Minerva
https://doi.org/10.1007/s11024-024-09550-2

Territorial Inequalities and (de)Concentration of Public Investment in Science: A Study on CONICET (Argentina) and the Tensions Between Academic Excellence and Equity

Andrés Niembro[1] · **Fernando Svampa**[1]

Accepted: 3 October 2024

Abstract The search for equity in science policy (in terms of territory, gender and other inequalities of opportunity) faces strong tensions with academic excellence, autonomy and meritocracy, which ultimately tend to concentration. Integrating different but related approaches and concepts, this article proposes an analytical framework to study the evolution of scientific policies, instruments or organizations through the lens of these tensions. The utility of this framework is illustrated by a case study of the Argentine National Scientific and Technical Research Council (CONICET in Spanish) and its scientific researcher career, with a focus on the deconcentration initiatives during the 2010-2022 period. This comprehensive perspective shows how tensions and contradictions translate into frequent marches and countermarches, turning the career calls into an incoherent set of layers, rationales, objectives and impacts, which counteract each other and tend to perpetuate rather than diminish territorial inequalities. Beyond this particular case study, we hope that this approach can be adapted in future research to examine other science policies and institutions, in order to identify and highlight the internal tensions that could interfere with some of the intended (equity) objectives.

Keywords Policy cultures · Efficiency and equity · Meritocracy · Inequality of opportunity · Lagging regions

✉ Andrés Niembro
aniembro@unrn.edu.ar

Fernando Svampa
fsvampa@unrn.edu.ar

[1] Universidad Nacional de Río Negro, Instituto de Estudios en Ciencia, Tecnología, Cultura y Desarrollo (CITECDE). Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), San Carlos de Bariloche, Argentina

Published online: 07 November 2024

Introduction

Territorial inequalities in science and technology (S&T) systems, especially in public resources and S&T organizations, are a problem and a topic of interest in many countries with different levels of development (Chiarini et al. 2014; Beigel et al. 2018; Graddy-Reed and Lanahan 2023; Rubiera Morollón and Fernández García 2023). In addition, this concern is often translated into debates and policy initiatives on regionalization, decentralization or spatial deconcentration of public investments (Perry and May 2007; Bekerman 2013; Chiarini et al. 2014; Guimón 2018).

These discussions are part of a more general issue and tension in public policies, such as the trade-off between efficiency and equity, in this case territorial equity (Yamano and Ohkawara 2002; Hicks and Katz 2011; Monastiriotis and Psycharis 2014; Hinrichs-Krapels and Grant 2016; Dijkstra 2024). In the specific field of science policy, the notion of efficiency is usually related to the search for excellence, at least from the point of view of the scientific community or academic culture (Rip 1994; Elzinga and Jamison 1995). Regarding the distribution of resources or funding, this culture is based on the pillars of scientific autonomy, peer review and meritocracy. To a large extent, this approach is still inspired by the linear model of science, technology and innovation (STI), in its supply-side or science-push version. Thus, it is expected that the generation of new scientific knowledge will then 'spill over' the society and make it possible to solve technological, productive and social problems. Within this traditional conception or "ideological hard core" of scientific communities (Kreimer 2015: 38), equity appears as a relegated or second-order objective, and inequalities of origin or opportunity are not usually considered when evaluating the merit to obtain resources or positions.

However, in recent years different authors have called for a new approach in science policy that should address distributive justice, inclusion and social cohesion, thus attacking different inequalities and societal challenges (Cozzens 2007; Woodhouse and Sarewitz 2007; Mercado 2012; Dutrénit and Sutz 2014; Wallace and Rafols 2015; Philippczyck et al. 2023). Closely related to this (although with an imprint that has led it to become an agenda in itself), we can place the debate and the different initiatives that try to tackle gender inequalities or gaps in the scientific system (Nielsen 2016; Tao et al. 2017; Cruz-Castro et al. 2023; Suárez et al. 2023; Tang and Horta 2023).

This article focuses on a particular type of inequity, the spatial concentration and the subsequent territorial inequalities in the distribution of capabilities, resources, funding and, above all, opportunities in the S&T public system. The mere search for efficiency, excellence or merit generates a circular mechanism that tends to perpetuate (and even deepen) these inequalities: more resources for the scientific elites in the most developed urban S&T centres, less for lagging groups in the peripheries of the system. In this context, a large body of literature has highlighted the importance of directing public efforts to historically lagging or peripheral regions (Beigel et al. 2018; Marques et al. 2019; Salomaa and Charles 2021; Dijkstra 2024). However, there are several tensions between, on the one hand, the political initiatives that seek the redistribution and deconcentration

of public investment and, on the other hand, the academic culture that promotes autonomy, excellence, merit and, consequently, concentration.

The present article contributes to this literature and debates from different angles. First, in the construction of the theoretical framework, we bring together (and highlight the links between) different approaches and concepts that are not always analyzed as a whole: concentration versus deconcentration or dispersion, efficiency versus equity, excellence versus quality or relevance, academic versus bureaucratic (and civic) culture. In this way, we offer a more comprehensive analytical perspective on a series of tensions between different cultures, rationales and objectives of science policy.

The utility of this 'analytical framework of tensions' is then illustrated by a case study on Argentina's National Scientific and Technical Research Council (CONICET in Spanish) and its Scientific Researcher Career (CIC in Spanish). In particular, we focus on the 2010-2022 period, when in the broader framework of the 'federalization policies' in the S&T system (Beigel et al. 2018; Niembro 2020a, 2020b), the objective of deconcentration of the CIC was installed with some impetus, but also with many contradictions and tensions, as we will see.

The CONICET offers an interesting case study since it is the leading organization of the Argentine S&T system in budgetary terms, accounting for about one third of public budget in recent decades (Aristimuño 2023), and also the one with the highest international recognition. From 2010 to 2021, the CONICET has remained in the second position among the Latin American organizations included in the Scimago Institutions Ranking (only behind the University of Sao Paulo, Brazil). According to Article 1 of Decree 1661/96, its main mission is "the promotion and execution of scientific and technological activities throughout the national territory and in the different knowledge areas". Although it has several functions to fulfill this mission (Article 3), the main one is its human resources policy, with the researcher career and doctoral and postdoctoral scholarships for research training (the career of technical support personnel is much more limited). As shown by different authors (Stefani 2018; Alasino 2020), the percentage of CONICET's budget devoted to salaries and scholarships ranged between 87% and 94% in the 2009-2018 period (in 2022, it reached 94% again), leaving little margin for its other functions: supporting research institutes and laboratories, and funding research projects.

In addition, it should be noted that the CONICET has become increasingly important in the last two decades, as it has been the main exponent of the expansion of the S&T system after the 2001-2002 crisis (Cruz-Castro et al. 2016; Botto and Bentancor 2018; García de Fanelli 2018; Albornoz 2019; Alasino 2020; Aliaga 2020). Between 2003 and 2021, the number of CONICET researchers increased by 200% (it tripled), against a 44% growth in full-time professors-researchers in the university system. As Szpeiner and Jeppesen (2013: 8) highlight, the annual allocation of scholarships and admissions to the CIC by the CONICET "marks to a large extent the direction and perspectives of Argentine scientific and technological development, both thematically and geographically". In other words, analyzing the CONICET and the CIC is a way to study the Argentine S&T system, albeit in an approximate sense, since "it is exceptional in the world to have a system where the

bulk of research is carried out by a single agency, with its own researchers" (Míguez 2018: 116).

After this introduction, in the first section we review different concepts and approaches in tension regarding science policy. On this basis, the second section presents the 'analytical framework of tensions' and details the sources of information used for our case study. The third section briefly describes some historical milestones and key features of the CONICET and the CIC. Throughout different subsections (and subperiods), the fourth section delves into the discussion on the tensions around the deconcentration of the CIC in the 2010-2022 period. Finally, the last section brings together the closing reflections of this study.

Different but Related Tensions Around Science Policy

Science policy and funding, as well as scientific organizations, are crossed by multiple dilemmas, between different issues such as efficiency, excellence and merit versus equity or equality, relevance and diversity, among others (Cruz-Castro et al. 2023; Lepori et al. 2023). In particular, the tensions between the objectives of academic excellence and equity or between competition and a relatively egalitarian distribution of resources have been central topics in the science policy debate (Crespy et al. 2007; Koschatzky and Kroll 2007; Hicks and Katz 2011; Rubiera Morollón and Fernández García 2023).

Concentration Versus Deconcentration and Dispersion

Considering the focus of this article, one of the principal tensions to be taken into account is that between concentration versus deconcentration or dispersion, in terms of the distribution of S&T funding and resources. In an interesting review, Aagaard et al. (2020) find in the literature different arguments in favor of the concentration of scientific funding: some linked to the search for efficiency, such as the generation of a critical mass of resources or capacities and the exploitation of economies of scale, and others linked to quality issues, such as scientific excellence and merit, directing funds towards the most capable and productive groups to achieve world-class results. On the other hand, in favor of dispersion, the authors mention some counterarguments, such as the presence of diseconomies of scale and diminishing marginal returns beyond a certain level of concentration. They also suggest the possibility of generating a more diverse research system, offering a wider range of opportunities and diversifying the risk (and chances of success) across a larger number of groups.

Another argument for dispersion is that the concentration and increasing (meritocratic) competition for scientific resources tends to reinforce the Matthew effect (Merton 1968; Bol et al. 2018), widening inequalities at the individual, institutional and even regional level (Münch and Baier 2012; Langfeldt, et al. 2015; Graddy-Reed and Lanahan 2023; Lepori et al. 2023). In the case of Argentina, Suárez and Fiorentin (2018: 43) stress that the "concentration of the efforts [in only four provinces] reveals the existence of historical processes of territorial imbalance, which,

analyzed in terms of the Matthew effect, explains why these patterns of resource and project allocation tend to be reproduced over time".

According to Guimón (2018), one of the challenges of STI policy is achieving a fair balance between concentrating public resources in the most advanced regions to create critical mass and reward excellence and, at the same time, supporting lagging regions to encourage territorial development. This is connected with the two possible scenarios presented by Jappe and Heinze (2023). On the one hand, in the 'elitist scenario', prestige and hierarchy generate self-reinforcing mechanisms of territorial concentration of resources, condemning peripheral regions to persist in that status. On the other hand, the 'expansive scenario' seeks to promote territorial cohesion, maintaining part of the funding to the most advanced institutions (to sustain and improve their performance) but counteracting excessive concentration by broadening the spectrum of organizations and regions that access to S&T funding and resources.

A Central Axis: Efficiency and Excellence Versus Equity

A dilemma or conflict that cuts across public policies in general (Yamano and Ohkawara 2002; Monastiriotis and Psycharis 2014; Hinrichs-Krapels and Grant 2016) and is connected to the particular discussion on the territorial (de)concentration of resources is that of efficiency versus equity (Guimón 2018), which in the particular case of science policy often turns into excellence versus equity (Hicks and Katz 2011). As the latter authors note:

> "Two legitimate sets of public values contest for primacy in the allocation of research funding. Governments seek to maximize research excellence by distributing resources based on merit. Governments also enhance equity with a broad geographic distribution of research funds to support economic development, strengthen research and enhance diversity and participation in the research enterprise" (Hicks and Katz 2011: 143).

Despite some recent transformations, there has been a historical predominance of the first objective over the second. Most of the national S&T organizations, such as the National Science Foundation or the different research councils in Latin American countries (including the CONICET), were created under the influence of different analysts and organizations in the middle of the last century, like Vannevar Bush (Rip 1994; Del Bello 2014). Bush (1945) called for allocating (and concentrating) resources based on peer evaluation of academic excellence and without considering their geographical distribution (Morin 1993; Hicks and Katz 2011). As Perry and May (2007: 1045) note, "science has generally been funded through processes of peer-review allocated according to the criteria of world-class excellence (…), regardless of location".

The introduction of regional considerations, placing inequalities of opportunity at the core of the discussion and seeking a more equitable distribution of resources,

represents a series of challenges and conflicts with the more traditional way of distributing scientific capabilities and funding (Crespy et al. 2007; Perry and May 2007). According to Cruz-Castro et al. (2023: 282), "previously existing differences create different opportunity structures for various groups that affect the probabilities of grant application or success". Even in the European context, where territorial cohesion is usually an objective, Rubiera Morollón and Fernández García (2023) show that the competitive nature of R&D projects and the search for the best results and academic excellence tend to increase territorial inequalities. This could be mitigated by introducing "corrective spatial factors in the calls" (Rubiera Morollón and Fernández García 2023: 26) to account for previous differences in terms of performance (Cruz-Castro et al. 2023).

