

Patterns of interdisciplinary citations and asymmetry between economics and the neighboring social sciences from 1959 to 2018

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Abstract

This paper offers a quantitative study measuring the historical relations between economics and the other social sciences, namely, anthropology, political science, psychology, and sociology. It performs a citation analysis in order to understand both whether economics has opened more space for the other social sciences and, if so, the subtleties of this process. Our time span is 1959-2018. This paper also develops an original asymmetry measure—the Coefficient of Interdisciplinary Asymmetry. Our results provide four major insights. First, we may separate the disciplines in three groups. Political science and sociology as disciplines with growing high interdisciplinarity, economics and psychology as disciplines with growing low interdisciplinarity, and anthropology as the only discipline with decreasing interdisciplinarity. Second, from the 1960s to the 2010s, economics rose from the fifth to the third position in terms of interdisciplinary citations to its fellow social sciences (outperforming psychology and anthropology). Third, economics became the central social science from the 1980s onwards, answering for nearly half of the interdisciplinary citations within the social sciences network. Finally, the Coefficient of Interdisciplinary Asymmetry yields the recognition that, within the social sciences network, economics is more representative to its neighboring disciplines than these disciplines to economics.

Keywords: Interdisciplinarity; Social Sciences; Bibliometrics; Citation Analysis; Coefficient of Interdisciplinary Asymmetry.

Resumo

Esse artigo oferece um estudo quantitativo mensurando as relações históricas entre a economia e as demais ciências sociais, quais sejam, antropologia, ciência política, psicologia e sociologia. É realizada uma análise de citação visando entender se a economia passou a dar mais atenção para as outras ciências sociais e, nesse caso, as sutilezas desse processo. Nosso período de análise é 1959-2018. Esse artigo também desenvolve uma medida original de assimetria—o Coeficiente de Assimetria Interdisciplinar. Nossos resultados fornecem quatro conclusões principais. Primeiro, podemos separar as disciplinas em três grupos. Ciência política e sociologia como disciplinas de alta e crescente interdisciplinaridade, economia e psicologia como disciplinas de baixa e crescente interdisciplinaridade, e antropologia como a única disciplina de interdisciplinaridade decrescente. Segundo, entre os anos 1960 e os anos 2010, a economia ascendeu da quinta para a terceira posição em termos de citações interdisciplinares às disciplinas próximas (superando a psicologia e a antropologia). Terceiro, a economia tornou-se a disciplina social central a partir dos anos 1980, respondendo por aproximadamente metade das citações interdisciplinares dentro da rede de ciências sociais. Finalmente, o Coeficiente de Assimetria Interdisciplinar mostra que, dentro da rede das ciências sociais, a economia é mais representativa para suas disciplinas correlatas do que o são essas disciplinas para a economia.

Palavras-chave: Interdisciplinaridade; Ciências Sociais; Bibliometria; Análise de Citação; Coeficiente de Assimetria Interdisciplinar.

JEL: A12; B29; C89.

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1. INTRODUCTION

Nearly a decade ago, commenting about the history of economics and the history of the social sciences, Backhouse and Fontaine (2010, p. 3) stated that: “[w]hatever the period being considered, references to the relationships between economics and other social sciences are almost universally incidental in general histories of economics.” Even within the specialized publications in the field of the history of economics, the literature dealing with the history of economics and the other social sciences is scarce. To illustrate this scarcity, the authors list the few papers they found on the subject—published between 2000 and 2010 (BACKHOUSE & FONTAINE, 2010, p. 3-6). Listing papers published since 2010, we think we could add only a few more on the subject, such as Rol (2012), Engerman (2015), Fontaine (2015), Cavalieri (2017), and Bögenhold (2018). Such scarcity of works on the subject indicates that the landscape in the history of economics is still one of relative neglect to the relationship between economics and the other social sciences. In an attempt to contribute to this literature, this essay focuses on the evolution of the interdisciplinarity between economics and the social sciences.

The research presented here is a descriptive-quantitative analysis of the patterns of interaction among economics and the other social sciences since 1959.¹ Recently, a few studies quantitatively analyzed the interdisciplinary relations among the social sciences.² In these accounts, knowledge exchange appears as asymmetric and economics is taken to be more insular than its neighboring disciplines. For example, Fourcade, Ollion, and Algan (2015, p. 94), evaluating the insularity—understood as the absence of interdisciplinarity—of economics for the 2000s, identify economics as the least interdisciplinary discipline in relation to other social sciences. Notwithstanding, there are contemporary discussions on the topic indicating that economics has become more mindful of and tolerant with the other social sciences in the recent years; therefore, increasing the interdisciplinary interactions (BÖGENHOLD, 2018, p. 1126; FONTAINE, 2015, p. 3; MÄKI, 2017). These discussions find support in a very recent research by Angrist et al.’s (2017, p. 2, 23-24), which presents economics with a growing tendency towards interdisciplinarity interaction with other social sciences.

