteristics, namely first year of publication, scientific field and vigintile of total publications over the period 2005-2010. Additionally, we ensure that control researchers are not co-authors of either political opponents or conservative researchers, for instance using the network measures that are described in the following subsection. The final samples have the following compositions: 226 political opponents are compared to 498 neutral researchers, 933 researchers working on gender with 10,667 neutral researchers, 832 researchers working on *sensitive topics* with 10,049 neutral researchers, and 58 researchers loyal to the government with 193 neutral researchers.

Network Analysis

All authors from the former samples are part of fully defined, identifiable groups that are politically aligned. The same reason why our methodology allows us to be certain that they are exposed to the

[22] Refer to Appendix C.4 for the full list.

[23] We also consider for robustness researchers working on *climate change* issues, who are often a target of illiberal governments in other context but less likely to be the case in the Hungarian one.

[24] Founded in 1995 for professors "committed to traditional European social virtues". See here for more detail.

political shock also prevents us from assessing the effect of that shock on other researchers who may diverge from the regime or be aligned with it. Those researchers could be heterogeneously affected in a similar manner, but are not part of structured groups. Furthermore, outcomes of the aforementioned well-defined group may have spillovers on connected researchers. In order to capture these potential effects, we make the assumption that researchers are more likely to work with researchers with whom they are closer to politically, in particular in contexts in which political affiliation becomes more salient. Using these connections, we build a sample of authors *connected* to the samples defined above.

Not all co-authors have relationships with the same depth and interdependence. We thus must take into account the fact that a co-author of a political opponent on a single paper does not have the same exposure to the political shock as a long-term, frequent collaborator. We use the dependence index from Aghion et al. (2026) to measure this proximity:

$$C_i^g = \sum_{\ell \in \mathcal{P}_i} \omega_{i\ell} \cdot \sigma_\ell^g$$

in which C_i^g is the index of proximity between individual i and group g over the 2000-2010 period. For each publication ℓ in the publications $\mathcal{P}_i$ of author i, we compute $\omega_{i\ell}$, the ratio of citations to publication ℓ to the total citations received by author i for all their publications over the period. We then sum all $\omega_{i\ell}$, weighting them by σ_ℓ^g, the share of authors of publication ℓ that belong to group g, i excluded. In other words, C_i^g measures the share of citations for author i that can be attributed to collaborations with group g, weighted by the intensity of these collaborations.

This index only measures the intensity of dependence on the affected groups for direct co-authors. But there is no reason to believe that spillovers or political closeness would stop after the first degree in the network. We therefore expand this definition to also take into account higher degree links between the politically aligned groups and other researchers. Let us define W as the co-authorship matrix, in which $w_{i,j} = \sum_{\ell \in \mathcal{P}_i \cap \mathcal{P}_j} \omega_{i\ell}\omega_{jl}$ measures the strength of collaborations between i and j. We transform this matrix into $\bar{W}$ so that the sum of each row equals 1. Let us also define $\mathbf{c}^g = (C_i^g)_i$ as the vector of direct indices from the first-degree index. We consider that the propagation of the shock across the network decays with a parameter $\lambda = 0.5$, up to the third degree of collaborations[25]. This yields the following continuous index:

$$C_i^{g,\,\text{net}} = C_i^g + \lambda \left(\bar{W}\mathbf{c}^g\right)_i + \lambda^2 \left(\bar{W}^2\mathbf{c}^g\right)_i$$

We provide a simplified example of the co-authorship network in Figure 1, for one researcher belonging to the Central European University, represented by a circled red star. Other researchers from the same

[25]If we considered only the first-degrees co-authorships, then $\lambda = 0$ and $C_i^{g,\,\text{net}} = C_i^g$. Results in the following sections are robust to different values of λ.

group group $g = CEU$ are also represented with a star, and intensity of the value $C_i^{g\,\text{net}}$ is shown in lighter to darker blue. Some researchers that are only connected to group g from another link may have a stronger $C_i^{g\,\text{net}}$ than some first-degree co-authors because more of their citations come from publications with close co-authors of group g. As the different values of $C_i^{g\,\text{net}}$ on the graph show, this dependence is taken into account by our measure. Throughout our analysis, we refer to a researcher as being part of the network of a given group if their value of $C_i^{g,\,\text{net}}$ is strictly above the median of the value in the dataset for this group (*Opponent Network* or *Ally Network* for instance). After removing researchers who belong to both groups, we keep 5,845 members of the *Opponent Network* and 4,529 members of the *Ally Network*. In order to remove selection bias in our regressions, we compute placebo networks made from groups matched from opponents and allies, respectively yielding networks of 10,749 and 6,483. We finally remove all authors who belong to two given networks at the same time and match researchers from each network with researchers from the corresponding control network on the same observables as in the above section. The resulting samples comprise 3,592 members of the *Opponent Network* with 2,544 researchers from the control network for opponents, and 1,899 members of the *Ally Network* with 1,028 researchers from the control network for allies[26].

4.1.2 Hungarian and Central-Eastern European Researchers

In addition to comparing the trajectories of researchers *within Hungary*, we aim in section 7 at measuring the global effect of illiberal policies on academia, performing cross-country author-level comparisons between Hungarian researchers and researchers based in Slovenia and Croatia. Such comparisons between countries are not often performed[27]. We however argue that such comparison is in our case possible, thanks to the quality of the data we use, which allows us to build a precise matching procedure based on author-level characteristics. We start with the same restrictions as above, in all of CRIS data, only keeping those with at least one publication between 1990 and 2005, and whose entry year falls between 1990 and 2005. This yields in total 36,731 Hungarian authors, 15,728 Slovenian researchers and 21,912 Croatian researchers. To ensure comparability between the treated and control groups, we perform exact matching over the selection period (2000-2005), allowing for replacement, using the raw sample of authors we previously obtain. The matching variables include the year of entry of the researcher in academia, the field she works in and the quantile this researcher belongs to in terms of publication in the CRIS data.

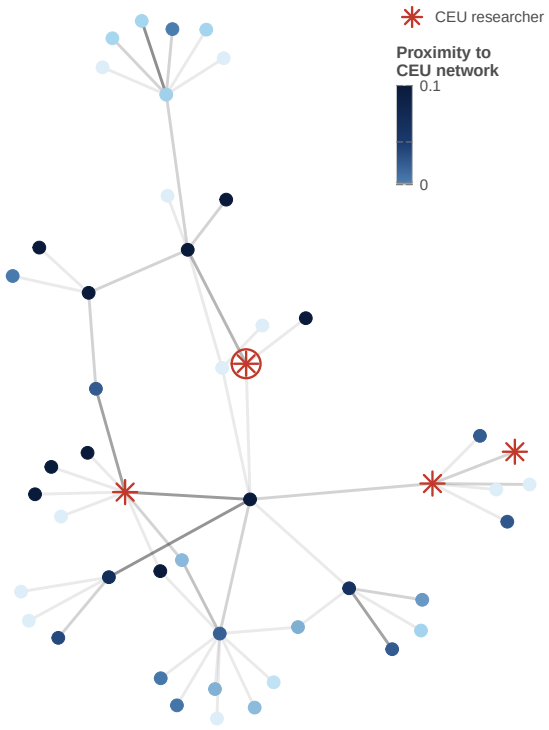
4.2 Comparing Academic Performance Across Researchers

For each sample we define, we estimate a difference-in-differences regression comparing the group of researchers of interest with a control group drawn from the *researchers perceived as neutral* group. We

[26] See table Table C.3.1.

[27] See for instance Kwiek (2016), for a cross-nations comparison of highly productive academics in Europe.

Figure 1. Opponent Network Example



Notes: The schema above reports an example of the network that we identify when computing the collaboration index. The displayed network is the network of the researcher at the centre of the schema, represented by a circled red star (in that example $g = CEU$, and the schema displays up to 3 degrees of collaborations between authors).

formally investigate the effect of political pressure on researchers' career trajectories by sequentially estimating the following equation:

$$Y_{it} = \sum_{t=2005}^{2020} \beta_t D_i \times Post_t + \alpha_i + \delta_t + \sum_{s=2005}^{2020} X_i \times \mathbb{1}_{\{t=s\}} + \epsilon_{it} \tag{1}$$

where Y_{it} is the outcome variable measuring academic performance for researcher i in year t. The treatment indicator D_i takes the value 1 if the researcher belongs to the group of interest and 0 if assigned to the matched control group, as defined in Section 4.1. The variable $Post_t$ is a binary indicator equal to 1 for years after 2010, the onset of illiberal policy implementation. The model includes individual fixed effects (α_i) and year fixed effects (δ_t). The term X_i represents a vector of time-invariant researcher characteristics, interacted with year fixed effects to control for their influence over time. In our baseline specification, X_i comprises only the field and the entry year of the author. We also consider extended specifications that include additional controls such as the author's main domain of research and the number of publications in the first two or five years of a researcher's career.

In all estimation tables, we further decompose the post-2010 effect of illiberal policies into distinct dummy

variables corresponding to each mandate of Viktor Orbán (2010–2014, 2014–2018, 2018–2022, post-2022). This allows us to capture not only the overall impact of illiberal policies but also their potential intensification over time, which is likely to be gradual as the political pressure intensifies over the years and mandates.

Each exercise relies on a different treatment group. The first set of results focuses on the "core" opponents and allies, i.e., the individuals identified as *aligned* or *non-aligned* in subsubsection 4.1.1. Once the exact matching procedure is performed, the trajectories of these researchers are compared to those of their control group. In addition, we run similar regressions in which treatment is defined by membership in the *Ally Network* or the *Opponent Network*. For these groups, since the collaboration index we build is based on authors' publication and citation counts, we construct collaboration indexes for two additional groups, *ally control* and *opponent control*, taking as the "core" of each network the matched controls of the corresponding treated group. For individuals belonging to the *Ally Network* or the *Opponent Network*, the control group thus consists of the networks of the matched counterparts of the "core" researchers described above. In this way, we compare not only individuals but also networks with similar structure and productivity before the 2010 elections[28].

While the estimating equation remains the same throughout the analysis, we use it to estimate different moments in the data. We believe that the first set of effects that we first estimate, while the most relevant to our research question, represents additional effects compared to the neutral group, positive or negative. The neutral researchers serve as a control group for the first part of the analysis, but we believe that they are also treated by illiberal policies. They become the treated group in our cross-country comparison in section 7.

5 How Do Political Pressures Affect Scientists' Productivity?

In this section, we first show that political pressure differentially affects the academic productivity of researchers after 2010, depending on their perceived political alignment, in terms of both quantity and quality (subsection 5.1). We also show that the effects are similar for researchers targeted through their affiliations or organizations they collaborate with, or through the topics they work on. Second, we investigate the mechanisms through which this negative impact on productivity operates (subsection 5.2).

[28] Figure C.3.1 shows the distribution of the collaboration indexes we build for the control group of ally researchers and the control group of opponent researchers.

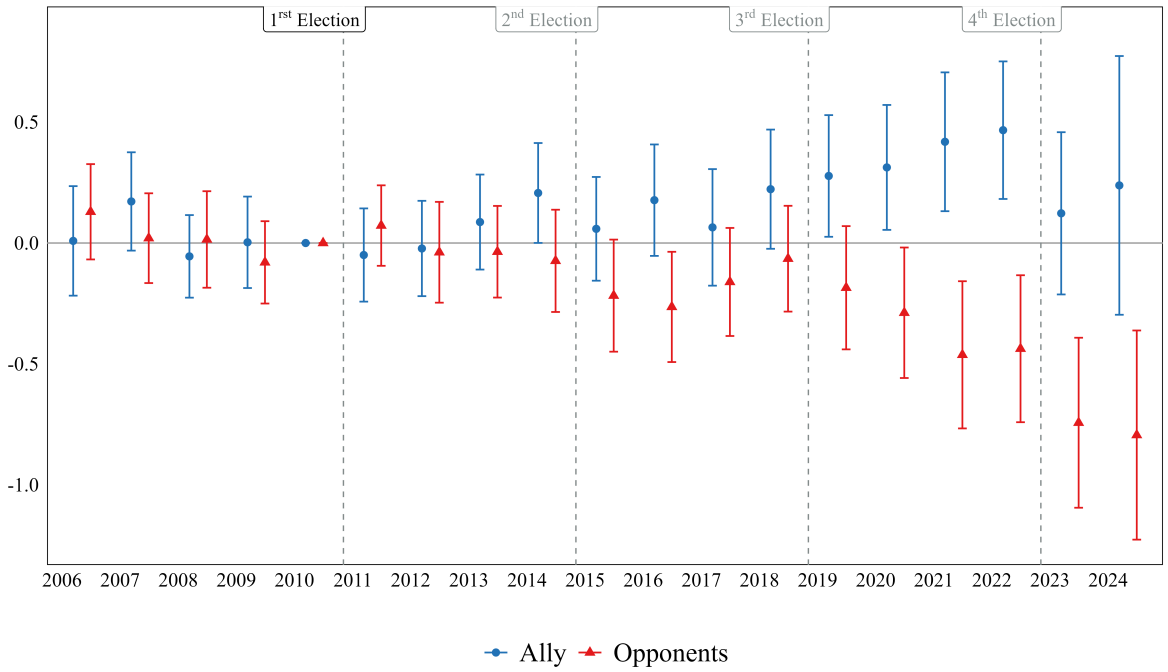
5.1 The Effect of Not Being Aligned on Academic Productivity

5.1.1 Political Opponents

This section begins by investigating the effect of illiberal policies on researchers who were directly targeted and perceived as political opponents. Our main results come from estimating Equation 1, using perceived political opponents as treated individuals and as controls researchers from the neutral group, matched on pre-2005 characteristics. These first results thus rely only on the "core" of the opponent network, as defined in Section 4.1. We contrast the results obtained on this sample with those obtained on the sample of political allies. Figure 2 shows the event-study graph for this first specification, using the yearly count of publications as the measure of productivity. When compared to neutral researchers, political opponents experienced a significant decline in the number of publications. The dashed lines in the graph represent Orbán's successive elections and re-elections. The event-study shows that the magnitude of the effect increases over the later mandates, which suggests that the more intense the political pressure through the years the stronger the impact on targeted researchers. By contrast, allies' estimated coefficients, if anything, show a slightly positive trend in their total number of publications, especially after Orbán's third election in 2018, although it disappears after 2022. Figure 3 reports the average treatment effects estimated for both groups on all quantity and quality outcomes. The negative effect on productivity holds for publications in both English and Hungarian. It represents an average decrease of 18% in the number of publications. Using the value of the pre-2010 average, this represents a decrease of 0.63 publication per year per author. We also document a strong negative effect on research quality: the figure shows the estimated effect on the number of publications in journals ranked in the top 5% and top 10% by citations. The estimate we measure represents a decrease of 59% in the number of publications in top 10%-ranked journals by citations i.e. -0.11 such publications per year per author. This effect is quite important since the pre-2010 average number of such publication per year is 0.19 publication. Researchers perceived as political allies do not appear to be overall affected, while those perceived as political opponents are over the different research quantity and quality measures we test.

Second, we not only restrict ourselves to the "core" of both perceived political opponents or allies, but also demonstrate that these effects are propagated along their network. Table F.2.1 shows smaller effects of the shock on researchers who are part of the network of opponents on the total number of publications and on the total number of publications in high-quality sources. The effect on total publications only becomes significant for the second and third mandates. When statistically significant, the effect that we measure for the network of political opponents is of a smaller magnitude than the one we measure for the individual at the core of the network, indicating that there is attenuation compared to perceived political opponents: it represents for instance a decrease of 8% in total publications during the second mandate, and a change of -22% in the count of publications in the top-10%-ranked journals. In the following section investigating the mechanisms of this effect, we show that indeed researchers at the centre of

Figure 2. Effect on Publications, by Political Alignment.



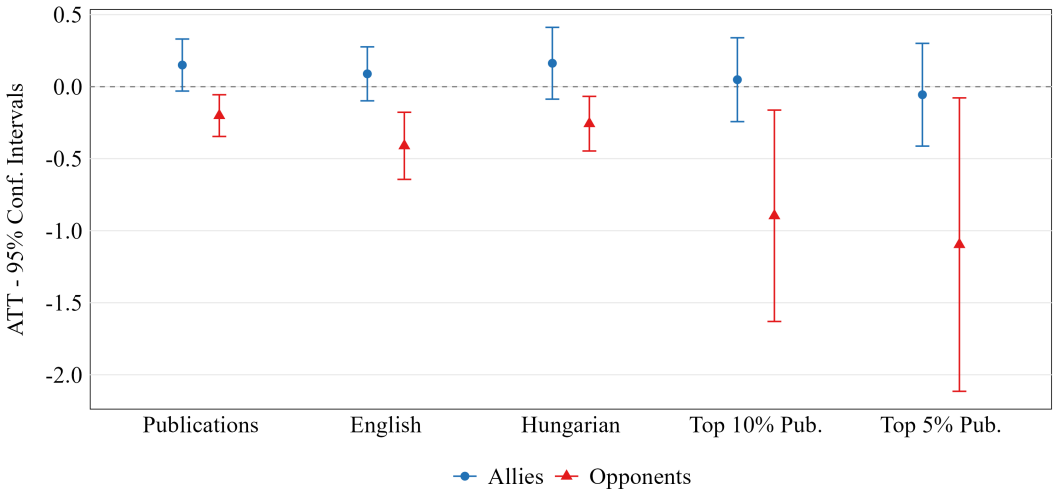
Notes: The graph above reports the coefficient in Fixed-Effects PPML regression on publications for each political group compared to Hungarian researchers that are not identified of being close to any organization targeted by the government nor to researchers explicitly supporting the government. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable.

the networks of political opponents are more impacted than the individuals located at its periphery, in their number of collaborations and in the citations they receive.We also summarize the results for ally researchers in Table F.1.1. These researchers do not incur any loss in terms of academic productivity, both in the quantity and quality of their research.

5.1.2 Targeted Topics

We then turn to the analysis on the effect on researchers perceived as non-aligned through the topic they work on. We estimate equation 1 again, using as a treatment whether the author worked in gender related topics or sensitive topics, i.e. if they had at least two publications featuring the associated keywords prior to 2005. 1. Table 1 summarises this effect on researchers' productivity. We find that both for gender-related and sensitive topics their productivity is negatively impacted, both in quantity and quality, similar to our results for political opponents. The magnitude that we measure is similar to the previous section: gender-topic researchers lose roughly 13% of total output after the policy change, with a fairly uniform hit across languages and a somewhat larger drop of 18% at the top of the quality distribution. Sensitive-topic authors show a similar pattern but with a higher effect on publication in top 5% ranked journals in terms of citations, as it represents a decrease of 25%. Targeted topics are thus affected substantially, although

Figure 3. Effect on Hungarian Academics' Productivity, by Political Alignment.



Notes: The graph above reports the ATT coefficients in Fixed-Effects PPML regressions for each political group compared to Hungarian researchers that are not identified of being close to any organization targeted by the government. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable.

the magnitude of the effect we find is smaller than the one on academics who are directly perceived as political opponent, but of a higher magnitude compared to their network. These findings — although limited to researchers working on gender-related or "sensitive" topics — are for instance consistent with the qualitative evidence presented by Kováts and Rónay (2021), which documents how concerns about potential government targeting can have tangible effects on researchers' output.

As we perform the exact same analysis as in the previous section, we only focus on researchers who entered academia in 2005 or before. The negative impact that we document on these researchers is however likely to also exists on researchers who entered after this year, especially after 2010. This assumption is supported at least descriptively, as Figure C.4.1 shows it. The figure plots the number of new researchers each year who publish more than once in gender in their first five years of activity. This count starts declining from 2015 on, which suggests indeed that the topics related to gender studies become less attractive to young researchers over the period, which likely explains partly of the negative productivity effect we find.

For all the regressions presented in this paper, we vary the variables on which we match the control to the treated group. Our preferred matching equation rely on variables that capture essential characteristics of researchers when it comes to comparing their trajectories both across-country and within Hungary. However, we also create alternative samples, using the same exact matching procedure but relaxing it by dropping some of matching variables. Doing so, we logically increase the size of both the control and treatment groups. We find that our results are robust to this exercise, and that samples with increased size

Table 1. Effect on Academic Productivity - Targeted Topics

	Publications		Publications (EN)		Publications (HU)		Pub. Top-5	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
gender × post	-0.143***		-0.170***		-0.133***		-0.197***	
	(0.025)		(0.031)		(0.035)		(0.044)	
sensitive × post		-0.125***		-0.101***		-0.163***		-0.288***
		(0.025)		(0.039)		(0.038)		(0.111)
Mean dep. var. (pre)	3.398	4.694	1.364	1.364	2.497	2.497	0.528	0.381
Observations	202,535	190,362	168,138	145,064	190,507	181,489	215,173	46,174
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those who published at least two publications in gender topics for the first line and sensitive topics for the second line. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total publications (columns 1-2), publications in English (columns 3-4), publications in Hungarian (columns 5-6) and publications in the top 5% most cited journals in OpenAlex. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

show similar effects of illiberal policies on targeted researchers. We perform another series of robustness checks regarding the results about gender studies. First, we chose more restrictive conditions to select authors working in gender topics and find similar results. Second, we replicate these results in OpenAlex, in which we find that the overall number of publications and average quality decline as well. Results are also robust to different winsorization thresholds on the outcomes variables (0.1%, 1% and 5%), showing that our results are not driven by extreme values in the distribution of outcomes, a usual concern when using publication data.

5.2 Mechanisms of Repression

This section aims at understanding how the political pressures translate into worse or better research outcomes for the affected groups. We consider different potential channels. First, we investigate the funding channel, and find no evidence that funding is the main margin through which treated researchers experience a change in their productivity. Second, we consider their network of collaborations and find that it shrinks after 2010, mostly through the loss of collaborators who are not themselves targeted. This contraction goes together with lower output only in the fields, and for the researchers, that rely most on collaboration, which is consistent with the network being one channel of the effect on the quantity and quality of research. Finally, we consider an effect closer to proper silencing: the influence of political opponents within Hungary, measured by the citations they receive from other Hungarian researchers, also decreases. We see this loss of influence as an outcome of political pressure more than as a mechanism behind the productivity effect, although lower visibility could in turn weigh on their research.

5.2.1 Is it just funding?

We first show that while funding could play a major role for the country as a whole, it does not seem to be the main channel through which targeted researchers were affected. A very efficient and direct way to conduct political repression would be to diminish the budget allocated to opponents, at the institutional or individual level. One observation that could be first made is that the core of the individuals we identify as political opponents are identified through their affiliation to institution who are privately funded, such as the Central European University, which is funded by a private foundation independently from the Hungarian State. As we have no access to funding data at the institutional nor individual level, we use several indirect tests that exploit differences in researchers' dependence on public funding.

First, we leverage the difference in the public or private status of researchers' affiliation. We subdivide the control and treated groups based on whether they had been affiliated to a public institution before 2010. If political pressure operated mainly through public funding, political opponents affiliated to public institutions should be more penalised than other opponents. Just like the above regressions, the triple difference-in-differences is estimated on a matched sample with the exact same matching variables. We estimate the following extension of equation (1):

$$Y_{it} = \beta_1 D_i \times Z_i \times Post_t + \beta_2 Z_i \times Post_t + \beta_3 D_i \times Post_t + \alpha_i + \delta_t + \sum_{s=2005}^{2024} X_i \times \mathbb{1}_{\{t=s\}} + \epsilon_{it}, \quad (2)$$

where D_i takes value 1 when we identified the researcher as a political opponent and 0 for matched neutral researchers, and $Post_t$ takes value 1 for years after 2010. Z_i is an indicator for the dimension of the funding heterogeneity we study: affiliation to a public institution before 2010. As in equation (1), α_i and δ_t are individual and year fixed effects, and X_i represents field and entry year of the author, interacted with year fixed effects. The term $D_i \times Z_i$ is absorbed by individual fixed effects, and the coefficient of interest, β_1, measures the additional effect of political pressure on opponents for whom $Z_i = 1$.

Table 2 presents the results. The penalty for opponents is robust for controlling for being affiliated to a public institution: relative to matched neutral researchers, they publish 12% fewer papers after 2010, 16% fewer in English and 13% fewer in Hungarian. They also receive 38% fewer citations from other Hungarian researchers. The triple interaction, however, is small and not significant for any outcome: opponents affiliated to public institutions are not penalised more than other opponents. These estimates are imprecise and do not rule out moderate differences, but their signs do not point to a larger penalty for publicly funded opponents. We run an additional placebo exercise to show that public affiliation alone is not associated with a post-2010 break: among researchers who are neither opponents, allies, nor co-authors of either group, the interaction between public affiliation and the post-2010 period is small and not significant for any outcome (see Table F.3.3).

Second, we run a similar exercise using European funding pre-2010, through the public data from

the European Research Council on grant winners [29]. ERC grant recipients obtained additional funding independently of the Hungarian government during the period. Only 83 Hungarian researchers have received an ERC grant over the period 2007 to 2025, and in our sample of political opponents, this is the case for only 6 researchers.[30] In order not to take into account the effect of being the researcher who has been granted the ERC, we analyse the effect of exposure to this type of funding by constructing the same collaboration index C_i^g, using all recipients of ERC grants prior to 2010. Similarly to other analyses based on network proximity, we consider a researcher to be exposed to ERC funding when this value is above the median value of the index.[31] We then estimate equation (2) with this exposure indicator.

Table F.3.1 presents the results. They likely provide evidence that even for researchers who are close members of the network of very renowned researchers who received funding from outside sources, this access has not been enough to offset the effect of illiberalism. Exposure to ERC grantees is associated with higher output after 2010 for neutral researchers, with 25% more publications, but not for opponents: the triple interaction is not significant for publications, and it is negative for citations, with a 17% decline. When this exposure index also includes grants awarded after 2010, exposed opponents partly recover, in particular in English-language publications (Table F.3.2). Since these later grants are themselves an outcome of post-2010 productivity, we only interpret this result as descriptive. Researchers who depend on other sources of funding than the government appear to still suffer from the political climate. Funding itself, while probably playing a role for the majority of researchers, is not the only mechanism through which the illiberal penalty affect researchers.

5.2.2 Network Shrinking Effects

We now turn to the analysis of network dynamics for treated researchers compared to the control group. If being the target of political pressures prevents researchers from forming new connections or exploiting existing ones, it can lead to the productivity effect we observe. In particular, after 2018, treated researchers were sometimes named in the press. Other researchers could thus fear that they would become exposed to pressures themselves if they collaborate with political opponents. In all the regressions of this section, we count only the co-authors who are also present in the national database.

Table 3 shows the effect of being identified as a political opponent on total collaborations and new collaborations. Researchers perceived as political opponents see their number of co-authors fall by 25% and their number of new collaborations by 28.6% after treatment. Allies' network, in contrast, do not seem to be affected, both in total number of co-authors and of new collaborations. Table 4 reports the

[29] We use this measure also as a proxy of the access to non-governmental funding. These researchers are indeed also more likely to be able to advertise their work in order to obtain other funding.

[30] Appendix F.3.1 presents descriptive statistics on the number of ERC recipients in the period and unconditional trends.

[31] We however consider in this case only researchers who are direct co-authors of the ERC recipent, thus no using the network version of the collaboration index that we describe in section 3

Table 2. Trends in Outcomes for Political Opponents, by Public Affiliation

	publications (1)	pub. in english (2)	pub. nat. language (3)	nr co-authors (4)	nr new co-authors (5)
pol. opp × post	-0.7359***	-0.4499***	-0.1680	-0.4972*	-0.4342*
	(0.2086)	(0.1445)	(0.1521)	(0.2808)	(0.2415)
public × post	0.5187***	0.2634***	0.3517*	0.4002**	0.1297
	(0.1968)	(0.0751)	(0.1921)	(0.1847)	(0.1390)
public × pol. opp × post	-0.8819	-0.1046	-0.9060**	0.5726	0.5001
	(0.8888)	(0.6435)	(0.4423)	(0.5579)	(0.4250)
Observations	643,834	643,834	643,834	643,834	643,834
R^2	0.562	0.591	0.496	0.582	0.362
Within R^2	0.000	0.000	0.000	0.000	0.000
Mean.Dep.Var.Pre	2.880	1.325	1.835	3.124	1.827
author fixed effects	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect PPML regressions of equation (2), for each outcome, on data from the Hungarian research repository. The unit of observation is author by year and the sample period is from 2005-2024. Treated authors are authors from our sample of political opponents, split by whether the author was affiliated to a public institution before 2010. Control authors are neutral Hungarian researchers matched to the treated, split by whether the author was affiliated to a public institution before 2010. We report the effect on total publications, publications in English, publications in Hungarian, citations count, total number of collaborations and number of new collaborations. Control variables account for trends for field and entry year in academia FE. *** p<0.01, ** p<0.05, * p<0.1.

same outcomes when the treatment group is the whole network of political opponents, i.e., individuals whose collaboration index with perceived opponents is above the median. We find similar results, both for the total number of collaboration and for the number of new collaborations, although they are of smaller magnitude compared to researchers representing the "core" of political opponents. Authors with above-median collaboration with perceived political opponents have about 16% fewer co-authors per year on average, which corresponds in level in 1 fewer co-author per year. The decomposition per mandates again shows that this effect intensifies over the years, with stronger effect for latest mandates. This attenuation from the core to the broader network of perceived political opponents is consistent with Figure C.3.3, which shows that authors at the centre of the opponents' network (i.e. with a higher collaboration index) are more affected in their number of collaborations than those at the periphery.

We believe that these diverging patterns in the Hungarian network of allies and opponents contribute to explain why publications in Hungarian are more affected in both directions than those in English. We perform a similar regression in OpenAlex, on the subset of authors who we identify from the CRIS datasets. Using the same matching algorithm to create a comparable control group, we compute the same regression, splitting publications by whether they have any co-author outside of Hungary, a co-author in the region outside of Hungary[32], and a co-author in the US. Table F.3.4 also shows that there is a positive

[32]In Slovenia, Slovakia and Czechia, other Central European countries that entered the European Union at the same time as Hungary.

Table 3. Allies and Opponents: Effect on Network and Influence

	Nb. co-authors		Nb. new collaborations		Repeat collab. rate		Nb. citations	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Opponents × Post	-0.288**		-0.337***		0.049		-0.195	
	(0.134)		(0.124)		(0.034)		(0.128)	
Allies × Post		0.041		0.023		-0.026		0.030
		(0.107)		(0.123)		(0.024)		(0.153)
Mean.Dep.Var.Pre	1.47	13.2	1.14	6.01	0.214	0.517	11.7	91.1
Observations	9,942	4,466	9,743	4,413	3,987	3,334	8,818	4,334
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Year-Entry year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Year-Field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those perceived as political opponents (first line) and as political allies (second line). Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total number of co-authors (columns 1-2), total number of new co-authors (columns 3-4), number of co-authors with whom the researcher has already collaborated before (columns 5-6) and citations from other MTMT publications (columns 7-8). The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

effect building up over time for international collaborations, in particular with co-authors from the US. Conversely, for allies, Table F.3.5 shows that international collaborations tend to decrease. Putting those regressions together, we find that the network of opponents shrinks in Hungary but collaborations intensify abroad, while the opposite happens for allies.

We then ask which collaborations are lost, and whether the loss of collaborators can explain the loss of output. Table 5 gathers these exercises. The treatment and control groups are the same as in Table 4: members of the network of perceived political opponents, compared to members of the placebo network.

First, the shrinking of the network for perceived political opponents could result from two different behaviours. Members of their network could cut their ties with the targeted researchers to avoid being exposed themselves, possibly turning towards researchers aligned with the government. Alternatively, the rest of the academic community could collaborate less with them. To distinguish between the two, we split the co-authors of each researcher into the three same groups we identify earlier: perceived political opponents, perceived political allies and the rest of researchers.[33] Columns 4 and 5 of Table 5 show that the decline comes from collaborations with researchers outside both groups: members of the opponents' network have 16.5% fewer such co-authors after 2010, which mirrors the overall effect. Collaborations with allies do not change significantly, although this estimate is imprecise, since only the authors with at least one allied co-author contribute to it. Ties with perceived opponents themselves are not lost: they

[33]Here in this measure, we use again the "network" definition and the collaboration index, only keeping researchers with a collaboration index with one of the political group above the median value.

represent about 0.5% of the co-authors of network members, both before and after 2010.[34] Members of the network therefore neither avoid the targeted researchers nor move towards allies of the government: the network shrinks at the margin of collaborations with researchers who are not directly involved, which is consistent with *neutral* researchers fearing to be exposed themselves.

Second, a decline in co-authors could simply accompany the productivity effect without causing it. If the shrinking of the network is a channel, the loss of output should be concentrated where research relies most on collaboration. We rank fields by their average number of co-authors per paper over 2000–2010, split them into terciles and estimate the effect separately for each tercile. Columns 1 to 3 of Table 5 show that co-authors decline in all three groups of fields, by 18%, 11% and 23% from the least to the most collaborative fields. This loss of collaborators, however, translates into a loss of output only in the most collaborative fields, where members of the opponents' network publish 15% fewer papers and 17% fewer papers in top-10% journals. In the least collaborative fields, neither outcome declines.

Third, the collaboration intensity of a field may be correlated with other characteristics, such as its dependence on research infrastructure and funding. We therefore replicate the exercise at the level of the researcher. We measure each researcher's reliance on co-authors as their total number of co-authors divided by their total number of papers over 2000–2010, and define as highly reliant the researchers above the median of their domain. We then estimate equation (2), where D_i now indicates members of the opponents' network, the control group is the placebo network, and Z_i indicates high reliance on co-authors. Columns 6 to 8 of Table 5 show that members of the network with low reliance on co-authors do not lose output, neither in quantity nor in quality. For highly reliant researchers, by contrast, the triple interaction is negative and significant for publications in top journals: adding the first and the last rows, they publish about 28% fewer papers in top-5% journals and 27% fewer in top-10% journals after 2010. Their total number of publications does not decline significantly more than for low-reliance researchers. This pattern is not driven by a general decline of researchers who work in teams: among control researchers, high reliance is, if anything, associated with more publications in top journals after 2010. Overall, the network of political opponents contracts after 2010, mostly through the loss of collaborators who are not themselves targeted, and this contraction goes together with a loss of output where, and for whom, collaboration matters most. These results are consistent with the shrinking of the network being the main channel of the productivity effect.

[34] This share cannot be estimated in our regression framework, since control researchers have, by construction, almost no co-author among perceived opponents. Treated researchers have on average 0.03 such co-authors per year, both before and after 2010.

Table 4. Collaboration and Influence - Opponents Network

	Nr Coauthors		Nr New Collaborations		Citations	
	(1)	(2)	(3)	(4)	(5)	(6)
Network pol. opp. × post	-0.176***		-0.164***		-0.060	
	(0.036)		(0.041)		(0.045)	
Network pol. opp. × post (1rst m)		-0.120***		-0.144***		-0.064
		(0.030)		(0.039)		(0.042)
Network pol. opp. × post (2nd m)		-0.204***		-0.175***		-0.108**
		(0.038)		(0.044)		(0.051)
Network pol. opp. × post (3rd m)		-0.223***		-0.197***		-0.110*
		(0.047)		(0.051)		(0.066)
Network pol. opp. × post (4th m)		-0.237***		-0.225***		-0.055
		(0.060)		(0.075)		(0.106)
Mean dep. var. (pre)	6.216	6.216	3.271	3.271	38.217	38.217
Observations	75,087	75,087	74,579	74,579	72,738	72,738
author fixed effects	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as political opponents is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total number of co-authors (columns 1-2), total number of new co-authors (columns 3-4), and citations from other MTMT publications (columns 5-6). The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Odd columns report the average effect on the period 2010-2024 and even columns split the effect by mandate. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

5.2.3 Loss of Influence

Beyond their network, we also find that the influence of political opponents on Hungarian research decreases during the post-2010 period. We interpret this decline as an outcome of political pressure rather than as a mechanism: fewer and less visible publications can lower influence as much as lower influence can reduce output, and the two cannot be separated with our data. In the Hungarian national repository data, we have access to the number of citations received by a publication from other publications of the database. We measure quality through the citations received globally by the journal or venue of publication. Citations from the rest of the world would be a measure of quality as well, but we consider that citations within Hungary also account for a different component, influence within the country. If all things equal, a researcher is less likely to cite a publication because it comes from a disregarded group, or more likely to cite it because one of the author is favoured by the government, then the resulting difference in citations is not due to a difference in quality but rather in how influential the researcher is in the country.