Merit and Meritocracy Versus Other Criteria of Scientific Quality (and Relevance)

The latter leads us into the discussion on academic excellence and merit versus other criteria of quality for evaluation and resource allocation (Vessuri et al. 2014). As Nielsen (2016) notes, given that the academic system is strongly meritocratic, part of the scientific community questions the legitimacy of 'discriminative' measures (or positive discrimination) in favor of historically disadvantaged groups. That portion (in general, the majority) of the scientific community "perceives preferential treatment as a threat to the stability of a well-functioning, objective, promotion system, where only the 'best' and 'brightest' succeed, while the other considers preferential treatment to be a necessary means to fixing a dysfunctional system" (Nielsen 2016: 386). Meritocracy can be questioned because it facilitates the reproduction of the elites and gives little attention to those who usually lose in competition, particularly if, beyond individual merits, unequal opportunities coexist (Cao 2021). Given that the search for equity in scientific funding implies a value judgment by those who decide how to distribute resources (Hinrichs-Krapels and Grant 2016), one way to moderate the elitist bias of meritocratic practices is the incorporation of what Cao (2021: 24) defines as "values of social meritocracy", such as inclusion, respect for differences, gender equity, among others.

Linked to the above and as another face of equity in science, Hinrichs-Krapels and Grant (2016) also note that research for equity may involve the definition of thematic priorities, aiming that inputs and results address some predefined social objectives. The planning and delimitation of priority or strategic research topics by political criteria external to those of the scientific community represent another arena of tensions in science policy (Braun 2003; Graddy-Reed and Lanahan 2023).

In line with these discussions, Radosevic and Lepori (2009) offer two complementary concepts. On the one hand, the static allocative efficiency or short-term efficiency, focused on the criterion of scientific excellence and, therefore, on previous performance. On the other hand, the dynamic or long-term efficiency, also concerned with current and, above all, future socio-economic relevance. Given that the achievement of both objectives does not necessarily coincide or may even be contradictory, the key is to balance both types of efficiency and time horizons. However, "it does not represent optimum but contextual fit" (Radosevic and Lepori 2009:

659). In the long term, according to the authors, it is crucial that the scientific system can quickly respond to new fields of study and societal needs.

Ultimately, what comes into constant tension are the different notions of scientific quality or research quality:

> "Studying research quality notions implies trying to capture diverse and tacit notions which are expressed through context-dependent assessments on what projects are most worth funding, (…) which researchers should be employed or promoted, or expressed in e.g. national evaluation regimes. Such formal assessments are triggered by the need to allocate resources, not to define quality as such" (Langfeldt et al. 2020: 132).

In practice, different conceptions of quality coexist in the scientific community, across the different disciplines or fields of research, and in the areas of scientific policy and funding. Langfeldt et al. (2020) distinguish two main types of quality notions: F(ield)-type, related to scientific fields, and S(pace)-type, related to science policy areas or spaces. The first type is negotiated and delimited among the specialists of the scientific community, through peer evaluations of merit and excellence. The second type arises in spaces of definition of science policy and funding, including groups of experts, specialists, directors and managers of the organizations in question. In this case, the criteria adopted may often be exogenous or cross-cutting to the different scientific fields and may reflect some concerns about the socioeconomic contribution of science (Langfeldt et al. 2020).

Actors, Communities and Policy Cultures

Another interesting aspect noted by Langfeldt et al. (2020), which allows us to introduce the last scenario of tensions, is the fact that funding agencies and scientific organizations are usually spaces or arenas where quality criteria are negotiated (often with profound differences) between the scientific community and the institutional or political elites (Whitley 2011). Using the terms of Lepori et al. (2023), a trade-off is generated between a bottom-up approach, which gives more degrees of freedom to the scientific community to set its research agenda and its criteria of merit or excellence, and a top-down approach, which may consider other objectives and give priority to social, economic and technological impacts.

The approach of 'policy cultures', proposed by Elzinga and Jamison (1995), permits addressing the cultural features within science policy and the tensions between the different actors involved in the formulation, direction and execution of S&T policies. Moreover, this perspective has been applied in multiple studies (Krishna 2001; Albornoz and Gordon 2011; Aguiar and Aristimuño 2018; Svampa and Aguiar 2019). Elzinga and Jamison (1995) identify four main types of cultures and interests (academic, bureaucratic, economic and civic), which try to influence the direction of S&T policies and funding distribution. However, two of these cultures have, in general, a greater centrality in science policy: on the one hand, the academic culture and, on the other, the bureaucratic culture. This is in line with Cruz-Castro

and Sanz-Menéndez (2018), who argue that there are at least two sources of legitimate authority in scientific organizations, one derived from the formal hierarchy or bureaucratic leadership and the other from the scientific community.

Academic culture is shaped by the scientists themselves, "concerned with policy for science and with preserving what are seen as traditional academic values of autonomy, integrity, objectivity, and control over funding and organization" (Elzinga and Jamison 1995: 576), inspired by visions such as those of Bush (1945) or Polanyi (1962). The latter author begins his description of "The Republic of Science" by stressing that "the community of scientists is organised in a way which resembles certain features of a body politic" (Polanyi 1962: 54).

Regarding the bureaucratic culture, Elzinga and Jamison (1995) link it to the planning, coordination and administration of science policy and funding by the State through various ministries, secretariats, departments, councils and committees. Given that the bureaucratic culture is concerned with the social use of science (Elzinga and Jamison 1995), it can be influenced by pressures or demands of the other two cultures: the economic, industrial or business culture, interested in technological applications of science, the resolution of productive problems or the possible introduction of innovations; and the civic or social culture, focused on other types of interests, such as environmental care, social equity, the reduction of gender gaps or science democratization. In this sense, it is feasible to think that the federalization of science in Argentina not only responds to concerns of the bureaucratic culture, reflected in laws and STI plans that point to deconcentration (Niembro 2020b; MINCYT 2022), but also expresses social interests towards the reduction of these and other territorial inequalities in the country and a wider and more 'democratic' access to scientific knowledge.[1]

The formation of organizational scientific elites is closely linked to the unequal distribution of resources and rewards and leads to a process of social stratification in the scientific field (Mulkay 1976). According to Rip (1994), research councils, such as the CONICET in Argentina, the French CNRS or the CSIC in Spain, were conceived as organizations halfway between "a parliament of scientists and a government bureaucracy" (Rip 1994: 3). Since the mid-twentieth century, many of these councils have been responsible for defining science policy and allocating scientific resources, while at the same time representing the scientific elite. Thus, "the invisible hand of scientific opinion is made visible, in a sense, in the way a research council draws on the judgements of scientists" (Rip 1994: 5).

According to Whitley (2011), one of the most significant differences between S&T organizations, in terms of the regulation and control of knowledge production, lies in the margin of power of the scientists themselves to control the standards that determine research priorities and the evaluation of results. This also depends on the willingness of the State to delegate control over the allocation of resources to those who are responsible for research. All these issues are connected to what Cruz-Castro

[1] The trilogy of deconcentration, decentralization and democratization is present in the definitions of the federalization of science in Argentina provided by Luz Lardone and Marcelo Ruiz (see, respectively, Comisión CTI 2020-10-01; Red PLACTS 2020-09-16).

and Sanz-Menéndez (2018) define as autonomous research organizations, where the authors place the case of the CONICET.

The Reality: Path-Dependency and Layers of Policies and Objectives

Although much of the previous development contrasts extreme positions to facilitate the description of the differences, the reality of science policy and funding is much more complex and overlapping, with the (not always peaceful) coexistence of different policy cultures, priorities, quality criteria and values within S&T organizations. Negotiation between different actors, interest groups or lobbies implies that a dominant view may not necessarily prevail (Koschatzky and Kroll 2007) and that the decisions finally adopted may not reflect what a critical assessment of the most pressing problems and the best solutions would indicate (Guimón 2018).

From the point of view of the evolution of policies and especially of instruments, a key aspect highlighted by Flanagan et al. (2011) is that:

> "nominally similar policy instruments are not necessarily stable in terms of their rationales, goals, use and impacts across time, space or policy domains. Nor does public policy pursue a single goal or even a coherent and hierarchical set of goals –rather it pursues a broad and ever-changing range of more or less explicit and implicit, final and intermediate goals and objectives, many of which will conflict in the sense that one can only be obtained at the expense or another" (Flanagan et al. 2011: 708).

These authors stress that public policies are not adopted on a tabula rasa, but are embedded in processes that show some degree of irreversibility and path-dependency, so that past decisions condition the current and future set of options. As conceptual rationales change over time and policies and scientific objectives are reinterpreted, policy layering and the accumulation of often incoherent instruments are common results. Ultimately, they reflect a set of successive reforms rather than the replacement of old practices with new ones (Aagaard 2017; Capano and Pritoni 2019; Lepori et al. 2023; Reale et al. 2023).

Analytical Framework and Resources

The different approaches and concepts discussed in the previous section can be schematically represented in Fig. 1. This 'analytical framework of tensions' highlights, on the one hand, the links between efficiency, excellence, merit and academic culture, and on the other hand (in tension with the latter), equity, relevance or quality, other distribution criteria (such as equality of opportunities, based on positive discrimination) and the bureaucratic and civic cultures around science policy. These disputes and tug-of-war, which are often unbalanced in terms of the relative power of each side, usually translate into the accumulation and layering of policies, instruments and objectives.

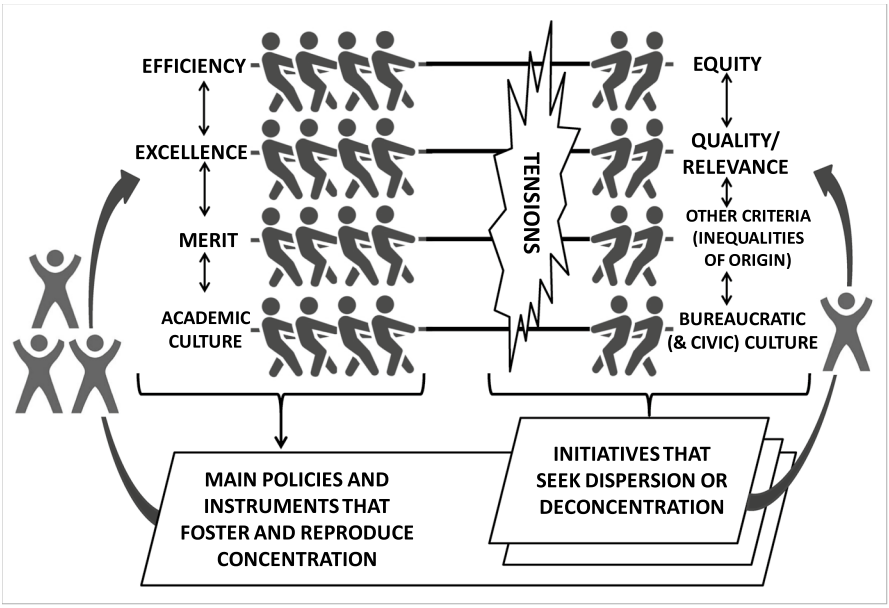

Fig. 1 Tensions in science policy, funding and scientific organizations. *Source* own elaboration

Like any schematic framework, it represents a simplification of a much more complex reality, with shades of grey instead of a black-white dichotomy. In what follows, we will interpret the different positions, actions, policies or instruments as being closer to one side (left or right) of Fig. 1 than the other, but this does not necessarily mean that they are aligned with all the concepts (or values) on that side, and there may even be inconsistencies in some cases. For example, if priority is only given to the settlement of researchers in lagging regions regardless of disciplinary or thematic issues (something that will be mentioned in section "Planning, geographical criteria and strategic topics"), territorial equity could be in tension with socioeconomic relevance. In addition, some administrative or operational decisions may be influenced by disciplinary, bureaucratic or institutional pressures that go beyond the categories of the proposed analytical framework. As Kreimer (2015) notes, the prevalence in Latin America of highly bureaucratized evaluation systems (often with the complicity of scientific elites and some public bureaucracies) tends to sterilize any change in science policies, despite the radical transformations in the paradigms and conceptions of science throughout history.

Based on this framework, in the following sections we delve into the case study of the CONICET and the CIC, its scientific researcher career. After a brief introduction of some historical milestones and relevant aspects of the CONICET, we discuss the tensions around the territorial deconcentration of the CIC in the 2010-2022 period, according to the different concepts, approaches and interests in dispute.

As Britto et al. (2014: 34) point out in their review of the main methodologies for evaluating S&T policies and programs in Latin America, "descriptive case studies

are in-depth investigations of a program or project, facility, technology or phenomenon, describing and explaining how and why the events of interest have occurred, in order to depict the context in which they occurred and to consider what would have happened otherwise".

In addition to reviewing previous studies on the CONICET, publications in specialized media and official documents (national STI plans and different CONICET reports, management memories, minutes and resolutions of the Board of Directors), the distinctive contribution of this paper is the collection, processing and analysis of data at the provincial level. Although some official statistics are available in the 'CONICET in figures' portal ('CONICET *en cifras*', in Spanish), our main sources of information are the resolutions of calls for applications to the CIC and, subsequently, the resolutions of selected candidates and applicants left in the order of merit, which since 2019 detail the specific institution where the candidates would carry out their research activities (this is further explained in the next section). Based on the latter information, we translate the results of the calls to the provincial level and evaluate the degree of territorial (de)concentration.

