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The IPR of the beholder: the economics and strategy knowledge base of IPR, patents and trademarks

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Abstract

The economics and strategy literature is a useful resource for professionals and policy-makers involved in patents, trademarks and other intellectual property rights (IPRs). Understanding how this knowledge accumulates is crucial for identifying, analyzing, evaluating, anticipating, and managing intangible assets. The role of IPR seems to be a touchstone for decision-makers as IPRs stand in the middle of micro and macro perspectives. Notwithstanding, it remains unclear how IPRs are interpreted differently across communities. This paper uses bibliographic data to identify, classify and assess research documents around IPR topics from the Economics discipline and from the Strategic perspective. For this, we investigate the trajectories of IPR-related research in the top-10 journals of both economic science and business strategy. Evidence shows new contributions have trended upwards at similar rates in both disciplinary realms. The stylised facts uncovered may be of use to leaders and experts in IPR offices who need to be up-to-date with the scientific literature but want to build panoramic awareness and retain critical insight.

Keywords IPR · Patents · Trademarks · Text mining

JEL Classification O31 · O32 · O34

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1 Introduction

Officials in intellectual property rights (IPRs) institutions and managers in business organisations need to support their decisions on validated knowledge, namely on systematic evidence (e.g. own analysis, commissioned studies, benchmarking, etc.) or past experience (including personal and institutional stock taking). However, as the proverbial academic once said: practical persons who think themselves to be quite exempt from any intellectual influence are usually distilling their initiatives from some obscure researcher who worked a few years back. So, the question thus poses itself: what are those cognitive resources that support and steer the ideas of public and private decision-makers in the field of IPR? In particular, patents and trademarks have continuously grown in importance for enterprises and for entire economies. It remains to be more thoroughly explored how different perspectives, for instance, management *versus* economics, have come to appropriate this tool. How to navigate the pool of knowledge and the intellectual debates about IPR matters remains a need for those professionals that are impacted by academic production, especially in the view of the ever-growing body of literature coming out from universities worldwide.

This paper addresses the research production on IPR, patents and trademarks that comes from Economics and Strategy outlets where scientific research is published. IPR is at the intersection of distinct disciplines and communities of practice, and thus will be appropriated in different way and may show drift over time. We choose these fields for their proximity to areas relevant to IPR offices and IPR-based firms. We operationalise our analysis by focusing on key intellectual items that drive science communication, policy debates, and management agendas. In particular, we will draw from scholarly items (in our case documents like editorials or book reviews are not considered) appearing in leading indexed international peer-reviewed journals (the top-10 outlets in the Scimago rankings).

In mapping and measuring scholarly contributions from Economics and Strategy to the wider policy and management contexts where IPR knowledge is actually deployed, this paper seeks to provide evidence that could be instrumental for current and future users, namely IPR professionals, of research (see also Miller 2007; Schwarz 2013). If the literature on intangible assets like patents and trademarks reflects activities and breakthroughs about IPRs, an informed analysis of bibliometric indicators can shed some light on how this matter may impact on the "real" world (see Caraça et al. 2009; Santos and Mendonça 2022a, b). Implications derived from the literature may remain closely tied to the publishing requirements and academic traditions but will have to be applied in actual domains of practice that are persistently transgressive, interdisciplinary, integrated and dynamic. Hence, IPRs may be seen as a "boundary object", that is, concepts and phenomena that have commonalities but that will have different lives across communities (Bowker and Star 2009; see also Barbosa et al. 2024; Godinho and Simões 2023; Sterzi et al. 2024). The role of IPR as a major issue at the firm level, as legal protection, and at the country level, as lever of technological regulation, has been noted in the literature but has lacked a systematic

treatment (see van Pottelsberghe de la Potterie and Peeters, 2006; see also Cui et al. 2022; Gupta et al. 2023, and Ascione and Vezzulli, 2004). Textual evidence can point to the rise in importance of given issues, the institutions originating it, the dynamics of the topics pursued over time, how disciplinary domains are trespassed, how policy agendas converge or diverge, etc. (Baron et al. 2023; Castellaci 2005; Castelnovo et al. 2024; Confraria and Godinho 2015; Costa and Pestana 2020; Dhayal et al. 2023; Drivas 2024; Drivas and Kremmydas 2020; Lu et al. 2023; Mendonça et al. 2022, 2025; Nasirov and Castaldi 2025; Santos and Mendonça 2022b, c, d; Tiberius et al. 2021, 2024; Tsironis et al. 2025).

The contribution of the paper is two-fold. First, results show that IPR subjects consistently rise in the leading scientific outlets of both the Economics and Strategy subject matters, especially in what patents are concerned. Second, count-based and content-oriented metrics show that while the agendas of Economics and Strategy have evolved over time, their similarities and differences are instructive for decision-makers, both public and private. The analysis brings forward evidence on the increasing prominence of IPR subjects in these disciplines but also shows how the evolving research agendas of the Economics and Strategy fields can inform more effective policy design and decision-making in innovation and intellectual property management.

Through the lenses of bibliometric indicators, after an analysis buttressed by a number of sensitivity checks, we observe that *all* the journals in the sample have at least one IPR-related paper. We also witness an increasing tendency for top Economics and Strategy outlets to attract and accept contributions on IPR, patents and trademarks. The composition of these papers shows that most of them seek harbour in Strategy-related journals; the disciplinary structure has largely remained the same (about 2/3 of the published papers are managerial), notwithstanding a recent take-up observed in the Economics discipline (happening from the mid-2010 s onwards). Most interest revolves around the topic of patents, with trademarks only accelerating after 2015 even if unevenly across the board. The interested professional reader who follows these themes will also be interested in knowing the specific journals driving trends: for instance, *American Economic Review* and *Strategic Management Journal*, which are leaders in their fields.

This paper also extends conventional bibliometric analysis by highlighting the potential of text mining for IPR analysis. The Economics and Strategy corpus was examined in terms of content and context. The two disciplines both coalesce around topics such as “innovation” and “firms” while appearing quite aligned along the features IPR, patents and trademarks. Notwithstanding, it is possible to show that Economics exhibits a preference for macro and governance topics, sometimes in relation to developing countries, while Strategy-related research is more inclined toward micro and transactional topics, sometimes in relation to high-tech industries. Economics starts from an emphasis on institutional frameworks and veers towards financed-based preoccupations over time, whereas Strategy reveals a consistent adherence to theories such as the knowledge-based view of the firm and the innovation studies of a neo-Schumpeterian bent. The findings underscore the value of bringing together these perspectives to address complex IPR challenges, offering a more robust understanding for policymakers

and practitioners seeking to align macro or system-level priorities with firm-level management.

The paper proceeds by describing the methodology and the data. It then reviews and discusses the major trends detected. It concludes by providing a synthesis of the key points and underscoring how they matter for the future.