Figure F.3.5 shows that there is a significant negative effect in an OLS specification of Equation 1, reaching around −8 citations received by members of the network of perceived political opponents per year over the period, and seems to decrease right after 2010. However, the effect is no longer significant

Table 5. The Network Channel – Opponents' Network

	By field collab. intensity			By type of co-author		By reliance on co-authors		
	Pub.	Top 10% Pub.	Nb. co-authors	w/ others	w/ allies	Pub.	Top 5% Pub.	Top 10% Pub.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Opp. × Post				-0.180***	-0.059	-0.027	0.062	-0.005
				(0.033)	(0.165)	(0.036)	(0.105)	(0.090)
Opp. × Post × Low collab.	0.036	0.081	-0.202**					
	(0.041)	(0.237)	(0.080)					
Opp. × Post × Medium collab.	-0.061	-0.127	-0.112***					
	(0.041)	(0.087)	(0.043)					
Opp. × Post × High collab.	-0.168***	-0.186**	-0.256***					
	(0.062)	(0.086)	(0.060)					
Post × High reliance						0.025	0.238*	0.188*
						(0.048)	(0.132)	(0.112)
Opp. × Post × High reliance						-0.058	-0.385**	-0.307**
						(0.058)	(0.155)	(0.131)
Mean dep. var. (pre)	5.675	1.692	7.510	7.215	1.009	5.680	1.263	1.694
Observations	62,859	36,620	62,489	62,483	13,486	62,743	32,551	36,558
author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions using data from the Hungarian national repository. The unit of observation is author by year and the sample period is 2006–2025. Treated authors are those whose collaboration index with researchers perceived as political opponents is above the median; control authors are members of the placebo network. Authors are matched exactly on entry year in academia, field of research and number of years with at least one publication over 2006–2010. Columns 1–3: fields are ranked by their average number of co-authors per paper over 2000–2010 and split into terciles; each row reports the treatment effect for authors whose field belongs to the corresponding tercile. Columns 4–5: reports the effect depending on the type of co-authors; who are neither perceived political opponents nor allies (column 4), or who are perceived political allies (column 5). Columns 6–8: reliance on co-authors is the author's total number of co-authors divided by their total number of papers over 2000–2010; high reliance indicates authors above the median of their domain. *Opp. × Post* is the effect for low-reliance authors and *Opp. × Post × High reliance* the difference between high- and low-reliance authors. Mean dep. var. (pre) is the mean of the outcome for treated authors over 2006–2010. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

for the entire period when using a PPML specification, as shown by Table 4; the effect is still increasing over time but no longer significant for most periods. However, we find the same attenuation pattern from the core to the broader network as with the effect on the number of collaboration, as reported in Figure C.3.3. Authors with a higher collaboration index are more negatively impacted than those at its periphery in terms of influence within Hungary. Conversely, Table 3 and Table F.3.6 show that both for the ally researchers and for their network, we do not find a positive effect mirroring the decrease in citations for members of the network of perceived political opponents. This loss of influence only appears for political opponents: researchers in Hungary are not more likely to cite political allies of the government after the shock.

So far, researchers are purely an object and not an agent for all of those three potential channels. Yet, we believe that scientists who are subjected to political pressures may change their behaviour in order to respond to them. These actions would both affect the productivity of researchers in discernible ways, but they would also incur additional costs of reacting to the shock. It is therefore necessary in order to fully understand the effect of political threat to study these individual reactions.

6 Academic Strategies under Political Pressure

We now present evidence of different behavioural strategies among targeted researchers. We draw on the *Exit, Voice, Loyalty* framework from Hirschman (1972), for which our context provides a suitable empirical test: when in disagreement with an organisation, an individual may choose among different courses of action. In our setting, academics facing political threats and increasing pressure of an illiberal government may react in different ways. We therefore test empirically for three distinct strategies. First, a researcher may *exit*, i.e. quit her position or leave the country. Second, she may *voice* her dissent. Finally, she may remain *loyal* and comply with the new research requirements. We nuance this third strategy and show that, rather than becoming fully silent, researchers are likely to self-censor.

6.1 Theoretical Framework

We formalise the responses of researchers in a simple static model, presented in Appendix D. Researchers differ in their perceived political alignment with the government, θ_i, and in their returns to migration, m_i, and choose among four mutually exclusive strategies:

- *Exit* consists in leaving Hungary or academia, at a fixed cost, against the returns to migration m_i.
- *Voice* is an active and visible response: the researcher expresses dissent against the government or the illiberal policies, including through her publications. This strategies implies a fixed cost and a cost increasing with the political pressure. Its returns increase with the research visibility and

outside option.

- *Loyalty* is the passive, default strategy: the researcher stays and takes no action, choosing to bear the pressure. This strategy exposes to political pressure in proportion to how much the researcher is politically not aligned. Loyalty in our context is not an attachment that delays exit, but the absence of any response.
- *Self-censorship* is an active but invisible response: the researcher stays and shift her research away from politically sensitive content, at a fixed cost, which removes the disutility of disagreement.

Self-censorship and exit are two forms of *silence* between which the choice depends on mobility alone: the immobile self-censor and the mobile leave. The model yields predictions that we take to the data (Appendix D.3): (i) exit has a political component, so it rises with pressure among non-aligned researchers but not among aligned ones with the same outside option; (ii) political exit is concentrated among researchers with high returns to migration, while the less mobile self-censor; (iii) self-censorship rises with pressure; (iv) voicing is an intermediate strategy, so that dissent should precede exit along the pressure path; (v) all effects fade with distance from the core of the opponent network.

Our empirical strategy follows directly. As in Section 5, we compare the trajectories of researchers who entered academia before the shock, perceived as non-aligned or not, using successive mandates as increasing levels of pressure. We then exploit heterogeneity in returns to migration, along three dimensions: field of research, which governs the international transferability of skills; career stage, younger researchers having a longer horizon over which to recoup the cost of leaving; and a direct proxy of individual mobility. Return to migration is defined in our context taking into account 2 dimensions: first the distribution in terms of their academic outcomes pre-2010 (publications, citations, etc.), second the age of the researchers, and third the domain she works on.

6.2 Exit Hungary

We first assess how frequently targeted researchers resort to the "Exit" strategy. In our context, we consider two types of observable outcomes as exit. The first is leaving academia. As we do not observe the actions of researchers outside of publishing, we consider that a researcher "retires" when we do not observe her publishing after a given year. The second consists in leaving the country. Similarly, while we do not observe the actual migration decisions and their timing, we have access to researchers' affiliations for most publications in OpenAlex. Based on this information, we infer whether they have an affiliation in the country, outside the country or both. For both types of outcomes, their existence is not only relevant to our understanding of reactions of individuals to illiberal policies. These actions have a direct effect on the total production of the country's research and innovation ecosystem, and can thus be interpreted as a loss in human capital. Again, we do not restrict our analysis to researchers who are directly perceived as political opponents and include in our regressions researchers who belong to their network as defined

in section 4.1.1. This allows us to study a more realistic picture of the effect of political pressures and how they propagate, while increasing our statistical power.

We estimate again Equation 1 as a linear probability model, with variables measuring exit as the outcome. We present the results of these regressions in Table 6. We first find that there is no increase in the probability of leaving research altogether: this does not appear to be a margin through which targeted researchers respond. Figure 4a shows that descriptively, we observe a pattern of increased exits from the country among members of the network of political opponents, measured by the probability of having an affiliation abroad for a period of four years. This holds true in the difference-in-difference specification: Figure 4b shows that on average, this probability to exit increases by about 5 percentage points at the end of the period. For shorter periods of continuous presence abroad, this effect becomes significant as soon as the second mandate of Orbán, prior to the ban of the Central European University, suggesting that we do not only capture the effect of government policy, but also of actions chosen by researchers. The effect is also very strong, reaching over 50% of the pre-period average at the second mandate only. It rises starkly during the third mandate, after the ban: we believe that this increase, which remains stable over the last period, reflects the expulsion of the CEU, which has further incentivised researchers to leave.

In order to validate our findings, we run the same regressions using as a treatment whether the researcher is part of the network of political allies of the government. If what we're observing in the aforementioned regressions is mechanical and due to our selection process - that is, if what we observe is researchers connected to internationally connected researchers leaving more often, we should also find a positive effect on exit outcomes. If what we have shown above indeed represents a strategy of reacting against political pressure, we should find no effect on the network of ally researchers. In Table G.2.1, we show that there is no significant effect on migration or retirement decisions for members of the network of ally researchers. We interpret this finding as additional evidence that we are accurately capturing strategies of politically targeted researchers.

The timing of these effects is in line with prediction (iv): exit becomes significant from the second mandate onward, whereas voicing starts as early as the first years after 2010 (see below). We then test whether exit is driven by returns to migration, as predicted by the model. Panel (a) of Figure 5 splits the effect by field. The increase in the probability of leaving among the network of political opponents is concentrated in life and health sciences, where skills are most easily transferable abroad, at around 11–12 pp. It is smaller in social sciences, where human capital is more country- and language-specific, and absent in physical sciences. For allies, the estimates are positive only in life sciences and negative in physical sciences, consistent with the model's prediction that pressure, if anything, retains aligned researchers at the margin.

Panel (b) of Figure 5 splits the sample by returns to migration. The effect is entirely driven by researchers with high returns to migration, whose probability of leaving increases by about 4.5 pp, while

it is small and non-significant for low and intermediate levels. Among allies, exit does not respond at any level of mobility. Since high-mobility allies and opponents face the same outside options, this contrast isolates the political component of exit (prediction (i)), and its concentration among the most mobile is consistent with prediction (ii): non-aligned researchers who cannot leave must instead resort to another strategy.

Figure 4. Effect on the Probability of Leaving Hungary



(a) Groups trends

(b) Difference in Probability

Note: Panel a) represents the difference in trends in probability of being away from Hungary over four continuous years in OpenAlex data, between researchers perceived whose collaboration index with researchers perceived as political opponents is above median, and control authors. The latter are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Pane b) shows the results from Fixed-Effect OLS regressions of the same variable. The unit of observation is author by year and the sample period is 2005–2024. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author.

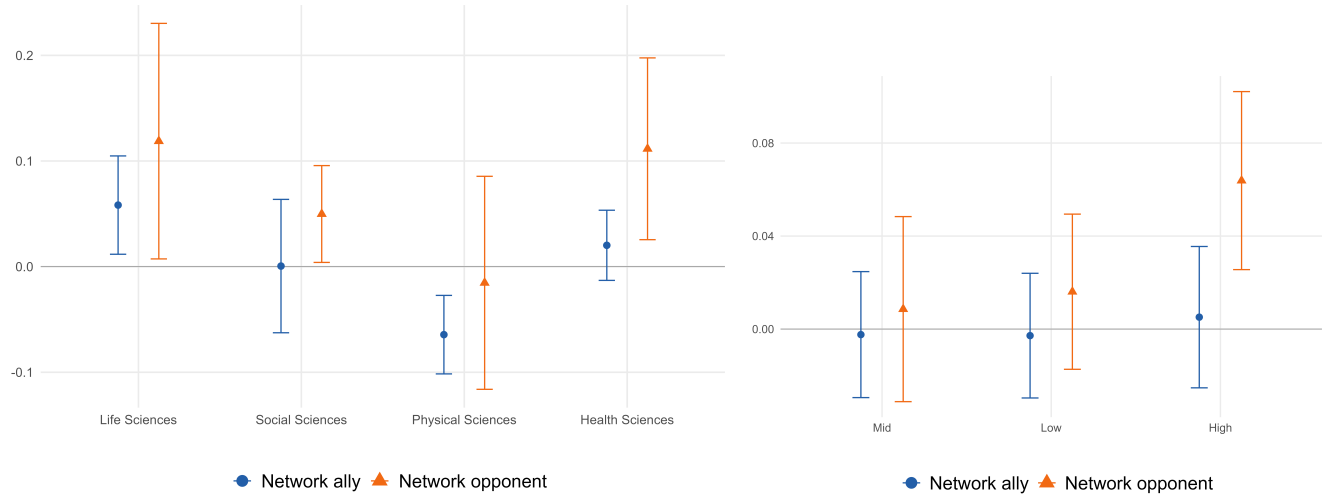
6.3 Voicing Dissent

The struggle between the Central European University and the Hungarian government was particularly visible, and researchers from the CEU have been outspoken in the media against this decision[35]. More generally, voicing could be undertaken via social media posts, protests or interviews with traditional media. While academic publishing could be more rare, it is still a common practice in social science, and represents a large, costly effort toward voicing. Researchers in social science may redirect their research in order to study a particular aspect of the regime and use their research to voice directly, which could be interpreted as a "lower bound" effect of all type of the voicing behaviours.

In this section, we thus provide evidence that researchers subjected to political pressures have shifted

[35]For instance, the New York Times published a widely read article in 2018 including a statement from the president of the university (Santora, 2018).

Figure 5. Effect on the Probability of Leaving Hungary, by Field and by Returns to Migration



(a) By field

(b) By returns to migration

Notes: The graph reports the ATT coefficients from Fixed-Effect OLS regressions of the probability of being away from Hungary over four continuous years in OpenAlex data, with 95% confidence intervals. Panel (a) estimates the effect separately by domain of research. Panel (b) estimates it separately by tercile of returns to migration (Low, Mid, High), as define by the total number of citations pre-2010 that one researcher have. Treated authors are those whose collaboration index with researchers perceived as political opponents or allies is above median. Authors are matched using their number of publications over the period 2000–2005, entry year in academia and field of research. The unit of observation is author by year and the sample period is 2005–2022. Standard errors are clustered by author.

Table 6. Political Opponents Network: Migration and International Collaboration

	Migration				Collaboration					
	Any affil. abroad		Abroad (2y)		Intl. collab.		Regional collab.		Retiring	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Network pol. opp. × post	0.051***		0.030***		-0.115		-0.017		-0.0002	
	(0.019)		(0.011)		(0.131)		(0.062)		(0.0009)	
Network pol. opp. × post (1rst m)		0.017		0.0002		-0.331**		-0.056		0.0005
		(0.019)		(0.009)		(0.131)		(0.052)		(0.001)
Network pol. opp. × post (2nd m)		0.067***		0.032**		-0.037		0.030		0.0001
		(0.021)		(0.013)		(0.151)		(0.069)		(0.001)
Network pol. opp. × post (3rd m)		0.075***		0.051***		-0.042		-0.026		-0.0009
		(0.026)		(0.017)		(0.167)		(0.083)		(0.001)
Network pol. opp. × post (4th m)		0.050		0.057***		0.015		-0.053		-0.0009
		(0.035)		(0.019)		(0.188)		(0.124)		(0.002)
Mean dep. var. (pre)	0.156	0.156	0.063	0.063	0.313	0.313	2.146	2.146	0.360	0.360
Observations	71,528	71,528	128,772	128,772	69,048	69,048	123,797	123,797	128,772	128,772
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on data from OpenAlex. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as political opponents is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. First panel reports the effect on migration: probability of having an new affiliation outside of Hungary (columns 1-2), the probability of publishing abroad over 2 years (columns 3-4). Second panel, reports the effect on number of publications with researchers outside Hungary. Last column shows the probability of retiring i.e. not publishing any more. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

research direction in order to speak out against the government. We estimate again our main equation Equation 1, but on total number per author of four different subsets of publications which we consider as indicative of voicing activity[36]. The two first are the gender topics and sensitive topics defined earlier. We add to them two narrower types of topics:

- *Rule of law*: One of the key elements of Orbán's illiberal policies was disregard of the rule of law. This strategy was both openly embraced by the government and noted by its critics, including the European commission. Emphasis on the rule of law and illiberalism from political opponents can therefore be considered as direct voicing, as it targets one of the salient political features of the government.

- *Minorities*: Another salient element of illiberal policies in Hungary consisted in targeting minority rights or attacking them in the media. Examples include the passing of a law similar to Russia's anti-"homosexual propaganda" law, or the vilification of Soros reactivating antisemitic stereotypes. We consider that publications explicitly mentioning minority rights are likely to be opposed to the government.

We detail in Appendix C.4 how we define such variables using the vocabulary use in the publication title. Members of the network of political opponents strongly increase their total number of publications in which the lexicon of the "rule of law" appears, as early as during the first years post 2010, as shown in Figure 6. Again, the magnitude of the positive effect we find increases over the years, suggesting that the higher the political pressure, the more likely academics perceived as political opponents are likely to express their dissent. We also note this trend does not diminish after 2018, suggesting that these researchers have largely chosen to "voice" their dissent rather than adopt a strategy of "loyalty". Additionally, we show in Table G.1.1 that this behaviour is not only driven by neither the Central European University members nor by researchers working with NGOs, but that both show an increase in the number of publications relative to the current democratic backsliding. In that respect, our results indicate that at first glance, political pressure appears relatively ineffective at fully silencing those perceived political opponents. Conversely, ally researchers and their network do not show similar results[37].

We also estimate the same equation as above, splitting further publications by language. Table 7 shows that voicing only occurs in English. For minority-related and sensitive topic publications, the effect actually becomes negative in Hungarian. This recontextualises the results described above: while researchers are more likely to voice overall, this is only due to the fact that they are doing so in publications

[36] In this section, due to the small number of researchers who publish in any of these subsets, all results are estimated using two-way fixed effects OLS rather than PPML.

[37] See Appendix G for more details

Table 7. Political Opponents Network: Voicing Behaviours

	Rule of law (EN) (1)	Rule of law (HU) (2)	Minorities (EN) (3)	Minorities (HU) (4)	Sensitive (EN) (5)	Sensitive (HU) (6)
Network pol. opp. × post	0.0174***	-0.0040	0.0044***	-0.0103***	0.0185***	-0.0306***
	(0.0032)	(0.0033)	(0.0013)	(0.0034)	(0.0040)	(0.0055)
Observations	226,224	226,224	226,224	226,224	226,224	226,224
R^2	0.303	0.319	0.215	0.302	0.286	0.288
Within R^2	0.001	0.000	0.000	0.000	0.000	0.000
Pre.Mean.Dep.Pre	0.011	0.034	0.004	0.041	0.040	0.112
Author FE	✓	✓	✓	✓	✓	✓
Year × Field FE	✓	✓	✓	✓	✓	✓
Year × Entry year FE	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on CRIS data. The unit of observation is author by year. Treated authors are those belonging to the network of political opponents, as defined in subsection 4.1. The dependent variables are indicators for publishing on rule-of-law topics, minority-related topics and sensitive topics, separately for English-language (EN) and Hungarian-language (HU) publications. All specifications include author, year × field and year × entry-year fixed effects. Standard errors are clustered at the author level and reported in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

visible internationally, while instead refraining from voicing in publications within the country. To some degree, these results show that while researchers voice their dissent to international audiences, they seem to be effectively silenced within Hungary. Our interpretation is that the behavioural responses of researchers are interconnected: those expressing dissent against illiberal policies may choose to do so in ways that do not attract negative attention of national authorities, as publishing in Hungarian could. We further investigate this phenomenon in the next section.

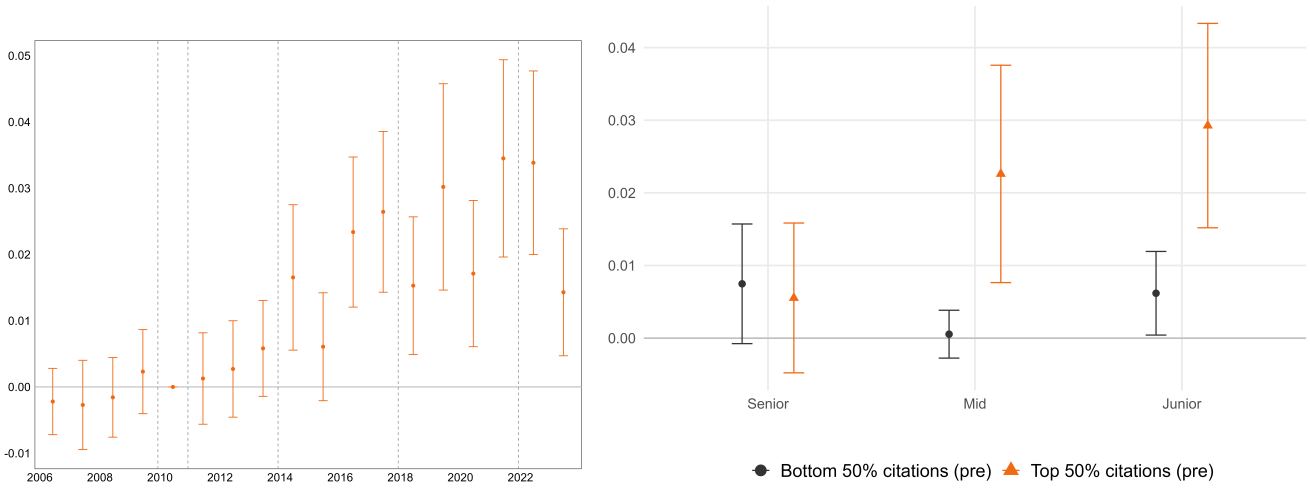
Panel (b) of Figure 6 splits the effect by career stage and by citations before 2010. The increase in *rule of law* publications is driven by researchers in the top half of the pre-period citation distribution, among mid-career and junior researchers. For these groups, the number of *rule of law* publications increases by about 0.023 and 0.029 per year respectively, both significantly positive. Among senior researchers, the effect is small and non-significant regardless of citations. Among less-cited researchers, the estimates are small at every career stage and only marginally different from zero for juniors. Voice is therefore concentrated among the most visible researchers, whose reputation provides some protection and good outside options, and among younger cohorts, whose careers are less tied to the domestic institutions targeted by the government. This pattern is consistent with the model's prediction that voicing is a strategy chosen by non-aligned researchers who can bear its costs.

6.4 Between *Loyalty* and *Silence*: *Self-censorship*

We consider in this section that there might be an alternative strategy of academics, between *loyalty* and *silence*, which is likely to be *self-censorship*. Kováts and Rónay (2021) show qualitative evidence that academics may feel the need to self-censor in their research not to attract negative attention.

We focus in this section on researchers working on targeted topics, namely sensitive and gender-related topics, and analyse to what extent we can observe patterns indicating self-censorship among

Figure 6. Effect on the Number of *Rule of Law* Publications, in English



(a) Average effect

(b) By seniority and pre-period citations

Notes: Panel (a) reports Fixed-Effect OLS regression estimates for the difference in the yearly number of *rule of law* publications in English between researchers we identify as political opponents and other Hungarian researchers, over the period 2006–2023. Panel (b) reports the average post-2010 effect estimated separately by career stage (Senior, Mid, Junior) and by citations before 2010 (below or above the median), with 95% confidence intervals. Authors are matched using their number of publications over the period 2000–2005, their main field of publication and their year of entry in academia.

these researchers. While this phenomenon is by definition hard to measure, we attempt to do so looking at the textual content of research papers, especially looking at how researchers in targeted topics are more likely to change research direction after 2010 and publish less similar research as before. In order to do so, we estimate the same specification as before, using the targeted-topic treatment defined in subsubsection 5.1.2: a researcher is treated if they have at least three publications in the targeted topics prior to 2005. The main outcome of interest is the cosine similarity between a researcher's current publications and their own research published in 2005 or earlier[38]. A positive effect on this measure would indicate that treated researchers "go deeper" into their existing research direction, or into the way they frame their research, relative to neutral researchers. However, a negative effect would indicate that they deviate from their previous research more than control researchers do, which could indicate either self-censorship or alternatively alignment with the research agenda of ally researchers.

Table 8 reports the aggregated treatment effects for researchers working on gender-related topics, both pooled over the post-2005 period and separately by government mandate. We identify different patterns. First, the similarity of researchers' Hungarian-language publications with their own pre-2005 research declines significantly after treatment as shown in the first two columns, with the magnitude of the effect growing across mandates, from -0.004 during the first mandate to -0.012 during the fourth. Second, as it can be seen in the next two columns, the similarity of their English-language publications

[38]For robustness, we build similar measures using the similarity with one researcher's own publications up to 2010, between 2000 and 2005 and between 2005 and 2010.

with their pre-2005 research remains stable, and if anything increases slightly: treated researchers do not seem to abandon their original research agenda in their international publications. Third, similarity with the research of government-allied researchers also decreases, again with a magnitude that grows over successive mandates (see column (5) and (6)).

Taken together, these results indeed point to an "in-between" strategy consistent with self-censorship.[39] Targeted researchers neither converge towards the research of political allies nor fully maintain their previous research direction in domestically visible output. Instead, they appear to adjust the content of their Hungarian-language publications away from their earlier, politically sensitive work, while preserving their research agenda in English-language, internationally oriented publications. Figure 7 shows that the corresponding event-study estimates display no differential pre-trends, supporting a causal interpretation.

These results are consistent when using alternative treatment definitions (see subsection G.4). These findings are consistent when replicating the analysis using working on sensitive topics as treatment, as reported in subsection G.4. We obtain comparable results in magnitude for these researchers, whereas no such pattern emerges for topics that do not seem as much politicized in the Hungarian context, such as research on climate change.

In addition, we estimate a triple difference-in-differences specification comparing researchers publishing on targeted topics in Hungary with their counterparts in the other countries for which we collect CRIS data, namely Slovenia and Croatia. These additional results confirm that our findings are not driven by a general trend in research topics: researchers working on gender in Hungary become less likely to continue publishing on the topic, relative both to Hungarian researchers in other fields and to gender researchers in the comparison countries. Figure G.4.1 shows the event-study estimates of the triple interaction for the probability of publishing work labelled as *gender* after 2010. Targeted researchers experience a sharp decline in this probability, of around 4 pp on average, with the effect growing in magnitude over time.

7 What Is the Global Effect of Illiberal Policies?

The comparison made in the previous sections identifies the differential effect of political alignment, but it nets out any effect common to all Hungarian researchers, including neutral ones. In this section, we estimate the illiberal penalty that all researchers may bear by comparing neutral Hungarian researchers with matched researchers in two neighbouring countries, Slovenia and Croatia. These estimates capture the effect of the post-2010 policy environment on Hungarian academia as a whole, rather than its differential impact across groups of researchers.

[39] An alternative explanation would be that journal editors became less willing to publish works on these topics. We detail in Appendix E.5 why this mechanism is likely not the one dominating: at the journal level, the share of publications on sensitive and gender-related topics is highly correlated before and after 2010, and the quality of the Hungarian and international journals in which treated researchers publish does not decline.

Table 8. Researchers Working on Gender: Research Similarity

	sim. pre-2005 (HU)		sim. pre-2005 (EN)		sim. Ally	
	(1)	(2)	(3)	(4)	(5)	(6)
gender × post	-0.006***		0.001**		-0.005**	
	(0.002)		(0.0005)		(0.002)	
gender × post (1rst m)		-0.004**		0.0006		-0.0004
		(0.002)		(0.0004)		(0.002)
gender × post (2nd m)		-0.007***		0.001*		-0.007**
		(0.003)		(0.0005)		(0.003)
gender × post (3rd m)		-0.010***		0.0008		-0.013***
		(0.003)		(0.0006)		(0.004)
gender × post (4th m)		-0.012**		0.002**		-0.014**
		(0.005)		(0.0009)		(0.006)
Mean dep. var. (pre)	0.819	0.819	0.843	0.843	0.771	0.771
Observations	204,954	204,954	164,034	164,034	93,887	93,887
Author fixed effects	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓

Note: This table gathers the FE OLS regressions for gender-topic researchers. Columns (1)–(2) report estimates for the similarity of Hungarian-language publications with the researcher's own pre-2005 publications, columns (3)–(4) show the estimates for the similarity of English-language publications. Columns (5)–(6) for the similarity with the current research of government-allied researchers. Odd columns report the average post-2010 treatment effect and even columns report the decomposition of this effect by mandate. All specifications include author, cohort × year and field × year fixed effects. *** p<0.01, ** p<0.05, * p<0.1. *** p<0.01, ** p<0.05, * p<0.1.

7.1 Comparing Individual Research Outcomes between Countries

In this section, treated researchers are neutral researchers based in Hungary, i.e. researchers whose collaboration index with both political opponents and political allies is zero under the network definition, and control researchers are researchers based in Slovenia or Croatia. We keep researchers who entered academia between 1990 and 2005. Each treated researcher is matched to control researchers following the procedure described in section 3.[40] We thus estimate the following event-study specification:

$$Y_{it} = \sum_{\substack{k=2006 \\ k\neq 2010}}^{2023} \beta_k T_i \times \mathbb{1}\{t=k\} + \alpha_i + \delta_t + \sum_{s=2006}^{2023} \gamma_s X_i \times \mathbb{1}\{t=s\} + \varepsilon_{it}, \tag{3}$$

where Y_{it} is an outcome of researcher i in year t, T_i equals one for neutral Hungarian researchers, and α_i and δ_t are researcher and year fixed effects. X_i is a set of controls, namely field and cohort indicators, so that the terms $\gamma_s X_i \times \mathbb{1}\{t=s\}$ correspond to field × year and cohort × year fixed effects. The year 2011 is again the first treated year and 2010 as the reference year. Each β_k measures the difference between

[40] We describe global cross-country trajectories and why comparing Hungary with other Central European country is valid in subsection B.4

treated and control researchers in year k relative to 2010, and the coefficients for 2006–2009 test for parallel trends. To summarise the dynamics, we also replace the yearly interactions with interactions for each of Viktor Orbán's mandates.[41] Our estimates capture all changes that affected neutral Hungarian researchers relative to their neighbours after 2010, and all other Hungary-specific shocks are therefore part of the treatment. [43]

7.2 Research Productivity and Research Quality

Table 9 reports the estimates obtained with national repositories. After 2010, neutral Hungarian researchers publish more than matched researchers in Slovenia and Croatia (column 1). The effect is already significant during the first mandate (+21%) and grows over time, to +43% during the second mandate, +37% during the third and +52% in 2023. Most of this increase comes from publications in the national language (column 3), which rise in every mandate, by 17% during the first and by 30 to 35% later. English-language publications increase much less, and the effect is only significant during the second mandate and in 2023 (column 2). In relative terms, the gap between the two languages is for instance moderate during the second mandate (+30% against +19%). In absolute terms, however, it is much larger, because national-language publications were more than four times as frequent before 2011: at pre-treatment means, the second-mandate effect corresponds to about 0.17 additional national-language publications per year, against 0.02 in English.[44] This pattern is consistent with the policies that rewarded publication in national outlets and in Hungarian (Section 2).

Higher output comes with lower quality (columns 6 to 8 and Figure 8a). The number of publications in top journals does not change during the first mandate, but declines sharply afterwards. During the second mandate, neutral Hungarian researchers publish 48% fewer papers in top-5% journals and 42% fewer in top-10% journals than control researchers. During the third mandate, these declines reach 75% and 59%. At the same time, publications in the 75% least-cited journals increase by 74% during the second mandate and 64% during the third. The decline in top publications therefore does not reflect lower English-language output, which does not fall in any period. Instead, the timing matches the introduction of the chancellor system in 2014 and the reorganisation of the research network after 2018. Effects on top journals are smaller and not significant in 2023. Since this period covers a single year and top publications are rare (about 0.02 to 0.03 per researcher and year before 2011), these estimates are imprecise. Lower funding could also explain lower-quality research. Hungary reduced public expenditure

[41] So we consider from 2011 to 2014 for the first mandate, then 2015–2018, 2019–2022 and 2023. For OpenAlex outcomes, the window ends in 2022. Count outcomes are winsorized at the 99th percentile and estimated by Poisson pseudo-maximum likelihood, and binary outcomes are estimated by OLS. Standard errors are clustered at the country × field level.[42]

[43] Croatia's accession to the European Union in July 2013 may also have improved Croatian researchers' access to European funding and networks. Using two control countries limits this concern, and most of the divergence we observe seems to start before 2014. We also address this issue in Appendix I.

[44] Pre-treatment means are computed on the estimation sample of each column, which differ because PPML drops researchers whose outcome is always zero.

after the 2008 financial crisis and during the European sovereign debt crisis, alongside its organisational reforms, and research funding is likely to have suffered. We lack researcher-level funding data and cannot estimate the role of funding directly.[45] Moreover, to the extent that funding cuts were part of the policy package, they are part of the effect we measure rather than a confounder. Overall, neutral Hungarian researchers became more productive after 2010, but mostly in Hungarian and at the expense of their international visibility: from 2015 onwards, they publish much less than comparable foreign researchers in the top journals of their field.

Table 9. Effect on Research Quantity, Quality and Network

	Quantity			Network		Quality		
	All pub.	English pub.	Native-lang. pub.	Co-authors	New collab.	Top-5%	Top-10%	Bottom-75%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mandate 1 × Hungary	0.188***	-0.020	0.155***	0.035	-0.034	-0.229	-0.183	0.119
	(0.037)	(0.062)	(0.052)	(0.054)	(0.055)	(0.237)	(0.211)	(0.130)
Hungary × Mandate 2	0.354***	0.171**	0.260***	0.458***	0.426***	-0.653*	-0.541*	0.555***
	(0.049)	(0.072)	(0.069)	(0.062)	(0.074)	(0.342)	(0.298)	(0.129)
Hungary × Mandate 3	0.315***	0.053	0.274***	0.509***	0.524***	-1.40***	-0.897**	0.494***
	(0.076)	(0.100)	(0.086)	(0.106)	(0.128)	(0.517)	(0.403)	(0.153)
Hungary × Mandate 4	0.417***	0.257*	0.302***	0.789***	0.859***	-0.096	-0.288	0.767***
	(0.094)	(0.142)	(0.099)	(0.129)	(0.161)	(0.415)	(0.270)	(0.160)
Observations	74,122	51,606	66,596	64,517	62,872	8,951	13,778	37,595
Pseudo R^2	0.39213	0.38730	0.39710	0.42381	0.30825	0.38108	0.35380	0.30058
Pre-mean (treated)	0.568	0.122	0.565	0.444	0.318	0.019	0.029	0.048
Researcher fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Year-Field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Year-Entry year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Estimates of the mandate version of equation (3) by fixed-effects PPML on the cross-country sample in national repositories. Treated authors are neutral researchers based in Hungary and control authors are matched researchers based in Slovenia and Croatia. Top-5%, top-10% and bottom-75% refer to the citation rank of the journal. Pre-mean is the 2006–2010 mean of the outcome for treated researchers in the estimation sample. The number of observations varies across columns because PPML drops researchers whose outcome is always zero. Standard errors, clustered at the country × field level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

7.3 Decoupling of National and International Collaboration Networks

We now focus on the effect of illiberal policies on researchers' networks. Table 9 shows that, after 2010, neutral Hungarian researchers publish more frequently with other researchers from their own country than control researchers do.[46] The coefficients reported in this table are obtained with CRIS data, and therefore only capture the effect on the *national* network of Hungarian researchers. This holds both for the total number of co-authors and for the number of new collaborations (columns 4 and 5). There is no effect during the first mandate, but the effect is large from the second mandate onwards: neutral Hungarian researchers have 58% more co-authors and 53% more new collaborations than Slovenian or Croatian

[45] See for instance Kováts and Rónay (2021) about higher education funding comparison.
[46] See Figure 8b for the corresponding event-study estimates.

researchers. At the pre-treatment mean, this corresponds to about 0.26 additional co-authors per year, i.e. around 1 every four years. The effect grows further during the third mandate (+66% and +69%). Since the collaborations we capture here are by definition only collaborations with other "national" authors, this increase reflects a densification of the domestic network. Taken alone, this result is not evidence of isolation; it becomes so only when combined with the effect on international collaborations. We test this hypothesis using the number of international publications, defined as publications with at least one co-author based abroad. International collaborations decline for neutral Hungarian researchers relative to control researchers (Table 10, columns 5 and 6). After 2010, the probability of publishing with at least one co-author based abroad falls by 5.9 percentage points. As for the national network and research quality, the effect is small and not significant during the first mandate, and appears from the second mandate onwards, with declines of 43% and 42% of the pre-treatment mean during the second and third mandates. This result is consistent with the effect we measure using national repositories. Together, they point to a decoupling between national and international collaborations: from 2015 onwards, the national networks of Hungarian researchers expand while their international networks contract.