A Brief Historical Overview of the CIC

In its beginnings in the 1960s, the CIC functioned as a categorization system for researchers, who received a subsidy or grant from CONICET while maintaining their working relationship with other S&T organizations, mainly public universities. However, in 1973, Lanusse's military government approved the CIC statute as a salary structure and, since then, CONICET researchers became full-time personnel "under a civil service regime (...) and have no formal obligation to be involved in teaching or service activities" (Vasen et al. 2023: 251). This was not the original approach of Bernardo Houssay and Rolando García, president and vice-president of the CONICET at its foundation, who nevertheless had deep differences regarding their strategies for the CONICET (Hurtado 2010; Feld 2015).

The 'Houssay group' could be defined as academicist and argued for scholarship and grant schemes in which academic excellence would be the unique awarding criterion, leaving aside any attempt to privilege the development of specific topics or regions. In contrast, the 'García group' sought to encourage different lines of research not yet consolidated in Argentina (such as social sciences) and to achieve a more federal approach connected to social and economic needs of the country (Caldelari et al. 1992; Hurtado and Feld 2008; Hurtado 2010). However, the interests and ideas of Houssay and his group have prevailed at CONICET since then, with academic merit as the main criterion and the financing of projects with free thematic choice (Rip 1994; Velho 2011).

Until 1975, national public universities represented the largest share of scientific resources. During the 1976-1983 period, in parallel to the development of the most violent military dictatorship in Argentina, the CONICET experienced the greatest relative expansion in its history, both in terms of personnel and institutes. In that period, the number of researchers in the CIC increased by 120%, at an average year-on-year growth rate of 12% –much higher than the 8% of the recent period of

accelerated growth (2003-2015)– (Fig. 2). In addition to trying to displace or reduce research activities at universities (which were seen as subversive hotspots), the expansion of the CONICET also pointed to the territorial deconcentration of scientific activity (Bekerman 2009; Hurtado 2010). This was achieved through the creation of Regional Centres for Scientific and Technological Research in 'the interior' of the country (beyond the metropolitan area of Buenos Aires) and by encouraging researchers to settle in these areas with a salary bonus (Bekerman 2010, 2016; Feld 2015; Aguiar et al. 2019).

As can be seen in Fig. 2, together with an unstable macro-economy that went through different crises, the two decades following the return of democracy in 1983 showed a much more limited expansion of the CIC, even with several years of stagnation (without openings of new positions and calls for admission to the career). Precisely, one of the central aspects of science policy since 2003-2004 consisted in the increase and rejuvenation of research personnel, restoring periodic (annual) calls for doctoral scholarships and entry of researchers into the CIC, given that previous years (or decades) of crisis had led to the ageing of human resources (CONICET 2006; Unzué and Emiliozzi 2017; Míguez 2018). Between 2003 and 2010, the CIC grew from 3800 researchers to more than 6300, an increase of 66% (an average year-on-year growth rate of 7.6%). Full-time university positions (a proxy for university researchers) increased by less than half in the same period (31%). Therefore, in this stage of recovery and growth of the S&T system, the CONICET has once again consolidated its position as 'the key' organization (Albornoz and Gordon 2011; Emiliozzi and Unzué 2015; Bekerman 2016; Cruz Castro et al. 2016; Botto and Bentancor 2018; Aliaga 2020).

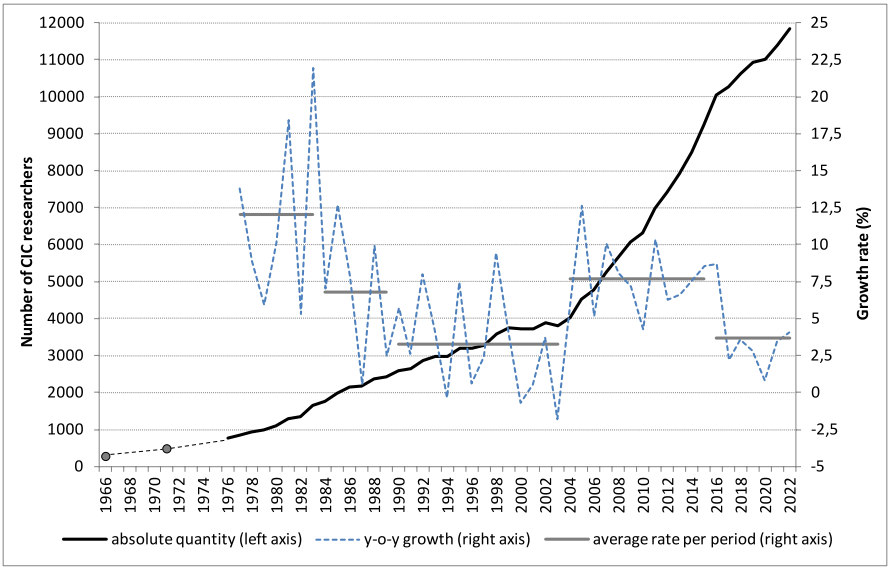

Fig. 2 Researchers in the CIC (1966-2022): absolute number and year-on-year growth rate. *Source* Own elaboration based on CONICET (2006), Bekerman (2016) and data collected from the CONICET

Moreover, the divorce between the growth trends of the CIC and university researchers deepened in the following decade. In the 2010-2021 period, the number of CONICET researchers increased by 80%, while full-time university positions barely grew by 10%. Thus, whereas in 2004 there was one CONICET researcher for every four full-time university professors, this relation was one for every three in 2011 and one for every two in 2021.

These figures also respond to some particularities of the Argentine scientific system. On the one hand, while the (annual) entry of new researchers into the CIC is not subject to the release of positions (due to resignations or retirements of other researchers), this type of substitution has been predominant in the case of full-time university positions, except in those cases in which extraordinary resources were established for the creation of new universities or new strategic degree programs (in pre-existing universities). On the other hand, although CIC researchers may be based in CONICET's own institutes or in other sectoral scientific organizations –mostly INTA (agriculture) and CNEA (atomic energy)–, according to MINCYT data for 2021, 80% of CONICET researchers and scholarship holders carry out their activities in university centres or, increasingly, in institutes with dual dependence between universities and CONICET. This generates a sometimes contradictory and tense but also necessary relationship between both actors, in which universities have become highly dependent on the CONICET to sustain or expand their research activities, as we will see later.

In general terms (although there are many exceptions), while the link with teaching may be lower among CIC members, the commitment to research (with all the challenges of measuring this dimension) tends to be weaker among university professors in Argentina. A Teacher-Researcher Incentive Program, launched in 1993, tried to improve the latter aspect (Vasen et al. 2023), but it has gradually lost economic relevance, evaluation periodicity and effectiveness.[2] Partly because of this and the different university cultures, Míguez (2018: 132) suggests that, for S&T policymakers, it may have been "much easier to expand the number of researchers by incorporating them into CONICET than to develop an effective policy to bring them into the different universities" (Míguez 2018: 142).

If we take into account the absolute and relative growth of the CIC compared to university researchers and the reduction of the university budget for scientific activities (Aristimuño 2023), we find a combination of variables and policies quite similar to the last military government (Míguez 2018; Albornoz 2019). But unlike the military period, during the 2000s, the consideration of geographical vacancy areas was restricted to the granting of some scholarship programs, while admission to the CIC was governed solely by merit and academic excellence, regardless of the geographical destination of the researchers (Sarthou 2019). The fact that the "policy of growth of researchers was not accompanied by a plan that oriented the new positions

[2] Unlike the evaluation and categorization mechanisms that exist in different countries (see Vasen et al. 2023), the CONICET does not play any role in the evaluation of university researchers who do not belong to the CIC. Therefore, different evaluative cultures and research incentive schemes coexist and overlap (not necessarily in a peaceful way) in Argentina (Beigel 2019). D'Onofrio and Rogers (2022) provide a detailed description of the bureaucratic organization, stages, periodicity and characteristics of CONICET's research evaluation system.

towards certain disciplines and regions" and that "new researchers were simply selected on the basis of the number of high-impact papers" (Laborde and Del Bono 2019: 6) ended up exacerbating the pre-existing territorial inequalities, as several authors have documented for the 2003-2010 period (Szpeiner and Jeppesen 2013; Jeppesen et al. 2015; Unzué 2015; Unzué and Emiliozzi 2017).

Tensions Around the Deconcentration of the CIC (2010-2022)

Planning, Geographical Criteria and Strategic Topics

The last national STI plans have systematically emphasized the high concentration of resources and funding in the City and Province of Buenos Aires, together with Córdoba and Santa Fe, and the strong territorial inequalities that this situation generates (SECYT 2006; MINCYT 2011; 2013a; 2022). The 2020 Plan, launched in 2013, stressed that achieving "a more equitable distribution at the territorial level would consequently contribute to support processes of regional socioeconomic convergence that are fundamental for a balanced development" (MINCYT 2013a: 47). In operational terms, the executive document of this plan stated that it would address "the federalization of human resources by prioritizing 25% of CONICET vacancies in those regions of the country with scarce scientific-technological development" (MINCYT 2013b: 13).

Another aspect of the 2020 Plan that also affected the CONICET was the implementation of more selective policies and programs, which implied "the identification of thematic areas of high strategic value as a priority target for STI promotion policies" (MINCYT 2013a: 33). Although the plan acknowledged the achievements of the previous decade in terms of PhD training and incorporation of researchers, it stressed the need to "correct the lack of orientation in the allocation of human resources by strategic areas" (MINCYT 2013a: 28).

In addition to the lack of thematic orientation, the human resources policy in science and technology, channelled mainly through CONICET scholarships and admissions to the CIC, faced several challenges towards the end of the 2000s. From 2010 onwards, a bottleneck began to appear in the CIC (Albornoz and Gordon 2011), since the number of applicants positively evaluated to enter the career (in many cases, PhD graduates from CONICET scholarships) exceeded the available vacancies. On the other hand, as mentioned above, the absence of other criteria beyond academic excellence or merit and the historical concentration of capacities in a few cities of the central part of the country led to a widening of territorial gaps in the 2003-2010 period.

Although some initiatives towards the federalization of the CONICET can be identified since the mid-2000s (Diego et al. 2021), such as scholarships for geographical vacancy areas or the creation of regional centres and institutes (González 2017), the main turning point to a new phase in human resources policy took place in 2010-2011 (Emiliozzi and Unzué 2015; Unzué and Emiliozzi 2017). Since then:

> "the CONICET produced a series of studies that (...) indicate some regions where a deficit of researchers was detected, either in relation to the number of scholarship holders or due to a lack of critical mass. This information led to giving priority to the admission of researchers from certain geographical areas to the detriment of the central ones" (Unzué 2015: 16).

As mentioned by Szpeiner and Jeppesen (2013), who worked in evaluation and planning areas of the CONICET, "an a priori percentage of vacancies was defined to cover priority provinces/locations by disciplines" (Szpeiner and Jeppesen 2013: 10). At the same time, the lagging provinces were considered "top priorities regardless of disciplinary issues", that is, "in provinces such as Chaco or Formosa, the settlement of researchers was considered desirable regardless of their discipline, since it represented a value-added in itself for these provinces" (Szpeiner and Jeppesen 2013: 14).

As can be seen from the last quote, the idea of equity around the federalization initiatives of the CONICET (and more broadly of the MINCYT) mainly means equal opportunities to develop a scientific vocation and career (in general, regardless of the discipline or research topic), whether in a peripheral province or a central one. According to Elisa Colombo, undersecretary of STI Federalization between 2019 and 2022, "it is not about being all equal, but about equal opportunities everywhere, that those of us who do science can live where we were born if we want that" (Grupo La Provincia Web 2021-10-22). Given the concentration of resources and capabilities in the metropolitan and central areas of the country, the Minister of STI between 2021 and 2023, Daniel Filmus, argued that "young people from 'the interior' do not have the possibility of developing in the place where they were born", so "those who want to do research have to go to large urban centres" (La Capital de Mar del Plata Newspaper 2023-03-07). Since "all societies tend to reproduce their inequalities, correcting them implies generating positive discrimination mechanisms" (Argentina.gob.ar Web 2022-06-13), "to give more to those who have less at the starting point" (Argentina.gob.ar Web 2022-09-20).[3] Despite all these good intentions and the incorporation of the aforementioned geographical criteria or positions for lagging regions, different studies that analyzed the results up to 2014 or 2015 agree that the changes in the territorial distribution of CONICET researchers had been uneven or partial (Unzué 2015; Unzué and Emiliozzi 2017), incipient (Gallardo 2015) or modest (Jeppesen et al. 2015).