Hence, the specific objective of this essay is to extend the empirical literature on the interdisciplinarity of economics in relation to its fellow social sciences. More specifically, this essay aims at performing a citation analysis in order to understand both whether or not economics has actually opened more space for the other social sciences and the subtleties of this process. We want to understand how the patterns of interdisciplinary citations between economics and the other social sciences evolved through time. However, since our time span is relatively large—encompassing the years between 1959 and 2018—we do not deal with particular events within the history of contemporary economics. We present general trends and general remarks about them.

Our study is close to the one performed by Angrist et al. (2017). We offer, however, a more comprehensive and focused discussion of the knowledge exchange between economics and the other social sciences. Our research is more comprehensive because it offers information on a wider and deeper range of relations, and more concentrated insofar as the discussion here is focused solely on the relations between economics and the other social sciences. We also developed an asymmetry measure that may allow both a more thorough perception about the relative relevance of economics before each social science and an evaluation of changes in the interdisciplinary structure of the social sciences in terms of reciprocal ties. Furthermore, the accomplishment of this objective may also serve the purpose of bringing quantitative remarks on the interdisciplinarity between economics and the neighboring social disciplines to the attention of the history of economics profession. None of the studies whose aim is this treatment were published in journals specialized in the area. Backhouse and Fontaine (2010, p. 6) defend that we should perhaps

¹ Quantitative approaches have not yet become routine among historians and methodologists of economics. However, Edwards, Giraud, and Schinckus (2018, p. 283-284) identify an ongoing *methodological moment* on behalf of quantitative analyses in the history of economics.

² There is a vast literature on the differences between inter-, trans-, multi-, and cross-disciplinarity. We do not intend to discuss taxonomies. For a more comprehensive discussion on the particularities of each, see Piaget (1972) and Klein (2010). In the remainder of this essay, interdisciplinarity will be adopted to represent knowledge flow among separate disciplines.

consider history of economics as history of social science. If this is the case, it may perhaps also be time for the historian of economic thought to complement his understanding of economics as a social science with maps of the historical relations between the social disciplines from a quantitative vantage point.

This essay is organized in four sections beyond this introduction. Section 2 details the hitherto existing empirical studies on the interdisciplinarity among the social sciences, explains our empirical strategy, and introduces the *Coefficient of Interdisciplinary Asymmetry*. Section 3 presents our results. Section 4 discusses the results presented in section 3. Closing, we present some final comments.

2. METHODOLOGY: CITATION ANALYSIS, EMPIRICAL STRATEGY, AND THE COEFFICIENT OF INTERDISCIPLINARY ASYMMETRY

This section counts with three subsections. The first subsection explains in what consists citation analysis and describes the four papers that, to our knowledge, measure social science interdisciplinarity. These papers are Rigney and Barnes (1980), Pieters and Baumgartner (2002), Fourcade, Ollion, and Algan (2015), and Angrist et al. (2017). The second subsection presents our empirical strategy. This presentation encompasses data, time span, and methodology. Finally, the third subsection lays out the estimation of the *Coefficient of Interdisciplinary Asymmetry*.

2.1. CITATION ANALYSIS

A reference to an academic manuscript indicates that the referenced work is a relevant piece of knowledge worth bringing to the attention of the academic community. Citation analysis, accordingly, is a quantitative technique that answers for a bibliometric effort to understand how communication flows within a given scholarly network. Its aim is to describe the structure of the flow of ideas and understand the position journals, disciplines, and scholars occupy within the network (EDWARDS, GIRAUD & SCHINCKUS, 2018, p. 287; JOVANOVIC, 2018, p. 302; MOODY & LIGHT, 2006, p. 69-70; PIETERS & BAUMGARTNER, 2002, p. 483-484). In this sense, we may understand the social sciences as a specific social network of scholars, journals and academic departments, among which we are interested in the *journal* citation network. The disciplines commonly regarded as constituents of the social sciences are anthropology, economics, political science, psychology, and sociology (ABBOTT, 2001, p. 123; ANGRIST et al., 2017, p. 2; PIETERS & BAUMGARTNER, 2002, p. 485; RIGNEY & BARNES, 1980, p. 114-115). Studies that aim at understanding the structure of interdisciplinary journal citations within this network are scarce, however. To our knowledge, only four works on the subject have been published thus far—two in the last four years.