2 Research design

2.1 Rationale for the study

IPRs are at the intersection of several fields: management and economics, law and engineering, etc. We have elected the focus on management and economics, since these subjects share commonalities (both have grounds on behaviour and human sciences, both are instrumental in intent, etc.) but also display differences (one more applied while the other more abstract, etc.) (see Vaidhyanathan 2017). Our entry point is that boundary work between management and economics in IPR has been acknowledged, perhaps more than in other disciplines (Dopfer et al. 2023; van Pottelsberghe de la Potterie and Peeters 2006). Current challenges in management and economics can be understood as the "innovation governance" challenge, in which choices regarding open innovation and standards at the micro level meet with choices over national specialisation and technological regulation (Castaldi and Mendonça 2024; Granstrand 2018).

The role of IPRs thus seems to be a touchstone for decision-makers as IPRs stand at the centre of both micro and macro perspectives. Notwithstanding, it remains unclear how IPRs are interpreted differently across different academic communities. A systematic and integral assessment of how the management and economics do boundary work on IPRs has been lacking. So far relevant recent reviews have not asked how IPRs reflect the eyes of the beholding disciplinary efforts while remaining not comparative or encompassing in purpose (see e.g. Bowker and Star 2009; Hall et al. 2014; Holgersson 2012; Holgersson and Aaboen 2019). It should also be kept in mind how patents and trademarks have been continuously and increasingly important as indicators for Economics and Strategy, either at an empirical research level or for policy purposes (Block et al. 2025; Castaldi et al. 2020, 2024; Castaldi and Mendonça 2022, 2024; Mendonça et al. 2004, 2019, 2021; Shu and Wang 2023; Wen and Deng 2023).

2.2 Methodological approach

This paper uses publication evidence and classifications based on the Scopus source. Results are reported for the period 2000–2022 as this was the last year with complete and fully available records and we rely of descriptive statistics throughout.

It is important to note that the patterns emerging are not pure facts, they are measurements conditional on the nature of the evidence and on the methodology employed (Ramos-Rodrígue and Ruíz-Navarro 2004). The limitations of

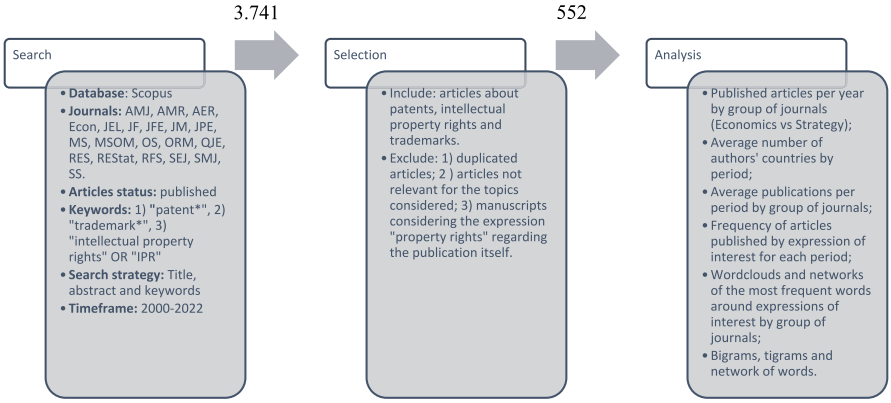


Fig. 1 Data collection, cleaning and analysis

publications as indicators of scholarly activity are well known and will not be discussed here (see van Raan 2004; de Jesus et al. 2018). Certainly, academic publications do not capture the tacit know-how of experts neither allow us to grasp the expertise that is being developed by actual practitioners. These publications are a codified record of advances attained by researchers, and cannot be assumed to be in direct correspondence to learning efforts in the world of IPRs.

For the present, however, it will be worth emphasising that the quantitative empirical engagement with serial academic literature provides an indispensable perspective on the unfolding of the intellectual enterprise. Indeed, this information is available, is comprehensive, has quality control, and provides a glimpse into a wide range of aspects of knowledge production.

2.3 Data acquisition and processing

The database built for the purposes of this work represents a number of choices, procedures of consolidation and efforts of validation that warrant reporting (see Fig. 1). First, for reasons of sampling and simplicity the top-10 journals from Economics and from Strategy (20 in total) are studied: the list was straightforwardly taken from the Scimago prestige metrics scholarly platform.[1] A note to say that the management journals refer to general business or strategic management; hence we have settled for the term "Strategy" for the remainder of this paper. Second, the source for the materials is well-known: Scopus, which covers a large number of journals, allows for the retrieval of a number of elements such as authorships and content (Thelwall and Sud 2022). Third, the time period is from 2000 onwards: until then IPR papers were

[1] For instance, while the selection of top journals from the Scimago rankings provides a solid foundation for the study, it is important to acknowledge we are excluding influential journals from other disciplines, such as political science or sociology, which could offer valuable perspectives into the contemporary handling of IPR by public and private decision-makers.

spotty and this is, for instance, the first year for which zero publications is no longer observed in Economics *and* Strategy for the sub-sample of top-5 journals. Fourth, a number of key terms were used as search statements for paper identification: (1) "intellectual property rights" (or "IPR"), (2) "patents" and (3) "trademarks". Fifth, search was conducted in the front-end fields available for each publication item: that is, only papers displaying any of the given key terms in the title, abstract and keywords were retrieved. Six, only a particular segment of documents was selected: namely articles and reviews, meaning that other pieces like editorials, book reviews, notes, retractions, etc., were filtered out. Seventh, a number of exercises were done in order to stabilise and consolidate the sample: verification searches in the website of the journals, searches of variations/truncations of the key terms (i.e. "property rights"). A final note: taking a short cut-off of prestigious journals (3 or 5 leading outlets) has been a standard practice by a number of papers which have preferred to go deeper into the dynamics of a discipline or a research community (Hamermesh 2013; Hamermesh and Kosnik 2023; Heckman and Moktan 2020); we abide by the parsimony and potency of this approach, but extend to the top 10 and complement with a comparative empirical strategy (20 journals in total from two research fields).

In the end, 552 relevant IPR-related publications were found during the 23 years being studied for the 20 journals under analysis. This constitutes our empirical sample, and from it we derive bibliometric work in the tradition defined by van Raan (1988), Moed et al. (2004) and Glänzel et al. (2019). Following, Martin and Irvine (1983) our view is one of "partial indicator", i.e. evidence that is only reliable if enough care is invested so as to ensure consistency of results, for instance by following through triangulation trials (testing different key terms, fairly long-time window, publication counts, text crunching, etc.). Such efforts are needed since our data are not *direct measurement* of the phenomenon we address (the attention devoted to IPRs by researchers) but only an imperfect representation of it: indeed, papers have been published during these years in these outlets that have treated or considered IPR topics and we are not capturing them; what we are doing is focusing on the papers that have elevated the topic to enough importance so as to signal it in the title, abstract and keywords, while looking as these papers as good guideposts for understanding the pathways of the prominent work in the field. The patterns detected have to be appreciated with this qualification in mind.