In addition to the geographical considerations, the annual calls for applications to the CIC showed another novelty since 2013: a set of vacancies assigned to the study of strategic topics. Except for a specific moment at the end of the 1990s when priority areas were incorporated (GACTEC 1999; Del Bello 2007; Niembro et al. 2021), the 'general call' with free choice of the topic of study (or simply 'free topics call') had been the predominant mode of admission to the CIC since its origins. The opening of the 'strategic topics call' and the topics selected were in line with the spirit of

[3] From the inclusion, for the first time, of provincial priorities in the 2030 Plan (MINCYT 2022), we can identify some signs of a 2.0 federalization agenda aimed at the territorial deconcentration of researchers who, at the same time, contribute to solving local problems (for example, in the 2023 call for scholarships on strategic topics). However, this new line remains embryonic.

the 2020 Plan. Over time, and recently with the discussion of the 2030 Plan (MINCYT 2022), the list of priority topics has been renewed. Although the strategic topics call has remained a form of admission to the CIC until today, the proportion of vacancies under this modality has varied over time, showing the fluctuations in the political priority assigned. Sarthou (2019) notes that in the 2013-2016 period (with a peak of over 900 total admissions to the CIC in 2015) only between 9% to 15% of vacancies (depending on the year) were allocated to strategic topics.

Following the change in the national government at the end of 2015, the CIC calls underwent further modifications. The first change, sustained until the end of Macri's presidency in 2019, was a sharp decrease in the number of annual admissions to the CIC to nearly 50% (Beigel et al. 2018), in a general context of budget reduction for the S&T system as a whole (Aristimuño 2023). This situation generated a sustained and acute conflict with the scientific community. The bottleneck in the admission to the CIC was accentuated year after year and many researchers (largely trained based on CONICET scholarships) did not find alternatives to continue in the S&T system, which implied a loss of previous investments by the national government itself.

Another change that also led to tensions and controversies was the increase in the proportion of vacancies assigned to strategic topics in the 2017 call and, as a counterpart, the relative decrease in the vacancies for free topics. Differently from the percentages of previous years (in 3 of the last 4 years the admissions for strategic topics had been around 10%), it was planned to distribute 600 vacancies in equal parts (300 vacancies for each modality). This led to a public controversy between some CONICET directors who defended the changes (Laborde and Del Bono) and the director for the area of social and human sciences (Dora Barrancos) who rejected the proposal. One of the reasons behind this opposition from social sciences (Beigel et al. 2018) was that the new distribution of vacancies among modalities could jeopardize another CONICET policy of the last decade: "to achieve an equal distribution of its resources among the four main disciplinary areas" (Bekerman 2018: 39), perhaps the greatest or principal concern for 'equity' in the CONICET community.[4] According to Laborde and Del Bono (Página 12 Newspaper 2017-03-15), the higher weight of strategic topics sought to generate a reorientation towards priorities defined in the 2020 Plan and, in addition, all disciplinary areas were considered among these topics, including social sciences.

The studies by Fischer et al. (2023) on CIC admissions by strategic topics and by Sarthou (2023) on scholarship allocation show that, as can be expected, the area of agricultural and engineering sciences is the most represented, but social and human sciences are not necessarily in last place. In fact, social sciences outperform biological, health and natural sciences in the distribution of scholarships by strategic topics. Paradoxically for those who advocate for parity among the four main areas, a report by the CONICET (2022b) notes that the strategic topics call was one of the factors

[4] CONICET is organized into four main disciplinary areas: exact and natural sciences, biological and health sciences, agricultural and engineering sciences, and social and human sciences. Each of these four areas has an elected representative on the CONICET Board of Directors. The Board that leads the CONICET is completed by a President and another four Directors (from universities, the industrial sector, the agricultural sector, and provincial S&T authorities).

that allowed the area of agricultural and engineering sciences to reverse its lower relative weight and approach the 25% level. Beyond the above arguments, Sarthou (2023: 12) highlights "the tension that arises when a policy aimed at solving socio-productive problems identified by diverse actors is implemented by an organization that has historically designed policies giving a wide margin of autonomy to the disciplinary communities" (see Fig. 3).

Comings and Goings: The Resistance of Free Topics and the Parity Between Disciplinary Areas

In an interview in mid-2017 (La Gaceta Newspaper 2017-07-09), the President of CONICET at the time, Alejandro Cecatto, announced another change in the CIC:

> "Federalizing the Argentine scientific system is a great need, as a matter of equity (...). Therefore, the CONICET Board of Directors has decided to (...) increase to 30% [previously 25%] the number of researchers with admissions assigned to geographical vacancy areas. This is the highest percentage that the institution has established and we intend to continue moving forward".

In light of the last quote, it is striking that the geographical vacancies for CIC admissions were abandoned the following year (until today), while these criteria have been maintained in the case of scholarships (Diego et al. 2021). According to this official report (by the CONICET), since the 2018 call, the geographical criteria have been supposedly replaced by a new modality of admissions to the

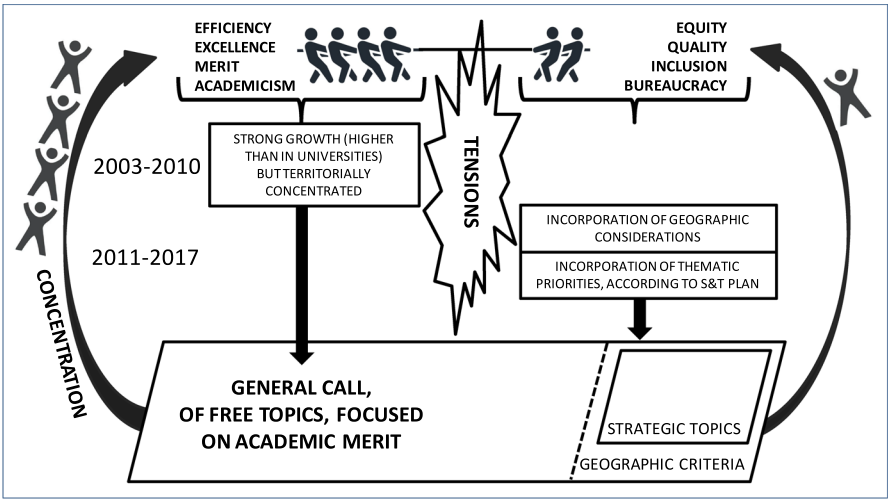

Fig. 3 CONICET and the CIC through the lens of science policy tensions (2003-2017). *Source* own elaboration

CIC, called 'Strengthening R&D', introduced at the request of the National Interuniversity Council (CIN in Spanish). Only to the extent that some of these universities are located in relatively lagging regions, this program contributes partially and indirectly to the goal of federalization. As we will see later, almost half of the admissions for Strengthening R&D are located, on the contrary, in the four central provinces.

With the incorporation of this new modality, which was added to the other two that coexisted since 2013, another novelty occurred in the 2018 and 2019 calls. The 2017 criterion of equal distribution of vacancies between modalities resulted in a three-thirds division (of a total of 450 vacancies), the lowest proportion historically attributed to the free topics category. However, as Table 1 shows, this projection at the opening of the calls was never translated into the admissions finally assigned the following year. Again, the social sciences area raised "the disagreement that the equitable distribution for the four main areas –which had been installed as a guideline in previous years–, now only contemplates a third of new vacancies [i.e. free topics]" (CODESOC 2018: 1), together with different questionings to the strategic topics.

In the 2018 and 2019 calls, the Strengthening program included universities with less than 150 researchers in the CIC, which were assigned, in principle, the possibility of requesting up to five priority profiles for admission. The implementation of the 2018 call had different problems (Laborde and Del Bono 2020; Niembro et al. 2021): (i) the applicants were evaluated by each main disciplinary area; (ii) for each profile, only the applicant with the highest score was selected, regardless of whether other candidates also exceeded the 'minimum merit' threshold; (iii) but if there were no candidates for a profile or they did not have sufficient merit, the position was left vacant. The latter situation was common in the commissions of biological and health sciences and exact and natural sciences, which approved few candidates.[5] As a result, only 88 vacancies were assigned through the Strengthening modality, raising the discontent of the universities. The difference between the 150 projected positions and the 88 admissions was not distributed equally between the other two modalities. It was primarily directed to increase the free topics category, which far from the original one-third exceeded 46% of the admissions in 2019.

Between the launch of the 2019 call and the announcement in 2020 of the candidates selected to enter the CIC, there was a change of authorities (and political orientation) at the national and CONICET levels. On this basis, the new

[5] The three points were revised in the following calls for applications. On the one hand, in some cases, two or more researchers were admitted for the same profile, "in order to complete the quota [five per institution] established in the Terms of the Call" (CONICET 2020-02-18: 10). On the other hand, a specific evaluation commission for the Strengthening program was created (Laborde and Del Bono 2020), as previously occurred with strategic topics calls (Fischer et al. 2023; Sarthou 2023). Creating specific evaluation commissions for new modalities responded to the need for an interdisciplinary evaluation of the projects and to adjust some evaluation criteria traditionally used by disciplinary commissions in free topics calls. Bearing in mind that the areas of biological and health sciences and exact and natural sciences have historically been the most influential in CONICET and the ones that best represent its academic culture of world-class science, we may not be surprised by the lower approval of candidates for the Strengthening program, in universities and S&T institutions of lower relative development.

Table 1 Calls and admissions (2018-2022): projected versus executed. *Source* Own elaboration based on information from CONICET

	Projected in 2018 and 2019 calls				Executed in 2019 admissions				Executed in 2020 admissions			
	Free Topic	Strat. Topic	Strengthen	Total	Free Topic	Strat. Topic	Strengthen	Total	Free Topic	Strat. Topic	Strengthen	Total
Absolute number	150	150	150	450	208	153	88	449	429	172	159	760
% of total	33.3	33.3	33.3	100	46.3	34.1	19.6	100	56.4	22.6	20.9	100
% change adm-call call-call					38.7	2	− 41.3	0	186	14.7	6	68.9

	Projected in 2020 call					Executed in 2021 admissions				
	Free Topic	Strat. Topic	Strengthen	Special	Total	Free Topic	Strat. Topic	Strengthen	Special	Total
Absolute number	400	100	180	120	800	434	106	188	92	820
% of total	50	12.5	22.5	15	100	52.9	12.9	22.9	11.2	100
% change adm-call call-call	166.7	− 33.3	20	+	77.8	8.5	6.0	4.4	− 23.3	2.5

	Projected in 2021 call					Executed in 2022 admissions				
	Free Topic	Strat. Topic	Strengthen	Special*	Total*	Free Topic	Strat. Topic	Strengthen	Special*	Total*
Absolute number	400	100	180	86 +?	766	446	116	134	63+15	774
% of total	52.2	13.1	23.5	11.2	100	57.6	15	17.3	10.1	100
% change adm-call call-call	0	0	0	–	–	11.5	16	− 25.6	− 26.7	–

*When the 2021 call was opened, only the vacancies for special projects were reported, but not the projected number of researchers repatriated from abroad, so the total could not be accurately anticipated

management decided to increase the number of vacancies from the 450 previously projected to the 760 finally assigned. In this call, as Laborde and Del Bono (2020) point out, a specific evaluation commission was created for the Strengthening modality and more than 150 admissions were granted (Table 1). However, once again, the biological, health and natural sciences had fewer approved candidates than the agricultural, engineering and social sciences. The response was similar to that of the previous year. To compensate or balance these areas, the additional vacancies (between 450 and 760) were not equally distributed among the three modalities but were mainly assigned to free topics, which accounted for more than 56% of admissions (compared to 23% and 21% for strategic topics and Strengthening, respectively). These decisions were taken in a climate of tension within the Board of Directors. Although there were other alternatives and proposals (such as allocating more vacancies to strategic topics), the majority decided to give priority to free topics over the strategic ones or the Strengthening program, and even "refused to listen to the Regional Advisory Council and to discuss with the provincial representatives the modality of the 2020 call" (Laborde and Del Bono 2020: 2).

Precisely, the following calls in 2020 and 2021 once again consolidated the general modality with free topics as the principal form of entry to the CIC, to some extent 'whitening' or specifying the percentages executed in the 2020 admissions and abandoning the idea of distribution by thirds. Half of the vacancies would be for free topics and the remaining half would be distributed among different 'oriented modalities'. Among the latter, the vacancies for strategic topics were reduced to only 100 positions in the 2020 and 2021 calls (returning to a percentage similar to that of the 2013-2016 period), while 180 vacancies were stipulated for Strengthening: 160 for public universities (20%) and 20 (2.5%) for other underdeveloped S&T organizations. Two of the CONICET directors at the time wrote a very critical document about these decisions, arguing that:

> "the increase in the number of admissions is not precisely to favor federalism but to favor the groups concentrated in the main cities and universities of the country. (...) Increasing the admissions for Free Topics implies accepting the full validity of the Linear Model, a matter that is no longer accepted in any part of the world. It also means accepting that if we leave everything to the demand of the new members (who are then called *the community*), an invisible hand will ensure that these researchers will necessarily address the most pressing needs of society" (Laborde and Del Bono 2020: 4).

Another controversial change in the 2020 and 2021 calls affected the selection criteria for the universities participating in the Strengthening program. Once again, the parity between disciplinary areas appeared as the main concern for 'equity' in the CONICET community (Fig. 4). Given that the admissions in the last two years had been higher in agricultural, engineering and social sciences –something understandable considering the needs of institutions located in lagging regions in socioeconomic terms (Niembro and Starobinsky 2021)–, the search for a balanced distribution among the four main areas of knowledge was imposed. The previous criterion

of having less than 150 researchers in the CIC, in total and in any area, was replaced by another that considered the situation of each area of knowledge in each institution (having less than 40 or 50 CIC members, depending on the disciplines). As a result, the number of participating universities increased and the competition for a relatively stable number of vacancies became more intense.