Rigney and Barnes's (1980) study consists of a comprehensive citation analysis to examine the interdisciplinary citations both (a) within the social sciences network, and (b) between each individual social science and the entirety of the academic disciplines. The authors randomly sampled five percent of the citations from the flagship journal³ of each social discipline and evaluated their publication sources. They also divided their time span in two comparable periods: 1936-1959 and 1960-1975. Their conclusion regarding economics is that, along psychology, the discipline had the lowest rates of interdisciplinary borrowing, the highest levels of intradisciplinary citations—citations to journals from within the discipline—, and did not receive many citations from its fellow social sciences as well.

Pieters and Baumgartner (2002) analyzed the communication flows, for the period 1995-1997, both (a) between economics journals, and (b) between economics journals and the other social sciences and business. They worked with forty two economics journals and divided them into seven clusters, organized by citation proximity. Economics once again portrayed high levels of intradisciplinarity, with a so-called asymmetric pattern of citation exchange between itself and the other social sciences.

Fourcade, Ollion, and Algan (2015) explored the relationship between economics and the other social sciences in different measures, among which we highlight insularity. The authors took in

³ The flagship journals are detailed below. They represent the core journal of the main American learned societies for each discipline.

consideration the period 2000-2009 and the analysis was made *vis-à-vis* sociology and political science. The citing source adopted, as in Rigney and Barnes (1980), was the flagship journal for each discipline and the reference sources were those in the 2000-2009 top 25 journals for each discipline. Their conclusion was that economics is more insular than the other social sciences and that economics has more space in the neighboring disciplines than the contrary.

Angrist et al. (2017), finally, evaluate the impacts of extramural—a term the authors used as a substitute to what is conventionally termed interdisciplinary—citations among the social sciences and many other fields of knowledge, ranging their analysis from 1970 to 2015. Their analysis is a more comprehensive study in terms of fields. The authors show that economics is among the most insular social sciences, but that this situation was ameliorated in the past few years. Their unit of analysis is also a flagship journal—which they call trunk journals—for each science.

As such, then, the hitherto existing studies commonly regard economics as a discipline that relatively neglects its sister social sciences. To this extent, Angrist et al. (2017) differs from the other works insofar as it places the interdisciplinarity of economics in a state of progressive improvement. The most comprehensive discussion of Angrist et al.'s (2017) paper, however, regards the fields of economics that have become more important outside the discipline, not the general phenomena *per se*. Finally, this literature—once again with the exception of Angrist et al. (2017), which does not make any reference to asymmetry patterns—employs the concept of asymmetry rather loosely, which, as we will see, may jeopardize an accurate comprehension of the asymmetry patterns.

2.2. EMPIRICAL STRATEGY AND METHODOLOGY

Our empirical strategy is, to some extent, a hybrid effort. It combines features of Angrist et al. (2017), Fourcade, Ollion, and Algan (2015), Pieters and Baumgartner (2002), and Rigney and Barnes (1980), with some new elements. It is, above all, a historical evaluation of economics' recent past. The bibliographic methods employed here solely serve the purpose of telling the history of developments circumscribed to our time span.

Following Angrist et al. (2017), Fourcade, Ollion, and Algan (2015), and Rigney and Barnes (1980), we will concentrate our analysis on one publication per discipline. This publication is the flagship journal of the main American learned society for each social science. We find in the literature four reasons to see this selection of journals as sufficient for our analysis. First, we take the flagship journal of the main American learned society for each discipline to fairly represent the central currents of research in their respective fields (RIGNEY & BARNES, 1980, p. 115). Second, knowledge production is a socially and institutionally embedded act, and the learned societies play a crucial role in this process, creating stimuli and development conditions, sponsoring research agendas, and coordinating research activities (ALMEIDA, ANGELI & PONTES, 2017, p. 81; COATS, 1985, p. 1725). Third, the choice for the learned societies' journals reduces the probability of publication biases nurtured by the selection of journals maintained by single departments whose publication screening processes might follow, as argued by Colussi (2018, p. 47-48) and Heckman and Moktan (2018, p. 5-6), particular internal logics.⁴ And, at last, the American academy is still the one that holds the highest-ranked journals and faculty departments in economics (COUPÉ, 2003, p. 1337; HECK & ZALESKI, 2006, p. 1; KALAITZIDAKIS, MAMUNEAS & STENGOS, 2003, p. 1356-1357; KELLY & BRUESTLE, 2011, p. 660). Therefore, the journals taken to be the unit of analysis are: *American Anthropologist* (AA), *American Political Science Review* (APSR), *American Sociological Review* (ASR), *Psychological Review* (PR), and *The American Economic Review* (AER).