7.4 Exit Through International Mobility and Leaving Academia

We then examine *exit* strategies of researchers compared to their control counterparts, using the cross-country sample in OpenAlex. We first find no effect on the yearly probability of publishing with an affiliation outside the home country Table 10, columns 1 and 2). However, the probability of publishing with an affiliation outside the home country for four consecutive years increases by 1.3 percentage points for neutral Hungarian researchers relative to control researchers (column 3). While this effect is small in absolute terms, it represents 26% of the pre-treatment mean of the variable (computed over 2006–2010). It is already significant during the first mandate and increases to about 30% of the pre-treatment mean during the second and third mandates (column 4). Overall, although the effect on emigration is moderate in absolute value, it is non-negligible relative to the baseline. Finally, we look at exits from academia. We measure them with an indicator equal to one in the year of a researcher's last observed publication. [47] Neutral Hungarian researchers are 0.77 percentage points more likely to exit each year after 2010 than control researchers (column 7). Relative to the pre-treatment exit rate of 2.7% among Hungarian researchers, this corresponds to a 29% increase. The disaggregated results show that this effect intensifies over time (column 8). It is small and not significant during the first mandate, reaches 0.66 percentage points (+25%) during the second, and 1.24 percentage points (+46%) during the third. This is again consistent with the increasing intensity of political pressure on academia.

[47] Since the exit from academia is measured using the last publication of one author, all researchers "mechanically exit" at the end of the sample. We thus use only data up to 2023 for this estimation.

Table 10. Effect on International Collaboration, Migration and Exit

	Affil. other country		Id. four years		Intl. Collaborations		Exit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
hungary × post	-0.0006		0.0134***		-0.0592***		0.0077***	
	(0.0035)		(0.0036)		(0.0221)		(0.0021)	
hungary × post (1rst m)		0.0040		0.0108***		-0.0156		0.0034
		(0.0036)		(0.0033)		(0.0178)		(0.0025)
hungary × post (2nd m)		-0.0014		0.0156***		-0.0810***		0.0066**
		(0.0044)		(0.0045)		(0.0275)		(0.0026)
hungary × post (3rd m)		-0.0047		0.0162***		-0.0791**		0.0124***
		(0.0060)		(0.0050)		(0.0317)		(0.0031)
hungary × post (4th m)								0.0098
								(0.0075)
Observations	203,938	203,938	203,938	203,938	203,938	203,938	114,354	114,354
R^2	0.467	0.467	0.698	0.698	0.533	0.533	—	—
Within R^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mean Dep. Var. (Pre)	0.087	0.087	0.052	0.052	0.190	0.190	0.027	0.027
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: OLS estimates of equation (3), pooled over 2011–2022 (odd columns) and by mandate (even columns), on the sample of researchers who are matched between sources (national repositories and OpenAlex), 2006–2022. Treated authors are neutral researchers based in Hungary and control authors are matched researchers based in Slovenia and Croatia. Columns 1–2: indicator equal to one if the author publishes with an affiliation outside the home country in year t. Columns 3–4: indicator equal to one if the author publishes with an affiliation outside the home country for four consecutive years. Columns 5–6: indicator equal to one if the author publishes with at least one co-author based abroad. Columns 7–8: indicator equal to one in the year of the author's last observed publication. Regressions include author, field × year and cohort × year fixed effects. Standard errors, clustered at the country × field level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

7.5 Aggregate Losses from Political Pressure

Beyond the estimation of micro-effects at the individual level, we assess the cumulative macro effect of illiberal policies on the aggregate output of research and on the stock of researchers over the entire period. Because our estimates are obtained on researchers who entered academia between 1990 and 2005, we focus on this population of researchers and apply our estimates to all treated researchers in it. Table 11 reports our calculations. For each outcome, the first four columns report the mandate coefficients estimated with equation (3) on the cross-country sample. Since most of them are obtained by PPML, column 6 converts them into an average percentage effect over the period 2011–2023. We apply this effect to the pre-treatment average of treated researchers (column 5), discarding any growth in academic productivity unrelated to the policy change, which gives the effect per person and per year (column 7). We then multiply this per-person effect by the number of researchers active in each year after the shock. A share of the researchers exits our database over the period, either because they no longer publish or because they are no longer in Hungary, and the effect no longer applies to them. Thus, we only count researchers who are active in each year. Column 8 reports the resulting cumulative effect for matched treated researchers, and column 9 for all treated researchers in the full sample. Column 9 assumes that

the effect estimated on matched researchers also applies to unmatched treated researchers. Column 10 only keeps the mandates whose coefficient is significant at the 10% level, which gives a more conservative estimate. Finally, the last column expresses the total cumulative effect as a share of the counterfactual outcome over the period, i.e. observed publications minus the estimated effect. The rise in publications in the 50% least-cited journals translates into between 8,300 and 8,700 additional publications, or 17% of the counterfactual number of such publications. While the number of lost publications in the top 5% and top 10% journals is much lower, between 3,500 and 4,300 and between 4,200 and 5,600 respectively, they still account for a loss of 6% and 5% of all such publications. Given that these estimates are substantial, we believe that our paper documents a real shift in the composition, quality and international exposure of Hungarian research. We further estimate that illiberal policies caused between 1,700 and 1,800 additional exits from academia, which represent about 11% of the treated researchers active after 2010.

Table 11. Aggregate Treatment Effects by Mandate

	Coefficient by mandate					Average over 2011–23		Cumulative effect			
	M1 2011–14	M2 2015–18	M3 2019–22	M4 2023	Pre-mean	Effect	Per-person/year	Matched	Total	Total (sig.)	Share
Top 5%	−0.23	−0.65*	−1.40***	−0.10	0.069	−41.4%**	−0.03**	−419***	−4,314**	−3,521***	−5.9%**
	(0.24)	(0.34)	(0.52)	(0.41)		(16.8)	(0.01)	(150)	(1,748)	(880)	(2.3)
Top 10%	−0.18	−0.54*	−0.90**	−0.29	0.102	−36.4%**	−0.04**	−522**	−5,569**	−4,249***	−4.9%**
	(0.21)	(0.30)	(0.40)	(0.27)		(16.5)	(0.02)	(227)	(2,525)	(1,424)	(2.1)
Bottom 50%	0.07	0.48***	0.48**	0.70***	0.116	50.1%**	0.06**	739**	8,735**	8,324***	17.1%**
	(0.15)	(0.15)	(0.20)	(0.21)		(22.6)	(0.03)	(358)	(3,937)	(3,181)	(9.0)
Exit[(a)]	0.00	0.01***	0.02***	0.01***	0.014	0.85*** pp	0.01***	200***	1,808***	1,719***	10.7%***
	(0.00)	(0.00)	(0.00)	(0.00)		(0.15)	(0.00)	(34)	(313)	(233)	(1.8)

Notes: Columns M1 to M4 report the coefficients of the interaction between the treatment (being in Hungary) and each mandate dummy, estimated by Poisson pseudo-maximum likelihood (PPML) on the matched sample. The estimation includes individual, year × field, and year × entry cohort fixed effects. Standard errors in parentheses are clustered at the country × field level. [(a)] Estimated with a linear probability model (LPM) and the effect is in percentage points, and cumulative effects in number of individuals. Cumulative effects are computed as $\sum_m (e^{\hat{\beta}_m} - 1) \times \bar{y}_{\text{pre}}^{\text{treated}} \times \sum_{t \in m} N_t$ for Poisson outcomes and $\sum_m \hat{\beta}_m \times \sum_{t \in m} N_t$ for LPM outcomes, where N_t is the number of active treated individuals in year t. *Total* uses all treated researchers with entry cohorts 1990–2005 in the full sample; *Total (sig.)* only keeps mandates whose coefficient is significant at the 10% level. *Share* expresses the *Total* cumulative effect as a percentage of the counterfactual number of publications of treated researchers over 2011–2023 (observed publications minus the estimated effect) for Poisson outcomes, and as a percentage of all treated researchers active after 2010 for LPM outcomes. *Per-person/year* is the total cumulative effect divided by the number of treated person-years over 2011–2023, and *Effect* expresses it relative to the pre-mean, i.e. $\sum_m w_m (e^{\hat{\beta}_m} - 1) \times 100$ with w_m the share of person-years in mandate m (for LPM: $\sum_m w_m \hat{\beta}_m \times 100$). Standard errors of aggregate effects are obtained by the delta method using the clustered variance-covariance matrix. Active individuals are researchers with at least one publication in the year (Poisson outcomes) or not yet retired (LPM outcomes). *** p<0.01, ** p<0.05, * p<0.1.

8 Conclusion

Our work shows how illiberal policies and political pressure can directly affect researchers and the production of ideas. We use the context of Hungary as quasi-natural experiment to measure how such pressures affect the quantity and quality of research. We first show that researchers in Hungary are negatively affected by illiberalism when they are perceived as political opponents. These researchers experience a

decline in both the quantity and the quality of their research, and are also more likely to leave Hungary. We document that these effect likely do not go through funding cuts, but likely come from the contraction of the perceived political opponents' network, suggesting that political pressure indeed makes collaboration more difficult for targeted individuals. Although silencing critics is often a central aim of illiberal regimes, targeted researchers have been more likely to publicly express their opposition to the regime, but also to self-censor in order to avoid the consequences of the political pressure.

Finally, we show that illiberalism imposes a penalty on all Hungarian researchers, including those who are not politically involved. Compared with similar researchers in other Central European countries, Hungarian researchers publish more, but mostly in Hungarian, and publish much less in the top journals of their field. We document an increasing isolation of the country's academia: Hungarian researchers collaborate more with their national colleagues, to the detriment of their international collaborations, and they are more likely to move abroad durably and to leave academia. Overall, illiberal policies shifted the composition, quality and international exposure of Hungarian research.

This work is particularly relevant at a time when rising political forces increasingly present the policies implemented in Hungary as a model. It contributes to understanding how not only the degradation of formal, legal institutions but also the political climate they create can foster, or deter, innovation and the production of new ideas. While our findings may not be fully generalizable to all contemporary political environments, the targeting of academics is often among the earliest signs of a shift toward illiberalism. Our results suggest that academia, as an organized system for producing innovation through individual researchers, remains sensitive to political pressure, even in regimes that occupy the middle ground between full autocracies and liberal democracies. The growing popularity, across democracies, of political parties that advocate similar regimes is therefore a serious concern for future innovation.

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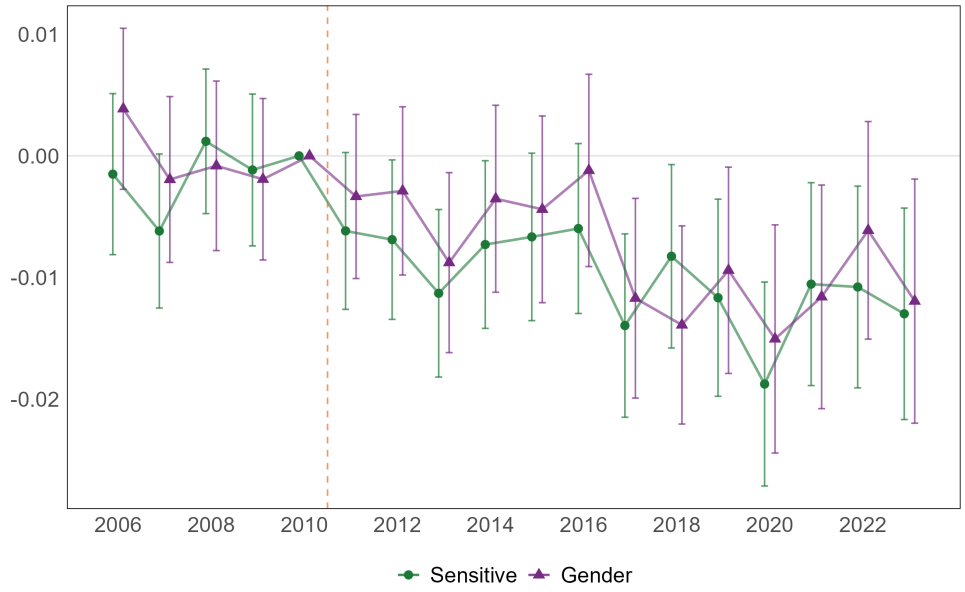
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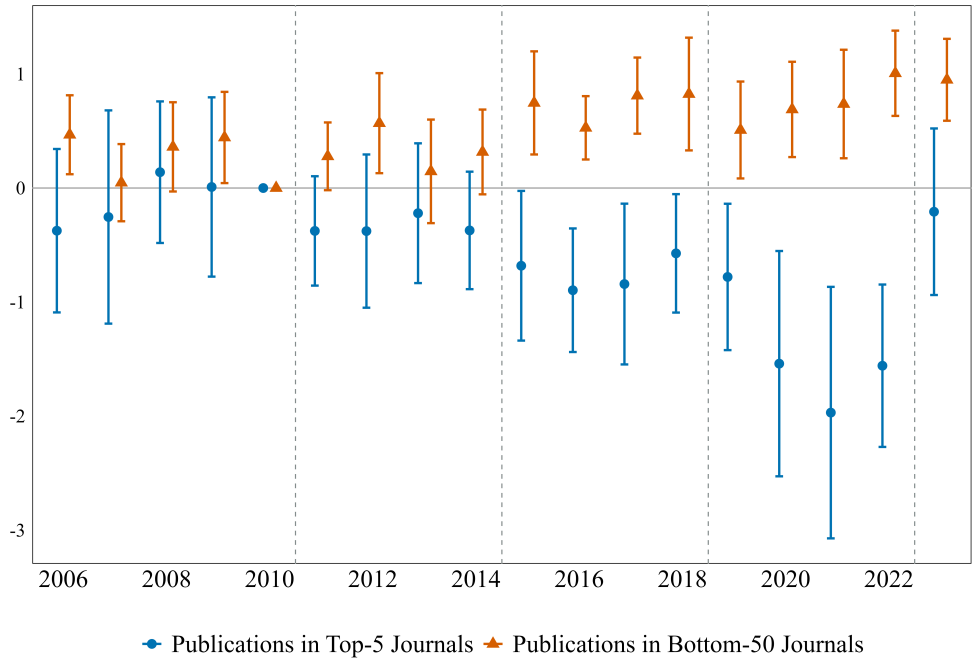
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Figure 7. Effect on Research Similarity with pre-2005 Publications - Gender and Sensitive Topics

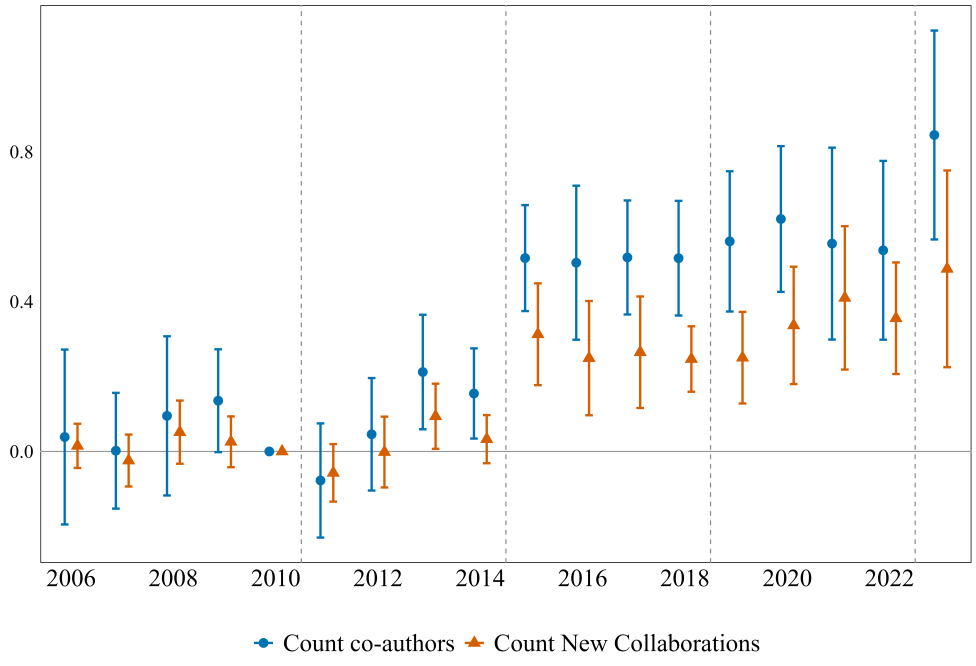


Notes: The graph above reports Fixed-Effect OLS regression estimates for the difference in the similarity measures for researchers publishing in gender related topics or in sensitive topics, compared to other Hungarian researchers for the period 2006-2023. Authors are matched using their number of publications over the period 2000-2005, their main field of publication and their year of entry in academia.

Figure 8. Effect on Publications by Journal Rank and on the National Co-Author Network



(a) Publications, by journal rank



(b) National co-author network

Notes: Event-study estimates of equation (3) by fixed-effects PPML on the cross-country sample in national repositories, 2006–2023, relative to 2010. The outcomes are (a) the number of publications by journal rank and (b) the total number of co-authors and the number of new co-authors registered in national repositories. Treated authors are neutral researchers based in Hungary; control authors are matched researchers based in Slovenia and Croatia. Outcomes are winsorized at the 99th percentile. Standard errors are clustered at the country × field level.

Appendix

This Appendix presents further details on the political background, data collection, construction of variables, additional results and all robustness checks.

- Appendix A gives more details on the political context of Hungary and the state of academia before and after the 2010 elections. It also gives more detail on the case of the Central European University and descriptive statistics on the situation of the university.
- Appendix B provides a detailed explanation of the different data sources we collected and the harmonization process we performed up to our final data set.
- Appendix C is the appendix regarding the definition of samples of politically aligned or non-aligned researchers and their network.
- Appendix D develops a simple theoretical framework to account for the behaviour of differently exposed researchers.
- Appendix E provides more information and descriptive statistics about our measures of research direction.
- Appendix F presents complementary results that support the results we present in the main text about research outcomes for politically aligned researchers.
- Appendix G shows additional results about strategies of politically aligned researchers.
- Appendix H shows additional results on the global effect of illiberal policies and the comparison between Hungary and other Central-Eastern European countries.
- Appendix I presents different robustness exercises.

A Political Background and the State of Academia in Hungary

In this section, we provide additional resources and descriptive statistics on the state of academia in Hungary (Appendix A.1) as well as on the particular case of the Central European University (Appendix A.2), about which we we display some descriptive statistics.

A.1 Descriptive evidence of the impact of illiberalism on Hungarian academia

We first present aggregate evidence and contextual information on the overall state of Hungarian research before and after 2010, marking the beginning of illiberal policy implementation.

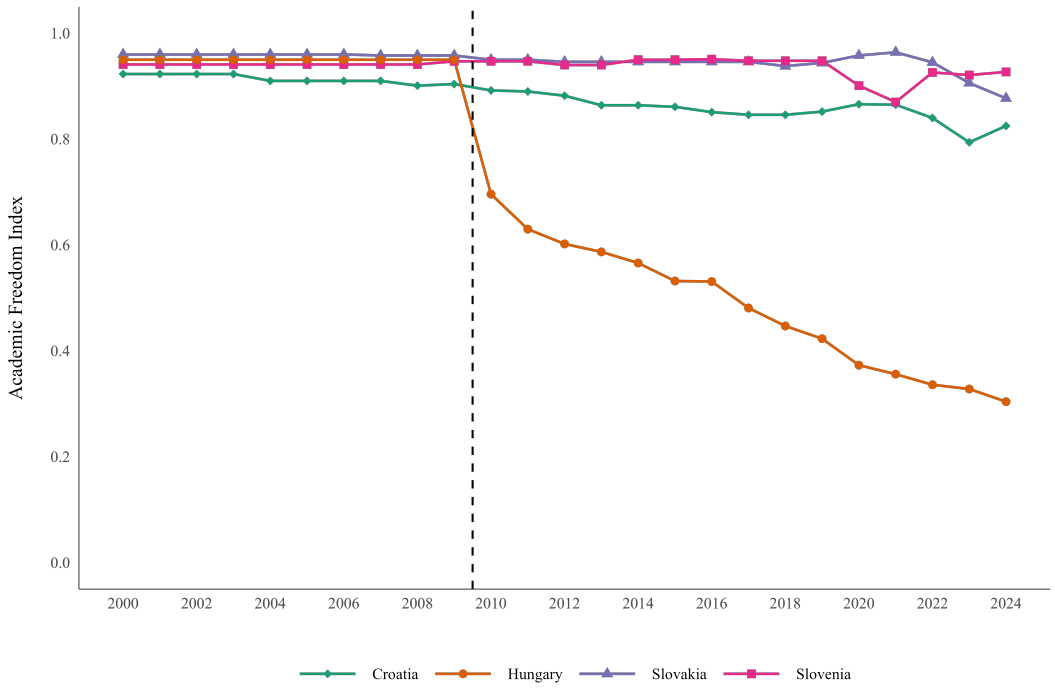
We would first like to recontextualise academic freedom in the Hungarian context by underlining the fact that the profession is used to being silent regarding political topics. The period over which academics have been involved in the public discourse without hindrance has been short, lasting only about twenty years between the end of the explicit ideological control of the communist period and the changes induced by Fidesz after 2010. During this time, academia became closely involved in politics. However, the chilling effect mentioned in this paper is a return to an earlier state from before 1989. The main difference that the literature identifies is that for those who are not self-censoring, instead of a ban on anti-government speech from academics, they are simply confined to the margins of publications by the State-aligned media, which does not even discuss their arguments. The combination of a fear for their livelihoods and the media takeover are the main reasons why academic freedom declined after 2010.

As a descriptive piece of evidence showing the rise of illiberalism in Hungary, we show that the Academic Freedom Index (AFI) has dropped since Orbán's reelection in 2010. This index is compiled by V-Dem to measure the level of academic freedom in each country on an annual basis based on private interviews with researchers. In Figure A.1.1, it is clear that Hungary diverges significantly from the trajectory of other Central and Eastern European countries[48]. The AFI for Hungary begins to decline sharply after 2010 and continues to deteriorate in the following years, while the rest only decline very slightly during Covid, which could be due to quarantine restrictions. None of the other countries see a drop with a similar magnitude as the one that we see in Hungary. Figure A.1.2 provides a more detailed view, displaying the individual components that are aggregated to construct the overall AFI. Although all dimensions taken into account by V-dem show a downward trend, some notable patterns emerge. In particular, the decline in "Institutional Autonomy" is especially strong in the Hungarian context, where academic freedom was initially challenged through governance reforms in 2011, 2014, and 2022. Interestingly, the indicator for "Cultural and Academic Expression" shows a sharp decline following the

[48]This is the measure that we use in order to select the countries used as a control group. The countries from which we use affiliated researchers are selected in such a way that they do not experience the same changes in academic freedom levels as Hungary.

campaign against the Central European University and the adoption of the "Lex CEU" law. This trend may reflect the broader atmosphere of intimidation and pressure on academics between 2017 and 2019 (Kováts and Rónay, 2021; Jenne et al., 2022).

Figure A.1.1. Academic Freedom Index – Central-Eastern European Countries (2000-2024)



Notes: This graphs shows the normalized Academic Freedom Index (AFI), computed by V-Dem, fror Croatia, Hungary, Slovakia and Slovenia, between 2000 and 2024. We obtain data directly from the V-Dem website. The dashed line indicates the year Viktor Orbán took office. The value of the index goes from 0 (no Academic Freedom) to 1.

While we cannot conduct a causal analysis on the entirety of Hungarian researchers, we can still descriptively document the impact of this decrease in academic freedom.

Figure A.1.3 highlights two notable patterns. First, it shows a slowdown in the size of PhD cohorts in public universities across all fields, with this decline becoming more pronounced after 2013. Second and interestingly, illiberal policies have not led to a reduction in the number of foreign PhD students. As the red curve in the figure indicates, the number of foreign students has continued to grow, representing an increasing share over time. In this sense, illiberal policies, in Hungary, do not appear to directly affect the arrival of foreign students; rather, their restrictive effects seem more targeted toward Hungarian researchers (see Section 7).

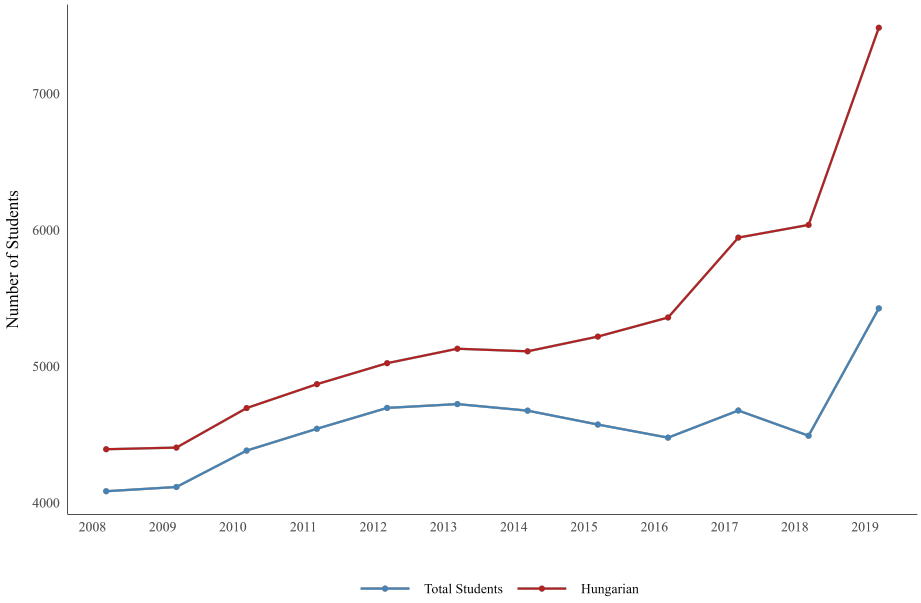
The trends observed in Figure A.1.3 for domestic researchers are echoed in Figure A.1.4, which displays a slowdown in the number of new researchers entering academia—especially after 2014–2015. These parallel trends also provide indirect validation of quality of the Hungarian CRIS data used in our analysis.

Figure A.1.2. Decomposition of the Academic Freedom Index - Hungary (2000-2024)



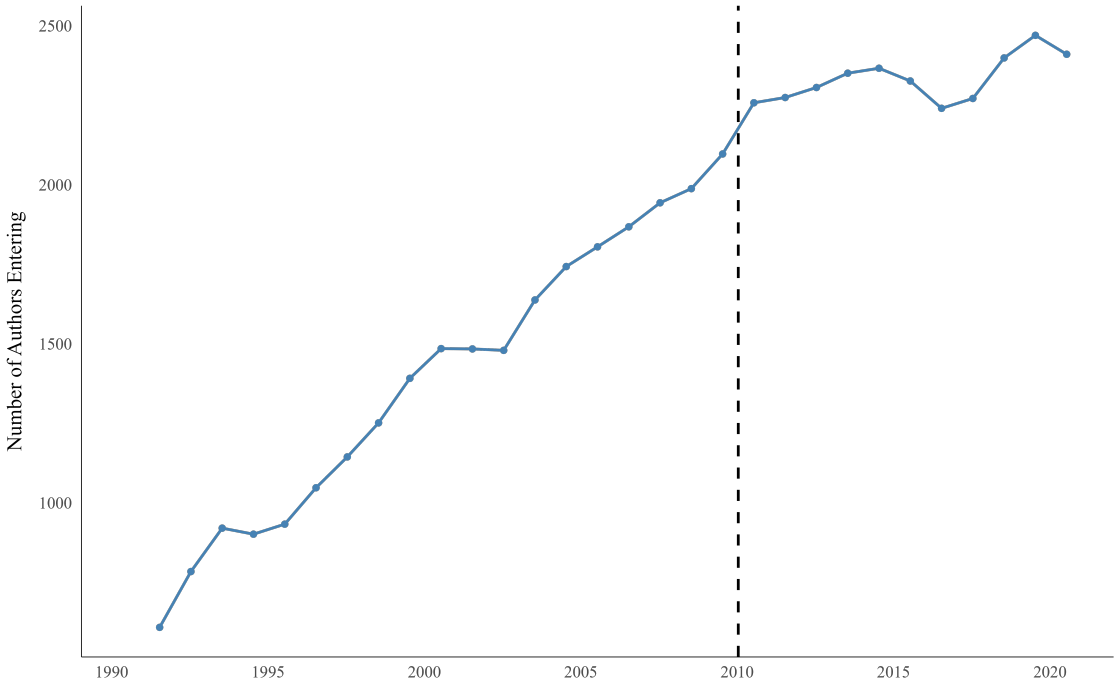
Notes: This graph shows the decomposition of the Academic Freedom Index (AFI), computed by V-Dem, for Hungary between 2000 and 2024. We obtain data directly from the V-Dem website. The dashed lines indicate the successive 3 main organizational reforms that we describe in Section 2 as being major turning points.

Figure A.1.3. Total Number of PhD Students in Hungary between 2008 and 2019 – by Nationality



Notes: The graph above displays the total number of PhD students enrolled at all Hungarian universities between 2008 and 2019. The data are sourced from the Hungarian Ministry of Higher Education. The count includes all students pursuing a doctorate, regardless of their year of study.

Figure A.1.4. Total Number of Entering Authors between 1990 and 2022 in Hungary



Notes: The graph above shows the total number of authors entering the Hungarian CRIS database (MTMT). An author's entry year is defined as the year of their first recorded publication. The dashed line indicates the year Viktor Orbán took office. To smooth overall trends, we compute a two-year rolling average; for example, the value shown for 2000 reflects the average number of new entries in 1999 and 2000.

Kováts and Rónay (2021) make the case that the changes within the university and the use of media outlets to target scientists are two elements of a single strategy. This allows the government to maintain a controlled opposition within university to be able to point fingers at enemies of the regime, in a climate in which they have promoted anti-intellectualism, and to swiftly deal with them by controlling the internal structure of the university. While no researcher is directly told not to work on certain topics, they are all aware that they could become a target at any time. For instance, they report the following citations from an interview with a researcher about their freedom to research and teach: "You don't need these politicians to ever have any direct say in your curriculum [...]. So they put the gun on the table and you never have to pull the trigger, and they may never pull the trigger, but that gun, you always see it. It's very powerful. In an environment that's been through that kind of socialization, it brutally restrains courage.".

A.2 The Central European University

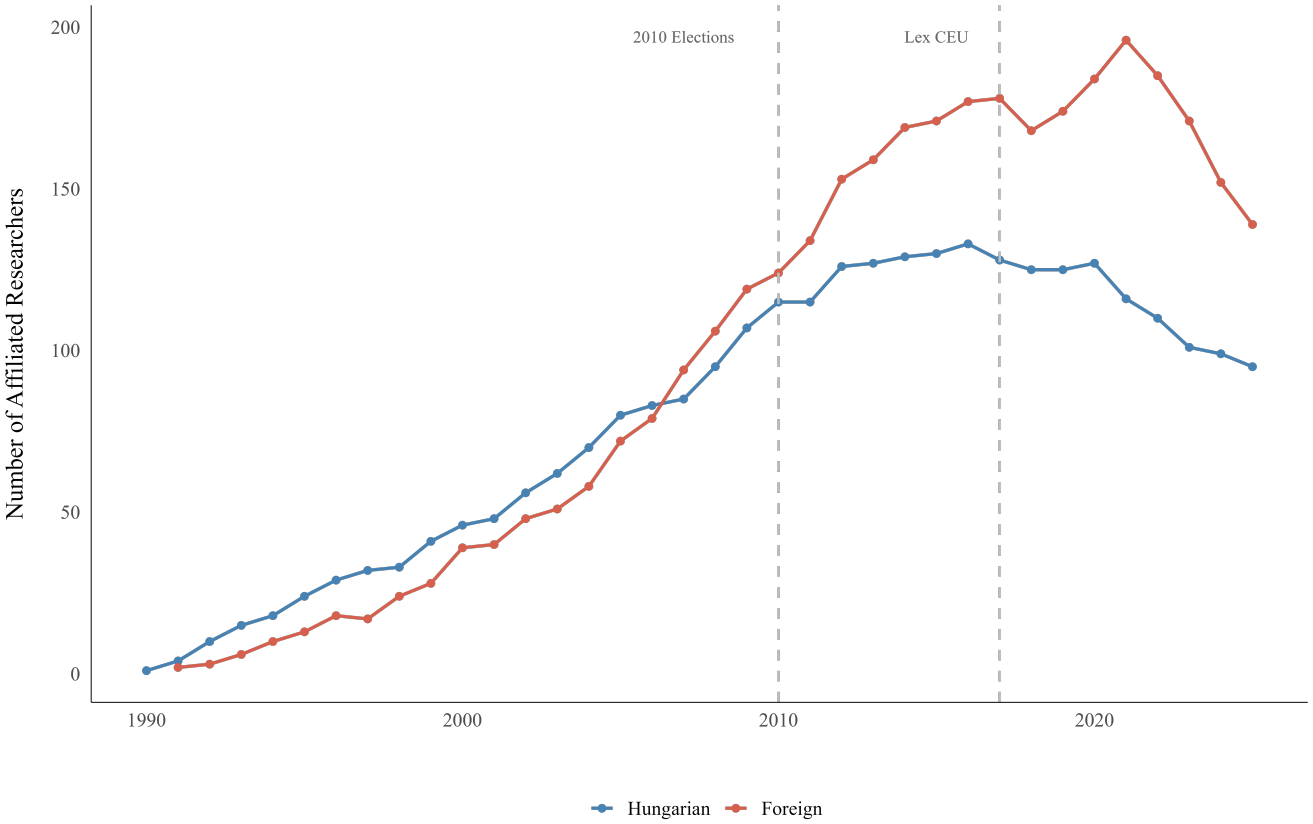
We first recapitulate the events leading up to the relocation of the CEU in Austria. In June 2018, after the election several "Stop Soros" legislative bills attempting to constrain the Hungarian civil society were

introduced in Parliament; these laws banned people from helping undocumented immigrants and imposed a 25% tax on foreign donations to pro-immigrant NGOs (Benková (2019)). This led George Soros's Open Society foundation to move its headquarters from the country and the EU Parliament to vote a punishment for this breach of core EU values. Benková (2019) underlines the years-long campaign started in 2015 of Fidesz against George Soros, a billionaire from Hungary living in the US who is politically progressive, costing over 100 million euros. Krekó and Enyedi (2018) detail the goals as well as several stepping stones of this campaign. Finding this common enemy, the authors say, contributes to what Orbán calls a "cultural counter-revolution". The regime used its control of the media, including some private media receiving most of their funding from the state, to promote a narrative positing that progressive and pro-human rights movements in Hungary were funded by Soros, including publishing in the Figyelő a list of 200 academics and human rights activists accused to be "mercenaries of Soros". Orbán did not limit himself to such initiatives, however costly (about 250 million in US dollars on anti-Soros and anti-Brussels campaign in 2017 alone according to HVG[49], in publications, posters...).