For purposes of sensitivity analysis we relaxed the sample in the following way: we replaced one the most cited papers in Economics and one of the journals in Strategy. This allowed us to see if the changes were significant and whether our interpretations were too contingent on the specific sample obtained with our empirical strategy. Moreover, in the content analysis we randomised the results dependent on the unigrams so as to train our reading and interpretation of the emerging patterns so as not to have the actual results as exclusive prior and, therefore, gain more leverage in the sense-making of the latent meanings. This three-pronged set of exercises were helpful for consolidating our findings and insights, so that the final results and research outcomes reported here are now more robust.

Table 1 Frequency of articles per term of interest

	IPRs	Patents	Trademarks	Total articles 2000–2022
Academy of management journal	2	17	0	19
Academy of management review	0	2	0	2
American economic review	7	35	1	43
Econometrica	0	5	0	5
Journal of economic literature	0	2	0	2
Journal of finance	1	9	0	10
Journal of financial economics	1	27	0	28
Journal of management	0	16	0	16
Journal of political economy	6	7	1	14
Management science	18	89	6	113
Manufacturing and service operations management	0	4	0	4
Organization science	8	45	3	56
Organizational research methods	0	1	0	1
Quarterly journal of economics	5	7	0	12
Review of economic studies	5	11	0	16
Review of economics and statistics	4	33	1	38
Review of financial studies	3	10	1	14
Strategic entrepreneurship journal	0	11	0	11
Strategic management journal	15	119	6	140
Strategy science	3	5	0	8
Grand total	78	455	19	552

Strategy journals in grey background

When dealing with content analysis we conducted four key preprocessing steps: text segmentation, removal of numbers and punctuation, conversion to lowercase, lemmatization and exclusion of stopwords,[2] i.e. words that have low discrimination value and the information carried by them is negligible such as determinants (the, a, an…), coordinating conjunctions (for, an, nor, but…) and prepositions (in, under, towards…) verbs like "be" or pronouns like "it" but also very regular generic terms like "property" or "data".

[2] The list of stopwords excluded were:"in","a","we","for","to","was","and","the","of","by","12","mdpi","power","load","paper","framework","rezekne","dos","longterm","contribute","overview","review","ptg","informal","test","research","authors","researchers","information","fields","local","basel","reserved","john","sons","summary","wiley".

3 Elite disciplinary knowledge production on IPRs

3.1 Basic stylised facts

We observe that all journals in the sample are active in what IPRs are concerned (Table 1). In particular, every single journal publishes papers mentioning patents, by far the focus of greatest attention.

Paper production on IPR-related themes grew nearly fivefold from beginning to end (Fig. 2). Initially there were more Economics articles than Strategy ones, but that situation changed irreversibly from the 2012 onwards. Since then, the Economics-Strategy structure has kept stable: 60–80% of the output comes from the Strategy journals every year. Volume pushes upwards but with variation around the trend, but the two time-series are broadly positively correlated with local peaks coinciding contemporaneously most times.

3.2 Where authors come from?

From the 1289 authorships found in the articles selected, affiliation countries were obtained for 1283. Between the 819 different researchers' names, 35 presented affiliations with multiple countries. In the beginning of the period, the overwhelming majority of authors publishing in the 20 journals (i.e. Economics + Strategy) were established in the US: 82.9%, in the first five years. By the last years of our sample that proportion had fallen significantly: 51.4% in the last period. Europe and Asia have been making increasing strides in the IPR field as whole. Figure 3 illustrates how the dynamics of the average number of countries with which authors are associated.

If we take the sub-sample of the most cited papers (the five most cited for each sup-period) we find that the internationalisation phenomenon has been more intense in the Economic realm: authors affiliated with a total of 12 countries

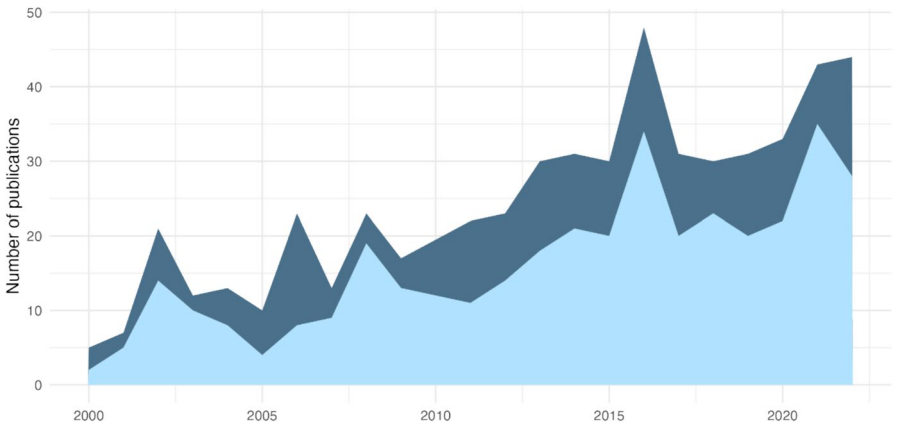


Fig. 2 Research items published in top journals, 2000–2022

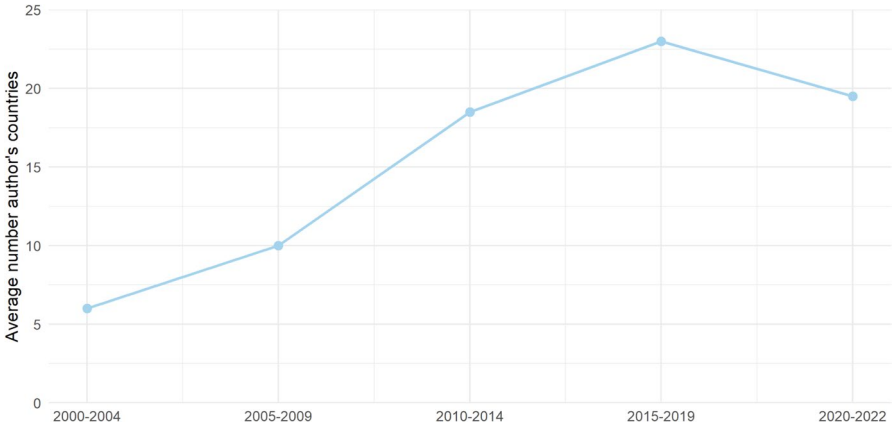


Fig. 3 Average number of countries in which authors are established, 2000–2022

(eight in Strategy group) for the whole period) (Fig. 4). Figure 5 demonstrates that the Economics set of articles presents a greater number of countries, particularly in the first and last periods. Although the Strategy group outperforms the Economics group in both periods, the difference is only one country.