This change is questionable because of the lack of an interdisciplinary vision and the interference in university decisions regarding the strategic areas to be strengthened (Laborde and Del Bono 2020; Niembro et al. 2021). On the other hand, this criterion imposed on the smaller universities participating in the Strengthening program has no relation with what happens in the other modalities with the bigger or central universities. This particular condition for Strengthening is not established for the admission of new researchers in each university by the general modality of free topics, which allows the reproduction of unbalanced structures. An irrefutable example, within the University of Buenos Aires, occurs with the Faculty (and area) of Exact and Natural Sciences, which concentrates most of the admissions by free topics in that university (Niembro et al. 2021).

Layers and More Layers, Meritocracy and Its Results

As the reader may have appreciated in Table 1, a new column appears since the 2020 call and is added to the three modalities in place since 2018. More than a clear and concrete modality, it is a diverse set of 'Special Projects and Permanent Call from Abroad', for which 120 vacancies were projected in the 2020 call (more than the 100 for strategic topics). However, the admissions in the following two years were always lower than previous projections. The definition of what is meant by special projects is rather vague, since they are intended to "address thematic, disciplinary

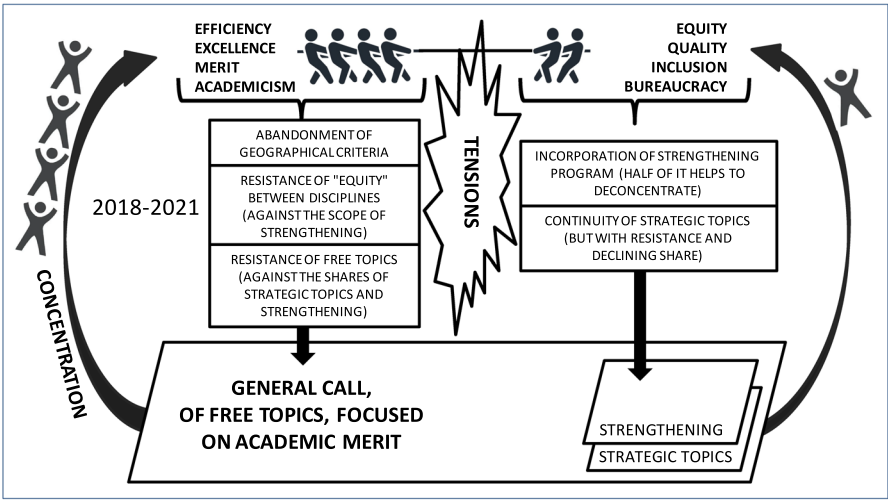

Fig. 4 CONICET and the CIC through the lens of science policy tensions (2018-2021). *Source* own elaboration

and/or geographical gaps, as well as projects and profiles that are considered strategic" (CONICET 2020-03-03: 20). In practice, in addition to the repatriation of researchers (30 candidates were selected in 2021 and 15 in 2022), four special projects were opened in the 2020 call. Only one was destined for a lagging province (Entre Ríos), while the other three were disciplinary or thematic projects (veterinary network, social research on China, and marine sciences). The 2021 call included one disciplinary project (geology, 12 positions), one thematic project (forestry, 24 vacancies) and four provincial projects (50 positions in total): Catamarca (12), Chaco (14), La Pampa (12) and San Juan (12). The results the following year showed some degree of failure in these special calls with provinces, since only 33 candidates were selected (only 1 in La Pampa and 7 in San Juan). As always, the planned but not executed vacancies in special projects in 2021 and 2022 and in the Strengthening program in 2022 (134 admissions instead of 180, similar to the situation in 2019) were mainly directed at increasing the admissions in the general modality of free topics.[6]

The poorer results achieved in the special projects with provinces deserve particular consideration, since for CONICET officials in those years it was one of the main instruments, if not the main one, to promote deconcentration. The President of CONICET at the time, Ana Franchi, highlighted in 2021 that "in order to begin to reduce the asymmetries in our country it is necessary to begin to have specific admissions by province" (CONICET Web, 2021-11-01). We do not underestimate the fact that the results in some provinces may be significant. For example, among the five provinces mentioned in the previous paragraph, Catamarca is the one with the lowest amount of CONICET researchers, to the point that the selection of 9 candidates in 2022 (not the 12 projected) implies an increase of 36% with respect to the number of researchers at the end of 2021. However, the quantitative impact on the aggregate is very limited, given that the 2021 call planned (and did not even reach) 50 admissions for special projects in only four of the 24 Argentine provinces, out of a total of 800 vacancies, that is, only 6% of total positions. It seems improbable that these projects would be enough to reduce territorial inequalities in Argentina, even more so if a large part of the remaining 94% of CIC admissions tends to reproduce and not to counteract concentration (Fig. 5), as we will see below.

As can be seen in Fig. 6, the degree of territorial deconcentration of the CIC between 2010 and 2022 has been very limited. In 2010, the City and the Province of Buenos Aires accounted for more than 60% of CONICET researchers and, if we add Cordoba and Santa Fe, these four jurisdictions surpassed 80%. The three provinces

[6] As mentioned, the lower number of admissions in different years in the Strengthening program or the special projects is partly explained by the fact that the evaluation commissions of some disciplines applied strict criteria (typical of other calls) to candidates in adverse conditions. This even led to the creation of specific commissions for new modalities. However, there are also other (interrelated) reasons why many profiles did not have candidates (CONICET 2022a; 2024): lack of official documentation and weaknesses in the definition of the objectives and modes of implementation of these new programs; lack of prior diagnosis on the viability and interest of potential candidates to develop certain lines of research according to the region; lack of incentives, support and opportunities in certain regions (for example, due to infrastructure, equipment or funding problems); uprooting and other professional and family difficulties to relocate researchers from other regions of the country; a general reduction in the number of candidates since the 2021 call, when only one application must be chosen (previously, it was possible to apply to the Strengthening program and also to free or strategic topics).

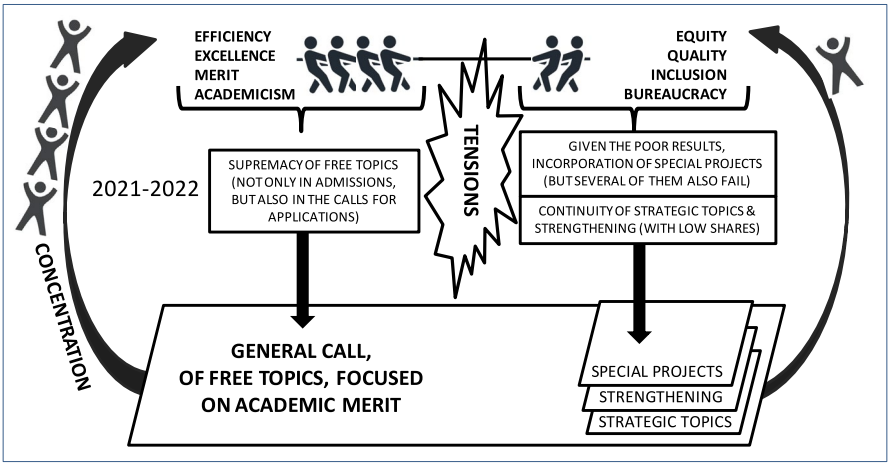

Fig. 5 CONICET and the CIC through the lens of science policy tensions (2021-2022). *Source* own elaboration

that follow in relative importance, Río Negro, Mendoza and Tucumán, represented approximately another 10%, so only 8.4% was distributed among the remaining 17 provinces. Twelve years later, these 17 jurisdictions increased their relative share by only four percentage points.[7] In Fig. 6, this is reflected in a similar fall in the City and the Province of Buenos Aires. However, the City of Buenos Aires had a drop of more than six percentage points between 2010 and 2022, while the province increased its share by almost two points.

If we focus on CIC admissions in the last three years (2020-2022), the top seven jurisdictions accounted for 80%, while the remaining 20% was distributed among the other 17 provinces. This slight deconcentration of admissions in recent calls is mainly explained by the Strengthening program and, to a lesser extent, by the special projects (Table 2). In contrary, the distribution of the modalities of free and strategic topics (governed merely by academic merit since the elimination of geographical criteria) tended to reproduce or even exacerbate the territorial concentration, given that the top seven provinces exceeded 90% of admissions. The problem is that the weight of the last two modalities (especially of free topics) has been predominant in recent years, with more than 72% of total admissions (Table 2).

Between 2020 and 2022, Strengthening and special projects explained all new CIC admissions in three provinces, they accounted for more than 85% in four jurisdictions, and in another four they explained more than two-thirds of admissions (last column of Table 2). The positive results shown in Fig. 6 for the northeast region of the country are a combination of a significant number of admissions by

[7] The importance of territorial inequalities in Argentina becomes even more evident if we keep in mind that the four central jurisdictions, which account for more than 80% of public resources in S&T, explain around 60% of the country's population and approximately 70% of its gross domestic product (GDP). At the other extreme, the 17 lagging provinces, which only represent about 10% of S&T investment, account for 30% of national population and 20% of GDP (Abeles and Villafañe 2022).

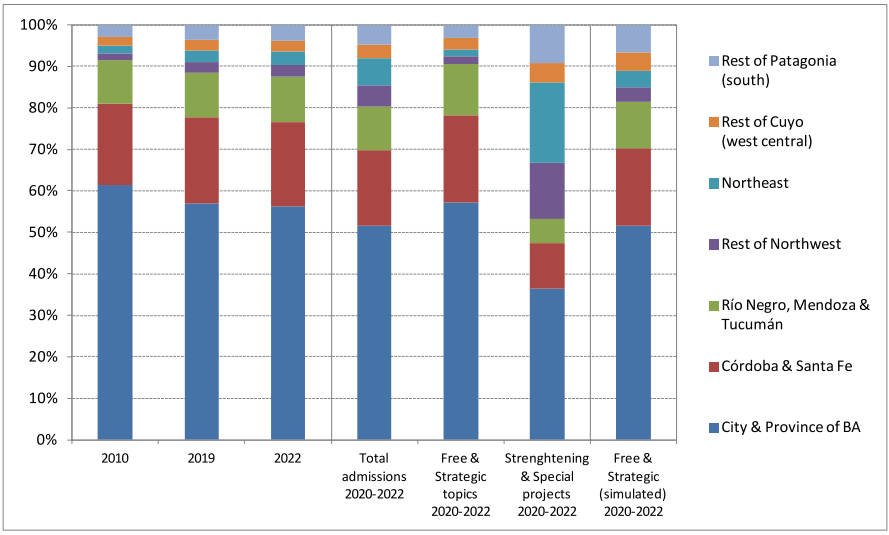

Fig. 6 Share of CIC members (2010, 2019, 2022) and admissions in 2020-2022, by selected provinces and regions. *Source* Own elaboration based on information from CONICET. Notes: Rest of Patagonia includes the provinces of Chubut, Neuquén, Santa Cruz and Tierra del Fuego; Rest of Cuyo, San Juan and San Luis; Northeast, Chaco, Corrientes, Entre Ríos, Formosa and Misiones; Rest of Nortwest, Catamarca, Jujuy, La Rioja, Salta and Santiago del Estero. (Color figure online)

Strengthening (Misiones and Corrientes) and also by provincial projects (Entre Ríos and Chaco).

The last column in Fig. 6 simulates and illustrates how the reinstatement of a type of geographical criterion in the modalities of free and strategic topics could increase the participation of the 17 lagging provinces from the current 10% to almost 20%. Based on the available data, we propose 'a type' of criterion that is quite aggregated and generic, since we take the provinces as the unit of intervention without considering the discipline of the candidates. In fact, the previous geographical vacancy areas combined both dimensions and sometimes distinguished between cities within the same province. With these caveats in mind, the proposal is simple:

(1) We roughly consider the 17 provinces with the lowest number of CONICET researchers (from Chubut to Santa Cruz in Table 3) as priority areas.

(2) Between 2020 and 2022, there were 156 candidates from these provinces in the order of merit (applicants who exceeded the minimum score but did not reach the first selected positions).

(3) If the geographical criteria had not been eliminated, it is likely that many of (or all) these candidates would have entered the CIC, since the sum of 161 effective admissions plus 156 in the order of merit, divided by 1703 total admissions, gives 19% (less than the minimum of 25% or 30% for vacancy areas).

(4) Therefore, we simulate the admission of these 156 candidates and, as a counterpart, the seven leading provinces give up about 10% of their positions in these years (so as to maintain the same total).