Within these flagship journals, we collect the bibliographic references at each original article to build our database. Then, we search for references to the top 25 journals of each social science—detailed below. As follows, our investigation seeks patterns of interdisciplinary *journal* citations flowing from the

⁴ Heckman and Moktan (2018, p. 53) argue that the tastes of editors and the biases of journals influence the publication screening process. This may create clientele effects and professional incest, raising the entry costs for new ideas and researchers outside the orbits of the journals and their editors. Colussi (2018, p. 49) endorses the view of editor favoritism towards the members of the editor's network at the expense of unconnected scholars.

flagship journals to this group of representative publications. It does not consider sources outside the top 25 journals of each discipline. As Fourcade, Ollion, and Algan (2015) did, we perform our analysis using the statistical programming framework *R*, and most of our main functionalities pertain to the *bibliometrix* package (ARIA & CUCCURULLO, 2017). The citation database is compiled from the *Elsevier Scopus* and *Web of Science* (henceforth WoS) databases, which we managed to merge.⁵

Our time span ranges from 1959 to 2018, which is different from the periods Rigney and Barnes (1980) and Angrist et al. (2017) analyzed. We chose the year 1959 as starting point because it marks the first record of the word *interdisciplinarity* and its variations in economics, according to Scopus and WoS.⁶ To analyze how economics' interdisciplinarity with the other social sciences evolved through time, we separated our time span in decades, from the 1960s (which includes 1959) to the 2010s (ending in 2018) and built a *dynamic* Top 25 Journal Ranking (henceforth T25) for each discipline. We qualify this T25 as dynamic because we constructed one ranking for each decade, with the objective of grasping each journal's influence in that specific time period. Moreover, we built our rankings based exclusively on the *inCites Journal Citation Reports*⁷ (henceforth JCR)—maintained by *Clarivate Analytics*, the same corporation that holds WoS—, which orders journals in decreasing order of impact factor. There are, furthermore, three issues involving the construction of these dynamic rankings.

First, the dynamic rankings per decade are the arithmetic means of the year-by-year impact factors within each interval. We rely on the arithmetic mean of the simple journal impact factor because the 5-year impact factor was made available only from 2007 onwards. Second, the Social Science Citation Index JCR is only available from 1979 onwards—unlike the Science Citation Index JCR, which dates back to 1975 (GARFIELD, 2007, p. 65; NISONGER, 2000, p. 264; RICE, BORGMAN & REEVES, 1988, p. 258). This means that social sciences journal rankings as we know them do not have observations for the period 1959–1978. For this reason, we adopted the same retrospective ranking for the 1960s and the 1970s. The reference for this ranking is the triennium 1979–1981. We did not base this ranking on years farther away from 1979 in order to avoid biases caused by mid-1980s outlier observations. There is, moreover, a difference between the rankings for the 1960s and the 1970s related to journal coverage: journals that did not exist in the 1960s were kept solely for the 1970s ranking and replaced by the next highest-ranked journal covering the 1960s. Finally, in cases where we had a coincidence of journals for two different sciences, we eliminated that journal from the discipline in which it occupied a lower average position.⁸ Accordingly, these journals were also replaced by the next highest-ranked publication.

2.3. THE COEFFICIENT OF INTERDISCIPLINARY ASYMMETRY

Asymmetry in interdisciplinary citations is loosely defined in Fourcade, Ollion, and Algan (2015, p. 93), Pieters and Baumgartner (2002, p. 498), and Rigney and Barnes (1980, p. 119). These works loosely use this concept to represent an absolute mismatch between two disciplines' reciprocal interdisciplinary citations. Rigney and Barnes (1980, p. 114), for example, understand asymmetry as the situation in which “one field cites another more often than it is cited in return.” Pieters and Baumgartner (2002, p. 498, 503), on the other hand, thinking of asymmetry as “reciprocal citation relationships,” present asymmetry in relation to the overall interdisciplinary citations of a discipline, but do not advance on this analysis.