We also present in this section some general descriptive evidence on the situation of the Central European University. Figure A.2.1 displays the number of researchers affiliated with Central European University each year between 1990 and 2025. The figure shows a steady increase in the total number of researchers—both Hungarian and international—until a shift occurs after 2010, particularly in the total number of Hungarian researchers affiliated to the university. Figure A.2.2 provides further insight on these trends. It shows that this change is driven by both an increase in the number of researchers leaving the Central European university and a sharp decline in the number of Hungarian researchers entering. Similar trends are observed for international researchers, although the decline in entries becomes most pronounced after 2014. Trends shift again after the "Lex CEU" and the main campus of the university leaving Budapest for Vienna in 2019.

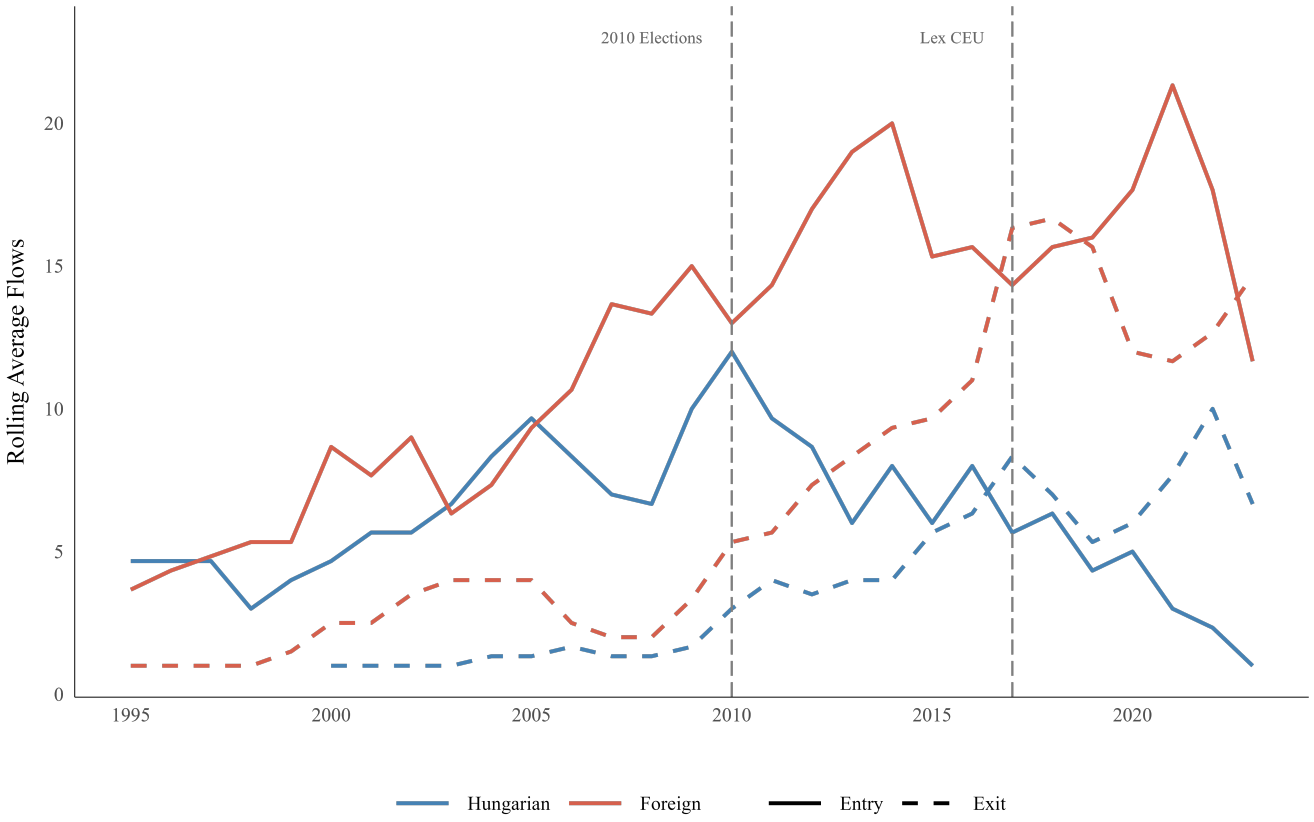
[49]Hava Nikita, January 2018 24, "Incomprehensible numbers: we show how much Orbán spent on propaganda last year", on hvg.hu, retrieved 26/04/24 at https://hvg.hu/gazdasag/20180124_Ennyit_koltottek_el_Orbnek_tavaly_propagandara__itt_a_lista.

Figure A.2.1. Number of Professors at the Central European University (1990-2025)



Notes: The graph aboves displays the total number of publishing researchers that we identified as being at the CEU. This statistics only includes researchers that published at least once.

Figure A.2.2. Exit flows of professors from the Central European University (2000-2025)



Notes: The graph above displays the flows of entering and existing researchers at the Central European University. Data comes from our data set matched by hand. To smooth overall trends, we compute a two-year rolling average; for example, the value shown for 2000 entries is the average number of new entries in 1999 and 2000.

B Data Collection and Harmonization Process

This appendix describes the construction of our dataset, which combines the OpenAlex bibliographic database with the national Current Research Information Systems (CRIS) in different Central European countries. We collected the national CRIS data for five countries: Hungary, Slovenia, Croatia, Slovakia and Czechia. However, the Slovak (SK CRIS) and Czech (IsVaVai) databases are built at the project level and suffer from inconsistencies in the registration of authors and publication dates. They are thus not yet usable in their current state, and we leave them for future work. Our analysis therefore relies on the data for the three remaining countries: Hungary, Slovenia and Croatia. We first describe how each data source was collected, then how we harmonize fields of research across sources, and finally how we merge the national and international data at the publication and author levels.

B.1 Collection of the Data Sets

OpenAlex is a fully open-access bibliographic database. We use the full snapshot released on 29 August 2024. This release follows a major revision of author disambiguation in OpenAlex, which led to the reassignment of all author identifiers. We still find several instances of duplicated or mixed-up author profiles when comparing them with national databases, an issue that is unavoidable given the size of the dataset.

he national repositories (Current Research Information Systems, CRIS) combine different types of sources: bibliometric data and doctoral-school records (MTMT and ODT for Hungary), project-based open data on research output (SK CRIS for Slovakia and IsVaVai for Czechia), national library records linked to a project-based researcher registry (SICRIS and COBISS for Slovenia), and a national CRIS built on existing institutional databases (CRORIS for Croatia). All are public databases, but apart from IsVaVai, none of them provides a bulk download. We therefore collect the data automatically through their API or website (MTMT, ODT, SK CRIS and CRORIS) and through the official register (SICRIS and COBISS). Although we also collected IsVaVai and SK CRIS, we cannot use them because of inconsistencies in the registration of authors and dates. Our data collection process is similar for all databases. We first collect the identifiers of all authors in the database. We then use these identifiers to obtain information at the author level, and then information about the publications of each author. This allows us to build a publication-author level dataset, which we later aggregate at the author level to construct the sample. Since all databases share the CRIS design, their variables are similar: we harmonize them and append the national datasets to build the full CRIS dataset. The harmonization of fields of research is described in Section B.2.

Hungary: We use two databases to characterize research activity and researchers in Hungary. The first is the list of doctoral programme members and students publicly available on the official website of the National Doctoral Council (*Országos Doktori Tanács*, hereafter ODT). Under Act CXXXIX of 2005

on higher education, all doctoral schools have been under the supervision of the ODT (an independent body) since 2007. Since November 2007, the ODT has required every doctoral school to publish a public profile for each of its researchers. These profiles include all academic titles of the researcher, the PhD students she supervises, her research areas, her employment history and a list of her recent publications. All the information is entered by researchers themselves and validated by the administrators of the doctoral school. Overall, the website contains about 52,000 profiles of researchers and PhD students. Any researcher who was active in a doctoral school after 2007 should have a profile, including now retired or deceased researchers. This information was obtained from the website doktori.hu.

The other source is the Library of Hungarian Scientific Works (*Magyar Tudományos Művek Tára*, hereafter MTMT), a publication-level bibliometric database launched in 2010. Five institutions contributed to its creation: the ODT, the Hungarian Accreditation Committee, the Hungarian Rectors' Conference, the Hungarian Scientific Research Fund (OTKA) and the Hungarian Academy of Sciences, which also manages it (Holl et al., 2014). Records are entered and validated at the institutional level. Hungarian publications in social sciences are likely to be poorly indexed in non-specialized databases (few have a DOI, and few are indexed in Scopus (Sasvári, 2022)).[50] We retrieve the database through calls to its API using researcher profiles. We harvest 1,768,488 scientific publications out of about 5 million records[51] and 66,435 author profiles, which is consistent with the figures recently reported by the curators of the data (Holl, 2024).[52] Among those, 15,643 are directly linked to a researcher profile in ODT.

Slovenia: SICRIS is developed and maintained by IZUM, the Institute of Information Science, and by the Slovenian Research and Innovation Agency (ARIS), instituted by the Research and Development Act 2002/26 (Curk et al., 2006). The ARIS evaluates research projects and publishes the resulting data not only at the project level but also at the level of researchers, research groups and research institutes. We use SICRIS to retrieve information about active researchers in Slovenia, which represents 48,022 records overall (Korošec, 2022).

We then use the link provided by SICRIS to retrieve publication information for all these researchers in COBISS.net, the shared library information system of Slovenia, North Macedonia, Serbia, Bulgaria, Albania, Bosnia and Herzegovina, Montenegro and Kosovo. Originating in a shared cataloguing system of former Yugoslavia developed at the initiative of IZUM (Seljak, 1994), the database contains records on all publications by authors from the country, with relatively high quality (Badovinac, 2021). The COBISS.SI database contains over 7.3 million records. We only collect the subset obtained through reports generated for authors in the SICRIS database, which represents 1,515,089 records. Some COBISS entries include

[50] Publications in other languages are frequent in the Hungarian CRIS data, although this depends on the discipline. For instance, theology and linguistics are often published in German, but less so in COBISS.

[51] MTMT also records non-academic publications and other types of works, for instance musical performances, which are not relevant to our analysis.

[52] A few researcher profiles are not visible to all users, but this concerns about a hundred profiles in the entire database.

citations obtained from other sources, such as Web of Science, but not systematically.

Croatia: CRORIS is maintained by the Ministry of Science and Education of Croatia and the University Computing Centre. It was developed under project KK.01.1.1.03.0001 of the European Regional Development Fund (2017). The project builds upon existing databases to create and maintain a Croatian CRIS that contains 920,921 publications and 52,169 researchers. We collect the full set of CRORIS publications through its API. CRORIS does not include any citation data.

B.2 Harmonization of Fields

We harmonize domains and fields using the OpenAlex classification, which is itself adapted from the Scopus subject areas. This classification has 4 main domains (Life Sciences, Social Sciences, Physical Sciences and Health Sciences) and 26 fields in total, and 252 subfields.

To derive the field of an author from the national databases, we map each field of science named in the different national research repositories to the OpenAlex classification, first by hand for fields that have an identifier, then by selecting the closest OpenAlex field in terms of the cosine distance between SciBERT embeddings (Beltagy et al., 2019). We proceed in the same way to identify subfields in MTMT and SICRIS when fields are detailed enough. For instance, "linguistics" is mapped to OpenAlex subfield #1203, "Language and linguistics". We then use this mapping to retrieve the domain of publication of the author in the OpenAlex classification. Because this information is provided directly by universities or researchers themselves, we consider it more trustworthy than the automatically computed OpenAlex classification. Therefore, for authors present in both sources, we use the field declared in the national database instead of the OpenAlex variable "topic share". This reduces measurement error in authors' fields.

For authors without a field in a national database, we rely on the OpenAlex variable "topic share", which gives the share of an author's publications associated with each research topic. We assign to each author the topic with the highest share, as well as any other topic whose share is at least 75% of this maximum. We then keep the subfields and fields to which these topics belong in the OpenAlex classification. We allow an author to be in several fields or domains at the same time; in that case, the author is assigned to a unique combined field corresponding to the intersection of the fields in which she publishes.

B.3 Merging National and International Data

In order to use the different data sources jointly and reduce measurement error in our analysis, we reconcile the information available in these databases by merging them on common identifiers. For instance, the professor of literature corresponding to ODT profile #14 has not one but five different OpenAlex profiles. One of them contains most of his publications (55), while 8 others are scattered across the remaining

four. In order to compute our measures of productivity, activity and location more precisely, we use the information available in the national CRIS to identify these profiles as belonging to the same person. We detail below how we deal with the different issues arising during this process.

B.3.1 Matching Publications

In theory, merging publications across databases should be straightforward: most publications available online have a Digital Object Identifier (DOI), which should be the same across all databases. However, for most publications in our databases, the DOI is not available (in MTMT, only 18% of publications have one). Other identifiers are available, such as Web of Science or Scopus identifiers, but merging only on these external identifiers misses most of the common information across databases. Therefore, we also merge on publication title. To capture matches in which Unicode encoding, capitalisation or stopwords differ, we normalise the titles by removing stopwords when the language of the publication is known, removing non-alphanumeric characters, and converting the strings to the same encoding.

When we use matched authors to match publications, we further allow for some variation in publication titles. Stopwords may have been removed in one record but not in the other when the language is missing, and titles may contain typing errors (for instance, the title of publication #12044 in MTMT includes "labortory" instead of "laboratory", preventing a direct match with OpenAlex publication #1983568155). We therefore keep matches in which the Levenshtein distance between normalized titles is below 10% of the length of the shorter of the two strings.

B.3.2 Matching Authors

We first match authors through their publications. We keep matches between authors listed by both databases as authors of a matched publication when their first and last names are concordant, or when the OpenAlex profile only has an initial that is consistent with the first name. This allows us to match researchers even if they share the same name and field, provided that their publications are not mixed together in OpenAlex.

We then match researcher profiles on external identifiers, names and fields. We normalize the names of researcher profiles in each database and match authors on their initials and last name. We keep a match when the researcher is the only one in the national database to have this full name, or initial and last name, in a given OpenAlex field.

A researcher from a national database may thus be linked to several OpenAlex profiles. Since OpenAlex tends to create several profiles for the same author, and since we consider the national author profiles to be more accurate, we assume that when an author has no homonym in the same field in the national database, homonymous OpenAlex profiles in that field are additional profiles of the same person. This approach complements the publication-based matching, as it retrieves researcher profiles

whose publications have been mixed with those of homonyms from another field. Overall, we link 15,372 Slovenian profiles and 59,629 Hungarian profiles to OpenAlex.

B.3.3 Eliminating Incorrect Matches

Because of homonyms in author names and publication titles, we need to eliminate incorrect matches. In principle, our procedure distinguishes authors who have the same name using their publications, but this does not work for all of them. Given the size of the dataset, the author attribution algorithm of OpenAlex generates false links between authors and publications on the basis of homonymy. For instance, some of the publications of the linguist and sociologist A5080416716 are attributed to her homonym A5004379723, who works on pulmonary diseases and endocrinology. Therefore, our process necessarily generates some false matches between author profiles.

Conversely, as explained above, we want to keep some profiles or publications that are not matched one-to-one across databases. Given the duplicated publications and author profiles, it is efficient to keep at least some of them. In this step, we consider the national databases as the source of truth, since they are at least partly managed by universities and researchers, who have an incentive to check and correct their profiles. By contrast, given the important size of OpenAlex, author profiles and duplicate publications cannot be checked for the entire world. Therefore, we keep all OpenAlex profiles that are matched to a single identifier in the national database, and discard those matched to several national identifiers.

Table B.3.1 provides a summary of the results of the matching process for Hungary (MTMT) and one of the countries we use as control in the cross-country analysis, Slovenia (COBISS). Overall, Panel A shows that matched publications represent only 17.2% of total publications in MTMT and 6.2% in COBISS. However, this subset allows us to match 25.9% of researchers in MTMT and 15.3% in COBISS, as displayed in Panel B. Our next matching step further allows us to match as many as 84.7% of researcher profiles in MTMT to at least one OpenAlex profile. For COBISS, this share is 42.4%. This gap between the two data sources likely reflects the lack of external identifiers in COBISS compared to MTMT, as COBISS does not provide the DOI for each publication and only provides the Web of Science and Scopus identifiers (and only for about 10% of all publications). Conversely, in MTMT, 21% of publications have at least a DOI, Scopus, Web of Science, or PubMed identifier. Likewise, authors in COBISS do not have any external identifiers. This makes the merging process less likely to result in one match. By contrast, 26% of researchers in MTMT are also recorded with an ORCID or Scopus profile. Panel C presents the results of the matching algorithm by main domain of research of MTMT and COBISS authors.[53]

[53] In this computation, we count researchers once per domain of activity, i.e. a researcher active in Life Sciences and Health Sciences counts once in each of the corresponding lines.

Unsurprisingly, the match rate is lower for researchers in social sciences in MTMT. This is because their publications or field are less likely to be recorded accurately in OpenAlex. In COBISS, health scientists appear to be particularly well recorded in OpenAlex compared to scientists in other domains. For these other domains, match rates are similar to one another.

Table B.3.1. Statistics on the Merging Procedure between OpenAlex and National Repositories

	Hungary (MTMT)		Slovenia (COBISS)	
Panel A: Publications				
	N	%	N	%
Total	2,491,849		1,638,784	
Step 1	316,089	12.7	52,386	3.2
Step 2	428,162	17.2	101,361	6.2
Step 3	428,462	17.2	101,373	6.2
Step 4	428,472	17.2	101,376	6.2
Panel B: Authors				
	N	%	N	%
Total	70,401		38,673	
Step 1	18,005	25.6	5,924	15.3
Step 2	18,251	25.9	5,924	15.3
Step 3	18,253	25.9	5,924	15.3
Step 4	18,254	25.9	5,924	15.3
Matched	59,629	84.7	16,401	42.4

Panel C: Authors by OpenAlex domain

	Total	Matched	%	Total	Matched	%
Life Sciences	12,089	6,556	54.2	2,365	1,369	57.9
Social Sciences	34,991	11,787	33.7	7,676	3,863	50.3
Physical Sciences	23,569	12,328	52.3	16,841	7,990	47.4
Health Sciences	12,634	7,543	59.7	3,681	2,757	74.9

Note: This table represents the number of identifiers which have at least one credible match in OpenAlex after each step of the iterative merging process, for MTMT and COBISS, for publications (Panel A), researcher profiles (Panel B) and researcher profile by main domain of study (Panel C). Next to each number, we print the percentage it represents compared to the total number of records in the CRIS database. The "Matched" step is the number obtained after iterative matching and subsequent matching on fields and names. In Panel C, Total is the number of researcher profiles in the domain, Matched is the number with at least one credible match in OpenAlex, and the percentage is Matched divided by Total.

B.4 Comparing Academic Trajectories across Central European Countries

This section compares publication patterns across the three national databases used in the cross-country author-level analysis, namely MTMT for Hungary, SICRIS/COBISS for Slovenia and CROBIS for Croatia, and checks whether differences in data collection could bias our results.

Because the databases we use were built separately, they likely started collecting publications system-

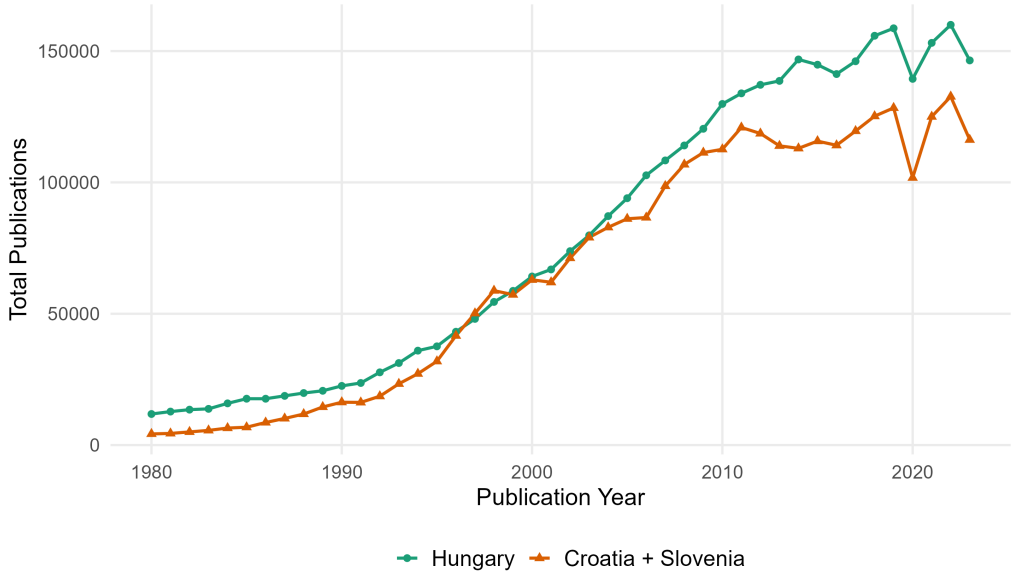
atically at different times. This could bias our estimates of the effect of the regime change in Hungary. In particular, funding cuts during the European sovereign debt crisis could have hindered data collection in one of the databases. To make the three databases comparable, we restrict publications to journal articles, books, book chapters and conference papers and harmonise document types across databases. In all different data bases, once a researcher's account is created, publications are updated automatically, so recorded output does not depend on individual reporting effort. Figure B.4.1 shows the total number of publications in each national database over 2000–2020, irrespective of any sampling. There is no large trend break in data collection in any of the databases around 2010.

Figure B.4.1 shows the total number of publications in each national database over 1980–2023, irrespective of any sample selection. Recorded publications follow very similar trends in Hungary and in the two control countries until 2010, with no trend break in data collection around this date. Both series drop in 2020, showing the effect of the Covid pandemic on the overall academic production in all three countries.

Figure B.4.2 shows the average number of publications per author and year. Hungarian authors publish more than authors in Croatia and Slovenia in the early 2000s, but the gap closes by 2008. Between 2008 and 2015, both groups have similar levels and trends. Afterwards, the average is slightly higher in the control countries. These differences in levels are absorbed by researcher fixed effects. What matters for our identification is that trends are similar just before 2011.

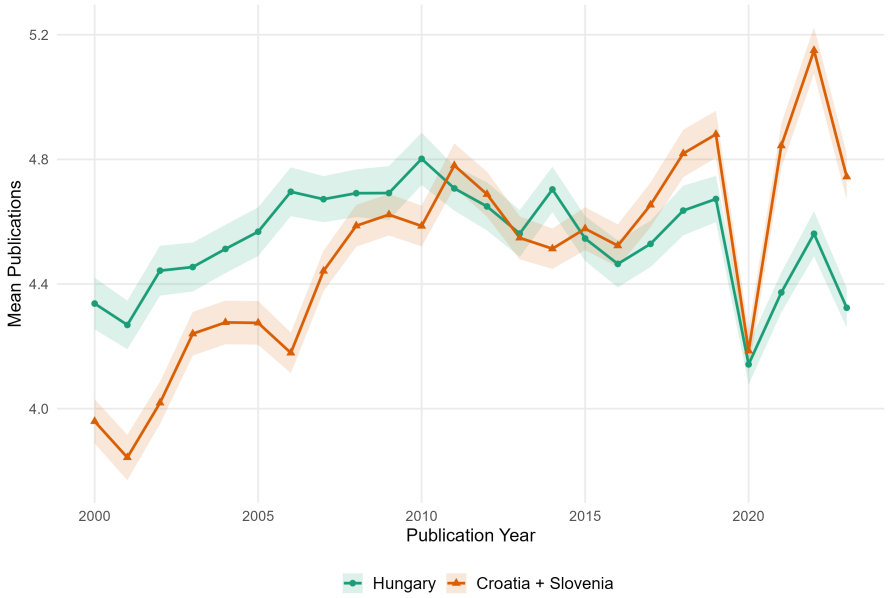
Figure B.4.3 plots average publication trajectories by years since entry into academia. In all three countries, publications increase during the first 10 to 15 years of the career and decline afterwards (panel a). Conditional on publishing, output rises with seniority and stabilises after about 20 years (panel b). Levels differ across countries, with Croatian authors publishing the least, but the shape of the academc productivity over the year is similar. Since cohort by year fixed effects are common to the three countries, this similarity supports our specification, and the differences in levels are again absorbed by researcher fixed effects.

Figure B.4.1. Total Publications per Year in National Databases



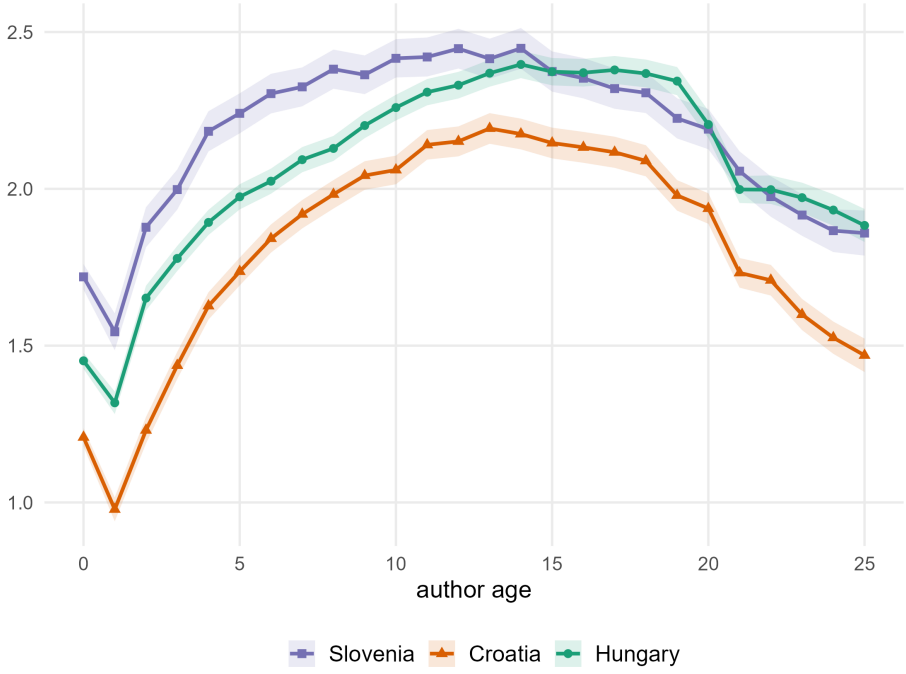
Notes: The graph plots the total number of publications recorded per year in the Current Research Information Systems (CRIS) used in the cross-country author-level analysis: MTMT (Hungary), SICRIS/COBISS (Slovenia) and CROSBI (Croatia). All recorded publications are included, without any sample restriction.

Figure B.4.2. Average Publications per Year - Full Sample

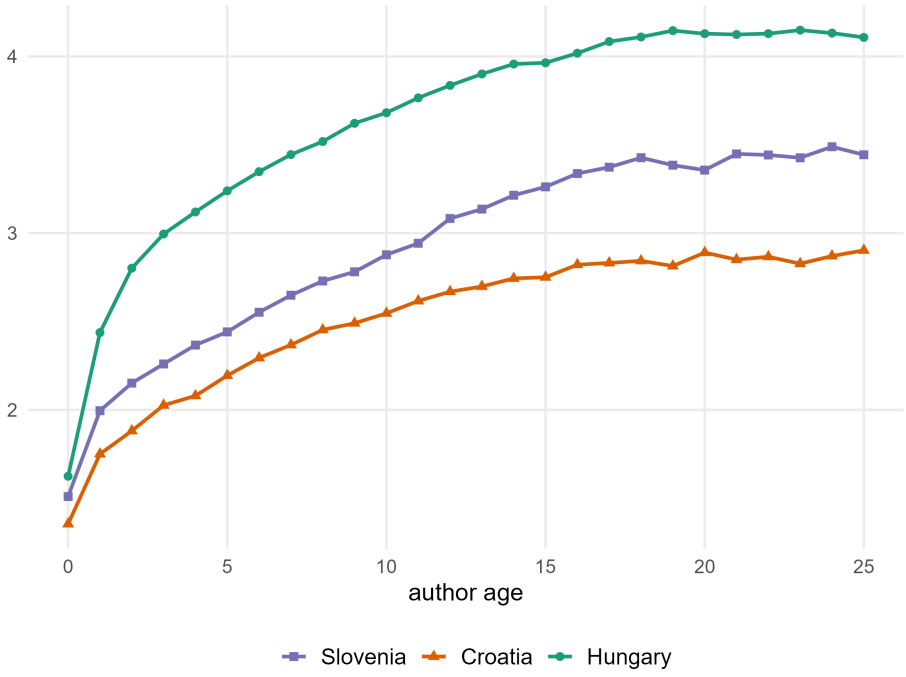


Notes: The graph shows the average number of publications per author per year in the CRIS used in the cross-country author-level analysis (Hungary, Slovenia and Croatia).

Figure B.4.3. Average Publication Trajectories per Author



(a) Average Number of Publications per Year



(b) Average Number of Publications per Year, Conditional on Publishing

Notes: The graphs plot the average number of publications per author in the CRIS used in the cross-country author-level analysis (Hungary, Slovenia and Croatia). In both graphs, the x-axis shows the number of years since entry into academia. Panel (b) only includes author-years with at least one publication.

C Academics' Political Alignment

We detail in this section how we build our samples of researchers who are likely to be perceived by the government as political opponents or as political allies. We consider three groups of perceived political opponents: researchers affiliated with the Central European University (CEU), academics linked to NGOs and activist networks targeted by the policies of Viktor Orbán's government, and researchers of the Institute of Political History (*Politikatörténeti Intézet*). We consider three groups of perceived political allies: members of the Batthyány Society of Professors, researchers affiliated with the Mathias Corvinus Collegium (MCC), and researchers who are members of Fidesz. Because these groups are small, we match their members by hand to their identifiers in the Hungarian CRIS (MTMT) and in OpenAlex, based on their publication records. To supplement and verify the data, we use researchers' personal websites, online CVs and LinkedIn profiles to collect key information, including nationality, year of entry and final year of affiliation with the relevant institution. This process also allows us to exclude deceased individuals and to correct OpenAlex data when it reports wrong affiliations. For each group, we only consider the information pre-2010. This ensures that we do not inadvertently include researchers who joined the different groups in reaction to the political opposition or support to the current government.

C.1 Perceived Political Opponents

Central European University. We extract from OpenAlex all researchers affiliated with the Central European University since its creation, a private university founded by George Soros which was forced to move most of its activities from Budapest to Vienna after the 2017 amendment to the higher education law (*Lex CEU*). We match authors to MTMT and OpenAlex by hand. For regression analyses using this sample, we restrict attention to researchers who began their affiliation with the Central European University before 2010.

NGOs and Activists. To identify researchers linked to NGOs, we identify several NGOs who always have been critics of the action of the government, namely the Hungarian Helsinki Committee, Amnesty International, Transparency International Hungary, the Open Society Foundations and *Menedék* (Hungarian associations for migrants). We confirm this list of NGOs using the so-called "Soros list", a document published in 2018 by *Figyelő*, a pro-government newspaper. The list names around 200 academics and human-rights activists accused of being "mercenaries of Soros". Approximately 80 individuals from this list are indexed in the Hungarian CRIS database.

Institute of Political History. The Institute of Political History (*Politikatörténeti Intézet*) is a left-leaning research institute that is not directly funded by the state. In 2013, the Fidesz government nationalized part of its archival holdings without compensation. In 2017, the state also sued to evict the Institute from the building that it and its predecessor had occupied since the postwar period. After the Institute initially won, an extraordinary review by the *Kúria*, Hungary's supreme court, opened the way

for lower courts to order its eviction in June 2020.

C.2 Perceived Political Allies

Batthyány Society. The Batthyány Society of Professors is a conservative association of academics close to Fidesz. The full list of its members can be found on its website pbk.info.hu. As for the CEU, we match them by hand to their identifiers in MTMT and OpenAlex based on publication records, and collect the same information.

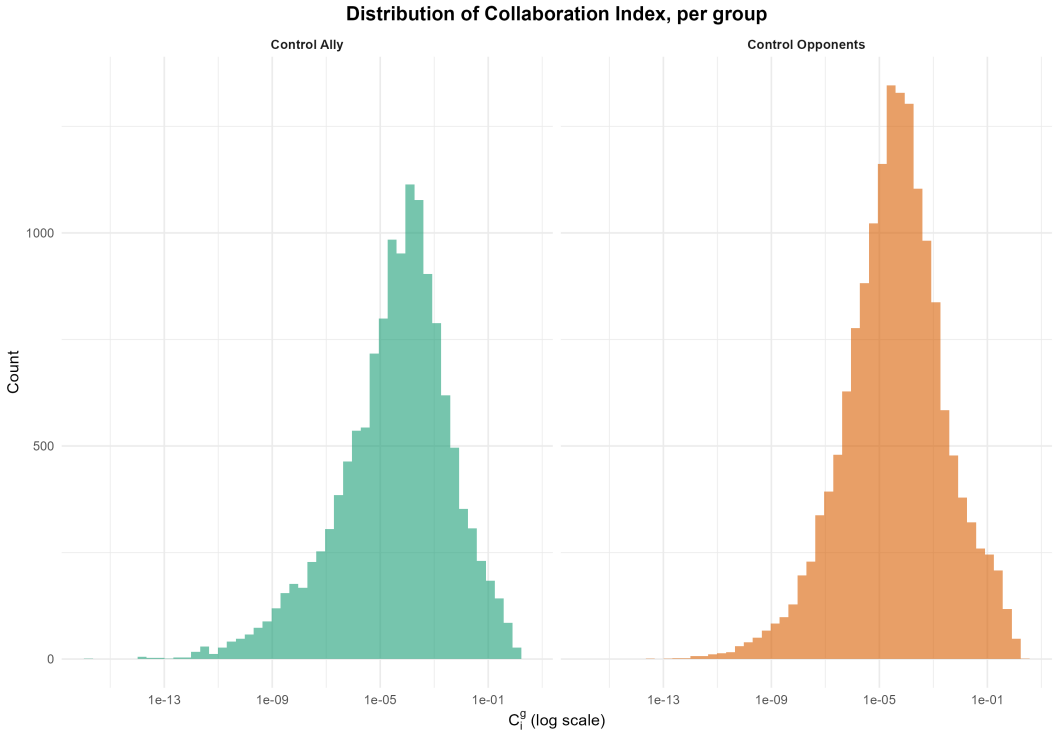
Mathias Corvinus Collegium. Founded in 1996, the Mathias Corvinus Collegium (MCC) is private think-tank, educational institution and research centre "devoted to the flourishing of the Hungarian nation" according to the organisation. The institution is closely tied to Viktor Orbán's government. We identify researchers affiliated with MCC using the website of the insitution, mcc.hu, and match them to MTMT and OpenAlex by hand.

Fidesz Members. Finally, we include researchers who were members of Fidesz, Viktor Orbán's party, before 2010. As there is no single source for this group, we compile it progressively, adding researchers whom we identify as members of the party before 2010 in the course of our research on the political repression of academics in Hungary. The list is therefore unlikely to be exhaustive. We then match these researchers to MTMT and OpenAlex data by hand.