Table 2 Admissions in 2020-2022 by modality and province. *Source* Own elaboration based on information from CONICET

	Free Topic	Strat. Topic	Stren-ghten	Spec. (2021-2022)	Total	Total (%)	Free+ Strat /Total (%)	Streng +Spec /Total (%)
Province of BA	407	134	145	31	717	30.5	75.5	24.5
City of BA	361	74	32	29	496	21.1	87.7	12.3
Córdoba	143	45	42	8	238	10.1	79.0	21.0
Santa Fe	122	47	17	5	191	8.1	88.5	11.5
Río Negro	61	16	15	6	98	4.2	78.6	21.4
Mendoza	65	12	3	9	89	3.8	86.5	13.5
Tucumán	39	16	5	0	60	2.5	91.7	8.3
Chubut	21	7	12	14	54	2.3	51.9	48.1
Entre Ríos	2	4	21	13	40	1.7	15.0	85.0
San Juan	16	12	15	8	51	2.2	54.9	45.1
Salta	12	10	16	4	42	1.8	52.4	47.6
Misiones	7	6	25	4	42	1.8	31.0	69.0
Chaco	2	0	12	16	30	1.3	6.7	93.3
Corrientes	8	0	24	3	35	1.5	22.9	77.1
Jujuy	3	5	15	3	26	1.1	30.8	69.2
San Luis	15	3	8	0	26	1.1	69.2	30.8
Catamarca	0	0	13	9	22	0.9	0	100
Neuquén	10	3	7	0	20	0.8	65.0	35.0
T. del Fuego	7	0	10	4	21	0.9	33.3	66.7
Sgo. del Estero	1	0	14	3	18	0.8	5.6	94.4
La Pampa	6	0	9	1	16	0.7	37.5	62.5
La Rioja	1	0	11	0	12	0.5	8.3	91.7
Formosa	0	0	7	0	7	0.3	0	100
Santa Cruz	0	0	3	0	3	0.1	0	100
Total Country	**1309**	**394**	**481**	**170**	**2354**	**100**	**72.3**	**27.7**

The color scale ranges from the highest values (in dark green) to the lowest (in dark red), going through intermediate values (in yellow)

The last column of Table 3 illustrates, with this simple and thus improvable exercise, the myopia of abandoning the geographical criteria. The 'cost' of the 10% in the seven most developed jurisdictions seems very small and more than compensated by growth rates of the admissions in the other 17 provinces that exceed 75%, 100% or 300%, depending on the case.

On the other hand, the first columns of Table 3 also show the consequences of the primacy of academic merit and the elimination of geographical criteria. Eleven of the 17 relatively lagging provinces have a higher percentage of candidates in the order of merit than among the researchers selected to enter the CIC. Moreover, in seven of these provinces, the absolute number of candidates in the order of merit exceeds the number of those who are admitted.

Table 3 Admissions and candidates in the order of merit in the modalities of free and strategic topics (2020-2022), by province. *Source* Own elaboration based on information from CONICET

	Admissions	Order of merit	Admissions (%)	Order of merit (%)	Ratio %Adm /%Merit	Simulated admissions (geographic criteria)	% change (simulated vs real)
Province of BA	541	420	31.8	31.7	1.00	486	-10
City of BA	435	356	25.5	26.9	0.95	391	-10
Córdoba	188	148	11.0	11.2	0.99	169	-10
Santa Fe	169	100	9.9	7.6	1.31	152	-10
Mendoza	77	65	4.5	4.9	0.92	69	-10
Río Negro	77	23	4.5	1.7	2.60	69	-10
Tucumán	55	56	3.2	4.2	0.76	50	-9
Chubut	28	34	1.6	2.6	0.64	62	121
San Juan	28	14	1.6	1.1	1.55	42	50
Salta	22	18	1.3	1.4	0.95	40	82
San Luis	18	16	1.1	1.2	0.87	34	89
Misiones	13	16	0.8	1.2	0.63	29	123
Neuquén	13	12	0.8	0.9	0.84	25	92
Corrientes	8	6	0.5	0.5	1.04	14	75
Jujuy	8	6	0.5	0.5	1.04	14	75
T. del Fuego	7	11	0.4	0.8	0.49	18	157
Entre Ríos	6	7	0.4	0.5	0.67	13	117
La Pampa	6	1	0.4	0.1	4.66	7	17
Chaco	2	7	0.1	0.5	0.22	9	350
Sgo. del Estero	1	4	0.1	0.3	0.19	5	400
La Rioja	1	0	0.1	0	-	1	0
Catamarca	0	2	0	0.2	0	2	∞
Formosa	0	2	0	0.2	0	2	∞
Santa Cruz	0	0	0	0	-	0	-
Total Country	**1703**	**1324**	**100**	**100**	**1**	**1703**	**0**

The color scale ranges from the highest values (in dark green) to the lowest (in dark red), going through intermediate values (in yellow)

After the government change at the end of 2019, the CONICET (2020-02-18: 10) noted that "it was not possible to apply a criterion of distribution by geographical vacancy [in the admissions in 2020], since that criterion was not established in the terms and conditions of the call". However, the truth is that the Board did not decide to reincorporate this criterion in the following calls. The consequences are plain to see.

The tensions and contradictions on this topic within the CONICET have been evident. A recent report by the CONICET (2022a: 65) acknowledges the "difficulties that human resources from urban areas with lower S&T concentration have to compete in general calls [of free topics], where they have fewer chances of access". Laborde and Del Bono (2020: 3) reveal that "it has been said in this Board [of

CONICET] that it does not make sense to send a single researcher to areas where there is practically nothing". The idea of the desert or moor over which isolated CONICET researchers are dispersed or spread –if we take the term used by Albornoz (2019)– has the bias of those who look at the complex and diverse reality of the country from the large metropolitan areas. By their very definition, the S&T systems in peripheral or lagging provinces are underdeveloped and crossed by multiple problems (Niembro and Starobinsky 2021), but they are far from being a tabula rasa. In particular, although CONICET researchers are not usually abundant in these peripheral systems, as a counterpart, there is a greater weight of university researchers (Niembro and Starobinsky 2021; Abeles and Villafañe 2022). Those who enter the CIC in lagging or peripheral areas generally have their place of work in university institutes, which is seen in the Strengthening program (Niembro et al. 2021). In this sense, the idea of the moor seems to be an excuse so that nothing changes and the resources keep concentrating in central regions.

Discussion and Final Remarks

Integrating different but related approaches and concepts, this article proposed an 'analytical framework of tensions' to study and understand the evolution of scientific policies, instruments or organizations. Although we apply this perspective to analyze a particular research council (the CONICET in Argentina) and one of the main instruments of human resources policy (both for the CONICET and the Argentine S&T system as a whole, such as the CIC), we hope that this framework can be adapted and used in future studies.

Using this framework, the complex and fluctuating trajectories of the CONICET and the CIC –which reflect the changes in cultures, rationales and objectives of science policy in Argentina– were schematically summarized and illustrated along three different figures. This holistic perspective shows some contexts of tensions in which opposing positions and contradictory decisions coexist in the same period, such as the marches and countermarches of the last five years. Instead, other tensions are expressed in fluctuations or pendulum swings over time: the high-growth and *laissez-faire* era of 2003-2010 versus the thematic and geographical priorities of 2011-2017 (albeit with strong resistance from the academic culture), and then the recovery of the free topics call and the abandonment of geographical criteria.

As highlighted, these marches and countermarches reflect multiple concepts and objectives in tension: between free and strategic topics, between merit based on excellence and the consideration of inequalities of origin with geographical criteria, between 'disciplinary equity' but territorially concentrated and the search for territorial equity (also considering disciplinary vacancies and interdisciplinarity). In this context, some steps towards the territorial deconcentration of the CIC faced several resistances and were gradually abandoned, such as the geographical criteria or the higher relative weights of the oriented or targeted calls.

From the beginning, the CONICET was built under a strong academic culture, taking autonomy and excellence as cornerstones. These ideals became part its DNA and were historically reflected in one of its main instruments, if not the main one:

the CIC with its general call of free topics, governed merely by academic merit. As for research groups and regions, this situation led to circular processes of concentration of resources and funding.

In the last decade (although with some previous small antecedents), the initiatives that prioritized territorial equity and deconcentration, the relevance of certain strategic topics (according to STI plans) or the development of universities and other S&T organizations have resulted in a set of additional calls or layers. These new layers have had a fluctuating weight and importance, depending on the moment, but in fact they have always been below the general call of free topics. This is in part a reflection of a conceptual approach that is much less consolidated, uniform or stable, and thus less powerful in countering the interests of the prevailing academic culture (recalling the original tensions between the Houssay and García groups).

The CONICET and, in particular, the CIC are clear examples of an organization and an instrument with "conflicting rationales, conflicting goals and conflicting approaches to implementation" (Flanagan et al. 2011: 710). In its current configuration, the CIC represents an incoherent set of layers, rationales, objectives and impacts, which counteract each other and tend more to perpetuate than to diminish territorial inequalities or, more precisely, to reduce them at an extremely slow and insufficient speed given the magnitude of these gaps.

As noted by Lepori et al. (2023: 7), "to prevent uneven funding allocations across institutions and regions, the stratification in research systems would need to be taken into account when designing research funding policies", something that connects with the idea of Rubiera Morollón and Fernández García (2023: 26) of introducing "corrective spatial factors in the calls for applications so that research centres located in less developed regions would have advantages". Some Argentine authors also pointed out that "a priority on disadvantaged areas is imperative in the competition for tenure at CONICET" (Beigel et al. 2018: 328).

These mentions could be translated into the restoration of the geographical criteria, a renewed increase in vacancies for the calls that foster territorial deconcentration (such as Strengthening or provincial projects) and a focus on strategic topics for each territory. However, this article shows that there is a significant degree of resistance of the academic culture, free topics and meritocracy, and that, by pursuing these interests, the territorial concentration of the CIC is usually reinforced. As shown by Chiarini et al. (2014: 625) in the case of Brazil, but which we could equally apply in Argentina, "even with federal policies aimed at the expansion and decentralization of the production of new scientific knowledge, this production is still strongly anchored in the *scientific quartet*".[8] Therefore, as Cruz-Castro et al. (2023: 294) note, "a main policy implication is that a variety of funding agencies may be better equipped to address some of the pending challenges". In other words, the diversification of instruments and institutional settings can be a strategy for separating some contradictory rationales and objectives of science policy (Lepori et al. 2023; Reale et al. 2023).

[8] The 'scientific quartet' brings together Sao Paulo, Rio de Janeiro, Minas Gerais and Rio Grande do Sul in Brasil, which is analogous to the City and Province of Buenos Aires, Córdoba and Santa Fe in Argentina.

Given the poor results obtained, a projection that does not seem very promising either and the frequent resistances within the CONICET, it is worth asking whether public universities, with their strong territorial presence throughout the country, could not be an alternative to lead the spatial deconcentration of S&T personnel, increasing full-time professors-researchers in strategic topics for their areas of influence (Niembro et al. 2021). In any case, this is not a simplistic solution, but faces different challenges (Míguez 2018), such as strengthening university research with a periodic and more rigorous evaluation system. Once the CONICET has been relieved of pursuing 'oriented' objectives (and calls) that collide with autonomy and academic culture, it could continue managing some vacancies for the general call with the goal of excellence and free thematic choice. Another possibility to be explored, but one that may imply important tensions and institutional transformations, is the generation of a transition process that gradually returns the CIC to its origins (before the 1973 statute), that of being a grant scheme supporting university research and teaching.

Unfortunately, the far-right national government that assumed at the end of 2023 seems to be far from worrying about the progress of the CONICET and the Argentine scientific and university system, and much less about (territorial) inequalities of origin. Nowadays, it has started a series of unprecedented cutbacks in the S&T system in general and in the CONICET in particular, which leads us to think that, in the coming years, the territorial concentration will worsen strongly. In any case, hoping that this dark period of scientific dismantling may last as little time as possible, it would be interesting that a new recovery period does not repeat the 'same mistakes' of the past and that some of the recommendations mentioned above may be considered.

In the future, it would be interesting to deepen on the performance of CONICET researchers admitted in lagging provinces and institutions from the different modalities (geographical criteria, strengthening and special projects), as well as to explore (with testimonial sources) the internal tensions in and between the Board of Directors, the different evaluation commissions and the management areas of the CONICET.

Acknowledgments This work was supported by the Agencia Nacional de Promoción de la Investigación, el Desarrollo Tecnológico y la Innovación, Argentina [PICT-2019-1162] and the Universidad Nacional de Río Negro, Argentina [PI-2020-40-B-888 and PI-2022-40-B-1050]. We are grateful to three anonymous reviewers for their valuable comments and suggestions. The usual disclaimers apply.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

References

Aagaard, Kaare. 2017. The evolution of a national research funding system: Transformative change through layering and displacement. *Minerva* 55: 1–19.

Aagaard, Kaare, Alexander Kladakis, and Mathias Nielsen. 2020. Concentration or dispersal of research funding? *Quantitative Science Studies* 1(1): 117–149.

Abeles, Martín, and Soledad Villafañe, eds. 2022. *El sistema de ciencia, tecnología e innovación argentino en clave federal*. Santiago, Chile: ECLAC.