Although these findings could be seen as evidence of a concentration of interest or excellence in a small number of nations, Hodgson and Rothman (1999) emphasized that this does not imply that these authors are the "best". It is noteworthy that the Anglo-Saxon world hosts authors in both fields, with the exception of Australia, which has more academics dedicated to Economics. Similarly, France, Switzerland, Denmark, and Sweden also have a higher concentration

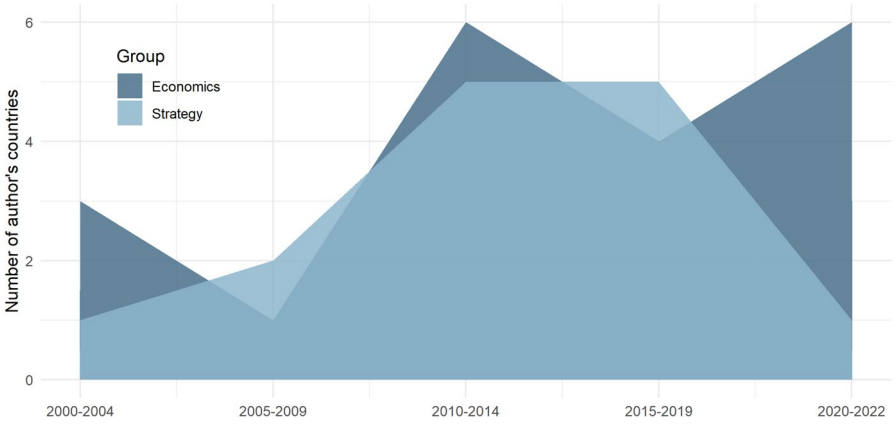


Fig. 4 Number of countries in which authors from top-cited 25 articles are established, in each time period. Note: Figures are computed from the top 5 most cited articles for five subperiods (2000–2004, 2005–2009, 2010–14, 2015–2019, 2020–2022)

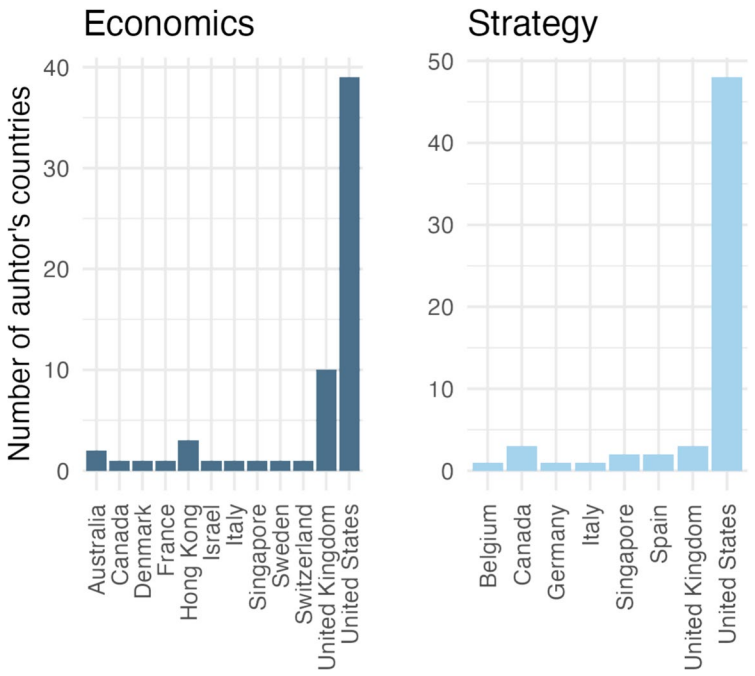


Fig. 5 Countries in which authors from top-cited 25 articles are established, by group. Note: Figures are computed from the top 5 most cited articles for five subperiods (2000–2004, 2005–2009, 2010–14, 2015–2019, 2020–2022)

of Economics scholars. Conversely, Belgium, Spain, and Germany host more authors focused on Strategy topics.

3.3 Journal dynamics

In Economics the outlets that most convey IPR-related items (proxied by IPR + patents + trademarks) are *American Economic Review*, *Review of Economics and Statistics and Journal of Financial Economics*. In the realm of Strategy, the leading journals are *Strategic Management Journal*, *Management Science*, and *Organization Science*.

As already seen, Strategy topples Economics in terms of IPR-related items. In Economics, however, interest on IPR-related topics surfaces as more distributed than in Strategy. In the Economics the three top journals concentrate 59.9% of the IPR-related papers of the discipline whereas in Strategy that figure is 83.5%.

Figures 6 and 7 show the publishing frequency per journals per year per topic by group. Not all journals publish IPR-related papers every year, but the rate of publication is becoming more intense over time even if uneven. By taking 5-year time intervals (except for the last three years), we see a drop in the number of journals featuring zero publications: in the sub-period 2000–2004 there was a

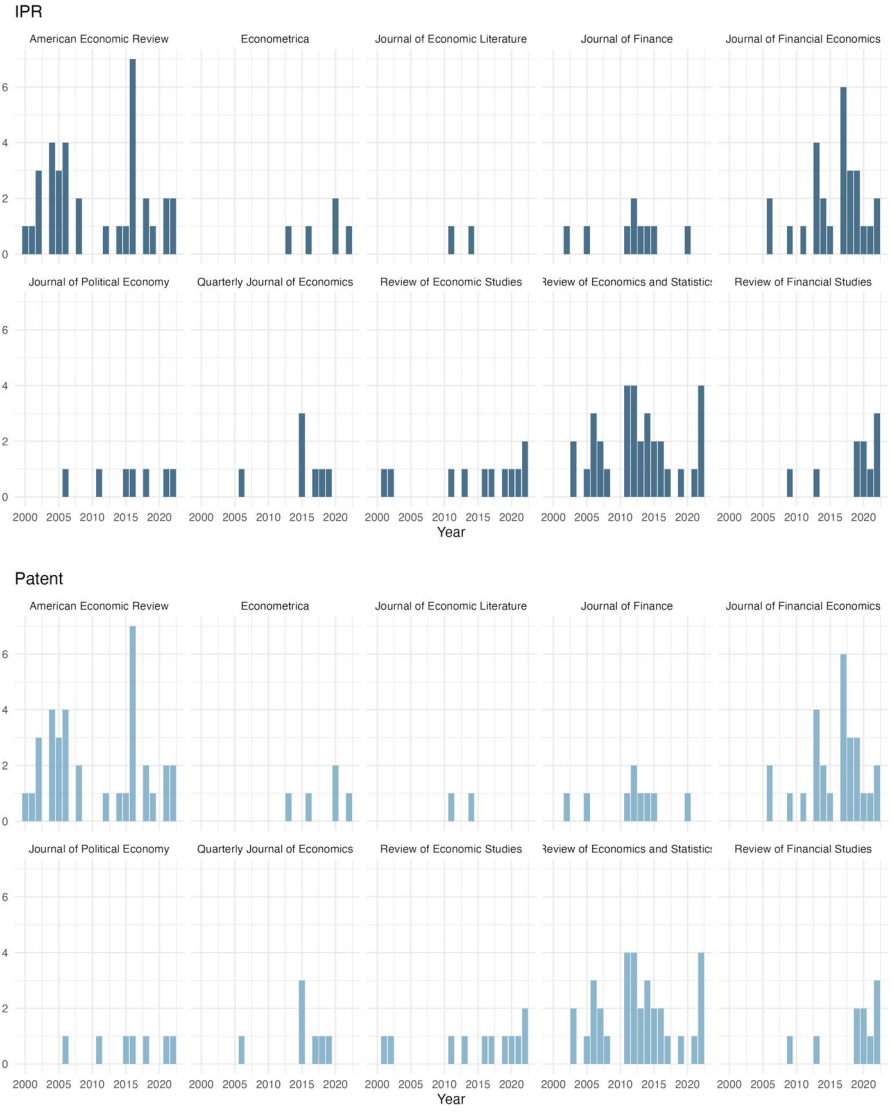


Fig. 6 The agenda in Economics regarding 1) IPR, 2) patents and 3) trademarks

total of eight journals (out of whole sample, that is, 20), whereas during 2020–22 there were three journals with zero IPR-related output.