C.3 Networks of Opponents, Networks of Allies

C.3.1 Network Description

Figure C.3.1. Distribution of Network Index - Control Groups



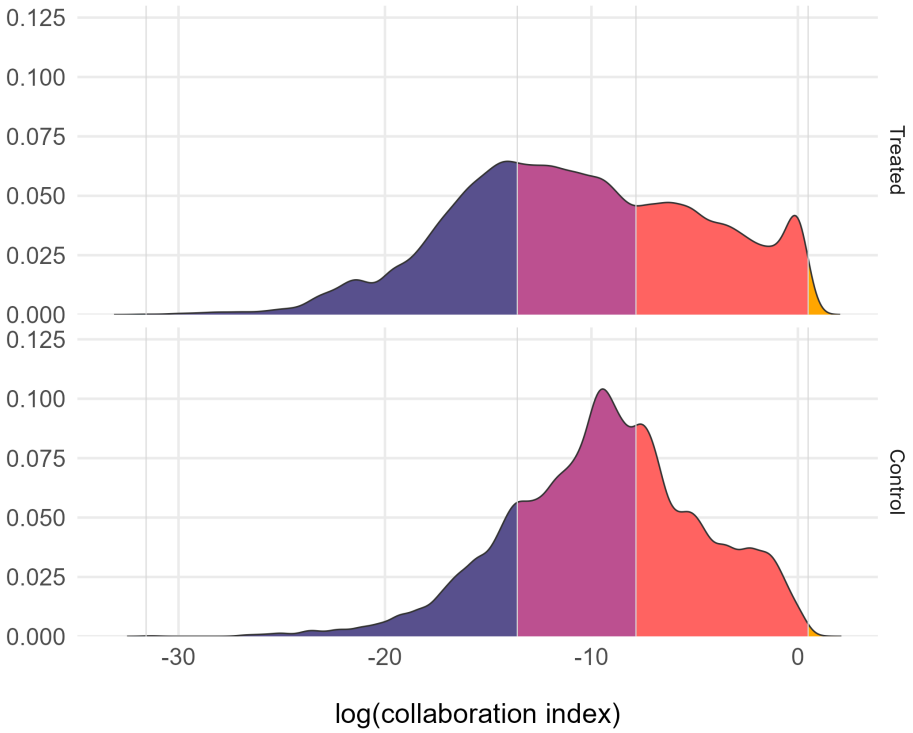
Notes: Each pane of this graph is showing the distribution of $C_t^{g,\text{net}}$ for the control groups ally researchers and the control group of opponent researchers.

Table C.3.1. Pre-treatment descriptive statistics by group

		Network pol. opp.		Network ally	
		Treat	Control	Treat	Control
Panel A: Non-matched sample					
Entry year	Mean	1990.64	1995.66	1993.81	1994.91
	SD	12.21	11.94	12.60	11.61
Life Sciences	Share	0.23	0.27	0.29	0.26
Social Sciences	Share	0.43	0.31	0.28	0.30
Physical Sciences	Share	0.30	0.43	0.46	0.37
Health Sciences	Share	0.28	0.23	0.21	0.33
Publications	Mean	4.89	2.87	3.98	3.43
	Median	3.00	2.00	2.00	2.00
	SD	6.60	4.07	5.86	5.10
Publications (English)	Mean	2.50	1.55	2.35	1.79
	Median	1.00	1.00	1.00	1.00
	SD	4.27	2.88	4.21	3.15
Publications (Hungarian)	Mean	2.80	1.60	2.00	1.95
	Median	1.00	0.00	0.00	1.00
	SD	4.77	3.09	4.24	3.92
Citations	Mean	59.28	34.14	60.96	34.79
	Median	7.00	1.00	4.00	2.00
	SD	211.17	216.89	303.16	116.43
N authors		5,845	4,464	4,529	1,790
Panel B: Matched sample					
Entry year	Mean	1991.81	1993.57	1994.45	1993.38
	SD	10.44	10.37	10.00	10.40
Life Sciences	Share	0.19	0.23	0.27	0.21
Social Sciences	Share	0.42	0.32	0.27	0.26
Physical Sciences	Share	0.21	0.36	0.33	0.31
Health Sciences	Share	0.26	0.19	0.19	0.30
Publications	Mean	4.59	2.90	3.57	3.37
	Median	3.00	2.00	2.00	2.00
	SD	6.22	4.06	5.14	5.06
Publications (English)	Mean	2.20	1.49	2.05	1.71
	Median	1.00	0.00	1.00	1.00
	SD	3.91	2.78	4.02	3.13
Publications (Hungarian)	Mean	2.72	1.65	1.82	1.96
	Median	1.00	0.00	0.00	0.00
	SD	4.60	3.18	3.65	4.01
Citations	Mean	54.79	36.48	63.94	35.33
	Median	6.00	1.00	4.00	2.00
	SD	216.61	239.25	326.17	113.89
N authors		3,592	2,544	1,899	1,028

Note:
Statistics computed on the pre-treatment period (2000–2009). Entry year and institution shares are computed at the author level; publication and citation statistics over author-year observations. Panel B restricts each comparison to its exact-matched sample (matched on entry year and field).

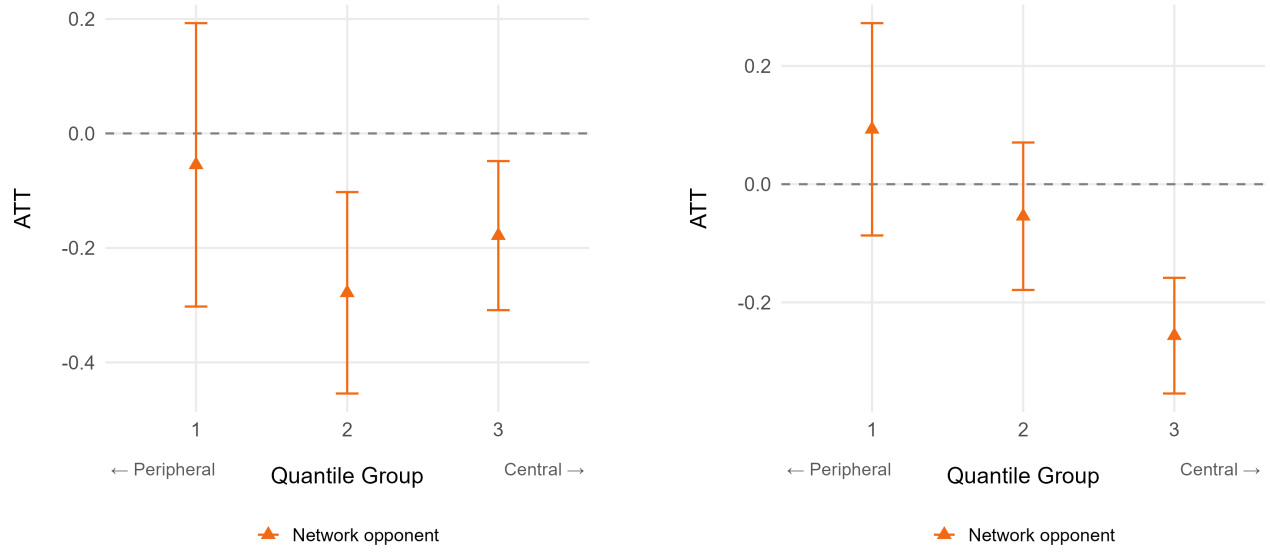
Figure C.3.2. Distribution of Network Index - Quantiles



Notes: This graph show the log distribution of the $C_t^{g,\text{net}}$ for the opponent network group (top pane) and the control group associated (bottom pane). Colours show the quantiles that we consider for both group in terms centrality in the network of Opponents.

C.3.2 Heterogeneity Results

Figure C.3.3. Network Proximity- Effect on Influence and Collaborations



(a) Citation count

(b) New Collaborations

Note: Results are from Fixed-Effect PPML regressions from CRIS data. The unit of observation is author by year and the sample period is 2005–2023. Treated authors are those whose collaboration index with researchers perceived as political opponents is above median. We then split them in three groups by tercile of collaboration index. Panel (a) reports the effect on citations within Hungarian CRIS. Panel (b) reports the effect on new collaborations. Control variables account for trends field and cohort dynamics over time. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

C.4 Non-Aligned Research Topics

C.4.1 Topic Definition

This section details how we identify publications belonging to three thematic categories: gender-related topics, rule of law and democracy, and broader sensitive political topics. Our classification relies on the presence of specific keywords and expressions in publication titles. For each category, we construct a curated list of terms commonly associated with the corresponding literature. To reduce noise, we classify an author as contributing to a given topic based on whether they published a number of these types of publications greater than three.

C.4.2 Gender

We identify gender-related publications using a set of keywords capturing the main dimensions of gender studies, including social theory, health, sexuality, and family structures. The list is designed to cover both conceptual and empirical work in the field. This topic includes several interconnected subtopics. First, gender relations and feminist theory (*gender*, *women*, *sexism*, *patriarchal*, *feminism*, *stereotype*, *toxic masculinity*, *intersectionality*) explores power structures, social norms, and inequalities shaping gendered experiences. Second, reproductive health and biomedical dimensions (*reproductive health*, *abortion*, *contraception*, *fertility*, *pregnancy*, *childbirth*, *gynecologic*, *menopause*, *uterus*, *ovary*) focuses on the biological, medical, and embodied aspects of reproduction. Third, sexuality, rights, and gender-based violence (*sexuality*, *sexual empowerment*, *sexual harassment*, *sexual violence*, *female genital mutilation*, *forced sterilization*, *partner violence*, *femicide*) addresses bodily autonomy, rights, and forms of gendered harm. Fourth, LGBTQ+ identities and gender diversity (*LGBT*, *lesbian*, *gay*, *transgender*, *non-binary*, *queer*, *intersex*, *sexual orientation*, *trans rights*) highlights issues of identity, recognition, and inclusion. Finally, family, labor, and social organization (*domestic labor*, *care economy*, *motherhood*, *maternity*, *family policy*, *child marriage*, *gendered division of labor*) examines how gender structures everyday life, institutions, and economic relations.

C.4.3 Rule of Law

To capture publications related to the rule of law and democratic institutions, we rely on a set of keywords commonly used in discussions of institutional quality, civil liberties, and authoritarian dynamics. These terms are frequently mobilized in academic work critically engaging with illiberal policies and democratic backsliding. This topic which includes several interconnected subtopics. First, fundamental rights and legal principles (*human rights*, *civil rights*, *fundamental rights*, *rule of law*, *constitutional law*, *legal equality*, *fair trial*, *access to justice*) refers to the normative and institutional foundations that protect individual freedoms and ensure legal accountability. Second, political ideologies and authoritarian

dynamics (*authoritarian*, *nationalism*, *political conservatism*, *populism*, *radical right*, *far right*, *autocracy*, *illiberalism*, *fascist*) captures ideological currents and regimes that challenge or reshape democratic norms. Third, democratic erosion and institutional capture (*democratic backsliding*, *erosion of democracy*, *judicial capture*, *politicized judiciary*, *constitutional crisis*, *manipulated elections*, *electoral fraud*, *state capture*) highlights processes through which democratic institutions are weakened or subverted. Fourth, surveillance, repression, and state control (*state surveillance*, *mass surveillance*, *political repression*, *police state*, *censorship*, *propaganda*, *arbitrary detention*, *state violence*, *enforced disappearance*) focuses on coercive tools used to monitor, control, and silence populations. Fifth, corruption and governance practices (*corruption*, *kleptocra*, *cronyism*, *clientelism*, *nepotism*, *bribery*, *patronage system*, *abuse of power*) examines informal and illegal mechanisms of power consolidation. Finally, freedoms, civil society, and academic autonomy (*freedom of speech*, *freedom of expression*, *freedom of the press*, *freedom of assembly*, *academic freedom*, *university autonomy*, *media freedom*, *shrinking civic space*, *chilling effect*) addresses the conditions necessary for open debate, knowledge production, and democratic participation.

C.4.4 Sensitive Topics

We define a broader category of sensitive political topics encompassing social justice, political conflict, and authoritarian practices. The associated keywords capture themes that are often politically salient, contested, or ideologically charged. This topic includes several interconnected subtopics. First, migration, borders, and global inequalities (*migrant*, *refugee*, *asylum*, *borders*, *internationalism*) highlights transnational movements of people and the political and ethical issues surrounding displacement and border regimes. Second, economic systems and class struggle (*capitalism*, *neoliberal*, *exploitation*, *social inequality*, *economic justice*, *income redistribution*, *anticolonialism*, *anti-imperialism*) focuses on critiques of economic structures and their role in producing inequality and domination. Third, labor, workers, and collective action (*workers*, *labor condition*, *trade union*, *workers' rights*, *workers' movement*, *class struggle*, *proletariat*) examines material conditions, labor organization, and social conflict. Fourth, left-wing ideologies and revolutionary thought (*marxism*, *communism*, *socialism*, *anarchism*, *left-wing*, *progressive politics*, *revolutionary theory*) captures political doctrines and movements advocating systemic transformation. Fifth, identity, discrimination, and social justice (*racism*, *antisemitism*, *islamophobia*, *sexism*, *intersectional*, *racial discrimination*, *equal opportunity*, *solidarity*) addresses inequalities based on identity and struggles for inclusion and rights. Sixth, historical violence, genocide, and memory (*holocaust*, *genoci*, *extermination*, *deportation*, *slave trade*, *denazification*) reflects on mass violence, collective trauma, and historical accountability. Seventh, authoritarianism and political repression (*autocracy*, *totalitarianism*, *dictator*, *fascism*, *police state*, *repression*, *surveillance state*, *cult of personality*) examines coercive regimes and mechanisms of control. Eighth, democratic erosion and institutional abuse (*democratic backsliding*, *judicial capture*, *electoral fraud*, *state capture*, *corruption*, *clientelism*, *abuse of power*) highlights pro-

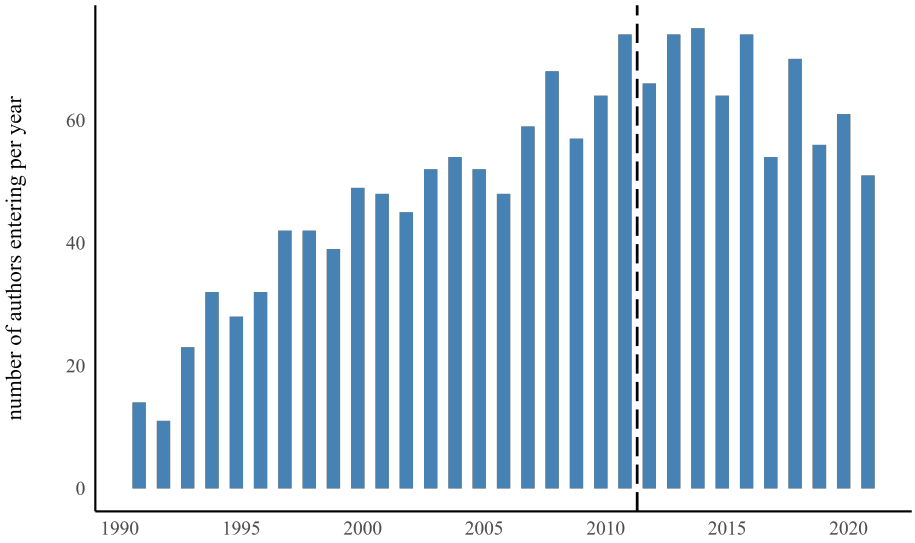
cesses undermining democratic governance. Finally, civil liberties and resistance (*freedom of speech*, *press freedom*, *censorship*, *political persecution*, *torture*, *political prisoner*, *exile*) emphasizes the restriction of freedoms and the struggles against oppression.

C.4.5 Climate change

Finally, we define a topic centred on climate change and environmental politics. The associated keywords capture themes that are scientifically established yet politically contested, spanning both the physical dimensions of environmental change and its social, economic, and cultural dimensions. First, core climate concepts and discourse (*climate change*, *climate crisis*, *global warming*, *climate policy*, *climate risk*, *climate change denial*, *climate skepticism*) captures the central vocabulary of this literature, including both the framing of the problem and the contestation of climate science itself. Second, environmental science and Earth systems (*greenhouse gases*, *carbon emissions*, *carbon cycle*, *air pollution*, *sea level rise*, *permafrost*, *natural disaster*) refers to the physical processes, mechanisms, and observable consequences of environmental change. Third, biodiversity and ecosystem decline (*biodiversity*, *loss of biodiversity*, *biodiversity crisis*, *biodiversity conservation*) addresses the erosion of ecosystems and species, together with efforts at their protection. Fourth, causes and structural drivers (*fossil fuels*, *extractivism*, *overconsumption*, *industrial agriculture*, *land degradation*, *ecological debt*, *climate colonialism*) identifies the economic activities and structural dynamics held responsible for environmental degradation, including critiques linking ecological harm to global power asymmetries. Fifth, energy transition and technological solutions (*renewable energy*, *green energy*, *carbon neutrality*, *carbon capture*, *green transition*, *sustainable development*, *recycl*) covers proposed responses to the climate crisis, from technological innovation to sustainability practices and resource management. Sixth, climate justice, mobilization, and displacement (*climate justice*, *environmental justice*, *climate refugees*, *just transition*, *climate activism*, *climate strike*, *Fridays for Future*, *Extinction Rebellion*) highlights the distributional and ethical dimensions of climate change, the displacement of populations, and the social movements demanding political action. Finally, environmental philosophy, culture, and theory (*anthropocene*, *ecocide*, *eco-anxiety*, *ecofeminism*, *deep ecology*, *degrowth*, *post-growth*, *planetary boundaries*) captures conceptual and critical frameworks that rethink the relationship between humanity and nature, including radical critiques of growth-based economic models.

C.4.6 Descriptive Statistics on New Researchers

Figure C.4.1. Number of entering authors working on gender topics.



Notes: The graph above shows the number of new authors working on gender-related topics between 1990 and 2020. The entering year is defined as the year of an author's first publication in our database. We use a five-year forward window to identify only the first publications of each author's career. We define new authors working on gender topics as those with more than one publication on gender-related topics within this five-year period. Gender publications are defined using the method detailed in Appendix C.4.

D Theoretical Framework: Exit, Voice, Loyalty or Self-censorship

The empirical analysis shows that the chilling effect of political pressure spreads beyond the researchers who are directly targeted. We develop a simple framework to account for the behaviour of differently exposed researchers: those in the network of non-aligned researchers, exposed to weaker pressure than the directly targeted but stronger than neutral ones, and all Hungarian researchers, subjected to rising pressure over time.

D.1 Setup

Consider a static model in which a conflict arises, in an organisation or a country, between the leadership and individuals. Pressure p is imposed on those who disagree, proportionally to their disagreement. Individuals all receive a wage y and are indexed along two dimensions. Perceived non-alignment θ_i, normalised on $[-1, 1]$ with a neutral value at 0, measures how far the values or goals of individual i differ from the leadership's. Returns to migration m_i capture the gains and costs to exiting, and can likewise be of either sign. Four mutually exclusive strategies are available. *Loyalty* leaves the individual enjoying her agreement, or suffering from her non-alignment, in proportion to pressure. *Self-censorship* changes the direction of her research at a fixed cost δ and, for simplicity, avoids the disutility of disagreement entirely. *Voice* costs a fixed r[54] plus a component convex in pressure, and returns a utility increasing in p, in a return to dissent v (visibility, reputation among peers, moral satisfaction), and in m_i, a higher outside option conferring bargaining power. *Exit* costs F and frees her from her disagreement altogether. Individual i, characterised by a pair (m_i, θ_i), chooses whichever of the four strategies pays most:

$$U_i = \begin{cases} U_i^L & = y - p\theta_i \\ U_i^C & = y - \delta \\ U_i^V & = y - p\theta_i + p(m_i + v)\theta_i - p^2 - r \\ U_i^E & = y + m_i - F \end{cases}$$

The wage y is common to all strategies and individuals: it plays no role in the comparison and we omit it, with the index i, from now on.

[Parameters] $p > 0$, $\delta > 0$, $r > 0$, $F > 0$, and v is large enough that $m + v > 0$ over the support of m. Disagreement and returns to migration are distributed on $[-1, 1]^2$.

$r \geq \delta$ *ie* voicing is more costly than self-censoring.

The condition $m+v > 0$ makes the bargaining power an individual mobilises when she voices non-negative,

[54] For instance, Alabrese et al. (2024) shows that researchers suffer a loss in public trust of their work when they express political opinions online.

so that voicing is never a way for an aligned and immobile individual to gain utility. subsection D.1 states that, for an individual whose disagreement has been neutralised, dissent is more expensive than a change of agenda.

D.2 Solving the Model

The solution rests on a single observation. Fix m: each payoff is affine in θ, with slope $-p$ for loyalty, 0 for self-censorship and exit, and $p\,\kappa(m)$ for voice, where

$$\kappa(m) \equiv m + v - 1. \tag{4}$$

The quantity $\kappa(m)$ is the individual's *net bargaining power*: the return she extracts from dissent, $m+v$, less the one unit of pressure she keeps bearing by remaining exposed. If $\kappa(m) > 0$, the payoff to voice rises with θ and dissent is the strategy of the most exposed and best connected; if $\kappa(m) < 0$, an exposed dissenter is worse off the more she disagrees and speaking cannot compete with falling silent.

Two consequences follow. First, self-censorship and exit are indistinguishable in θ: both are flat, so one dominates the other everywhere, and which one depends on m alone. Reorienting the agenda costs δ, leaving costs $F - m$. The cheaper of the two, which we call *silence*, costs

$$\Delta(m) \equiv \min\{\delta,\ F - m\}, \tag{5}$$

and it is self-censorship when $m < m^*$, exit when $m > m^*$, where

$$m^* \equiv F - \delta. \tag{6}$$

The threshold m^* involves neither θ nor p: it is the mobility at which the cost of shifting agenda equals the net cost of leaving, and the vertical frontier of Figure D.2.1. Second, the comparison reduces to a three-way one between loyalty, silence — of utility $U_i^S = y - \Delta(m_i)$ — and voice. With slopes ordered $-p < 0 < p\kappa(m)$, the upper envelope is convex and piecewise linear, so the optimal strategy is monotone in disagreement: loyalty at the bottom, silence in the middle, voice at the top.

D.2.1 The Frontiers

Three comparisons remain, each linear in θ:

$$\text{loyalty} \geq \text{silence} \quad \Longleftrightarrow \quad p\,\theta \leq \Delta(m), \tag{7}$$

$$\text{voice} \geq \text{silence} \quad \Longleftrightarrow \quad p\,\kappa(m)\,\theta \geq p^2 + r - \Delta(m), \tag{8}$$

$$\text{voice} \geq \text{loyalty} \quad \Longleftrightarrow \quad p\,(m+v)\,\theta \geq p^2 + r. \tag{9}$$

Each defines a threshold in disagreement,

$$\theta_1(m) \equiv \frac{\Delta(m)}{p}, \qquad \theta_2(m) \equiv \frac{p^2 + r - \Delta(m)}{p\,\kappa(m)}, \qquad \theta_3(m) \equiv \frac{p^2 + r}{p\,(m+v)}, \tag{10}$$

separating loyalty from silence, silence from voice, and loyalty from voice, with the convention $\theta_2(m) = +\infty$ whenever $\kappa(m) \leq 0$. The loyalty ceiling θ_1 is flat at δ/p for the immobile and falls at rate $1/p$ once m exceeds m^*, the two branches meeting there since $F - m^* = \delta$. The voice frontier moves the other way, falling below m^* and rising above it: it is V-shaped with a minimum above the kink in θ_1, and the voice region is a wedge opening at m^*.

D.2.2 Partition of the (m, θ) Plane

[Optimal strategies] Under subsection D.1 and subsection D.1, and up to the frontiers themselves, an individual (m, θ)

- voices if $\kappa(m) > 0$ and $\theta \geq \max\{\theta_2(m), \theta_3(m)\}$;
- stays loyal if $\theta \leq \min\{\theta_1(m), \theta_3(m)\}$;
- is silent otherwise — self-censoring if $m < m^*$, exiting if $m > m^*$.

Voicing therefore requires $m > 1 - v$: an individual whose bargaining power is below one never voices.[55]

For $\theta \leq 0$ only loyalty and exit are chosen, self-censorship being pointless and voice lying below loyalty by (9). Aligned researchers leave for economic reasons only, and their exit frontier $m \geq F - p\theta$ moves *outwards* as pressure rises: pressure retains the aligned at the margin.[56]

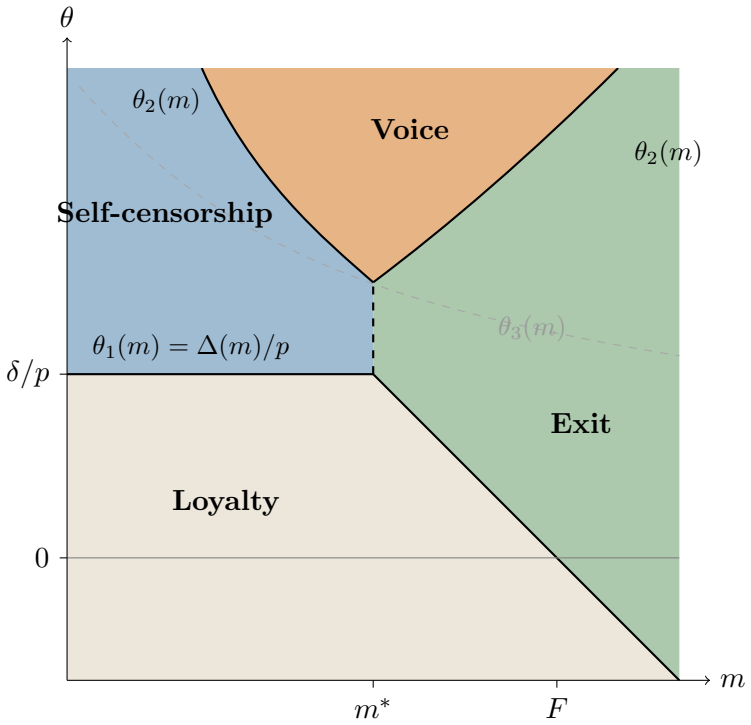
D.2.3 Voice Confined to Intermediate Pressure

The pivotal mobility $m^* = F - \delta$ is free of p: pressure alone never pushes an individual from self-censorship into exit, or the reverse. The loyalty ceiling falls, since $\Delta(m)$ does not depend on p and $\theta_1 = \Delta(m)/p$ is strictly decreasing: the loyalty region shrinks monotonically, towards self-censorship for $m < m^*$ and towards exit for $m > m^*$. This is the first mechanism behind both the spread of self-censorship and the

[55] Fix m. If $\kappa(m) \leq 0$, $U^V - U^S = \kappa(m)\theta - (p^2 + r - \Delta(m))$. The first term is non-positive for any $\theta \geq 0$, and $\Delta(m) \leq \delta \leq r$ by subsection D.1, so the term in parentheses is always positive: $U^V \leq U^S$, and an individual with non-positive $\kappa(m)$ always prefers silence to voicing. She prefers voicing to loyalty if $\theta \geq \theta_3$, but then prefers silence to loyalty as well, since $\kappa(m) \leq 0$ means $m + v \leq 1$, so that $\theta_3 - \theta_1 = \frac{p^2 + r - \Delta(m)(m+v)}{p(m+v)} \geq 0$ by the same subsection D.1; and (9) ensures loyalty is preferred to voice for a negative θ. The only binding threshold for $\kappa(m) \leq 0$ is thus θ_1: loyalty below, silence above. For $\kappa(m) \geq 0$ the ordering of the thresholds decides. The individual remains loyal if θ falls below the lowest of θ_1 and θ_3, the minimum in the statement. If $\theta_1 \geq \theta_2$, silence is dominated by loyalty, θ_2 cannot bind, and she voices if $\theta \geq \theta_3$ and remains loyal otherwise. If $\theta_2 > \theta_1$, loyalty is dominated by silence, and she is silent if $\theta \leq \theta_3$ and voices otherwise.

[56] We show empirically that exit rises with pressure for neutral researchers too, whereas here a researcher at $\theta = 0$ leaves whenever $m \geq F$, at any level of pressure. The gap is partly measurement, since θ is *perceived* non-alignment and few researchers sit exactly at zero, and partly the absence, in this design, of any deterioration of the research environment for those who stay.

Figure D.2.1. Optimal Strategy in an "Exit, Voice, Loyalty or Self-censorship" Game



Notes: Optimal strategy as a function of perceived non-alignment θ and returns to migration m. The figure is schematic: the axes carry no scale, only the ordering of the frontiers being meaningful. When $\delta\,\kappa(m^*) \le p^2 + r - \delta$ the loyalty and voice regions do not touch, as drawn here; at lower pressure the self-censorship band closes and dissenters come directly from the ranks of the loyal, along θ_3. Below $\theta = 0$ the descending branch of θ_1 is the pure-migration margin $m = F - p\theta$.

political component of exit, the direction in which an individual leaves loyalty being fixed by her mobility relative to m^*.

The two voice frontiers move in opposite directions over different ranges of pressure:

$$\theta_2(m) = \frac{1}{\kappa(m)}\left(p + \frac{r - \Delta(m)}{p}\right), \qquad \theta_3(m) = \frac{1}{m+v}\left(p + \frac{r}{p}\right),$$

their derivatives in p have the signs of $p^2 - r + \Delta(m)$ and $p^2 - r$, so both are convex and U-shaped in pressure, with minima at $\sqrt{r - \Delta(m)}$ and $\sqrt{r}$. The binding frontier is $\max\{\theta_2, \theta_3\}$: θ_3 at low pressure and θ_2 at high pressure, the switch occurring at

$$p_s(m) = \sqrt{(m+v)\,\Delta(m) - r}\,. \tag{11}$$

Being the maximum of two convex functions, it is itself convex, and diverges at both ends: $\theta_3 \to +\infty$ as $p \to 0$, $\theta_2 \to +\infty$ as $p \to \infty$. The set of pressures at which the voice region is non-empty is therefore an interval, and voicing is an intermediate strategy. What changes with pressure is the strategy against which voicing competes. At low pressure silence is not worth its cost and the comparison is with loyalty: θ_3 binds and falls with p, pressure making loyalty painful faster than it makes dissent dangerous, so the

voice region expands. At high pressure the comparison is with silence: θ_2 binds and rises, and the region contracts until it vanishes at $\bar{p}$. Dissent is thus confined to an intermediate band, at its widest around $\sqrt{r}$.[57]

As $p \to 0$ the model collapses to pure migration, exit being decided by $m \geq F$ alone; as $p \to \infty$, $\theta_1 \to 0$ and it becomes a partition between the aligned, who stay, and the non-aligned, silent in one of the two available ways. A period of autocratisation should therefore display a hump in dissent rather than a monotone decline.

D.2.4 Loyalty first, Voice, then Silence

The former subsection describes how the frontiers move, not the order in which a given individual changes strategy. Fix (θ, m) with $\theta > 0$ and $m < F$ and write each deviation from loyalty as a function of pressure:

$$g^S(p) = p\theta - \Delta(m), \qquad g^V(p) = p\theta(m + v) - p^2 - r. \tag{12}$$

The individual plays whichever deviation is larger, and stays loyal while both are negative. The gain to silence is an increasing line, negative for a positive θ only if $\Delta(m) > 0$ and hence $m < F$: an individual whose outside option already exceeds the cost of leaving departs at any pressure and has no loyal phase. $\Delta(m)$ does not depend on p: pressure decides *when* an individual falls silent, never *in which way*, that choice being driven by (5) alone.

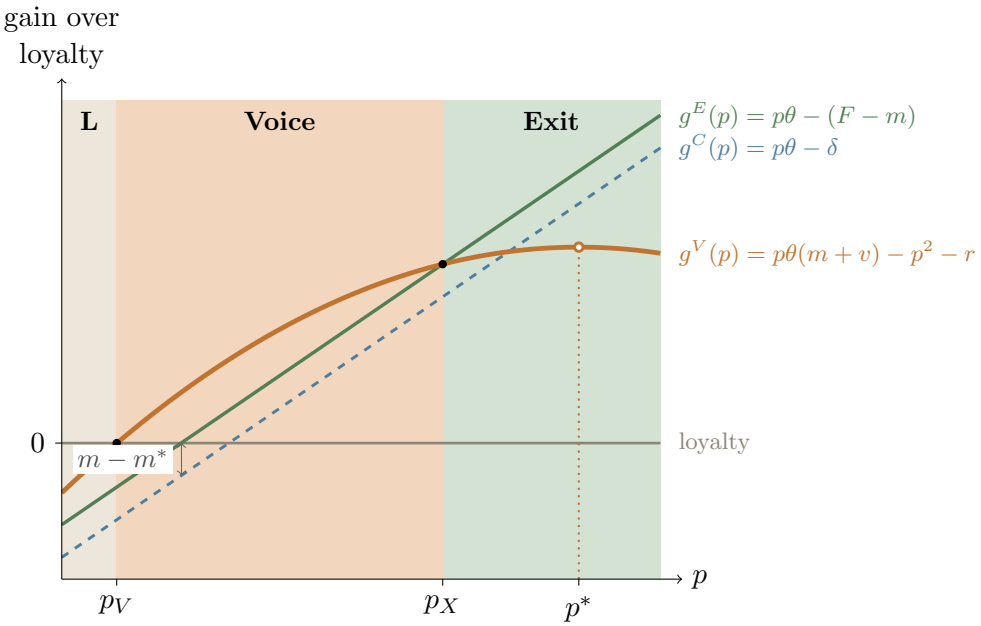
The gain to voice is concave. It starts at $g^V(0) = -r$, peaks at

$$p^* = \frac{\theta(m + v)}{2}, \tag{13}$$

where the marginal return to bargaining power $\theta(m + v)$ equals the marginal cost of dissent $2p$, and declines thereafter. It is positive only between the two roots of $d^v(p) = p^2 - p\theta(m+v) + r = 0$, real if and only if $\theta(m + v) \geq 2\sqrt{r}$: bargaining power must clear a threshold set by the fixed cost of speaking before dissent is worth its price. That fixed cost also places the curve below loyalty at zero pressure; without it there would be no loyal phase at all. A concave curve and an increasing line cross at most twice, so the order in which the deviations take the lead is fixed: loyalty, then voice, then silence. The individual begins to voice at p_V, the smaller root of $d^v(p)$, and falls silent at p_X, the larger, self-censoring if $m < m^*$

[57] Since θ_2 is smallest at m^* and disagreement is bounded above by one, the voice region is non-empty only if $\theta_2(m^*) \leq 1$, that is if $p^2 - \kappa(m^*)\, p + r - \delta \leq 0$. Under subsection D.1 the constant term $r - \delta$ is non-negative, so this quadratic has two non-negative roots whenever they are real and the condition defines a bounded interval $[\underline{p}, \bar{p}]$: the voice region is empty at low as well as at high pressure, and at every pressure when the fixed cost of speaking is too large relative to the bargaining power available at m^*.

Figure D.2.2. Timing of Responses



Notes: Optimal responses as a function of political pressure p. The axes carry no scale, only the ordering of the frontiers being meaningful. The vertical distance between the two silent gains is $m - m^*$: the individual drawn here, for whom g^E lies above g^C, is mobile enough to leave rather than reorient.

and exiting if $m > m^*$.[58]

Figure D.2.2 draws the gains for a mobile researcher. Voicing is given up not because it has stopped paying but because exit has started paying more, and the two have different empirical signatures: a fall in the intensity of dissent against a rise in departures among those who were dissenting. Read as an autocratisation episode in which pressure rises over a sequence of mandates, this predicts dissent early and exit later, with a lag proportional to $p_X - p_V$.[59]

D.3 Predictions

The framework delivers six predictions. The first four follow formally from the model; the last two combine them with an assumption on the mapping from network position to perceived non-alignment.