Aguiar, Diego, Francisco Aristimuño, Fabiana Bekerman, and Nicolás Magrini. 2019. La influencia del Banco Interamericano de Desarrollo en la política de ciencia y tecnología de Argentina: Una mirada de largo alcance (1979–1999). *REDES* 25(49): 15–46.

Aguiar, Diego, and Francisco Aristimuño. 2018. Políticas e instituciones de ciencia y tecnología en la Argentina de los noventa. Un abordaje desde las culturas políticas y las redes de asuntos internacionales. In *Políticas de ciencia, tecnología e innovación en la Argentina de la posdictadura*, eds. Diego Aguiar, Manuel Lugones, Juan Martín Quiroga, and Francisco Aristimuño. Viedma, Argentina: Editorial UNRN.

Alasino, Carlos. 2020. CONICET: Una mirada al pasado reciente. *Revista Ciencia e Investigación* 70(1): 12–31.

Albornoz, Mario, and Ariel Gordon. 2011. La política de ciencia y tecnología en Argentina desde la recuperación de la democracia (1983-2009). In *Trayectorias de las políticas científicas y universitarias de Argentina y España*, eds. Mario Albornoz, and Jesús Sebastián. Madrid: CSIC.

Albornoz, Mario. 2019. *Viejas estructuras y nuevos desafíos*. Buenos Aires: Asociación Argentina para el Progreso de las Ciencias.

Aliaga, Jorge. 2020. Características del sector de ciencia en Argentina. *Revista Ciencia e Investigación* 70(2): 6–33.

Argentina.gob.ar Web. 2022-06-13. Se realizó la segunda Asamblea General del año del Consejo Federal de Ciencia y Tecnología. Available at: www.argentina.gob.ar/noticias/se-realizo-la-segunda-asamblea-general-del-ano-del-consejo-federal-de-ciencia-y-tecnologia

Argentina.gob.ar Web. 2022-09-20. Filmus anunció la licitación pública de siete institutos de investigación ubicados en siete provincias. Available at: www.argentina.gob.ar/noticias/filmus-anuncio-la-licitacion-publica-de-siete-institutos-de-investigacion-ubicados-en-siete

Aristimuño, Francisco. 2023. Financiamiento público de la ciencia y la tecnología: Un estudio de la evolución del presupuesto público argentino de función ciencia y técnica (1983–2022). *CTS - Revista Iberoamericana De Ciencia, Tecnología y Sociedad* 18(54): 225–257.

Beigel, Fernanda, Osvaldo Gallardo, and Fabiana Bekerman. 2018. Institutional expansion and scientific development in the periphery. The structural heterogeneity of Argentina's academic field (1983–2015). *Minerva* 56: 305–331.

Beigel, Fernanda. 2019. ¿PROINCE versus CONICET? Guerra fría, convivencia pacífica y doble-agentes. In *Culturas evaluativas: Impactos y dilemas del Programa de Incentivos a Docentes-Investigadores en Argentina (1993-2018)*, eds. Fernanda Beigel, and Fabiana Bekerman. Buenos Aires: CLACSO.

Bekerman, Fabiana. 2009. El campo científico argentino en los años de plomo: Desplazamientos y orientación de los recursos. *Sociohistórica* 26: 151–166.

Bekerman, Fabiana. 2010. Modernización conservadora: la investigación científica durante el último gobierno militar. In *Autonomía y dependencia de las ciencias sociales: Chile y Argentina (1957-1980)*, ed. Fernanda Beigel. Buenos Aires: Biblos.

Bekerman, Fabiana. 2013. The scientific field during Argentina's latest military dictatorship (1976–1983): Contraction of public universities and expansion of the National Council for Scientific and Technological Research (CONICET). *Minerva* 51: 253–326.

Bekerman, Fabiana. 2016. El desarrollo de la investigación científica en Argentina desde 1950: entre las universidades nacionales y Consejo Nacional de Investigaciones Científicas y Técnicas. *Revista Iberoamericana De Educación Superior* 7(18): 3–23.

Bekerman, Fabiana. 2018. Morfología del espacio científico-universitario argentino: una visión de largo plazo (1983–2014). *Ciencia, Docencia y Tecnología* 56: 18–46.

Bol, Thijs, Mathijs De Vaan, and Arnout van de Rijt. 2018. The Matthew effect in science funding. *Proceedings of the National Academy of Sciences* 115(19): 4887–4890.

Botto, Mercedes, and Leticia Bentancor. 2018. Luces y sombras de la política de innovación científica y tecnología durante las gestiones kirchneristas (2003–2015). *Revista Estado y Políticas Públicas* 10: 149–168.

Braun, Dietmar. 2003. Lasting tensions in research policy-making a delegation problem. *Science and Public Policy* 30(5): 309–321.

Britto, Fabián, Mariano Pereira, and Gustavo Baruj. 2014 *Evaluación de programas públicos: Principales metodologías y experiencias de evaluación de programas de apoyo a la CTI en América Latina*. Buenos Aires: Centro Interdisciplinario de Estudios en Ciencia, Tecnología e Innovación (CIECTI).

Bush, Vannevar. 1945. *Science, the Endless Frontier.* A Report to the President by Vannevar Bush, Director of the Office of Scientific Research and Development. Washington DC: United States Government Printing Office.

Caldelari, María, Mónica Casalet, and Enrique Oteiza. 1992. Instituciones de promoción y gobierno de las actividades de investigación. In *La política de investigación científica y tecnológica argentina*, ed. Enrique Oteiza. Buenos Aires: Centro Editor de América Latina.

Cao, Horacio. 2021. La meritocracia que necesitamos. In *Mérito y empleo público: retos y desafíos de la administración pública contemporánea*, eds. Aura Herrera Rojas, and Andrés Rodríguez Villabona. Bogotá: Universidad Nacional de Colombia.

Capano, Giliberto, and Andrea Pritoni. 2019. Varieties of hybrid systemic governance in European higher education. *Higher Education Quarterly* 73(1): 10–28.

Cruz-Castro, Laura, and Luis Sanz-Medéndez. 2018. Autonomy and authority in public research organisations: structure and funding factors. *Minerva* 56: 135–160.

Chiarini, Tulio, Vanessa Parreiras Oliveira, and Fabio Chaves do Couto e Silva Neto. 2014. Spatial distribution of scientific activities: An exploratory analysis of Brazil, 2000–10. *Science and Public Policy* 41(5): 625–640.

CODESOC. 2018. *Comunicado situación CONICET*. Rosario: Consejo de Facultades de Ciencias Sociales y Humanas de la República Argentina (CODESOC). Available at: http://filo.unt.edu.ar/wp-content/uploads/2018/05/comunicado_CODESOC_sobre_CONICET.pdf

Comisión CTI. 2020-10-01. Versión taquigráfica de la reunión del día 01/10/2020 de la Comisión de Ciencia, Tecnología e Innovación, de la Cámara de Diputados de la Nación. Available at: https://hcdn.gob.ar/comisiones/permanentes/ccytecnologia/reuniones/vt/vtcom.html?id=7610

CONICET. 2006. *Consejo Nacional de Investigaciones Científicas y Técnicas – 50 años*. Buenos Aires: Edición Nacional Editora & Impresora.

CONICET. 2022a. *Evaluación Programática de los Centros de Investigaciones y Transferencia (CIT)*. Buenos Aires: CONICET.

CONICET. 2022b. *Evolución de la dotación entre 1985 y 2020*. Cuaderno de Trabajo N° 1, Proyecto Estudios de Trayectorias de Investigadoras e Investigadores del CONICET 1985-2020. Buenos Aires: CONICET.

CONICET. 2024. *Evaluación de la iniciativa "Convocatoria para el ingreso a la CICyT Modalidad Fortalecimiento I+D+i"*. Buenos Aires: CONICET.

CONICET. 2020-02-18. *Act 517 of CONICET Board of Directors*. Buenos Aires: CONICET. Available at: https://www.conicet.gov.ar/wp-content/uploads/Acta-517_.pdf

CONICET. 2020-03-03. *Act 518 of CONICET Board of Directors*. Buenos Aires: CONICET. Available at: https://www.conicet.gov.ar/wp-content/uploads/Acta-518.pdf

CONICET Web. 2021-11-01. Franchi presentó en Chaco los Proyectos Especiales con Provincias. Available at: https://www.conicet.gov.ar/franchi-presento-en-chaco-los-proyectos-especiales-con-provincias

Cozzens, Susan. 2007. Distributive justice in science and technology policy. *Science and Public Policy* 34(2): 85–94.

Crespy, Cecile, Jean-Alain Heraud, and Beth Perry. 2007. Multi-level governance, regions and science in France: between competition and equality. *Regional Studies* 41(8): 1069–1084.

Cruz-Castro, Laura, Pablo Kreimer, and Luis Sanz-Menéndez. 2016. Los cambios en los sistemas públicos de investigación de España y Argentina: el papel del CSIC y del CONICET en perspectiva comparada. In *Mirada iberoamericana a las políticas de ciencia, tecnología e innovación perspectivas comparadas*, eds. Rosalba Casas, and Alexis Mercado. Buenos Aires: CLACSO.

Cruz-Castro, Laura, Donna Ginther, and Luis Sanz-Menéndez. 2023. Gender and underrepresented minorities differences in research funding. In *Handbook of Public Funding of Research*, eds. Benedetto Lepori, Ben Jongbloed, and Diana Hicks. Cheltenham: Edward Elgar.

Del Bello, Juan Carlos. 2007. Contrarreforma (1990/96) y cambios en el CONICET a partir de 1996. In *Ruptura y reconstrucción de la ciencia argentina*. Buenos Aires: Ministerio de Educación, Ciencia y Tecnología - UNESCO.

Del Bello, Juan Carlos. 2014. Argentina: experiencias de transformación de la institucionalidad pública de apoyo a la innovación y al desarrollo tecnológico. In *Nuevas instituciones para la innovación:*

Prácticas y experiencias en América Latina, eds. Gonzalo Rivas, and Sebastián Rovira. Santiago, Chile: ECLAC.

Diego, César, Alan Kusznier, Jorge Pieroni, Marcelo Rodríguez, and Javier Silvani. 2021. *Informe sobre iniciativas de federalización del CONICET - Primera parte*. Buenos Aires: CONICET.

Dijkstra, Lewis. 2024. What do we owe a place? How the debate about left-behind places is challenging how we distribute public funding and the problems it should address. *Cambridge Journal of Regions, Economy and Society* 17(2): 417–424.

D'Onofrio, María Guillermina, and Juan Rogers. 2022. Key factors affecting the promotion of researchers of the Argentine Scientific and Technical Research Council (CONICET). *Research Evaluation* 31(2): 188–201.

Dutrénit, Gabriela, and Judith Sutz, eds. 2014. *National innovation systems, social inclusion and development: The Latin American experience*. Cheltenham: Edward Elgar.

Elzinga, Aant, and Andrew Jamison. 1995. Changing policy agenda in science and technology. In *Handbook of science and technology studies*, eds. Sheila Jasanoff, Gerald Markle, James Peterson, and Trevor Pinch. Thousand Oaks: Sage.

Emiliozzi, Sergio, and Martín Unzué. 2015. La política de formación de recursos humanos altamente calificados en la Argentina reciente. In *Desafíos y dilemas de la universidad y la ciencia en América Latina y el Caribe en el siglo XXI*, eds. Silvia Lago Martínez, and Néstor Correa. Buenos Aires: Editorial Teseo.

Feld, Adriana. 2015. *Ciencia y política(s) en la Argentina, 1943–1983*. Bernal, Argentina: Universidad Nacional de Quilmes.

Fischer, Melina, Mariela Goldberg, and Cynthia Jeppesen. 2023. Trayectorias en investigación orientada a la resolución de problemas. El caso de los temas estratégicos del CONICET, Argentina. *CTS - Revista Iberoamericana de Ciencia, Tecnología y Sociedad* 18(54): 199-224.

Flanagan, Kieron, Elvira Uyarra, and Manuel Laranja. 2011. Reconceptualising the 'policy mix' for innovation. *Research Policy* 40(5): 702–713.

GACTEC. 1999. *Plan Nacional Plurianual de Ciencia y Tecnología 2000-2002*. Buenos Aires: Gabinete Científico Tecnológico (GACTEC).

Gallardo, Osvaldo. 2015. Trayectorias de formación de investigadores del CONICET. *Revista Sociedad* 34: 121–139.

García de Fanelli, Ana. 2018. La importancia de la investigación en las universidades nacionales de la Argentina: situación actual y retos al futuro. In *La agenda universitaria IV: Viejos y nuevos desafíos en la educación superior argentina*, ed. Carlos Marquis. Buenos Aires: Universidad de Palermo.

González, Giselle. 2017. Federalización de la ciencia y la tecnología en Argentina. Una revisión de iniciativas de territorialización y planificación regional (1996–2007). *Revista De Estudios Regionales* 108: 193–225.

Graddy-Reed, Alexandra, and Lauren Lanahan. 2023. Prioritizing diversity? The allocation of US federal R&D funding. *Science and Public Policy* 50(1): 104–119.