The rate of publication on IPR-related has increased, and that is the case for both disciplines. For the Economics segment there was an average of 3.17 papers published in the beginning of the period (2000–2004) whereas in the end it was 4.38 (2020–2022); for Strategy the increase was starker, the average jumped from 6.5 to 9.44 (although for the period between 2015 and 2019, the average reached 14.6).

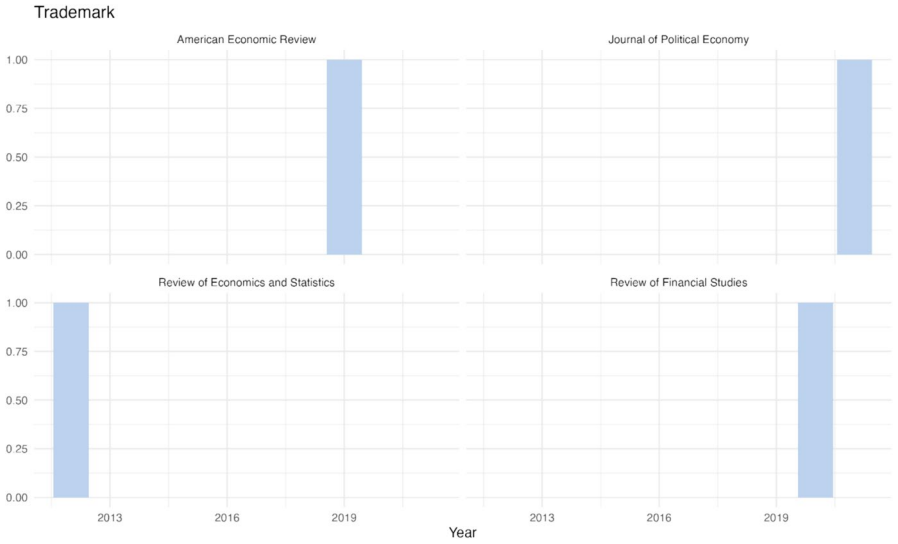


Fig. 6 (continued)

3.4 Disciplines and objects of analysis

Scholarly work is overwhelmingly devoted to patents (82.4% of the papers), and less so to the generic topic of "IPR" (14.1%) and only marginally to trademarks (3.4%) (see Table 2). In terms of relative advantage, Economics seems to be stronger on the most general and macro themes covering IPR as a whole (41.0% of total papers on IPR), whereas Strategy sports undisputed dominance in the specific IPR modalities of patents (67.9% of all patent papers) and especially trademarks (where Strategy papers are more than three times those of Economics; 78.9% of total trademark papers).

3.5 Trending word analysis

The implied meaning of phrases like "intellectual property rights" for participants in published scientific communication at academic elite levels can be glimpsed by means of cloud representations of related words (Bensaude-Vincent, 2014). The meaning of the phrases or terms, even if not explicitly defined in individual scientific discourse, is thus conveyed by the neighbouring words and concepts that emerge around it. The global image for each phrase or term is a convenient holistic methodological approach that starts to reveal the priorities and perimeter of the literature under analysis (Ranaei et al. 2019, p.957).

For this exercise, we extracted the words of interest (i.e., expunged from stopwords) from the abstracts. The articles were organised by their focus of interest and discipline. The visuals are set-up to facilitate the understanding regarding thematic trajectories. This orientation yielded wordcloud representations that display core ideas (i.e., for frequently used words) in larger fonts and at the centre, whereas

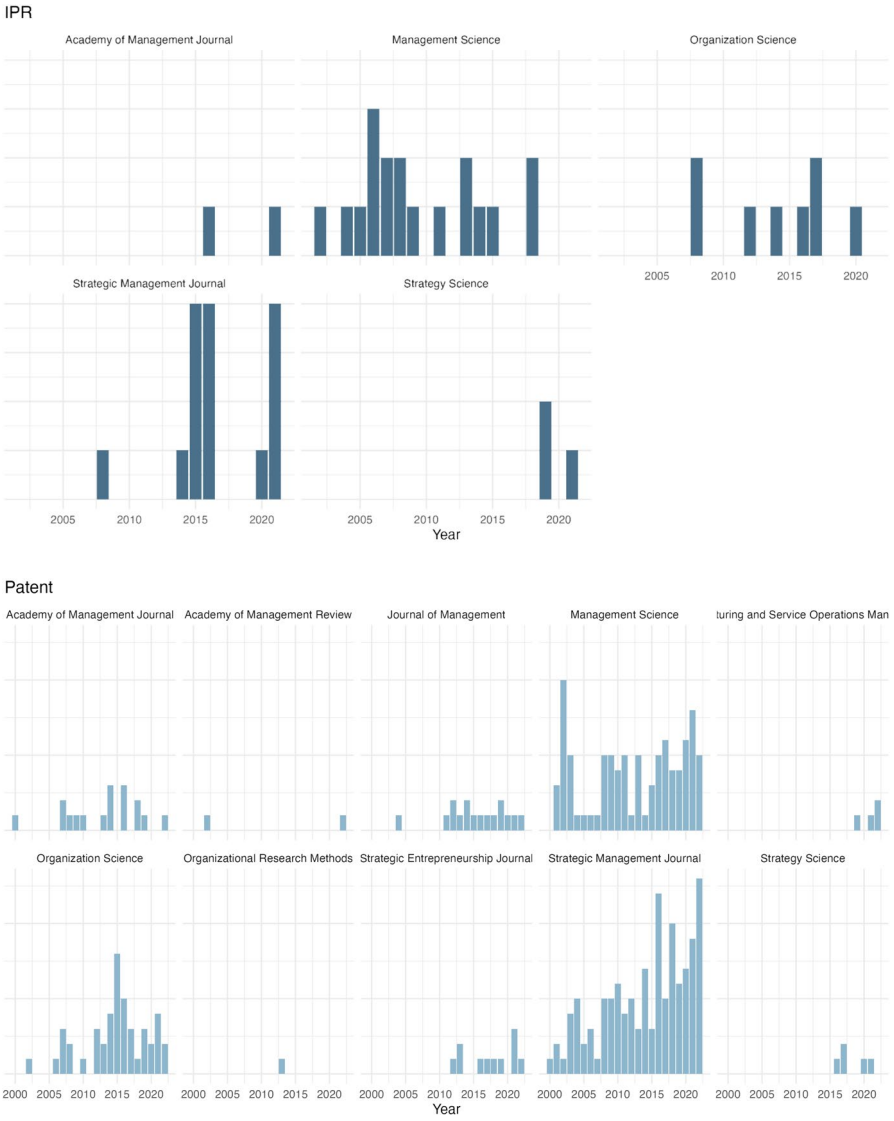


Fig. 7 The agenda in Strategy regarding 1) IPR, 2) patents and 3) trademarks

smaller and more distant ideas are more peripheral ideas (i.e., words less used). For each area of focus (IPR, patents, trademarks) the anchor term was removed from the wordcloud so as to streamline the representation (i.e., the wordclouds for articles dealing with IPR do not display "IPR").