1. *Sorting with disagreement.* For a given outside option, the strategy is monotone in disagreement: low θ_i stay loyal or leave for purely economic reasons; at higher θ_i, the immobile self-censor and the sufficiently mobile voice or exit.

2. *Self-censorship rises with pressure.* As p increases, the threshold above which loyalty becomes too

[58] This requires that silence still be dominated when voice becomes profitable, $\theta p_V < \Delta(m)$, and already profitable when voice is overtaken, $\theta p_X \geq \Delta(m)$; both hold in Figure D.2.2. When the second fails, the voice window closes before silence pays and a fourth phase appears: the individual voices, returns to loyalty, and falls silent only at a much higher pressure.

[59] The model being static, the sequence is a comparative-statics path and presumes a constant (θ, m); and since p_V and p_X depend on (θ, m), the aggregate profile is a mixture over the population rather than a scaled-up Figure D.2.2.

costly falls, so individuals with an ever smaller θ_i change agenda. At low pressure the effect is ambiguous, the ceiling of the band falling with its floor as voicing expands; self-censorship grows unambiguously only past a pressure of the order of $\sqrt{r}$.

3. *Voicing is an intermediate strategy.* Voicing is attractive only when pressure is high enough to make silence costly, and its returns fall beyond a given value. Individuals start voicing and then fall back on self-censorship or exit, depending on their mobility — across individuals at a given pressure, and along the pressure path of one individual: dissent early, exit later.

4. *Exit has a political component.* The loyalty–exit frontier depends on p: exit increases with pressure, including among those who would never voice.

5. *Attenuation with network distance.* Since θ decays from the core of the opponent network outward, every effect fades with distance from the core.

6. *Isolation is a composition effect.* The mobile leave, the immobile retreat, and the aligned become a growing share of those who remain: no actor needs to set out to isolate the system, the outcome being the sum of individually rational strategies. If m is related to quality of work, the composition effect lowers the average quality of the stayers.

Our findings are in line with this framework: exit becomes more likely as pressure increases for all categories of researchers, including the neutral ones, with no significant effect during the first mandate, while self-censorship rises over time. Self-censorship is thus not confined to those at the margins, and may be as frequent a strategy as migration — a pattern that could extend beyond non-aligned Hungarian researchers to illiberal regimes at large.

D.4 Population Shares

subsubsection D.2.4 follows one individual, but the objects we measure are counts. Aggregating the partition over the population turns the frontiers into shares, and delivers one prediction the individual analysis does not. Let (m, θ) be uniform on $[-1, 1]^2$, so that the density is $1/4$, and write

$$\lambda(m) \equiv \min\{\theta_1(m), \theta_3(m)\}, \qquad \upsilon(m) \equiv \max\{\theta_2(m), \theta_3(m)\} \tag{14}$$

for the loyalty ceiling and the voice floor, the min and the max covering both configurations of subsubsection D.2.2. Each share is a quarter of the integrated vertical extent of its region: loyalty below λ, voice above υ, silence in between, split at m^*. Under $p > \delta$, $p > 1 - F$ and $p^2 + r < F + v - 1$ — which place the loyalty ceiling inside the support and give θ_2 its V-shape — the four integrals are elementary. With $B \equiv (p^2 + r - \delta)/p$, $C \equiv p^2 + r - F - v + 1$, $\kappa^* \equiv \kappa(m^*)$, and $[a, b]$ the interval of mobility over which

voicing occurs, $a = \max\{-1, B - v + 1\}$ and $b = \min\{1, (F - p^2 - r + p(v-1))/(1-p)\}$,

$$S_L = \frac{1}{2} + \frac{1}{4p}\left[\delta(1+F) - \frac{\delta^2 + (1-F)^2}{2}\right], \qquad S_C = \frac{1}{4}\left[(1+a) + B\ln\frac{\kappa^*}{\kappa(a)} - \frac{\delta(1+m^*)}{p}\right], \tag{15}$$

$$S_V = \frac{1}{4}\left[(b-a) - B\ln\frac{\kappa^*}{\kappa(a)} - \frac{b-m^*}{p} - \frac{C}{p}\ln\frac{\kappa(b)}{\kappa^*}\right], \quad S_E = \frac{1}{4}\left[(1-b) + \frac{b-m^*}{p} + \frac{C}{p}\ln\frac{\kappa(b)}{\kappa^*} - \frac{\delta^2 - (1-F)^2}{2p}\right]. \tag{16}$$

They sum to one, every logarithm cancelling in pairs.[60] Loyalty is exactly hyperbolic in pressure, $S_L = \frac{1}{2} + K_L/p$, with K_L a function of δ and F alone: neither r nor v enters, the loyalty ceiling being set by the cost of silence and never by the voice frontier.

The limits are read off the square. As $p \to 0$ the ceiling $\Delta(m)/p$ diverges and only mobility decides: $S_L \to (1+F)/2$, $S_E \to (1-F)/2$. As $p \to \infty$ the ceiling collapses and loyalty is the half-square $\theta \leq 0$, so $S_L \to 1/2$: the aligned never leave, loyalty paying them an unbounded $p|\theta|$ against an exit payoff bounded by $1 - F$. The non-aligned half is then split by m^* alone, $S_C \to (1+m^*)/4$ and $S_E \to (1-m^*)/4$. Voice vanishes at both ends, and this is general.

[Aggregate hump in dissent] For any distribution of (m, θ) with full support, $S_V(p) \to 0$ as $p \to 0$ and as $p \to \infty$, so the aggregate profile of dissent is hump-shaped whenever the voice region is non-empty at some pressure.[61]

This closes the gap left by subsubsection D.2.4, where the hump is established for one individual only.

Figure D.4.1 plots the four shares. Loyalty declines and self-censorship rises throughout, and dissent traces the hump. Exit does neither: it falls over the first stretch of the range and only then climbs. Two forces produce the dip: the exit margin for the aligned, $m \geq F - p\theta$, moves outwards, so economic departures become rarer, and the mobile dissenters who would otherwise leave are voicing instead. Both are exhausted once the loyalty ceiling has fallen far enough that political exit dominates. A flat or declining exit response early in an autocratisation episode is therefore a prediction of the model rather than evidence against it. [62]

Finally, that loyalty converges to the aligned population and that m^* alone divides the non-aligned hold for any distribution; the values $1/2$, $(1 + m^*)/4$ and $(1 - m^*)/4$ add the uniform benchmark, disagreement having median zero and being independent of mobility.[63]

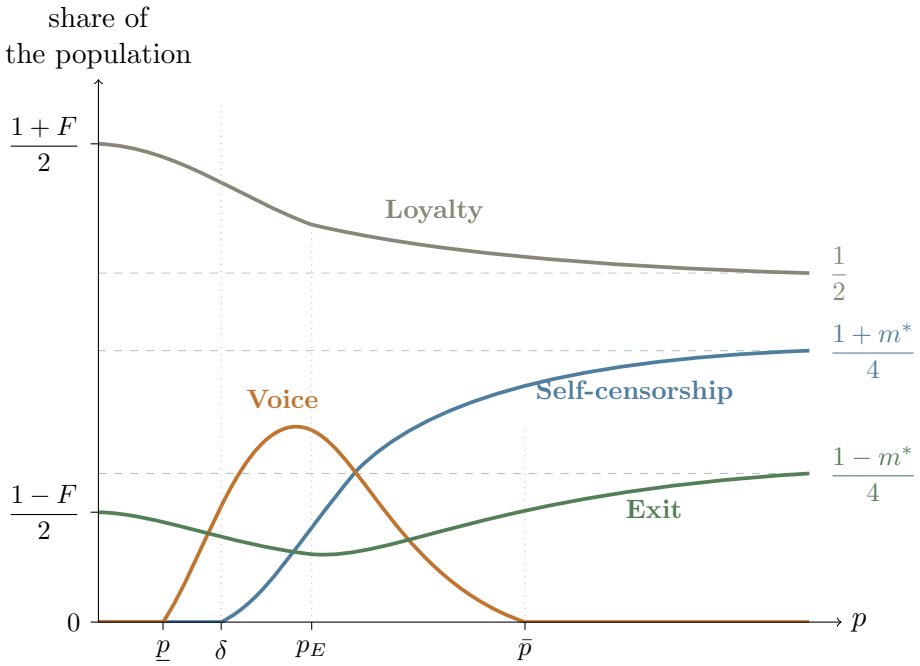
[60] The antiderivatives are $\int \theta_1 = \delta m/p$ and $[Fm - m^2/2]/p$ on the two branches, $\int \theta_2 = B\ln\kappa(m)$ and $[m + C\ln\kappa(m)]/p$, using $\theta_2 = [1 + C/\kappa(m)]/p$ to the right of m^*; truncation is where $\theta_2 = 1$. Where $\delta(m^* + v) > p^2 + r$ the silence band closes around m^*, $\lambda = v = \theta_3$ there, and each expression is corrected by the integral of the gap over that interval.

[61] $\theta_3 \to +\infty$ as $p \to 0$ and $\theta_2 \to +\infty$ as $p \to \infty$, so v exceeds the top of the support at both ends; and both are convex in p by subsection D.1, so $\{p : v(m) \leq 1\}$ is an interval for each m.

[62] These shares are stocks, whereas departures and changes of agenda are observed as flows, so the empirical counterpart is closer to dS_k/dp than to S_k: for exit the prediction is a change of sign, not a difference in level.

[63] If the median researcher is non-aligned, loyalty converges below one half and both silent responses are larger. If disagreement and mobility are positively associated, exit gains at every pressure what self-censorship loses and the non-aligned half tilts towards departure, while the loyalty share, the endpoints at $p = 0$ and the pressures $\underline{p}$, p_E, $\bar{p}$ stay put. The shape of Figure D.4.1 is robust to both; only the heights of the exit and self-censorship curves change.

Figure D.4.1. Population Shares as a Function of Political Pressure



Notes: Share of the population playing each strategy as a function of political pressure p, for (m, θ) uniform on $[-1, 1]^2$. The axes carry no scale, only the ordering of the curves and of the turning points being meaningful; the limits are exact. Loyalty falls hyperbolically from $(1 + F)/2$ to $1/2$, by (15). Self-censorship is nil until $p = \delta$, below which the ceiling δ/p lies above the support of θ, and rises to $(1 + m^*)/4$. Voice is confined to $[\underline{p}, \bar{p}]$ and hump-shaped, by Equation D.4. Exit begins at its pure-migration level $(1 - F)/2$, falls to a minimum at p_E and rises to $(1 - m^*)/4$, ending above its initial level iff $F + \delta > 1$. The drawing takes $m^* > 0$.

E Self-censorship and Research Direction

E.1 Measuring Research Similarity

We measure changes in research direction using text similarity between publications. Title of each publication is encoded as a sentence embedding: a vector representation in which texts with similar meaning lie close to each other. We use Multilingual-E5-large (Wang et al., 2024), a transformer-based model from the BERT family (Devlin et al., 2019) trained on multilingual data, which allows us to embed English, Hungarian, Slovenian and Croatian texts in a common space.[64] The similarity between two publications is the cosine similarity between their embeddings. Our main measure is based on the titles of the publications, since abstracts are unevenly available across sources, languages and periods. Before computing similarities, we remove generic titles (e.g. "Preface", "Book review") and translated duplicates of the same publication.

Three features of embedding similarities are worth putting emphisis on. First, raw similarity levels are not directly interpretable. Although cosine similarity can in principle range from -1 to 1, embeddings

[64] Publications in other languages are also embedded but are not treated as a separate category.

produced by models such as Multilingual-E5 occupy a narrow region of the vector space, so that even unrelated texts typically have a high similarity. In our data, the average similarity between two publications in the same field is about 0.81, with a standard deviation of about 0.03 (Table E.4.1). Differences that look small in raw terms can therefore be meaningful. Baseline levels also differ across disciplines, for instance because titles are more formulaic in some disciplines than in others. We therefore compare publications within the same domain, field or subfield, so that differences in baseline similarity across disciplines do not drive our measures. Moreover, we never interpret similarity levels on their own: we compare changes in similarity for allies and opponents with changes for neutral researchers.

Second, the model maps texts in different languages into a common space, but this alignment is imperfect: two publications on the same topic are more similar when written in the same language than when written in two different languages. Table E.4.1 illustrates this: average similarities are around 0.84 between Hungarian-language publications and around 0.80 between English-language publications. This matters for our analysis (especially for the cross-country comparisons) because researchers in Hungary increasingly publish in Hungarian after 2010. An author who published mainly in English before 2010 and mainly in Hungarian afterwards would mechanically appear less similar to their past work, even if the topics they study had not changed, which would mimic a change in research direction. To separate changes in content from changes in language, we also compute all similarity measures separately within each language. We thus compare English-language publications only with English-language publications and Hungarian-language publications only with Hungarian-language publications.

Third, the minimum and maximum similarities depend mechanically on the number of publications being compared. An author with n_t publications in year t and n_p publications in the reference period contributes $n_t \times n_p$ pairs. The more pairs there are, the more likely it is that at least one of them is very similar, which raises the maximum, and that at least one is very dissimilar, which lowers the minimum, even if the author's research direction is unchanged. Since researchers perceived as opponents tend to publish less after 2010, their maximum similarity to past work would fall for this reason alone. We therefore use the average similarity as our main measure, which does not depend on the total number of pairs.

E.2 Similarity to one's own past research

For each author and year, we compute the pairwise similarities between the author's publications that year and their publications in a reference period, excluding papers that belong to both. Our baseline reference period is all publications before 2005, leaving the period 2005-2009 to be used for pre-trend checks before Orbán's election. As robustness checks, we use 2000–2005, 2005–2009 and all publications before 2009, and the most recent prior year in which the author published. We summarise each matrix by its mean, minimum and maximum. A decline in similarity to one's own pre-2010 work, relative to

neutral researchers, thus indicates in our analysis a change in research direction.

E.3 Similarity to allies and opponents

For each author and year, we also compute the pairwise similarities between the author's publications and the publications of allies and of opponents in the same domain, field or subfield. If the author is a member of the group, we exclude the author's own publications. Our baseline reference period is again 2000–2009. For robustness, we use additional measures, taking 2000–2005, 2005–2009, all publications before 2005 and before 2009 as period of reference. As above, we summarise each matrix by its mean, minimum and maximum, using titles in our main specification and abstracts as a robustness check, both for all publications and separately for English and Hungarian-language publications. Thus, moving away from opponents' pre-2010 research is consistent with self-censorship. Moving toward allies' research is consistent with the *loyalty* strategyu in the sense of Hirschman (1972) and as discussed in section 6.

E.4 Descriptive statistics

Table E.4.1 reports the distribution of pairwise similarities between publications of authors in the same field over 2000–2009, by pair of groups and language. Before 2010, allies, opponents and neutral researchers publish on very similar topics: across all languages, average similarities differ by at most 0.004 across pairs of groups, about a tenth of a standard deviation. The only noticeable difference concerns English-language publications, where opponents' publications are less similar to those of neutral researchers (0.799) than allies' publications are (0.812), a gap of about 0.4 standard deviations. No such gap appears for Hungarian-language publications.

Table E.4.1. Pairwise similarity of publications across groups, 2000–2009

	All languages				English				Hungarian			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Allies (within)	0.813	0.035	0.651	1	0.813	0.031	0.666	1	0.838	0.029	0.680	1
Opponents (within)	0.817	0.038	0.621	1	0.806	0.035	0.653	1	0.841	0.029	0.645	1
Allies – opponents	0.816	0.037	0.643	1	0.805	0.034	0.656	1	0.836	0.029	0.660	1
Allies – neutral	0.814	0.035	0.602	1	0.812	0.029	0.650	1	0.837	0.029	0.631	1
Opponents – neutral	0.816	0.037	0.608	1	0.799	0.034	0.637	1	0.837	0.029	0.635	1

Notes: The table reports the mean, standard deviation, minimum and maximum of the cosine similarity between Multilingual-E5-large embeddings of publications, for pairs of publications by authors in the same field published between 2000 and 2009. "Within" rows compare members of the same group with each other; other rows compare members of two different groups. The first panel includes publications in all languages, the second only publications in English, and the third only publications in Hungarian. The maximum equals 1 by construction: a publication co-authored by members of both sets being compared appears on both sides of the comparison, and its similarity with itself is exactly 1.

E.5 Publication Quality and Journals

The decline in politically sensitive research documented above could come from two channels. On the *demand side*, journals, and in particular Hungarian journals whose editors, boards, and funding may be exposed to domestic political pressure, could have become less willing to publish sensitive work after 2010. On the *supply side*, researchers themselves could have stopped writing or submitting such work, which would reflect self-censorship. We provide descriptive evidence that the latter mechanism is at play, consistent with the results in section 6. We classify as "politically sensitive" all publications that we identify as belonging to *gender* studies or to *sensitive* topics, as defined in section 5.1.2, as well as publications on *minorities* and the *rule of law*.

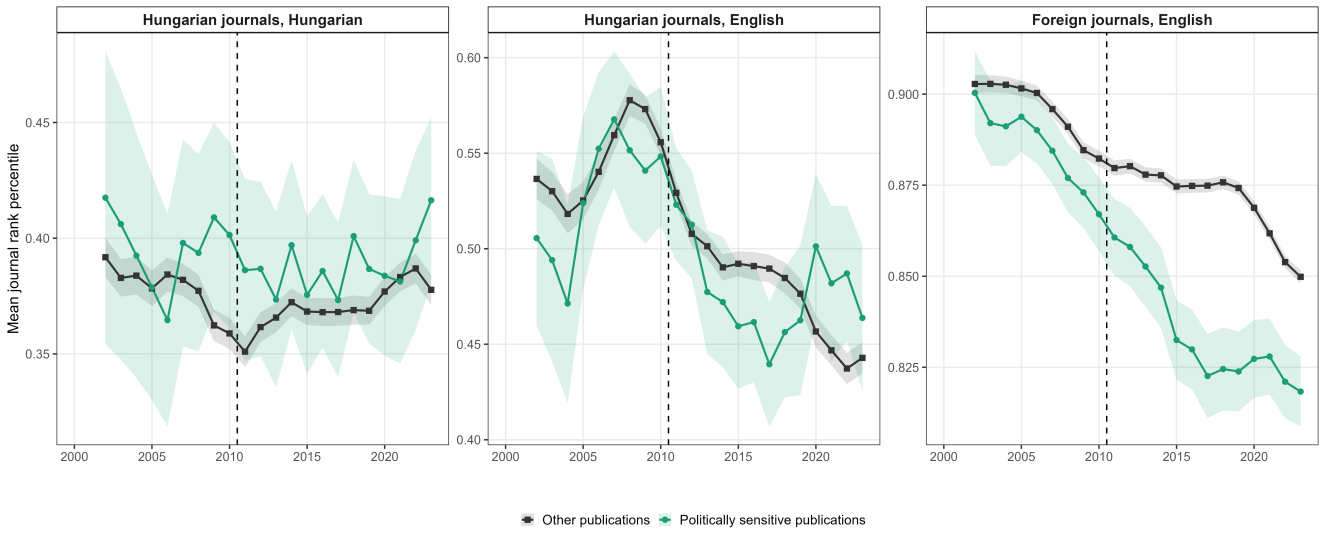
We test two implications that distinguish the channels. First, *journal rank*: if editors became more hostile to sensitive work, sensitive papers should be pushed toward lower-ranked outlets after 2010, especially in Hungarian journals. If the shift comes from authors, the rank of sensitive and other publications should instead evolve similarly. Second, *journal-level persistence*: gatekeeping should change the editorial profile of specific journals, with some outlets ceasing to publish sensitive work. If the shift comes from authors, journals' propensity to publish sensitive work should remain stable, and the decline should be broad-based, including in foreign journals beyond the reach of Hungarian politics.

E.5.1 Journal Rank

Figure E.5.1 plots the mean journal rank percentile of sensitive and other publications by Hungarian-affiliated researchers, separately for three types of outlets. In Hungarian-language Hungarian journals, where political pressure on editors would be most likely to operate, sensitive publications appear in outlets of similar or slightly higher rank than other publications throughout the period, with no break in the gap around 2010. In English-language Hungarian journals, both series rise until 2008 and then decline together: the post-2010 fall is common to all publications and not specific to sensitive work.

In foreign journals, the rank of sensitive publications declines more sharply than the one of other publications. This however is not likely to indicate an higher rejection rate of foreign journal specific to this type of publications due to the arrival of the illiberal government in 2010. First, the gap opens around 2003, well before 2010, and does not accelerate afterwards. Second, editors of foreign journals do not have obvious reason to respond to Hungarian domestic politics and political pressure. Third, the divergence is consistent with authors moving sensitive work from Hungarian-language outlets to English-language ones, where the audience is less exposed to domestic scrutiny, often in less prestigious international or regional journals. This compositional shift lowers the mean rank of sensitive publications in foreign journals without any change in editorial behaviour, and to the extent it operates after 2010, it reflects a language strategy by authors.

Figure E.5.1. Journal Rank of Politically Sensitive and Other Publications



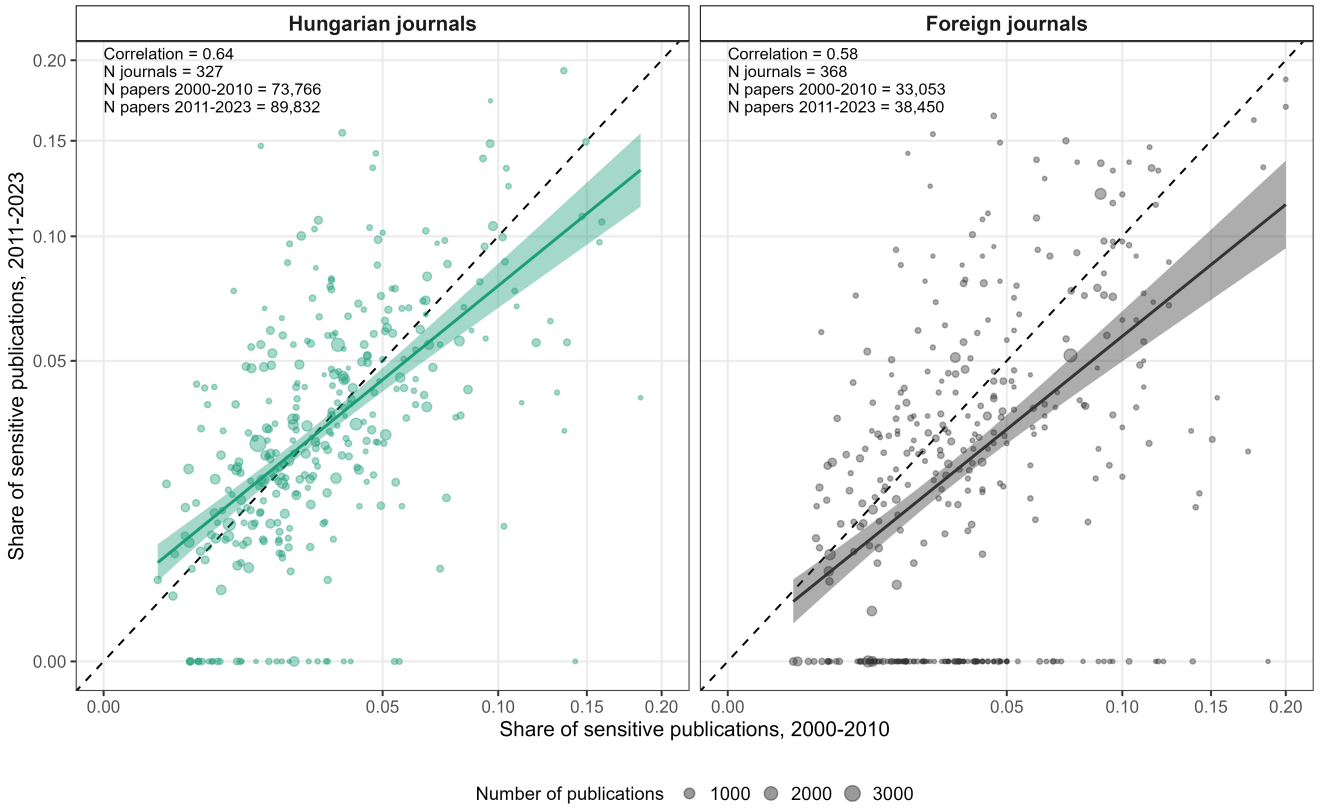
Notes: The graph displays the mean journal rank percentile of publications by Hungarian-affiliated researchers, by year of publication, for politically sensitive publications (gender and sensitive topics, publications on minorities and the rule of law) and all other publications. Shaded areas represent 95% confidence intervals. The panels restrict to Hungarian journals publishing in Hungarian, Hungarian journals publishing in English, and foreign journals publishing in English. The dashed vertical line marks the 2010 change in government.

E.5.2 Journal-level Persistence

Figure E.5.2 plots, for each journal, the share of sensitive publications among papers by Hungarian-affiliated researchers in 2011–2023 against the same share in 2000–2010. Journals' propensity to publish sensitive work appears to be highly persistent, with correlations of 0.64 for Hungarian and 0.58 for foreign journals. Their editorial orientation does not seem to change markedly. The decline is also not specific to Hungarian journals. Among Hungarian journals, the fitted line crosses the 45-degree line at a low pre-2010 share, consistent with reallocation across outlets rather than the closing of specific ones. Among foreign journals, which are not subject to Hungarian political pressure, the fitted line lies below the 45-degree line over almost the entire range, indicating a broad-based decline. Journals with no sensitive publications after 2011, mostly foreign, typically publish few papers by Hungarian researchers, so their zero share likely reflects small numbers of publications by Hungarian researchers rather than a change in the editorial policy.

Because journal-level shares are measured with noise, regression to the mean partly flattens the fitted lines relative to the 45-degree line, which however should not affect our conclusions. Regression to the mean leaves the average share unchanged, so the downward shift for foreign journals reflects a genuine decline. The same noise attenuates the pre-2010 period comparison with post-2010 period: they are therefore lower bounds on the true persistence of journals' editorial profiles.

Figure E.5.2. Share of Politically Sensitive Publications by Journal, Before and After 2010



Notes: Each dot represents a journal. The axes show the share of politically sensitive publications among publications by Hungarian-affiliated researchers in the journal over 2000–2010 (horizontal) and 2011–2023 (vertical). Dot size is proportional to the number of publications. The solid line is a linear fit with its 95% confidence interval. The dashed line represent the 45-degree line. The left panel covers 327 Hungarian journals (73,766 papers for the period 2000–2010, 89,832 in 2011–2023). The right panel covers 368 foreign journals (33,053 and 38,450 papers respectively).

F Political Alignment and Impact on Productivity: Complementary Results

F.1 Political Opponent, Political Ally

Table F.1.1. Effect on Academic Productivity - Loyal Researchers

	Publications (1)	English (2)	Hungarian (3)	Top 10% Pub. (4)	Top 5% Pub. (5)
Allies × Post	0.135	0.117	0.182	0.048	-0.056
	(0.087)	(0.092)	(0.112)	(0.149)	(0.182)
Mean.Dep.Var.Pre	9	3.96	4.77	2.14	1.58
Convergence	TRUE	TRUE	TRUE	FALSE	TRUE
Observations	4,488	4,236	4,343	2,809	2,602
Author fixed effects	✓	✓	✓	✓	✓
Year-Entry year fixed effects	✓	✓	✓	✓	✓
Year-Field fixed effects	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those identified as loyal to the government. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total publications, publications in English, publications in Hungarian, and publications in the top 10% and the top 5% most cited journals in OpenAlex. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.1.2. Effect on Academic Productivity - Political Opponents

	Publications (1)	English (2)	Hungarian (3)	Top 10% Pub. (4)	Top 5% Pub. (5)
Opponents × Post	-0.199***	-0.354***	-0.265***	-0.896**	-1.10**
	(0.069)	(0.101)	(0.081)	(0.374)	(0.520)
Mean.Dep.Var.Pre	3.47	1.41	1.80	0.193	0.162
Observations	10,981	8,836	10,192	1,359	721
Author fixed effects	✓	✓	✓	✓	✓
Year-Entry year fixed effects	✓	✓	✓	✓	✓
Year-Field fixed effects	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those identified as political opponents to the government. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total publications, publications in English, publications in Hungarian, and publications in the top 10% and the top 5% most cited journals in OpenAlex. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.1.3. Effect on Research Quantity and Network – Political Opponents

	Panel A: Research Quantity			*Panel B: Research Network*	
	publications	pub. nat. language	pub. in english	nr co-authors	nr new co-authors
	(1)	(2)	(3)	(4)	(5)
pol. opp. × post (1^{rst} mandate)	-0.3673*	-0.2525**	-0.0549	-0.3165**	-0.2590***
	(0.1887)	(0.1256)	(0.1009)	(0.1279)	(0.0863)
pol. opp. × post (2nd mandate)	-0.9105***	-0.6275***	-0.2015	-0.4885***	-0.3757***
	(0.2292)	(0.1557)	(0.1244)	(0.1536)	(0.1033)
pol. opp. × post (3rd mandate)	-1.171***	-0.6671***	-0.3934***	-0.6879***	-0.5647***
	(0.2883)	(0.2006)	(0.1360)	(0.1677)	(0.0982)
pol. opp. × post (4th mandate)	-2.015***	-0.9859***	-0.7947***	-0.8249***	-0.6440***
	(0.3106)	(0.2218)	(0.1535)	(0.2148)	(0.1311)
Observations	123,048	123,048	123,048	123,048	123,048
R^2	0.595	0.577	0.549	0.508	0.329
Within R^2	0.001	0.001	0.001	0.000	0.001
Mean.Dep.Var.Pre	3.094	2.206	0.539	1.345	0.888
author fixed effects	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on data from national repositories. The unit of observation is author by year and the sample period is 2005–2023. Panel A reports the effect on research quantity (total publications, publications in national language, and publications in English); Panel B reports the effect on the author's research network (number of co-authors and number of new co-authors). Each column reports the decomposition of the treatment effect by political mandate. Control variables account for trends for the matching cell over time. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.1.4. Effect on Research Quality – Political Opponents

	Top 1% Pub.		Top 5% Pub.		Bottom 50% Pub.	
	(1)	(2)	(3)	(4)	(5)	(6)
political opponent × post	-0.0100		-0.0699*		-0.0402	
	(0.0143)		(0.0384)		(0.0323)	
political opponent × post (1rst mandate)		-0.0053		-0.0717**		-0.0430
		(0.0144)		(0.0325)		(0.0328)
political opponent × post (2nd mandate)		-0.0086		-0.0710*		0.0017
		(0.0165)		(0.0424)		(0.0382)
political opponent × post (3rd mandate)		-0.0351**		-0.1188***		-0.0892**
		(0.0155)		(0.0460)		(0.0367)
political opponent × post (4th mandate)		-0.0598***		-0.1093**		-0.0712
		(0.0161)		(0.0482)		(0.0492)
Observations	123,048	123,048	123,048	123,048	123,048	123,048
R^2	0.343	0.343	0.567	0.567	0.422	0.422
Within R^2	0.000	0.001	0.000	0.001	0.000	0.000
Mean.Dep.Var.Pre	0.014	0.014	0.054	0.054	0.149	0.149
author fixed effects	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓

Note: results are from OLS Fixed-Effect regression, for each outcome, on data from Hungarian national repositories. The unit of observation is author by year and the sample period is from 2005-2024. The dependent variable is the number of publications in the top 1% and 5% most cited journals and the 50% least cited journals (resp. columns (1), (2), (3)), and the share of the latter over the total number of publications (column (4)). Standard errors (SE) are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

F.2 Impact on the Members of the Networks of Politically Aligned Researchers

Table F.2.1. Effect on Academic Productivity - Network of Political Opponents

Outcome	Research Quantity						Research Quality			
	publications		pub. in english		pub. nat. language		Top 10% Pub.		Top 5% Pub.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Network pol. opp. × post	-0.032		-0.015		-0.017		-0.125*		-0.092	
	(0.029)		(0.042)		(0.032)		(0.068)		(0.079)	
Network pol. opp. × post (1rst m)		-0.007		9.1×10^{-5}		0.024		-0.046		0.015
		(0.026)		(0.036)		(0.030)		(0.067)		(0.082)
Network pol. opp. × post (2nd m)		-0.082**		-0.076*		-0.033		-0.253***		-0.238***
		(0.033)		(0.045)		(0.039)		(0.066)		(0.077)
Network pol. opp. × post (3rd m)		-0.066*		-0.053		-0.048		-0.164*		-0.169*
		(0.038)		(0.051)		(0.048)		(0.084)		(0.096)
Network pol. opp. × post (4th m)		-0.042		0.010		-0.088		-0.138		-0.156
		(0.054)		(0.071)		(0.068)		(0.107)		(0.136)
Mean dep. var. (pre)	4.857	4.857	2.344	2.344	2.915	2.915	0.822	0.822	0.579	0.579
Observations	75,449	75,449	70,931	70,931	70,527	70,527	45,464	45,464	40,198	40,198
author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as political opponents is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Panel A reports the effect on research quantity: total publications (columns 1-2), publications in English (columns 3-4), publications in Hungarian (columns 5-6). Panel B reports the effect on -research quality: publications in the top 10% (columns 7-8) and the top 5% most cited journals in OpenAlex (columns 9-10). The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.2.2. Effect on Academic Productivity - Network of Loyal Researchers

Outcome	Research Quantity						Research Quality			
	publications		pub. in english		pub. nat. language		Top 10% Pub.		Top 5% Pub.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Network ally × post	0.081*		0.077		0.021		0.144*		0.166*	
	(0.045)		(0.059)		(0.051)		(0.086)		(0.100)	
Network ally × post (1rst m)		0.067		0.070		-0.006		0.198**		0.292***
		(0.041)		(0.054)		(0.048)		(0.081)		(0.099)
Network ally × post (2nd m)		0.021		-0.005		-0.034		0.095		0.144
		(0.059)		(0.075)		(0.065)		(0.092)		(0.110)
Network ally × post (3rd m)		0.065		0.011		0.112		0.115		0.084
		(0.056)		(0.070)		(0.073)		(0.110)		(0.139)
Network ally × post (4th m)		0.131*		0.147*		0.128		0.176		0.088
		(0.074)		(0.083)		(0.113)		(0.137)		(0.169)
Mean dep. var. (pre)	4.660	4.660	2.536	2.536	2.614	2.614	0.884	0.884	0.639	0.639
Observations	31,085	31,085	29,648	29,648	28,553	28,553	22,280	22,280	19,850	19,850
author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as loyal to the government is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Panel A reports the effect on research quantity: total publications (columns 1-2), publications in English (columns 3-4), publications in Hungarian (columns 5-6). Panel B reports the effect on -research quality: publications in the top 10% (columns 7-8) and the top 5% most cited journals in OpenAlex (columns 9-10). The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

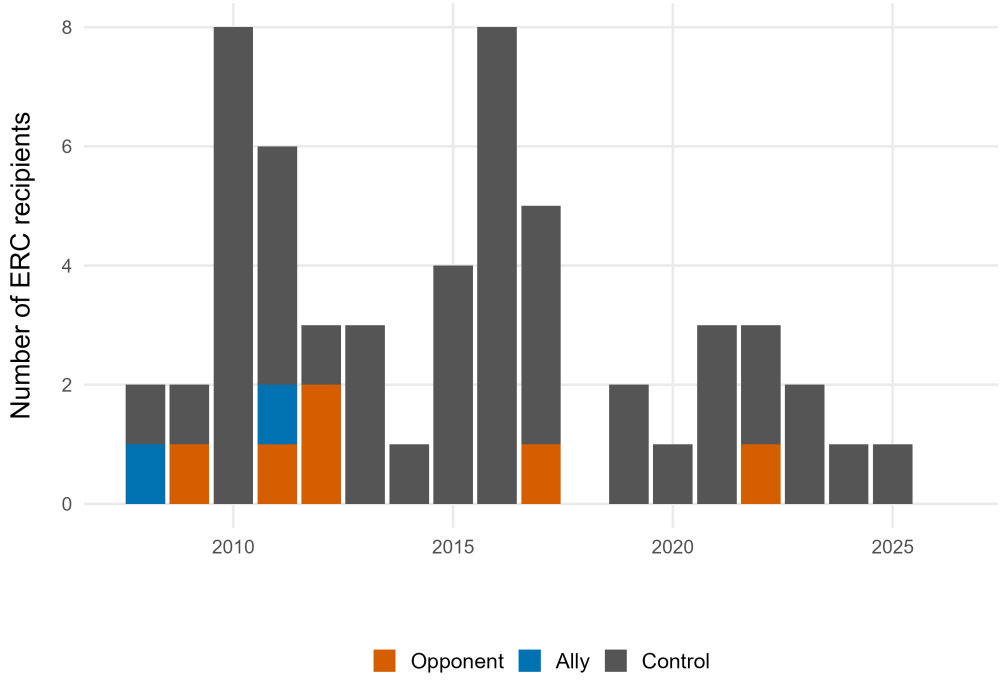
F.3 Channels of repression

F.3.1 Funding and the Effect of Illiberal Policies

ERC funding

Figure F.3.1 shows the total number of ERC recipients per year among our sample of political opponents, allies and researchers from the database tagged as neutral. There does not appear to be a strong decreasing trend in total number of ERC recipients post-2010. The composition of the groups is quite different: most political opponents who received an ERC grant work in social sciences. Restricting the focus to researchers in social sciences, Figure F.3.2 shows a decreasing trend in the average number of publications per year for ERC recipients among political opponents. Table F.3.1 and Table F.3.2 report the regression results discussed in Section 5.2.1.