Grupo La Provincia Web. 2021-10-22. Elisa Colombo: Hay que dejar de pensar la ciencia de todo país desde Buenos Aires. Available at: https://www.grupolaprovincia.com/sociedad/elisa-colombo-hay-que-dejar-de-pensar-la-ciencia-de-todo-pais-desde-buenos-aires-818916

Guimón, José. 2018. Decentralization of science and innovation policies in emerging countries: Three key challenges that deserve further attention. *International Journal of Technological Learning, Innovation and Development* 10(1): 69–87.

Hicks, Diana, and J. Sylvan Katz. 2011. Equity and excellence in research funding. *Minerva* 49: 137–151.

Hinrichs-Krapels, Saba, and Jonathan Grant. 2016. Exploring the effectiveness, efficiency and equity (3e's) of research and research impact assessment. *Palgrave Communications* 2(1): 1–9.

Hurtado, Diego, and Adriana Feld. 2008. 50 años del Conicet. *Los Avatares De La Ciencia. Nómada* 12: 2–7.

Hurtado, Diego. 2010. *La ciencia argentina: un proyecto inconcluso: 1930-2000*. Buenos Aires: Edhasa.

Jappe, Arlette, and Thomas Heinze. 2023. Research funding in the context of high institutional stratification: policy scenarios for Europe based on insights from the United State. In *Handbook of Public Funding of Research*, eds. Benedetto Lepori, Ben Jongbloed, and Diana Hicks. Cheltenham: Edward Elgar.

Jeppesen, Cynthia, Mariela Goldberg, Alfonsina Szpeiner, and María Cecilia Rodríguez. Gauna. 2015. Estrategias, instrumentos y resultados de la política de recursos humanos del CONICET en los últimos 10 años. *Revista Sociedad* 34: 73–89.

Koschatzky, Knut, and Henning Kroll. 2007. Which side of the coin? The regional governance of science and innovation. *Regional Studies* 41(8): 1115–1127.

Kreimer, Pablo. 2015. Los mitos de la ciencia: desventuras de la investigación, estudios sobre ciencia y políticas científicas. *Nómadas* 42: 33–51.

Krishna, Venni. 2001. Changing policy cultures, phases and trends in science and technology in India. *Science and Public Policy* 28(3): 179–194.

La Capital de Mar del Plata Newspaper. 2023-03-07. Filmus destacó en Mar del Plata que el gobierno trabaja para federalizar la ciencia en el país. Available at: www.lacapitalmdp.com/filmus-destaco-en-mar-del-plata-que-el-gobierno-trabaja-para-federalizar-la-ciencia-en-el-pais

La Gaceta Newspaper. 2017-07-09. Federalizar el Conicet es una necesidad, por una cuestión de equidad. Available at: https://www.lagaceta.com.ar/nota/736610/actualidad/federalizar-conicet-necesidad-cuestion-equidad.html.

Laborde, Miguel Ángel, and Tulio Del Bono. 2019. *Propuestas para comenzar a solucionar algunos de los principales problemas que afectan al CONICET*. Buenos Aires: CONICET.

Laborde, Miguel Ángel, and Tulio Del Bono. 2020. *Reflexiones sobre la convocatoria 2020*. Buenos Aires: CONICET. Available (as appendix) at: https://www.conicet.gov.ar/wp-content/uploads/Acta-519-1.pdf

Langfeldt, Liv, Mats Benner, Gunnar Sivertsen, Ernst Kristiansen, Dag Aksnes, Siri Brorstad Borlaug, Hanne Foss Hansen, Egil Kallerud, and Antti Pelkonen. 2015. Excellence and growth dynamics: A comparative study of the Matthew effect. *Science and Public Policy* 42(5): 661–675.

Langfeldt, Liv, Maria Nedeva, Sverker Sörlin, and Duncan Thomas. 2020. Co-existing notions of research quality: A framework to study context-specific understandings of good research. *Minerva* 58: 115–137.

Lepori, Benedetto, Ben Jongbloed, and Diana Hicks. 2023. Introduction to the Handbook of Public Funding of Research: understanding vertical and horizontal complexities. In *Handbook of Public Funding of Research*, eds. Benedetto Lepori, Ben Jongbloed, and Diana Hicks. Cheltenham: Edward Elgar.

Marques, Pedro, Kevin Morgan, Adrian Healy, and Paul Vallance. 2019. Spaces of novelty: Can universities play a catalytic role in less developed regions? *Science and Public Policy* 46(5): 763–771.

Mercado, Alexis. 2012. Social inclusion or social illusion: The challenges of social inclusion, social participation and social cohesion in Venezuelan S&T policy. *Science and Public Policy* 39(5): 592–601.

Merton, Robert. 1968. The Matthew effect in science: The reward and communication systems of science are considered. *Science* 159(3810): 56–63.

Míguez, Eduardo. 2018. *Crítica (y reivindicación) de la universidad pública*. Buenos Aires: Siglo XXI.

MINCYT. 2011. *Hacia una Argentina Innovadora: Plan Nacional de Ciencia, Tecnología e Innovación. Lineamientos 2012-2015*. Buenos Aires: Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCYT).

MINCYT. 2013a. *Argentina Innovadora 2020: Plan Nacional de Ciencia, Tecnología e Innovación. Lineamientos Estratégicos 2012-2015*. Buenos Aires: Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCYT).

MINCYT. 2013b. *Argentina Innovadora 2020: Plan Nacional de Ciencia, Tecnología e Innovación. Síntesis ejecutiva*. Buenos Aires: Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCYT).

MINCYT. 2022. *Plan Nacional de Ciencia, Tecnología e Innovación 2030*. Buenos Aires: Ministerio de Ciencia, Tecnología e Innovación (MINCYT).

Monastiriotis, Vassilis, and Yannis Psycharis. 2014. Between equity, efficiency and redistribution: An analysis of revealed allocation criteria of regional public investment in Greece. *European Urban and Regional Studies* 21(4): 445–462.

Morin, Alexander. 1993. *Science policy and politics*. New Jersey: Prentice-Hall.

Mulkay, Michael. 1976. The model of branching. *The Sociological Review* 24(1): 125–133.

Münch, Richard, and Christian Baier. 2012. Institutional struggles for recognition in the academic field: The case of university departments in German chemistry. *Minerva* 50: 97–126.

Nielsen, Mathias. 2016. Limits to meritocracy? Gender in academic recruitment and promotion processes. *Science and Public Policy* 43(3): 386–399.

Niembro, Andrés. 2020a. ¿Federalización de la ciencia y tecnología en Argentina? La carrera del investigador de CONICET (2010–2019). *Ciencia, Docencia y Tecnología* 31(60): 1–33.

Niembro, Andrés. 2020b. ¿Qué significa la federalización de la ciencia y la tecnología en Argentina? *Ciencia, Tecnología y Política* 3(4): 1–11.
Niembro, Andrés, and Gabriela Starobinsky. 2021. Sistemas regionales de ciencia, tecnología e innovación en la periferia de la periferia: un análisis de las provincias argentinas (2010–2017). *Estudios Socioterritoriales - Revista De Geografía* 30: 1–22.
Niembro, Andrés, Francisco Aristimuño, and Juan Carlos Del Bello. 2021. Federalización e ingresos de investigadores a CONICET en 2019 y 2020: ¿Del dicho al hecho hay mucho trecho? *Revista Perspectivas De Políticas Públicas* 10(20): 233–269.
Página 12 Newspaper. 2017-03-15. El Conicet en debate. Available at: https://www.pagina12.com.ar/25740-el-conicet-en-debate
Perry, Beth, and Tim May. 2007. Governance, science policy and regions: An introduction. *Regional Studies* 41(8): 1039–1050.
Philippczyck, Nicole, Jan Grundmann, and Simon Oertel. 2023. The framing of diversity statements in European universities: The role of imprinting and institutional legacy. *Minerva* 62(1): 69–92.
Polanyi, Michael. 1962. The Republic of Science: Its political and economic theory. *Minerva* 1(1): 54–73.
Radosevic, Slavo, and Benedetto Lepori. 2009. Public research funding systems in central and eastern Europe: between excellence and relevance: introduction to special section. *Science and Public Policy* 36(9): 659–666.
Reale, Emanuela, Magnus Gulbrandsen, and Thomas Scherngell. 2023. R&D programs as instruments for governmental R&D funding policy. In *Handbook of Public Funding of Research*, eds. Benedetto Lepori, Ben Jongbloed, and Diana Hicks. Cheltenham: Edward Elgar.
Red PLACTS. 2020-09-16. Federalización de la ciencia y la tecnología. Desafíos y oportunidades. Available at: https://www.youtube.com/watch?v=L5jpau7k9QQ&ab_channel=RedPLACTS
Rip, Arie. 1994. The republic of science in the 1990s. *Higher Education* 28(1): 3–23.
Rubiera Morollón, Fernando, and Tania García Fernández. 2023. Spatial heterogeneity in the distribution of European research and development funds and its effects on territorial cohesion. *Investigaciones Regionales - Journal of Regional Research* 56: 9–30.
Salomaa, Maria, and David Charles. 2021. The university third mission and the European Structural Funds in peripheral regions: Insights from Finland. *Science and Public Policy* 48(3): 352–363.
Sarthou, Nerina. 2019. Tendencias en la evaluación de la ciencia en Argentina: género, federalización y temas estratégicos. *Ciencia, Docencia y Tecnología* 30(59): 37–73.
Sarthou, Nerina. 2023. Las becas CONICET para temas estratégicos: balance y desafíos. *Ciencia, Tecnología y Política* 6(10): 1–14.
SECYT. 2006. *Plan Estratégico de Ciencia, Tecnología e Innovación Bicentenario (2006-2010)*. Buenos Aires: Secretaría de Ciencia, Tecnología e Innovación Productiva (SECYT).
Stefani, Fernando. 2018. *Rol actual y futuro de la ciencia en la innovación industrial y el crecimiento económico en Argentina*. Buenos Aires: Centro de Investigaciones en Bionanociencias (CIBION).
Suárez, Diana, Florencia Fiorentin, and Mariano Pereira. 2023. Observable and unobservable causes of the gender gap in S&T funding for young researchers. *Science and Public Policy* 50 (4): 579–590.
Suárez, Diana, and Florencia Fiorentin. 2018. Federalización y efecto Mateo en la política científica: El caso del PICT en la Argentina (2012-2015). Working Paper No. 12. Buenos Aires: CIECTI.
Svampa, Fernando, and Diego Aguiar. 2019. Los consejos de investigaciones y la tensión entre culturas burocráticas y académicas. El CONICET entre 1983-1989. *Ciencia, Docencia y Tecnología* 30(59): 1-36.
Szpeiner, Alfonsina, and Cynthia Jeppesen. 2013. Políticas de federalización en ciencia y tecnología: Avances en el CONICET. Conference Paper presented at VII Congreso Argentino de la Administración Pública, Mendoza, Argentina.
Tang, Li, and Hugo Horta. 2023. Supporting academic women's careers: Male and female academics' perspectives at a chinese research university. *Minerva* 62: 113–139.
Tao, Yu., Wei Hong, and Ying Ma. 2017. Gender differences in publication productivity among academic scientists and engineers in the U.S. and China: Similarities and differences. *Minerva* 55: 459–484.
Unzué, Martín. 2015. Nuevas políticas públicas de formación de doctores en Argentina. *Revista Sociedad* 34: 12–34.
Unzué, Martín, and Sergio Emiliozzi. 2017. Las políticas públicas de ciencia y tecnología en Argentina: un balance del período 2003–2015. *Temas y Debates* 33: 13–33.
Vasen, Federico, Nerina Sarthou, Silvina Romano, Brenda Gutiérrez, and Manuel Pintos. 2023. Turning academics into researchers: The development of national researcher categorization systems in Latin America. *Research Evaluation* 32(2): 244–255.

Velho, Lea. 2011. La ciencia y los paradigmas de la política científica, tecnológica y de innovación. In *Estudio social de la ciencia y la tecnología desde América Latina*, eds. Antonio Arellano Hernández, and Pablo Kreimer. Bogotá: Siglo del Hombre editores.

Vessuri, Hebe, Jean-Claude Guédon, and Ana María Cetto. 2014. Excellence or quality? Impact of the current competition regime on science and scientific publishing in Latin America and its implications for development. *Current Sociology* 62(5): 647–665.

Wallace, Matthew, and Ismael Rafols. 2015. Research portfolio analysis in science policy: Moving from financial returns to societal benefits. *Minerva* 53: 89–115.

Whitley, Richard. 2011. Changing governance and authority relations in the public sciences. *Minerva* 49: 359–385.

Woodhouse, Edward, and Daniel Sarewitz. 2007. Science policies for reducing societal inequities. *Science and Public Policy* 34(2): 139–150.

Yamano, Norihiko, and Toru Ohkawara. 2002. The regional allocation of public investment: Efficiency or equity? *Journal of Regional Science* 40(2): 205–229.