Figure 8 focuses on Economics and finds 18 words for articles focusing on IPR, 20 for patent-oriented articles, and 18 for those about trademarks. Figure 9 does the same for Strategy and finds 19 words for articles on IPR, 18 on patents, and 19 on trademarks. Although the number of words related with trademarks was higher, their

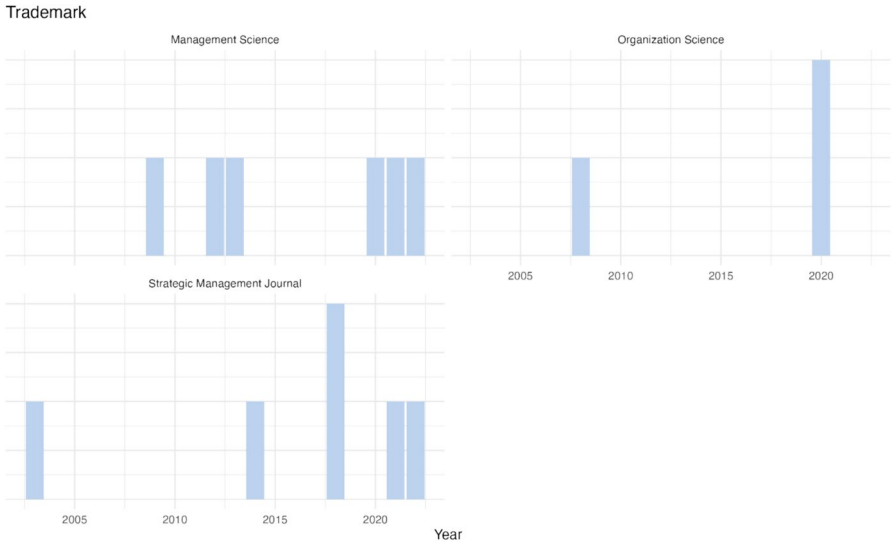


Fig. 7 (continued)

Table 2 Disciplinary and object breakdown of published papers, total 2000–2022

	IPR	Patents	Trademarks	Total
Economics	32	146	4	182
Strategy	46	309	15	370



Fig. 8 Frequency of the most occurring words for the Economics articles

lower frequency was due to the low number of articles which makes them smaller than the words linked to IPR and patents. A key observation has to do with the similarities between the two disciplines along the features IPR, patents and trademarks. Our main observations:

- IPR: we find that articles discussing IPR tend of emphasise "innovation" (not competition or litigation, for instance), and to emphasise "firms" and "patents";



Fig. 9 Frequency of the most occurring words for the Strategy articles

this is the case for both disciplines, meaning that the dominant purpose of these research items is to empirically analyse innovation at the micro-level through patent data (that is, theoretical or modelling exercises on markets or industrial dynamics are less common);

- Patents: articles on patents also end to emphasise technological and product innovation at the firm level (indeed, words like "firm(s)"); however, citation data, inventors and products as a unit of analysis, and (although lesser so) university patents are also popular approaches both in Economics and in Strategy;
- Trademarks; this type of papers also tend to refer to patents and products, but the words innovation and technology are less prominent.

3.6 Networks of words

This sub-section digs deeper into the denser case of the patent-related paper corpus. It does that by analysing association maps of the words extracted from the abstracts in order to understand between the discussion in each field. In semantic network analysis the connections between different terms are empirically specified and context is unleashed from the word structure (Zitt et al. 2019). Lines on the graphs represent co-presence between nodes that are, therefore, linked. Thickness of the lines indicate strength of connections.

This time around, some differences between Economics and Strategy are telling. Figure 10 shows that for Economics there is an institutional theme that emerges as a backbone: it articulates topics such as law, rights, system, (patent) office, examination, etc. There are also two other clusters of interrelated semantic markers: externalities (knowledge, spillovers), returns at the market level (financial, stocks) and country development (growth).

In contrast, Fig. 11 brings forward the latent themes for Strategy papers. Key topics are related to business and management disciplines. A major hub-and-spoke cluster is related to firm performance (processes, outputs, outcomes) in the context of high-tech industries (semiconductors, pharma, bio-tech, etc.). Two other thematic

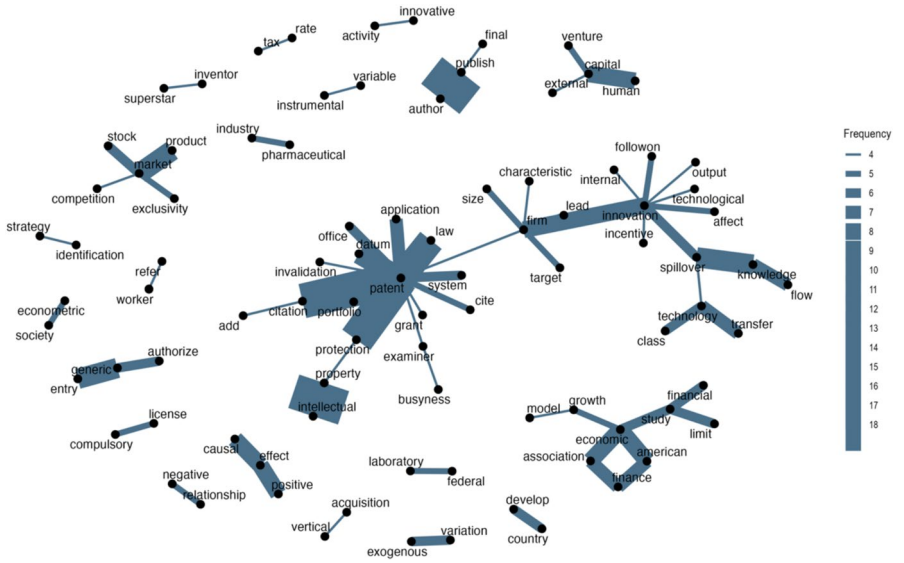


Fig. 10 Word association maps of Economics articles about patents. Note: only pairs appearing more than 3 times are represented