Figure F.3.1. Number of ERC recipients per year per political status

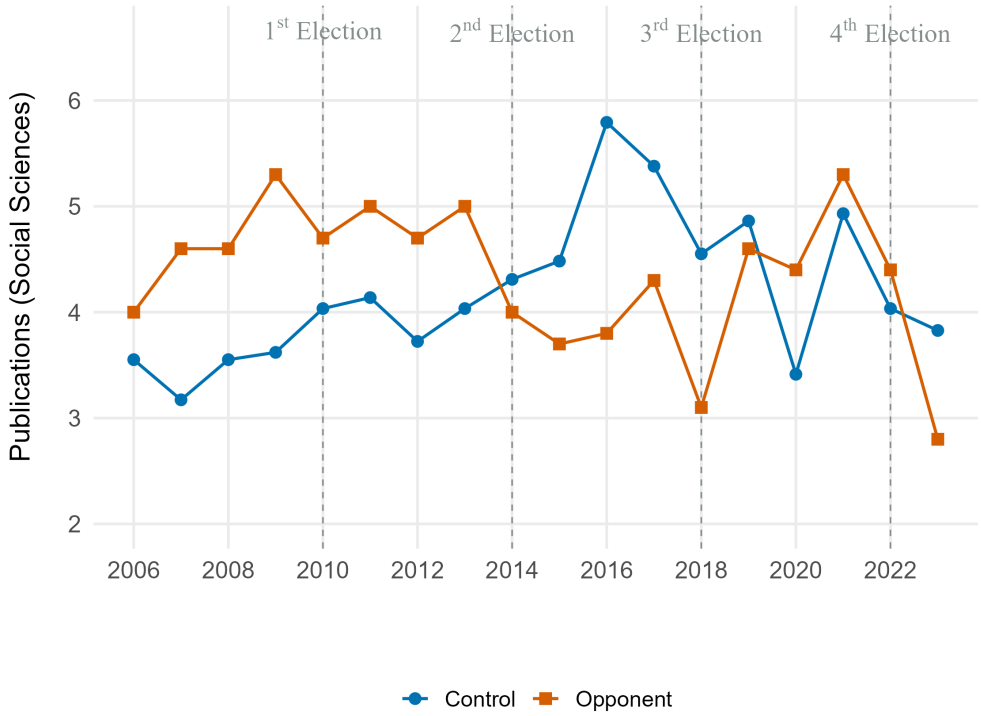


Notes: The graph above reports the total number of ERC recipients by call year for political opponents and for other Hungarian researchers for the period 2006-2023.

Differential effects between public and private affiliations

The main results are reported in Table 2 in the main text. Table F.3.3 reports a placebo exercise on researchers who are neither political opponents, allies, nor co-authors of either group: public affiliation before 2010 is not associated with a post-2010 break for any outcome.

Figure F.3.2. Number of Publications for ERC Recipients, Social Sciences, per Political Group



Notes: The graph above reports the average number of publications for ERC recipients in social sciences each year, for political opponents and for other Hungarian researchers for the period 2006-2023.

Table F.3.1. Trends in Outcomes for Political Opponents, by closeness to pre-2010 ERC recipients

	publications (1)	pub. in english (2)	pub. nat. language (3)	citation_count (4)	nr pub. top 5% (5)
pol. opp × ERC exposure × post	0.4556	0.2633**	0.0775	-24.42***	-0.0478**
	(0.3482)	(0.1317)	(0.3294)	(4.111)	(0.0213)
ERC exposure × post	0.5017***	0.2029***	0.4662***	-5.856***	0.0190*
	(0.1873)	(0.0709)	(0.1772)	(2.212)	(0.0115)
pol. opp × post	-0.5565***	-0.1363***	-0.4322***	-2.091	0.0052
	(0.1380)	(0.0522)	(0.1305)	(1.629)	(0.0084)
Observations	21,600	21,600	21,600	21,600	21,600
R^2	0.599	0.487	0.599	0.355	0.351
Within R^2	0.002	0.001	0.001	0.005	0.000
Mean.Dep.Var.Pre	3.538	0.575	2.992	13.878	0.025
author fixed effects	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect PPML regressions of equation (2), for each outcome, on data from Hungarian national repository. The unit of observation is author by year and the sample period is from 2005-2024. Treated authors are authors from our sample of political opponents, split by whether their collaboration index with pre-2010 ERC recipients is above or below median. Control authors are neutral Hungarian researchers matched to the treated, split whether their collaboration index with pre-2010 ERC recipients is above or below median. We report the effect on total publications, publications in English, publications in Hungarian, citations count and publications in the top 10% most cited journals. Control variables account for trends for field and entry year in academia FE. *** p<0.01, ** p<0.05, * p<0.1.

Table F.3.2. Trends in Outcomes for Political Opponents, by closeness to any-period ERC recipients

	publications	pub. in english	pub. nat. language	citation_count	nr pub. top 5%
	(1)	(2)	(3)	(4)	(5)
pol. opp × ERC exposure × post	0.4556	0.2633**	0.0775	-24.42***	-0.0478**
	(0.3482)	(0.1317)	(0.3294)	(4.111)	(0.0213)
ERC exposure × post	0.5017***	0.2029***	0.4662***	-5.856***	0.0190*
	(0.1873)	(0.0709)	(0.1772)	(2.212)	(0.0115)
pol. opp × post	-0.5565***	-0.1363***	-0.4322***	-2.091	0.0052
	(0.1380)	(0.0522)	(0.1305)	(1.629)	(0.0084)
Observations	21,600	21,600	21,600	21,600	21,600
R^2	0.599	0.487	0.599	0.355	0.351
Within R^2	0.002	0.001	0.001	0.005	0.000
Mean.Dep.Var.Pre	3.538	0.575	2.992	13.878	0.025
author fixed effects	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect PPML regressions of equation (2), for each outcome, on data from the Hungarian national ropository. The unit of observation is author by year and the sample period is from 2005-2024. Treated authors are authors from our sample of political opponents, split by whether their collaboration index with researchers who received an ERC grant at any point is above or below median. Control authors are neutral Hungarian researchers matched to the treated, split whether their collaboration index with researchers who received an ERC grant at any point is above or below median. We report the effect on total publications, publications in English, publications in Hungarian, citations and publications in the top 10% most cited journals in OpenAlex. Control variables account for trends for field and entry year in academia FE. Since grants awarded after 2010 depend on post-2010 productivity, these results are descriptive. *** p<0.01, ** p<0.05, * p<0.1.

Table F.3.3. Placebo: Public Affiliation among Researchers Unrelated to Opponents or Allies

	publications	pub. in english	pub. nat. language	citation (nat)	nr pub. top 5%
	(1)	(2)	(3)	(4)	(5)
public × post	-0.0412	-0.0863	0.0167	0.0113	-0.1071
	(0.0403)	(0.0574)	(0.0446)	(0.1177)	(0.1308)
Observations	80,874	78,505	78,167	79,869	43,600
Squared Correlation	0.655	0.738	0.588	0.854	0.860
Pseudo R^2	0.427	0.487	0.441	0.752	0.499
Mean.Dep.Var.Pre	5.195	2.597	3.112	48.091	0.472
author fixed effects	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect PPML regressions, for each outcome, on data from the Hungarian national repository. The unit of observation is author by year and the sample period is from 2005-2024. The sample includes researchers who are neither political opponents, allies, nor co-authors of either group. The coefficient compares researchers affiliated to a public institution before 2010 with other researchers, after 2010. Control variables account for trends for field and entry year in academia FE. *** p<0.01, ** p<0.05, * p<0.1.

F.3.2 International Network and Loss of Influence

Table F.3.4. International Collaborations - Opponents

	Intl. collab.		Regional collab.		US collab.	
	(1)	(2)	(3)	(4)	(5)	(6)
pol. opp × post	0.128		1.81***		0.178*	
	(0.080)		(0.459)		(0.105)	
pol. opp. × post (1rst m)		-0.066		1.28***		0.202**
		(0.068)		(0.425)		(0.093)
pol. opp. × post (2nd m)		0.233***		2.55***		0.224**
		(0.085)		(0.589)		(0.107)
pol. opp. × post (3rd m)		0.299**		2.15***		0.297*
		(0.136)		(0.754)		(0.163)
pol. opp. × post (4th m)		0.222*		0.688		0.003
		(0.127)		(0.654)		(0.111)
Mean dep. var. (pre)	0.148	0.148	1.798	1.798	0.114	0.114
Observations	25,524	25,524	25,524	25,524	25,524	25,524
Author fixed effects	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions. The unit of observation is author by year. Treatment is being perceived as a political opponent. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on the number of publications with at least a co-author outside of Hungary in columns 1-2, in Slovenia, Slovakia or Czechia in columns 3-4, and in the USA in columns 5-6. Odd columns report the effect for the entire period; even columns report the effect by mandate. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.3.5. International Collaborations - Allies

	Intl. collab.		Regional collab.		US collab.	
	(1)	(2)	(3)	(4)	(5)	(6)
ally × post	-0.418***		-1.12		-0.189	
	(0.157)		(0.757)		(0.159)	
ally × post (1rst m)		-0.382**		-0.582*		-0.215
		(0.154)		(0.325)		(0.143)
ally × post (2nd m)		-0.305		-1.28		-0.118
		(0.193)		(0.817)		(0.192)
ally × post (3rd m)		-0.594**		-1.96*		-0.264
		(0.248)		(1.11)		(0.229)
ally × post (4th m)		-0.552*		-2.87**		-0.051
		(0.289)		(1.16)		(0.284)
Mean dep. var. (pre)	0.686	0.686	3.182	3.182	0.444	0.444
Observations	31,734	31,734	31,734	31,734	31,734	31,734
Author fixed effects	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓

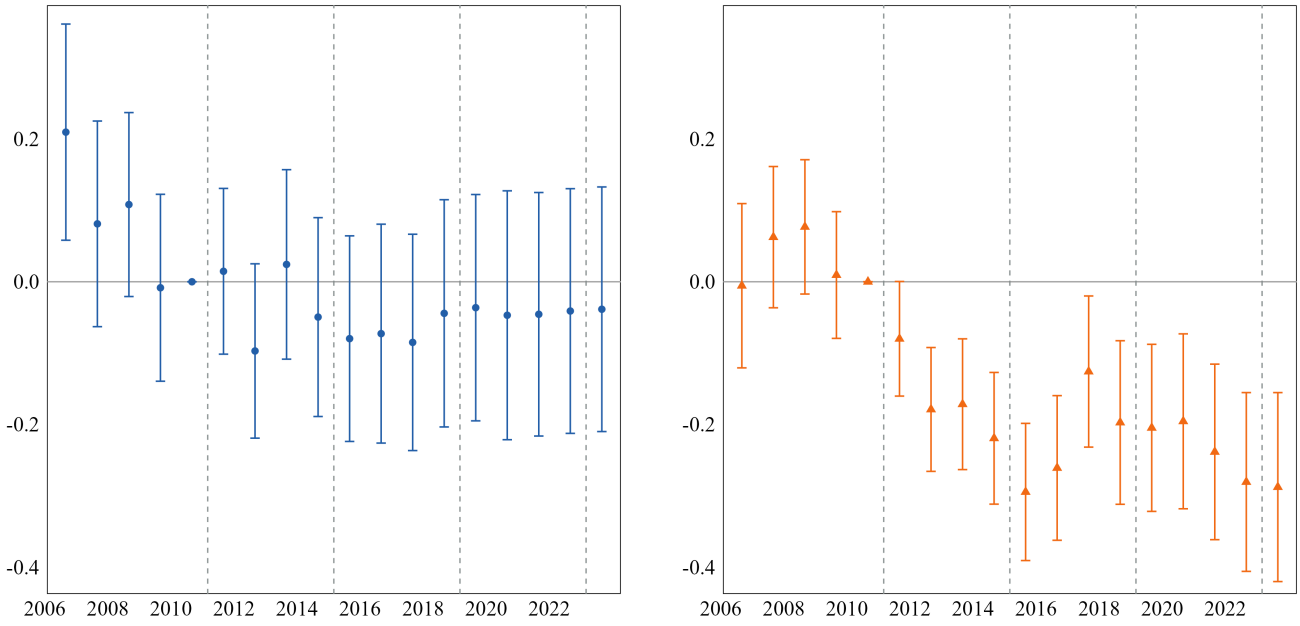
Note: Results are from Fixed-Effect OLS regressions. The unit of observation is author by year. Treated researchers are those that we identified as loyal to the government. We report the effect on the number of publications with at least a co-author outside of Hungary in columns 1-2, in Slovenia, Slovakia or Czechia in columns 3-4, and in the USA in columns 5-6. Odd columns report the effect for the entire period; even columns report the effect by mandate. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table F.3.6. Network of allies: Effect on Network and Influence

	Nr Coauthors		Nr New Collaborations		Citations	
	(1)	(2)	(3)	(4)	(5)	(6)
Network ally × post	-0.091*		-0.099*		-0.036	
	(0.048)		(0.055)		(0.064)	
Network ally × post (1rst m)		-0.090**		-0.142***		-0.016
		(0.041)		(0.054)		(0.060)
Network ally × post (2nd m)		-0.100*		-0.088		-0.025
		(0.053)		(0.062)		(0.075)
Network ally × post (3rd m)		-0.103*		-0.066		-0.082
		(0.062)		(0.069)		(0.090)
Network ally × post (4th m)		-0.060		-0.027		0.134
		(0.072)		(0.096)		(0.141)
Mean dep. var. (pre)	6.205	6.205	3.295	3.295	42.524	42.524
Observations	30,929	30,929	30,737	30,737	30,358	30,358
author fixed effects	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect PPML regressions on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as loyal to the government is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total number of co-authors (columns 1-2), total number of new co-authors (columns 3-4), and citations from other MTMT publications (columns 5-6). The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Odd columns report the average effect on the period 2010-2024 and even columns split the effect by mandate. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Figure F.3.3. Ally Network and Opponent Network: Effect on Total Collaborations

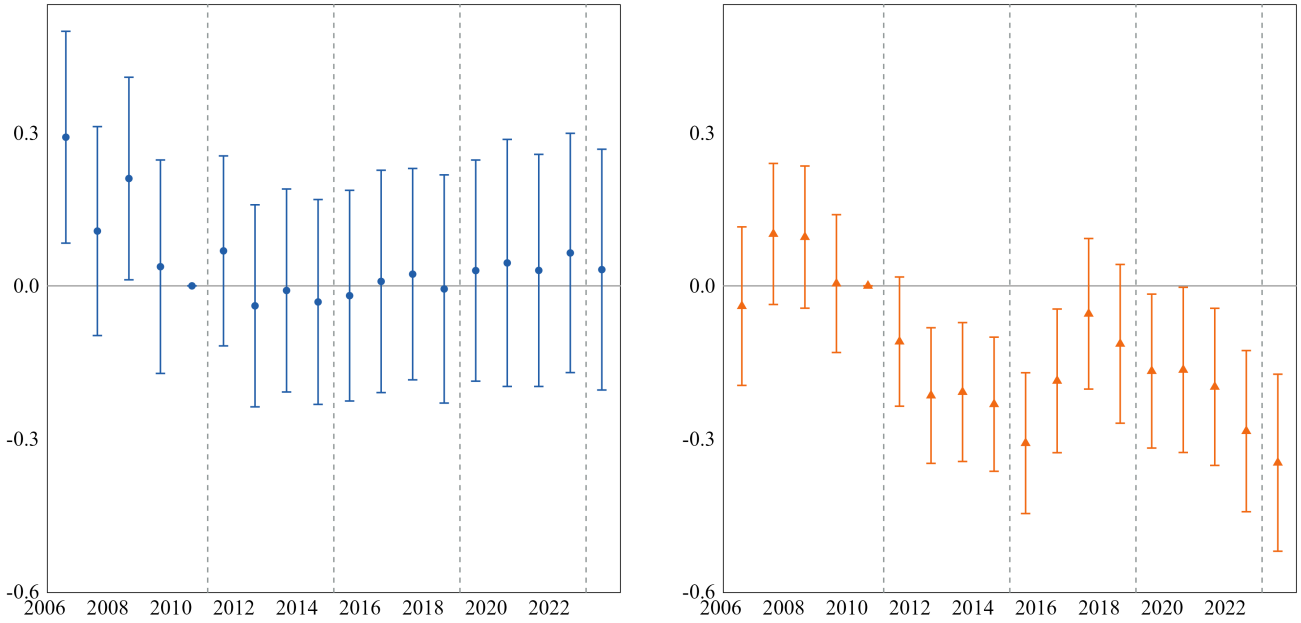


(a) Ally Network

(b) Opponent Network

Note: Results are from Fixed-Effect PPML regressions from CRIS data. The unit of observation is author by year and the sample period is 2005–2023. The outcome variable is the total number of collaborations. Panel (a) reports the effect for the Ally Network individuals i.e. researchers which collaboration index with ally researchers is above the median. Panel (b) reports the equivalent estimation for opponent network. Control variables account for trends field and cohort dynamics over time. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Figure F.3.4. Ally Network and Opponent Network: Effect on New Collaborations

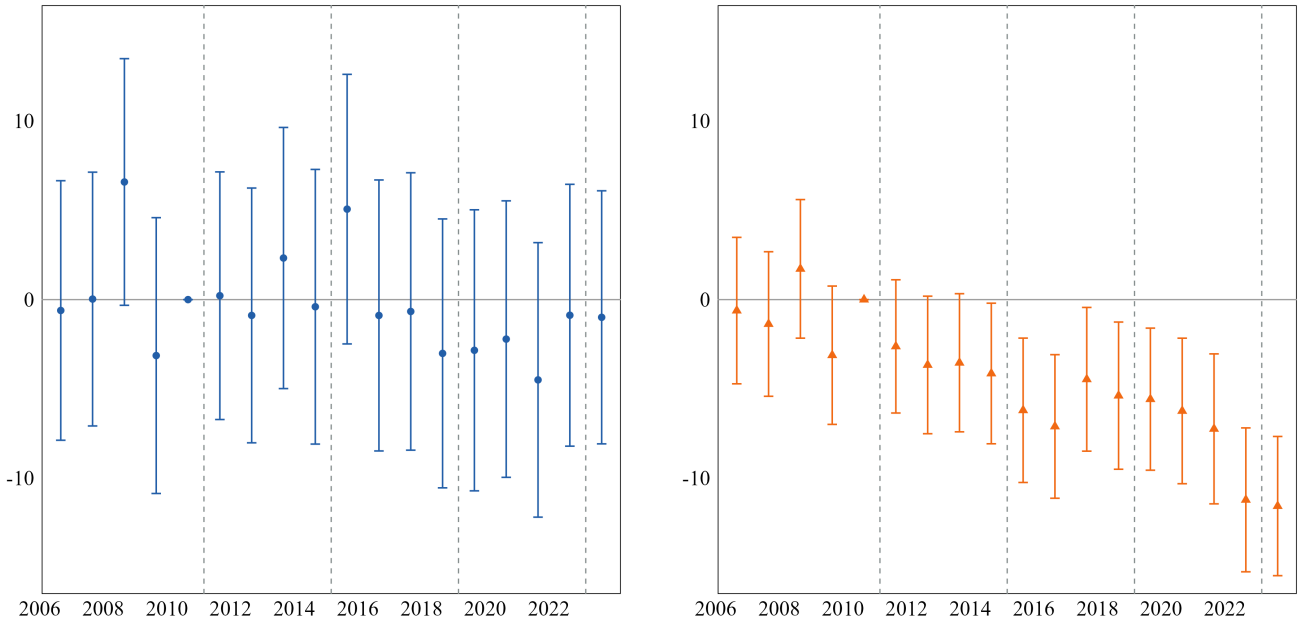


(a) Ally Network

(b) Opponent Network

Note: Results are from Fixed-Effect PPML regressions from CRIS data. The unit of observation is author by year and the sample period is 2005–2023. Panel (a) reports the effect for the Ally Network individuals i.e. researchers which collaboration index with ally researchers is above the median. Panel (b) reports the equivalent estimation for opponent network. Control variables account for trends field and cohort dynamics over time. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Figure F.3.5. Ally Network and Opponent Network: Effect on Citations



(a) Ally Network

(b) Opponent Network

Note: Results are from Fixed-Effect OLS regressions from CRIS data. The unit of observation is author by year and the sample period is 2005–2023. The outcome variable is the count of citations per year. Panel (a) reports the effect for the Ally Network individuals i.e. researchers which collaboration index with ally researchers is above the median. Panel (b) reports the equivalent estimation for opponent network. Control variables account for trends field and cohort dynamics over time. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

G *Exit* and *Voice*: Complementary Results

G.1 Voicing

Table G.1.1. Effect on *Voicing* behaviours – Political Opponents Treatment

	pub. *rule of law*			share pub. *rule of law*		
	(1)	(2)	(3)	(4)	(5)	(6)
pol. opp. × post	0.0775***			0.0153***		
	(0.0247)			(0.0041)		
CEU × post		0.0586**			0.0103**	
		(0.0253)			(0.0046)	
NGO × post			0.1632**			0.0271***
			(0.0724)			(0.0094)
Observations	123,048	121,932	120,852	78,546	77,675	76,936
R^2	0.311	0.289	0.300	0.243	0.238	0.229
Within R^2	0.002	0.001	0.002	0.001	0.000	0.001
Mean.Dep.Var.Pre	0.006	0.006	0.006	0.002	0.002	0.002
author fixed effects	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect OLS regression, for each outcome, on data from MTMT, the Hungarian CRIS-national repositories. The unit of observation is author by year and the sample period is from 2005-2024. Treated individuals are all researchers perceived as political opponents (line 1), researchers who were professors at the CEU prior to 2010 (line 2) and researchers who were named in the list published by Figyelő in 2018. Columns 1 to 3 report the effect on each group for the number of publications identified as mentioning the subject of rule of law; columns 4-6 report the effect on the share of publications mentioning the subject. Control variables account for trends for the matching cell over time. Standard errors (SE) are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

G.2 Ally Network

Table G.2.1. Ally Network: Migration and International Collaboration

	Migration				Collaboration					
	Any affil. abroad		Abroad (2y)		Intl. collab.		Regional collab.		Retiring	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Network ally × post	-0.004		-6.28×10^{-5}		-0.160		-0.635***		-0.0002	
	(0.011)		(0.008)		(0.181)		(0.190)		(0.0006)	
Network ally × post (1rst m)		-0.018		-0.013*		-0.045		-0.078**		-0.0008
		(0.011)		(0.007)		(0.226)		(0.033)		(0.0008)
Network ally × post (2nd m)		0.010		0.010		-0.184		-0.162***		-0.0006
		(0.013)		(0.010)		(0.252)		(0.043)		(0.0008)
Network ally × post (3rd m)		-0.006		0.002		-0.233		-0.155***		0.0003
		(0.014)		(0.010)		(0.158)		(0.055)		(0.0008)
Network ally × post (4th m)		0.005		0.003		-0.236**		-0.198***		0.001
		(0.020)		(0.011)		(0.095)		(0.063)		(0.001)
Mean dep. var. (pre)	0.195	0.195	0.091	0.091	0.663	0.663	3.475	3.475	0.360	0.360
Observations	146,632	146,632	239,670	239,670	239,670	239,670	239,670	230,480	239,670	239,670
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on data from OpenAlex. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as loyal to the government is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Panel A reports the effect on migration: probability of having an affiliation outside of Hungary for the past 2 years (columns 1-2), the past 3 years (columns 3-4), and the past 4 years (columns 5-6). Panel B reports the effect on number of publications with US researchers. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table G.2.2. Ally Network: Additional Measures

	Migration						Collaboration	
	Abroad (recent)		Abroad (3y)		Abroad (4y)		US collab.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Network ally × post	-0.006		0.003		0.006		-0.124	
	(0.008)		(0.008)		(0.007)		(0.168)	
Network ally × post (1^{rst} m)		-0.008		-0.007		-0.001		-0.043
		(0.008)		(0.007)		(0.006)		(0.211)
Network ally × post (2nd m)		-0.001		0.007		0.005		-0.167
		(0.009)		(0.009)		(0.008)		(0.235)
Network ally × post (3rd m)		-0.008		0.007		0.013		-0.166
		(0.010)		(0.010)		(0.009)		(0.140)
Network ally × post (4th m)		-0.005		0.005		0.013		-0.109
		(0.011)		(0.010)		(0.009)		(0.091)
Mean dep. var. (pre)	0.099	0.099	0.074	0.074	0.060	0.060	0.482	0.482
Observations	226,390	226,390	239,670	239,670	239,670	239,670	239,670	239,670
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on data from OpenAlex. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as loyal to the government is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Panel A reports the effect on migration excluding all non-publishing years: probability of having an affiliation outside of Hungary for the past 2 years (columns 1-2), the past 3 years (columns 3-4), and the past 4 years (columns 5-6). Panel B reports the effect on number of publications with US researchers. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

G.3 Political Opponent Network

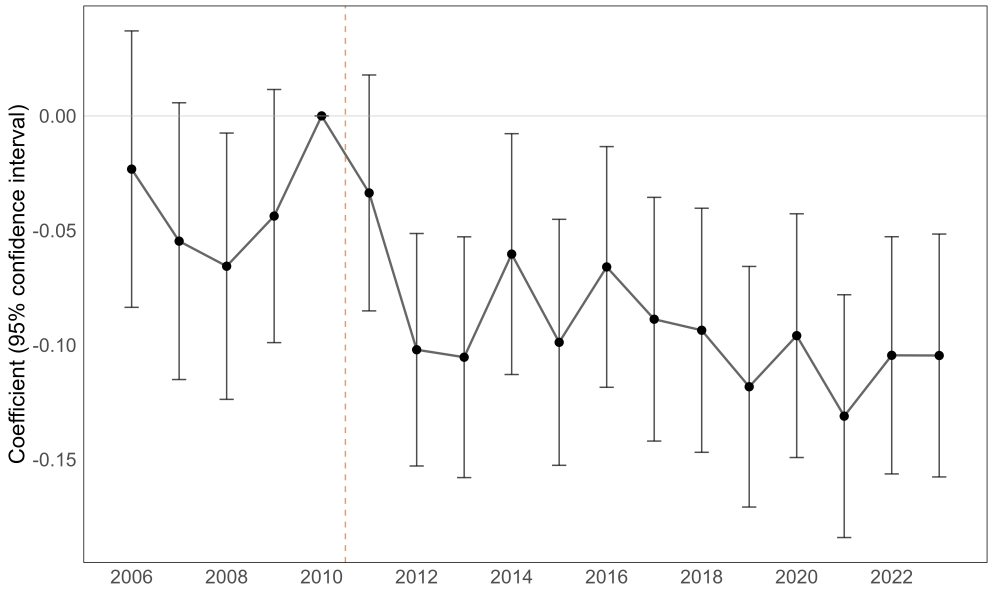
Table G.3.1. Political Opponent Network: Additional Measures

	Migration						Collaboration	
	Abroad (recent)		Abroad (3y)		Abroad (4y)		US collab.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Network opp. × post	0.030*		0.024**		0.023**		-0.034	
	(0.018)		(0.011)		(0.011)		(0.181)	
Network pol. opp. × post (1rst m)		0.004		-0.003		-4.24×10^{-5}		0.037
		(0.015)		(0.009)		(0.009)		(0.199)
Network pol. opp. × post (2nd m)		0.030		0.024*		0.021*		0.098
		(0.020)		(0.012)		(0.012)		(0.198)
Network pol. opp. × post (3rd m)		0.053**		0.044***		0.042***		-0.228
		(0.023)		(0.016)		(0.016)		(0.237)
Network pol. opp. × post (4th m)		0.048*		0.049***		0.042**		-0.347
		(0.024)		(0.018)		(0.017)		(0.350)
Mean dep. var. (pre)	0.117	0.117	0.050	0.050	0.039	0.039	0.221	0.221
Observations	112,450	112,450	128,772	128,772	128,772	128,772	47,565	47,565
Author fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS regressions on data from OpenAlex. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those whose collaboration index with researchers perceived as political opponents is above median. Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. Panel A reports the effect on migration excluding all non-publishing years: probability of having an affiliation outside of Hungary for the past 2 years (columns 1-2), the past 3 years (columns 3-4), and the past 4 years (columns 5-6). Panel B reports the effect on number of publications with US researchers. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

G.4 Additional Results on Research Similarity and Self-censorship

Figure G.4.1. Effect on the Probability of Publishing in Gender - Triple DiD



Note: Results are from Fixed-Effect OLS triple difference-in-differences regressions on data from the CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. The line reports the difference in probability of publishing any paper with gender topics, between researchers who publish in gender topics in Hungary compared to those publishing in gender topics in Slovenia or Croatia, compared to their respective difference in probability with researchers in their country who do not publish in gender topics. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table G.4.1. Triple Difference-in-Differences: Researchers working in Gender

	Pubs. (1)	Co-authors (2)	Pub. Gender (3)	Publish in Gender (4)
Post × gender	-0.006	0.014	-0.215***	-0.151***
	(0.028)	(0.029)	(0.027)	(0.010)
Post × hungary × gender	-0.094***	-0.142***	-0.105**	-0.039***
	(0.036)	(0.040)	(0.043)	(0.014)
Observations	353,680	335,814	377,767	377,767
Author fixed effects	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓
Country × Cohort × Cohort fixed effects	✓	✓	✓	✓

Note: Results are from Fixed-Effect Triple difference-in-differences regressions on data from the CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those who published at least 3 publications in gender topics (first line) and those who do so in Hungary (second line). Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total publications, total number of co-authors, total publications with gender keywords in the title, and probability to publish any paper with gender keywords in its titles. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table G.4.2. Triple Difference-in-Differences: Researchers working on Sensitive Topics

	Publications (1)	Co-authors (2)	Pub. Sensitive (3)	Publish in Sensitive (4)
sensitive × Post	0.015	0.038	-0.203***	-0.166***
	(0.035)	(0.050)	(0.028)	(0.014)
hungary × sensitive × Post	-0.113***	-0.311***	-0.035	0.001
	(0.042)	(0.066)	(0.037)	(0.017)
Observations	281,864	261,129	299,629	299,629
Author fixed effects	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓
Country × Cohort × Cohort fixed effects	✓	✓	✓	✓

Note: Results are from Fixed-Effect OLS triple difference-in-differences regressions on data from the CRIS-national repositories. The unit of observation is author by year and the sample period is 2005–2024. Treated authors are those who published at least 3 publications in sensitive topics (first line) and those who do so in Hungary (second line). Authors are matched using their number of publications over the period 2000-2005, entry year in academia and field of research. We report the effect on total publications, total number of co-authors, total publications with sensitive topic keywords in the title, and probability to publish any paper with sensitive topic keywords in its titles. The dataset is winsorized at the top of the distribution at the 1 percent level for the outcome variable. Control variables account for trends for field and entry year in academia FE. Standard errors are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

Table G.4.3. Researchers Working on Sensitive Topics: Research Similarity

	sim. pre-2005 (HU)		sim. pre-2005 (EN)		sim. Ally	
	(1)	(2)	(3)	(4)	(5)	(6)
sensitive × post	-0.007***		0.001		-0.010***	
	(0.002)		(0.0007)		(0.002)	
sensitive × post (1rst m)		-0.006***		-8.19×10^{-5}		-0.003
		(0.002)		(0.0008)		(0.002)
sensitive × post (2nd m)		-0.007***		0.0007		-0.011***
		(0.002)		(0.0009)		(0.003)
sensitive × post (3rd m)		-0.011***		0.002**		-0.016***
		(0.003)		(0.0009)		(0.004)
sensitive × post (4th m)		-0.011***		0.002*		-0.014**
		(0.004)		(0.001)		(0.006)
Mean dep. var. (pre)	0.819	0.819	0.843	0.843	0.771	0.771
Observations	204,954	204,954	164,034	164,034	93,887	93,887
Author fixed effects	✓	✓	✓	✓	✓	✓
Cohort × Year fixed effects	✓	✓	✓	✓	✓	✓
Field × Year fixed effects	✓	✓	✓	✓	✓	✓

Note: This table gathers the FE OLS regressions for researchers working on sensitive topics. Columns (1)–(2) report estimates for the similarity of Hungarian-language publications with the researcher's own pre-2005 publications, columns (3)–(4) show the estimates for the similarity of English-language publications. Columns (5)–(6) for the similarity with the current research of government-allied researchers. Odd columns report the average post-2005 treatment effect and even columns report the decomposition of this effect by government mandate. All specifications include author, cohort × year and field × year fixed effects. *** p<0.01, ** p<0.05, * p<0.1. *** p<0.01, ** p<0.05, * p<0.1.