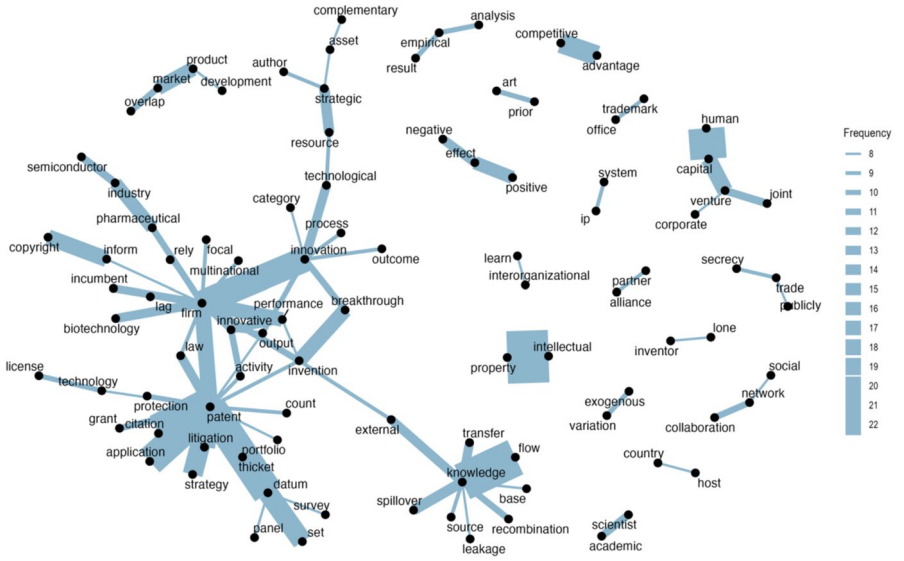


Fig. 11 Word association maps of Strategy articles about patents. Note: only pairs appearing more than 7 times are represented

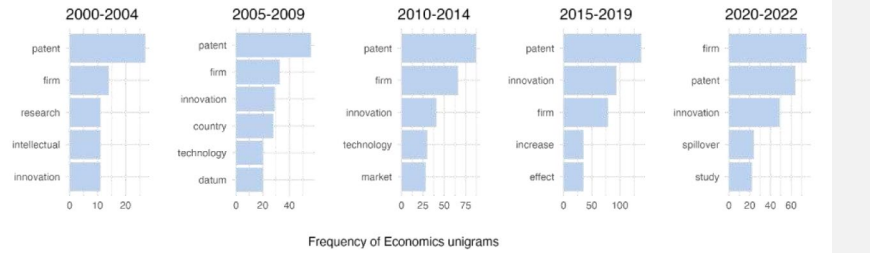


Fig. 12 Unigram analysis of the economics corpus, 2000–2022

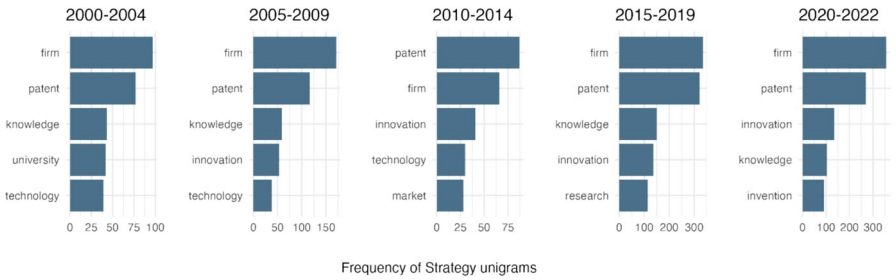


Fig. 13 Unigram analysis of the strategy corpus, 2000–2022

clusters are: knowledge transfer (flows, recombinations) and competitive advantage (portfolio, litigation, thicket).

The distinct thematic focuses in Figs. 10 and 11 indicate disciplinary divergence or specialisation. The semantics for Economics is indicative of macro-oriented and governance-related preoccupations while devoting attention to developing countries. Findings for Strategy suggest that more micro-applied and transaction-oriented concerns are prominent while emphasising contested high-tech industries. However, potential areas for disciplinary convergence or overlap are also evident. Both disciplines show an interest in knowledge-related themes, albeit at different scales. Economics focuses on knowledge externalities at a societal level, while Strategy explores knowledge flows and recombinations at the firm level. This shared interest in knowledge dynamics could serve for further guidance in interdisciplinary collaboration, bridging macroeconomic policy implications with firm-level innovation strategies.

3.7 Themes over time

We carry forward the content analysis by implementing unigram analysis of article abstracts. Despite strong heterogeneity, the corpus displays some similar traits. Figures 12 and 13 are constructed by distilling sole stems from all the abstracts in our sample by frequency after removing stopwords. The two strands of literature seem to coalesce and converge around two anchor terms that are common and persistent

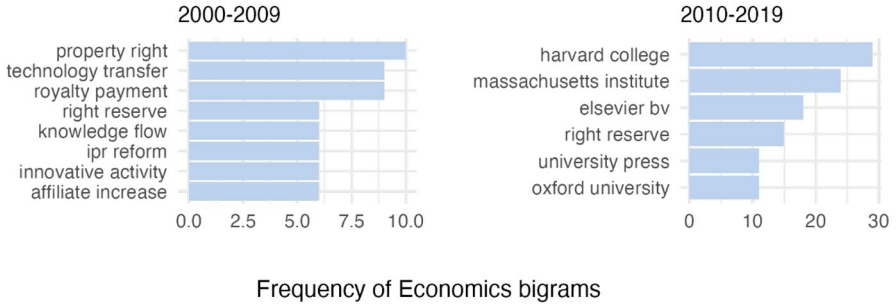


Fig. 14 Bigrams of the economics corpus, 2000 s and 2010 s

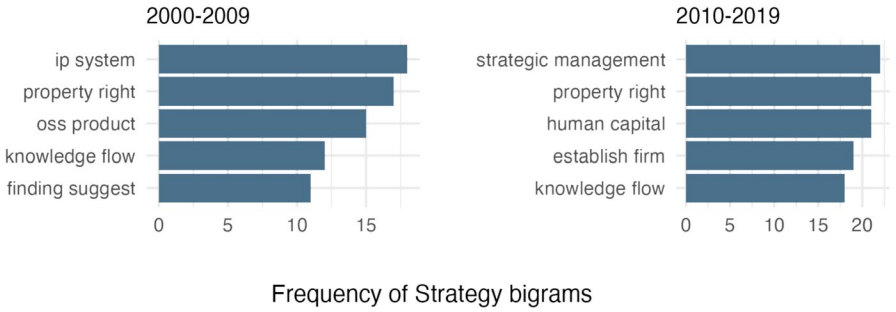


Fig. 15 Bigrams of the strategy corpus, 2000 s and 2010 s

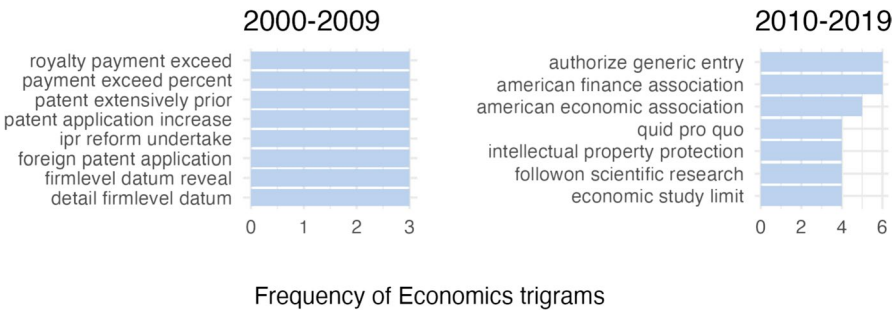


Fig. 16 Trigrams of the economics corpus, 2000 s and 2010 s

over time: *firms* and *innovation*. For both disciplines the two terms are the most frequent, but with a nuance: Economics scores (slightly) higher frequencies for *innovation*, while Strategy (robustly) for *firms*.