H Global effect : Complementary Results

H.1 Migration

Table H.1.1. Effect on Migration, Hungarian vs. Central Europe

	affiliation in other country for over 2 years		for over 3 years		emigrated	
	(1)	(2)	(3)	(4)	(5)	(6)
hungary × post = 1	0.0114***		0.0144***		0.0146***	
	(0.0038)		(0.0038)		(0.0046)	
hungary × post (1rst mandate)		0.0131***		0.0130***		0.0109***
		(0.0036)		(0.0035)		(0.0041)
hungary × post (2nd mandate)		0.0117**		0.0163***		0.0202***
		(0.0047)		(0.0047)		(0.0057)
hungary × post (3rd mandate)		0.0101*		0.0139***		0.0165**
		(0.0055)		(0.0053)		(0.0067)
Observations	203,938	203,938	203,938	203,938	203,938	203,938
R^2	0.667	0.667	0.683	0.683	0.806	0.806
Within R^2	0.000	0.000	0.000	0.000	0.000	0.001
Mean.Dep.Var.Pre	0.078	0.078	0.063	0.063	0.098	0.098
final_id fixed effects	✓	✓	✓	✓	✓	✓
year × entry cohort fixed effects	✓	✓	✓	✓	✓	✓
year × field fixed effects	✓	✓	✓	✓	✓	✓

Note: results are from Fixed-Effect OLS regression, for each outcome, on data from OpenAlex. The unit of observation is author by year and the sample period is from 2005-2020. Treated authors are authors from Hungary. Control authors are Slovenian researchers matched to the treated. The dependent variable is an indicator variable taking the value 1 if the author publishes with an affiliation outside of Hungary for the treateed and Slovenia for the control after that date for two or three consecutive years (resp. columns (1), (2)), and another indicator variable taking the value 1 if the author is never seen publishing with an affiliation in Hungary for the treateed and Slovenia for the control after that date (column (3)). Control variables account for trends for the matching cell over time. Standard errors (SE) are clustered by author. *** p<0.01, ** p<0.05, * p<0.1.

I Robustness Exercises

I.1 Within Hungary: Opponents and Allies

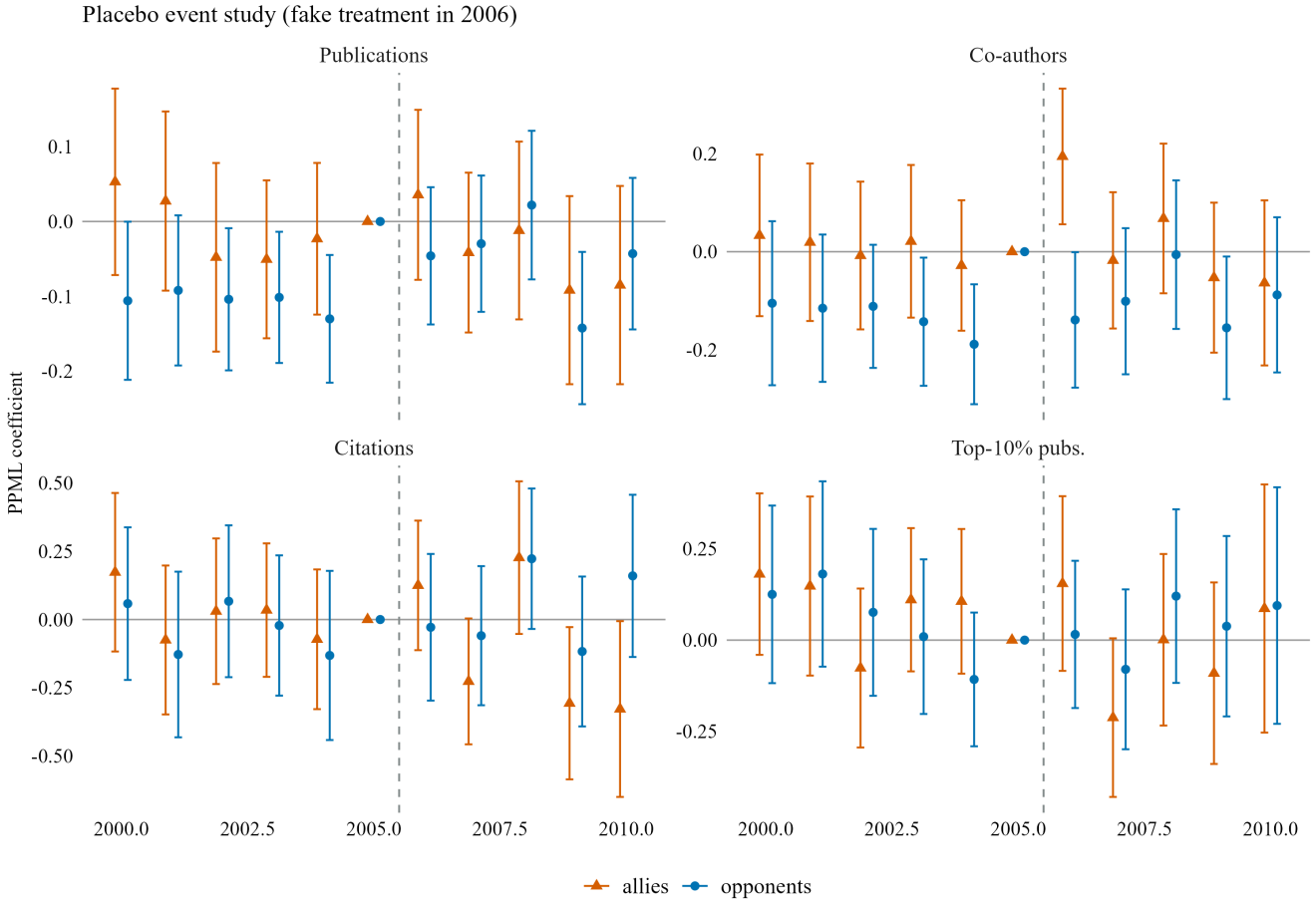
We run three falsification exercises on the within-Hungary design. All use the PPML specification of the main analysis (author, year × field and year × entry-year fixed effects, exact matching, standard errors clustered at the author level).

Placebo event study. We re-estimate the event study on the pre-period only (1990–2010), so the real treatment never enters the sample, and assign a fake treatment date in 2006. Because 2006–2010 productivity lies inside this window, authors are matched on entry year and field only. For allies, almost all coefficients are insignificant, before and after the fake date (Figure I.1.1). For opponents, the coefficients for publications and co-authors stay around -0.1 both before and after the fake date, with a few significant years on either side. This reflects a relatively high level in the 2005 reference year rather than a differential trend: there is no break at the fake date. Consistently, the difference-in-differences estimated for each fake treatment year between 2001 and 2007, which compares all years before and after the cutoff, is insignificant in 54 of the 56 estimates (4 outcomes, 7 years, 2 groups), about what chance alone would produce; the two exceptions are publications of opponents (fake year 2005) and citations of allies (fake year 2007) (Figure I.1.2).

Random treatment. We draw 1,000 authors at random from the neutral researchers (actual opponents and allies are excluded), label them as treated, re-match and re-estimate. We repeat this 500 times. Under a correctly sized test, about 5% of draws should be significant at the 5% level; with 500 draws, rates between 3.1% and 6.9% are consistent with correct size. Figure I.1.3 shows that the t-statistics are centred on zero, with rejection rates within this band.

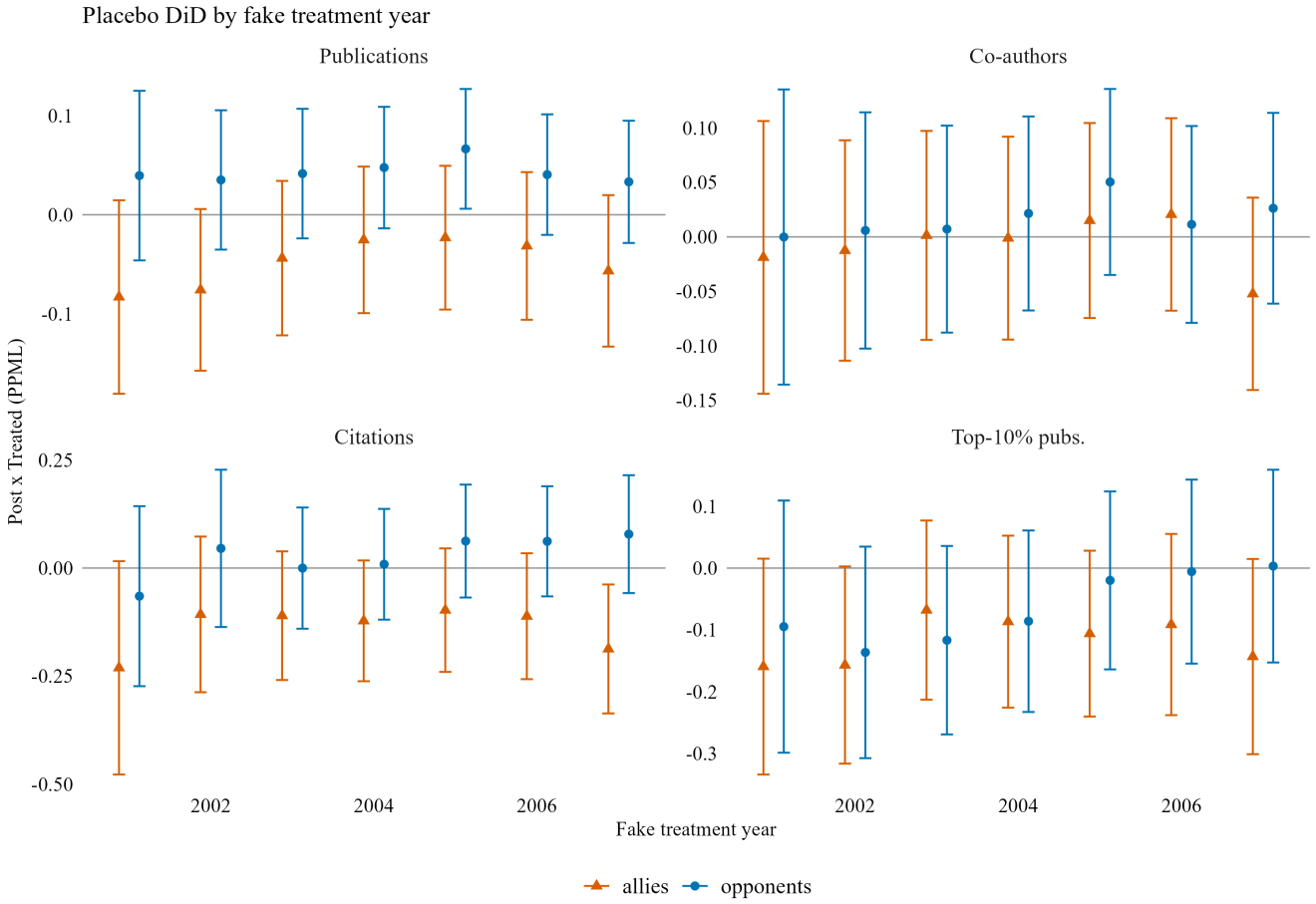
Randomization inference. Finally, we permute the actual treatment labels across authors within matching strata 500 times and compare our main estimate with the resulting null distribution (Figure I.1.4). For opponents, the randomization-inference p-values are close to the clustered ones: 0.477 (clustered: 0.478) for publications, 0.096 (0.087) for citations, 0.024 (0.025) for co-authors and 0.046 (0.012) for top-10% publications. The effects on co-authors and top-10% publications therefore remain significant at the 5% level under randomization inference.

Figure I.1.1. Placebo Event Study, Within Hungary



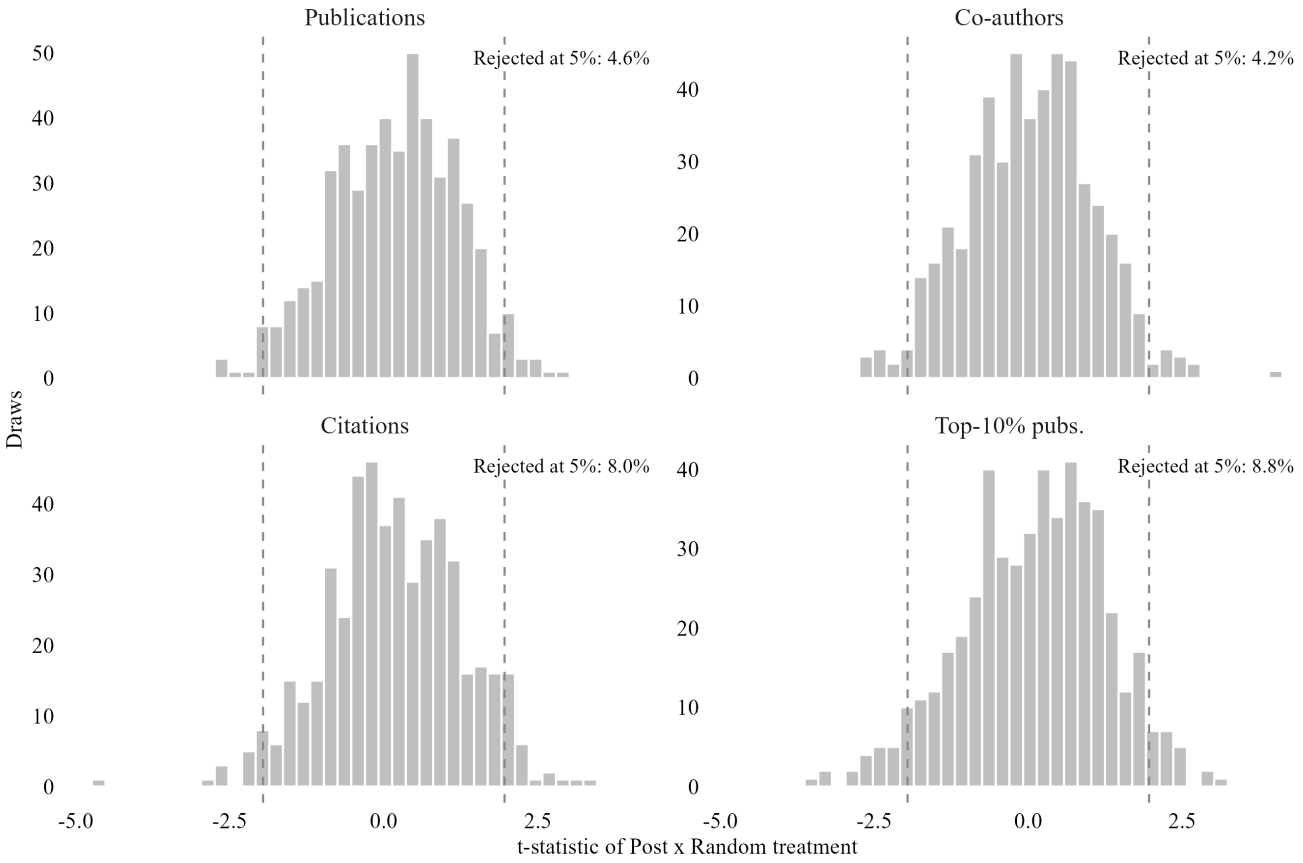
Notes: The figure reports year × treatment coefficients from Fixed-Effects PPML regressions using MTMT data over 1990–2010, with a fake treatment date in 2006 (reference year 2005). Blue: political opponents; orange: government allies; each group is compared with its matched control group of neutral researchers. Authors are exactly matched on entry year and field. Publications, co-authors and citations are winsorized at the top 1 percent. 95% confidence intervals use standard errors clustered at the author level.

Figure I.1.2. Placebo Difference-in-Differences by Fake Treatment Year, Within Hungary



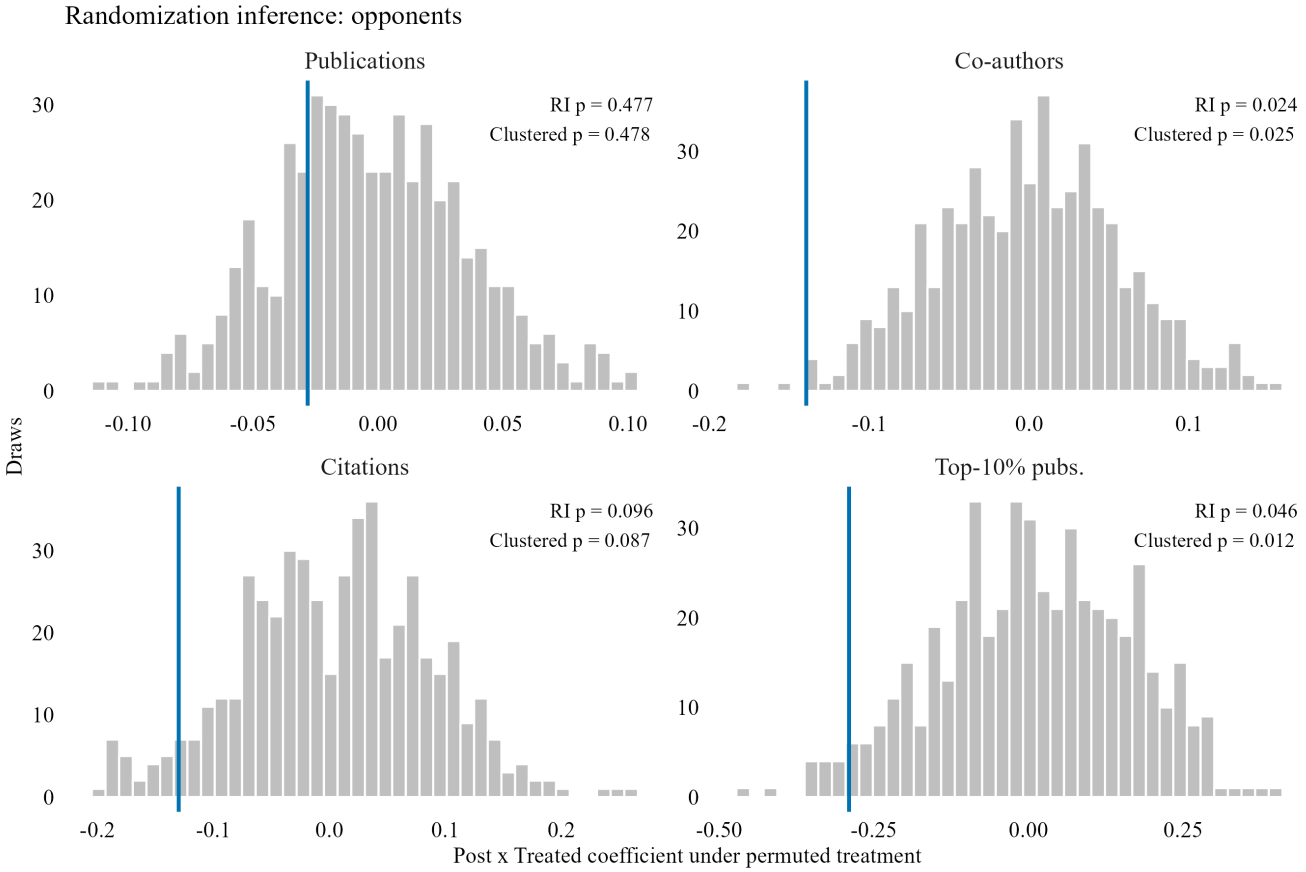
Notes: Each point is the Post × Treated coefficient from a separate Fixed-Effects PPML regression on MTMT data over 1990–2010, where Post equals one from the fake treatment year onwards. Blue: political opponents; orange: government allies. Matching, fixed effects and winsorization as in Figure I.1.1. 95% confidence intervals use standard errors clustered at the author level.

Figure I.1.3. Random Treatment Assignment, Within Hungary



Notes: The figure shows the distribution of t-statistics of Post $\times$ Random treatment across 500 draws. In each draw, 1,000 authors are randomly drawn from researchers who are neither opponents nor allies and labelled as treated; the sample is then exactly matched on entry year, field and 2006–2010 productivity and the main Fixed-Effects PPML specification is re-estimated on MTMT data over 1990–2020 (Post: 2011 onwards). Dashed lines mark ± 1.96. Standard errors are clustered at the author level.

Figure I.1.4. Randomization Inference, Political Opponents



Notes: Grey bars show the distribution of the Post × Treated coefficient when the actual treatment labels are permuted across authors within matching strata (500 permutations). The vertical line is the estimate with the actual labels. RI p is the share of permutations with an absolute t-statistic at least as large as the actual one; clustered p uses author-clustered standard errors. Specification as in the main analysis.

I.2 Cross-Country: Hungary vs. Slovenia and Croatia

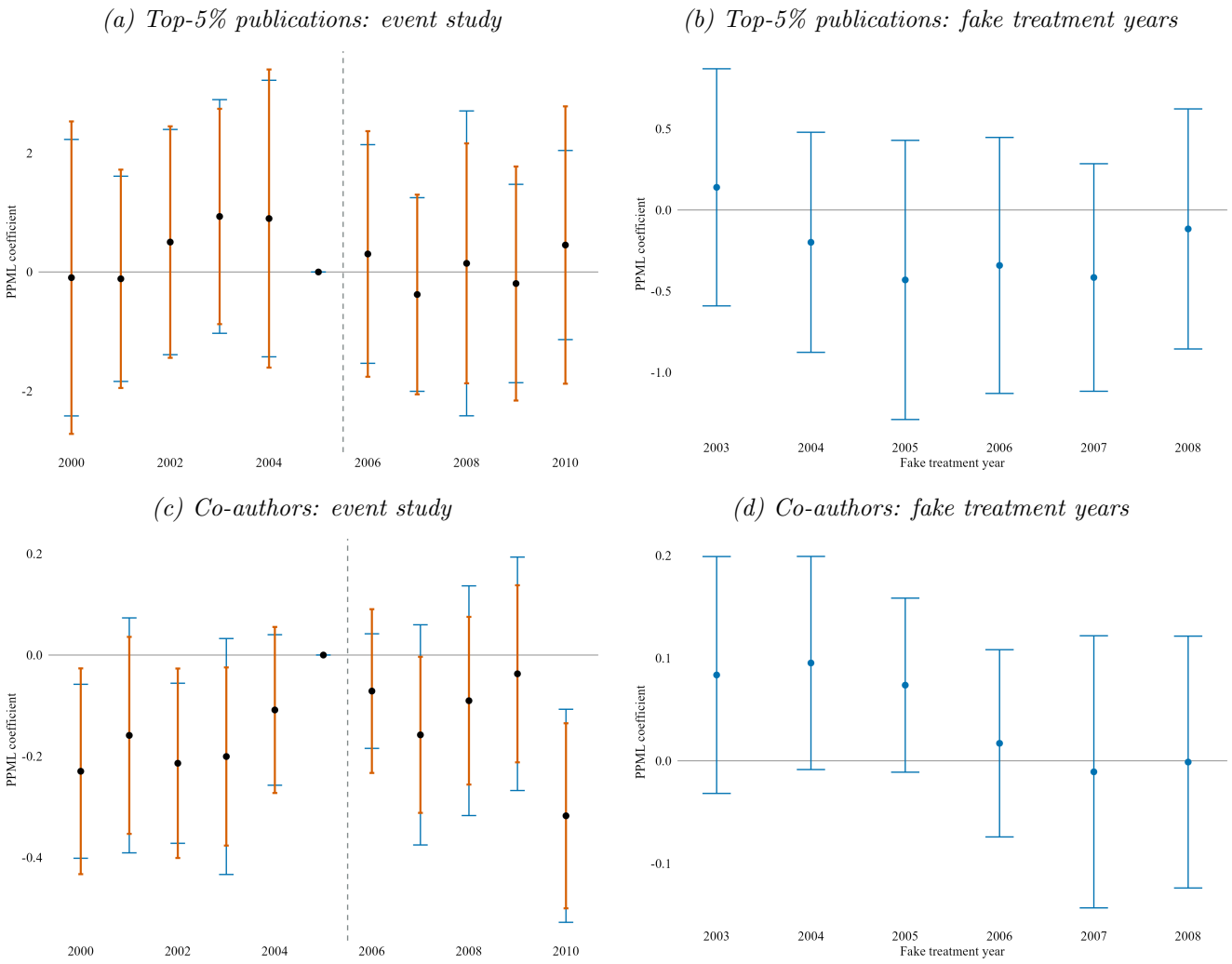
With a single treated country, the main threat is a Hungary-wide shock unrelated to the political change, and inference based on country clusters is not informative. We therefore cluster standard errors at the country × field level and complement them with three exercises. All use a demanding version of the main specification: Fixed-Effects PPML on 2006–2023, Post from 2011, authors entering 1990–2005, coarsened exact matching on entry year, field, 2005–2010 publications, English-language publications, co-authors and top-10% publications, year × matching-stratum fixed effects, outcomes winsorized at the top 1 percent, and authors linked to the different political groups excluded.

Placebo event study. We re-estimate the event study over 2000–2010 with a fake treatment in 2006, and the difference-in-differences for fake treatment years from 2003 to 2008, on authors publishing every year in 2000–2005 (Figure I.2.1). Authors are matched on entry year, field, co-authors and top-10% publications measured over 2000–2005, so the fake post-period years (2006–2010) are the informative ones. For top-5% publications, no coefficient is significant, either in the event study or for any fake treatment year, although the estimates are imprecise. For co-authors, the fake post-period coefficients for 2006–2009 are not significant, and the fake-cutoff estimates are close to zero and insignificant for every year. Two deviations stand out: the 2000 and 2002 coefficients lie significantly below the 2005 reference, and the 2010 coefficient is negative and significant.

Random treatment. We randomly assign treatment to as many Slovenian and Croatian authors as there are matched Hungarian authors (Hungarian authors are excluded from the pool), re-match and re-estimate, 500 times. Under a correctly sized test, 5% of draws should be significant at the 5% level; with 500 draws, rates between 3.1% and 6.9% are consistent with correct size. For top-5% publications, for instance, 5.6% of draws are rejected with country × field clustering and 4.4% with author clustering (Figure I.2.2).

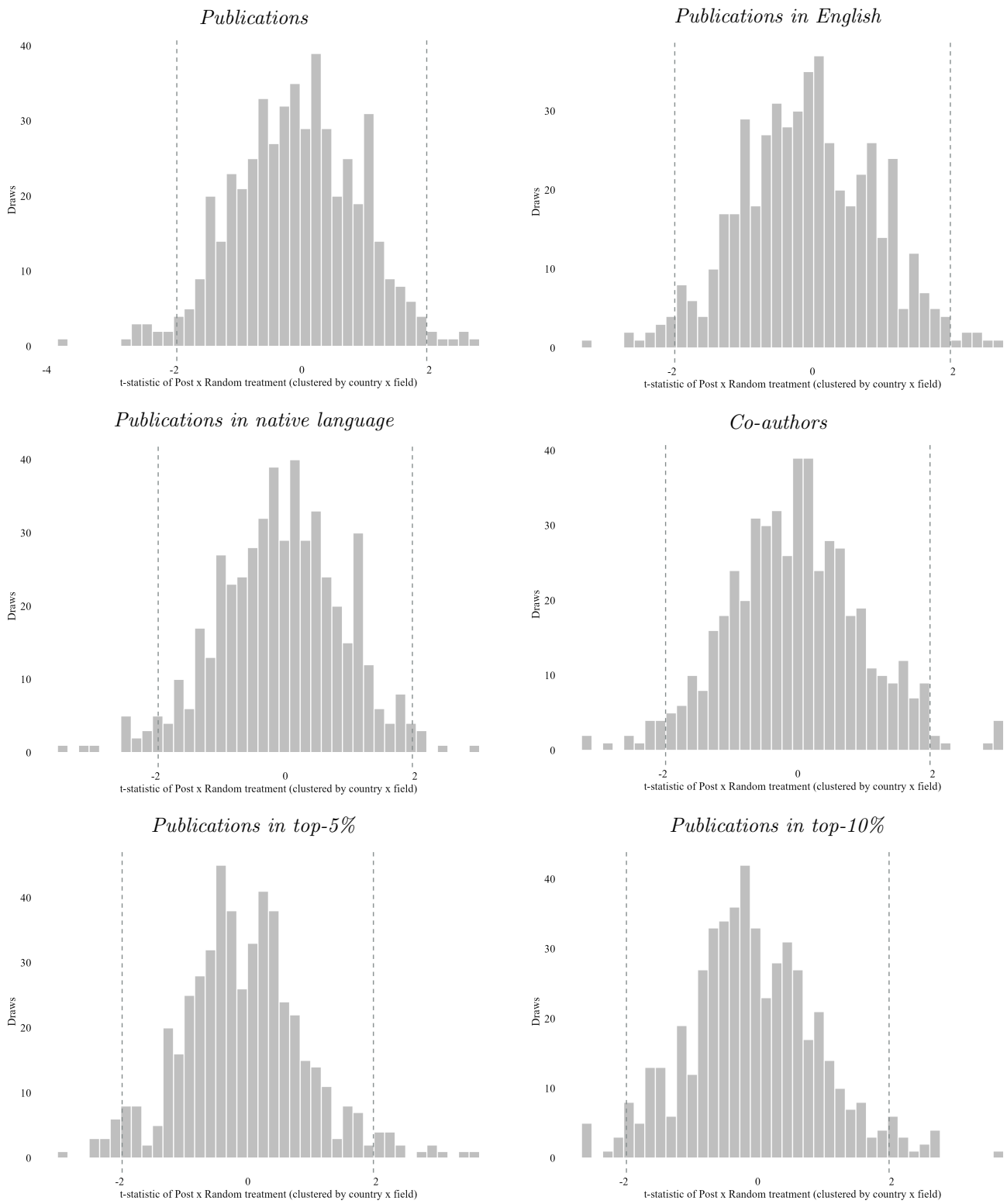
Randomization inference. We permute the actual treatment labels across authors within matching strata 1,000 times and compare the main estimate with the resulting null distribution (Figure I.2.3). The randomization-inference p-values are consistent with the clustered ones. Because treatment is assigned at the country level, this exercise does not account for country-wide shocks.

Figure I.2.1. Placebo Exercises, Cross-Country



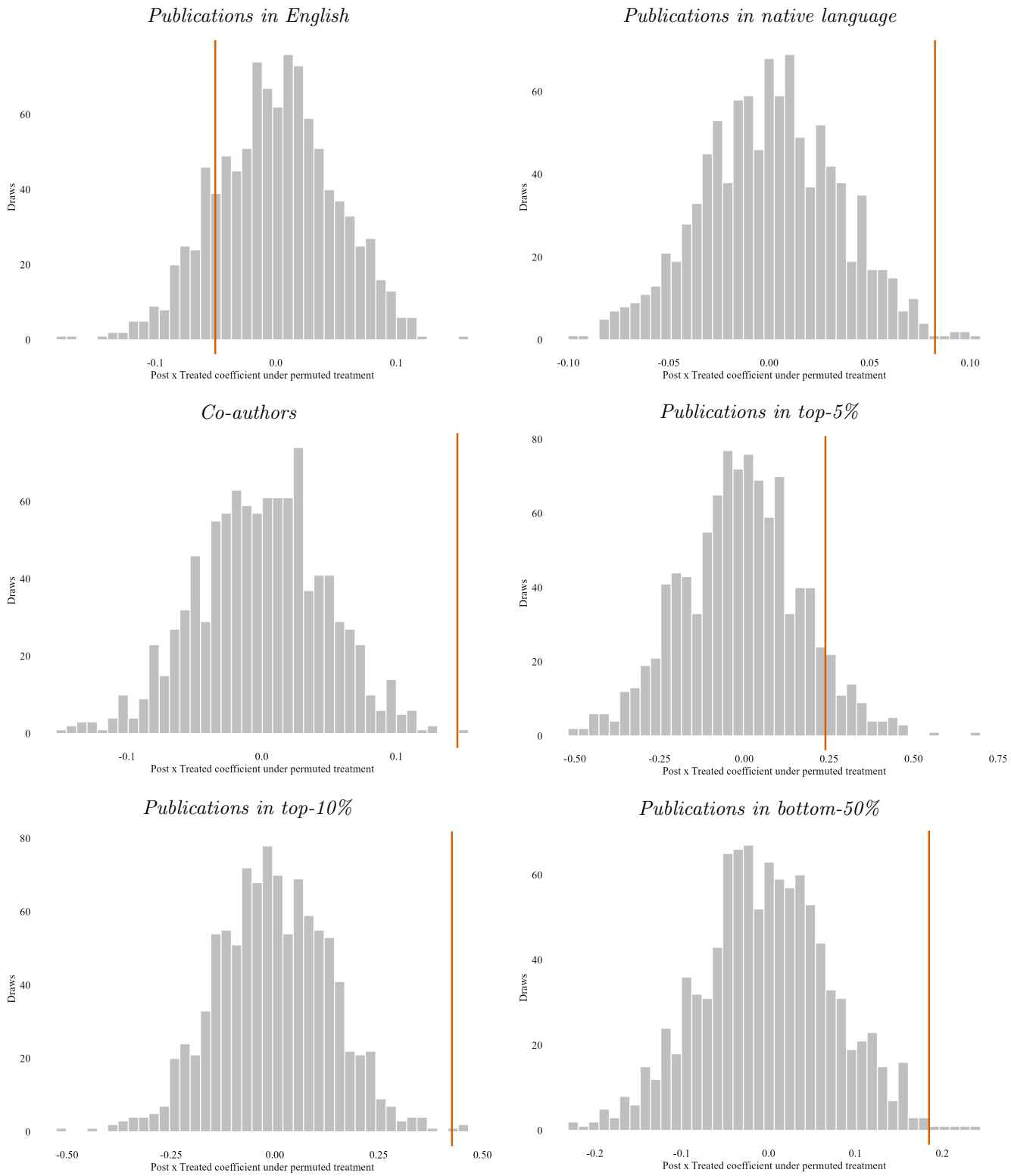
Notes: The figure reports placebo estimates from Fixed-Effects PPML regressions using data from CRIS national repositories over 2000–2010. Treated authors are researchers based in Hungary; controls are researchers from Slovenia and Croatia entering 1990–2000 and publishing every year in 2000–2005. Authors are matched on two-year entry-year bins, field, quintiles of 2000–2005 co-authors and bins of 2000–2005 top-10% publications; the regressions include author, year × field, year × entry year and year × matching-stratum fixed effects. Panels (a) and (c) report year × treatment coefficients with a fake treatment date in 2006 (reference year 2005); blue: 95% confidence intervals clustered by country × field ($t(G-1)$); orange: clustered by author. Panels (b) and (d) report the Post × Treated coefficient from separate regressions where Post equals one from the fake treatment year onwards, with 95% confidence intervals clustered by country × field. Outcomes are winsorized at the top 1 percent.

Figure I.2.2. Random Treatment Assignment, Cross-Country



Notes: Distribution of t-statistics of Post × Random treatment across 500 draws. In each draw, as many authors as there are matched Hungarian authors are randomly drawn from Slovenian and Croatian researchers and labelled as treated; the sample is re-matched and re-estimated. Dashed lines mark ±1.96. Standard errors clustered by country × field. Specification: Fixed-Effects PPML regressions using data from CRIS national repositories over 2006–2023, with Post equal to one from 2011. Treated authors are researchers based in Hungary; controls are researchers from Slovenia and Croatia entering 1990–2005. Authors are matched on two-year entry-year bins, field, deciles of 2005–2010 publications and English-language publications, quintiles of 2005–2010 co-authors and bins of 2005–2010 top-10% publications; the regressions include author, year × field, year × entry year and year × matching-stratum fixed effects. Outcomes are winsorized at the top 1 percent.

Figure I.2.3. Randomization Inference, Cross-Country



Notes: Grey bars show the distribution of the Post × Treated coefficient when the actual treatment labels are permuted across authors within matching strata (1,000 permutations). The vertical line is the estimate with the actual labels. Specification: Fixed-Effects PPML regressions using data from CRIS national repositories over 2006–2023, with Post equal to one from 2011. Treated authors are researchers based in Hungary; controls are researchers from Slovenia and Croatia entering 1990–2005. Authors are matched on two-year entry-year bins, field, deciles of 2005–2010 publications and English-language publications, quintiles of 2005–2010 co-authors and bins of 2005–2010 top-10% publications; the regressions include author, year × field, year × entry year and year × matching-stratum fixed effects. Outcomes are winsorized at the top 1 percent.