Besides common features there are also some relevant variations, Economics exhibits a more unique and numerous vocabulary in the wordage making it to the top-5 terms (*innovation*, *firm*, *technology*, *patent* and *market*), perhaps indicating that it addresses the subject matter from a richer array of angles. This also might mean that it encompasses most of the Strategy terminology (it has only one distinct

word, namely *knowledge*). Economics indeed seems to revolve towards an agenda with a wider spectrum (i.e. in the early 2000s it looked to industries and investment or, in other words, a meso and macro agenda), whereas in the early 2020s it also converged to a more applied and data-driven agenda (as it vied toward products and spillovers).

For purposes of sensitivity analysis, bigrams and trigrams were also extracted, i.e., sequences of and two and three words. Although the meaning is more accurate, since they articulate ideas, there are also some problems as there is more noise and less observations. Nevertheless, from Figs. 14, 15, 16, and 17 we learn the following for Economics: an emphasis on framing institutions (reforms, protection) and actors (laboratories, capitalists, firms), and a trend toward finance (taxes, corporate governance). About Strategy we learn: there are strong and steady hints of the resource-based view of the firm (complementarity assets, firm specific knowledge) and of the innovation systems view of technical change (subsequent technological evolution, global alliance networks). Hence, from this analysis it surfaces that Strategy, the otherwise more pragmatic managerial strand of scholarship, comes forth as more methodologically reflexive; it is Strategy, not Economics with all its multisecular tradition of "big thinkers", that explicitly is seen to borrow more theoretical texture (neo-Schumpeterian and evolutionary theories) to the core terms most often used by both bodies of literature: *firms* and *innovation*.

4 Conclusions

IPRs, patents and trademarks occupy an important and growing role in social sciences and policy analysis, and in particular in Economics and Strategy scholarship. In this study, we investigate how closely neighbouring disciplines have focused on these intangible assets, used them as empirical resources, and addressed pressing challenges.

Today, as decision-makers have to carry out evidence-based ponderations it is expected that have to be more directly (or indirectly through consultants) aware of the current state of research in terms of puzzles, concepts, and measures. Our

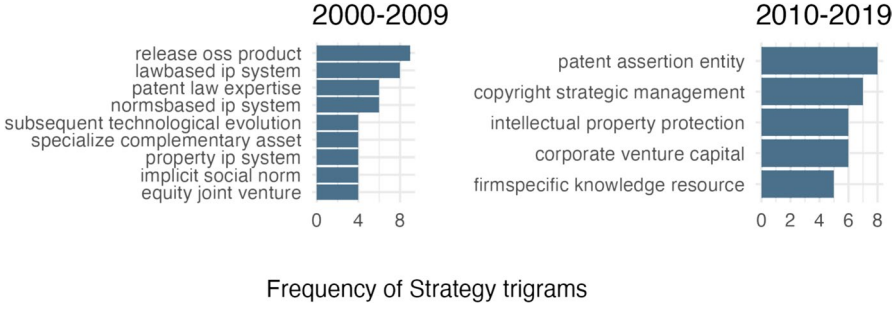


Fig. 17 Trigrams of the strategy corpus, 2000 s and 2010 s. Note 1: OSS = open source software. Note 2: All abstracts of the 570 papers used

assessment matters for policy-makers in a variety of capacities, including in the fields of competitiveness and innovation policy as well specifically for professionals and leaders in the IPR world. For example, IPR national offices can use our findings on the differences between Economics and Strategy to develop non-core services, for instance by linking patent trends to opportunities for investment.

For analysts in the field, our perspective offers a situational awareness regarding the differences and similarities between Economics and Strategy as well as a critical appreciation of trends and turns in cutting-edge IPR-related work. This can help consultants and analysts operating at this intermediate level to create "club goods" for their associates (tailored services to specific industries or regional clusters) and to advise firms on aligning their intellectual property strategies with broader policy objectives, such as promoting sustainable innovation ecosystems where startups and universities are at the core of sectoral renewal.

Our research design generated 570 articles from the top 10 scientific journals in Economics and Strategy from 2000 to 2022. Papers on IPR-related subjects has been growing, but mostly they are published in Strategy journals. The contributions appearing in Economics are from authors with more institutionally diverse affiliations while in Strategy from more internationally diverse backgrounds. More and more journals in Economics and Strategy publish IPR-related work every single year, but most of the focus is on patents. Papers in Economics and Strategy tend are similar in which they both tend to be empirical and to concentrate on two major linchpins: firms and innovation. Conversely, they tend to differentiate: Economics more sensitive to macro and governance issues, Strategy more micro and transactional. While Economics appears to be richer in the variety of aspects from which they address their subjects, Strategy seems to be more consistent in terms of theoretical framework.

Despite their differences, Economics and Strategy share a common cognitive frame in their empirical orientation and focus on two major themes: firms and innovation. Economics tends to emphasize macro-level and governance-related issues, such as institutional frameworks and policy impacts, while Strategy focuses on micro-level, transactional dynamics, such as firm performance and competitive advantage. This distinction offers a top-down perspective for IPR professionals by highlighting how these perspectives can complement each other in the IP world as a whole but also a bottom-up outlook for intermediaries to shape sectors and ecosystems.

A large body of work argues that research increases the effectiveness of decisions, in the sense that more scientific understanding leads to better applications in the real world. How academic knowledge improves policy and management decisions remains a rather open question. In the case of social scientific on IPR-related topics, our exercise may be of value to those designing and implementing IPR-related decisions. At the very least, our results may contribute to lead readers more directly to perspectives that matter to them, to break assumptions regarding the different paths of research available, and to motivate them to interrogate lessons learned from a more empowered stance.

Surely our approach has limitations. Over the last two decades, management and economics research on IPRs has co-evolved. We propose a research agenda that

would re-engage with less developed themes. Pursuing it could enhance the level of interchange and capture the shifting of balance of IPRs in the current era.

Future research should investigate specific cross-disciplinary collaboration frameworks, such as methods for fostering cooperation between legal scholars and technologists in developing AI-related intellectual property policies. Additionally, studies could explore how economic and behavioral insights inform interdisciplinary approaches to managing innovation ecosystems. Moreover, similar studies addressing disciplines such as public administration, sociology or history would be of value in the future. Furthermore, a study on the boundary work from the legal and engineering perspectives on IPR would also be worth pursuing.

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Data availability Data available on request from the authors.

Declarations

Competing interests The authors have no relevant financial or non-financial interests to disclose.

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