⁵ All the accesses to Scopus and WoS were performed in September 21st, 2018. Therefore, only the first three quarters of 2018 are covered in our sample.

⁶ JSTOR delivers results that predate 1959, starting in 1940, but JSTOR does not allow us to disaggregate citation data as Scopus and WoS do. We will, for that reason, remain faithful to the results delivered by Scopus and WoS.

⁷ Available at <http://jcr.incites.thomsonreuters.com>.

⁸ Four journals were replaced in economics: *Scottish Journal of Political Economy* (1960s, remained in political science), *Problems of Communism* (1960s, 1970s, 1980s; remained in political science), *Journal of Human Resources* (1970s, 1980s; remained in sociology), and *Economy and Society* (2000s; remained in sociology). Four journals were also replaced in sociology: *Canadian Review of Sociology and Anthropology* (1960s, 1970s; remained in anthropology), *Journal of Politics and Military Sociology* (1970s; remained in political science), *Social Networks* (1980s, 1990s, 2000s, 2010s; remained in anthropology), and *Politics & Society* (1990s, 2000s; remained in political science). One journal was replaced in anthropology: *Human Ecology* (2000s, 2010s; remained in sociology). Finally, one journal was also replaced in political science: *Socio-Economic Review* (2010s; remained in sociology).

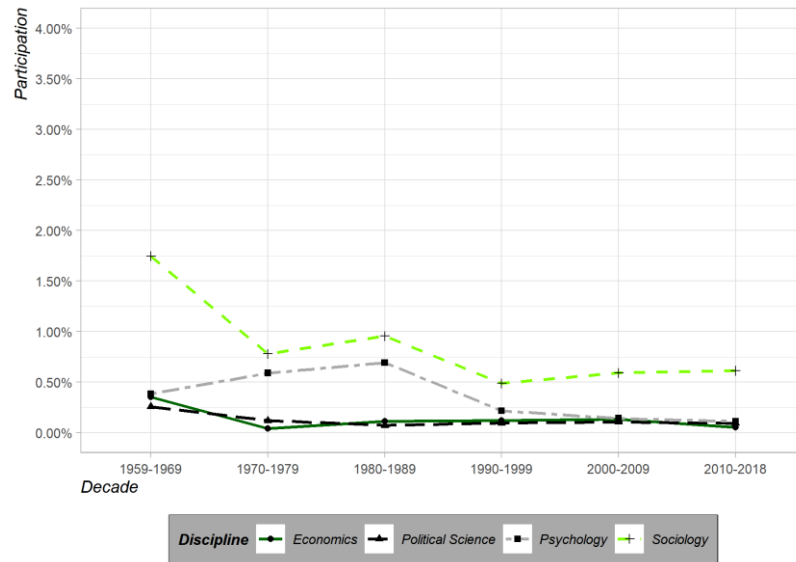
Following this, in order to better understand the asymmetry patterns in social science interdisciplinarity, we designed something we called *Coefficient of Interdisciplinary Asymmetry* (henceforth CIA). The CIA is supposed to measure the relation between two disciplines in terms of reciprocal proportion of citations; it quantifies the importance of discipline A to discipline B in relation to discipline B 's importance to discipline A . Its formula for a given point in time is $CIA_{A,B} = \left(\frac{\sigma_B^A}{\theta_B}\right) \left(\frac{\theta_A}{\sigma_A^B}\right)$. This equation measures the asymmetry of discipline A in relation to discipline B . In this formula, σ_B^A gives the number of citations to discipline A in discipline B , σ_A^B gives the number of citations to discipline B in discipline A , and θ_A and θ_B yield the total number of interdisciplinary citations in disciplines A and B , respectively. Therefore, it is a relation between the proportion occupied by disciplines A and B in the interdisciplinary citation network of each other. Once this is calculated, $CIA_{B,A}$ is given merely by the multiplicative inverse of $CIA_{A,B}$: $CIA_{B,A} = \frac{1}{CIA_{A,B}}$.

If $CIA_{A,B}$ equals one, we have that A plays a role in B 's network of interdisciplinary citations equivalent to the role played by B in A 's. For example, if, among the interdisciplinary citations of A , B is the target of ten per cent of A 's citations, a CIA equal to one tells us that A receives the same proportion of B 's interdisciplinary references. As such, values closer to one represent higher symmetry than those farther away. Alternatively, a $CIA_{A,B}$ greater than one means that A is more representative to B than B to A , while a $CIA_{A,B}$ less than one yields the opposite result. This relation can only be established between two disciplines at a time.

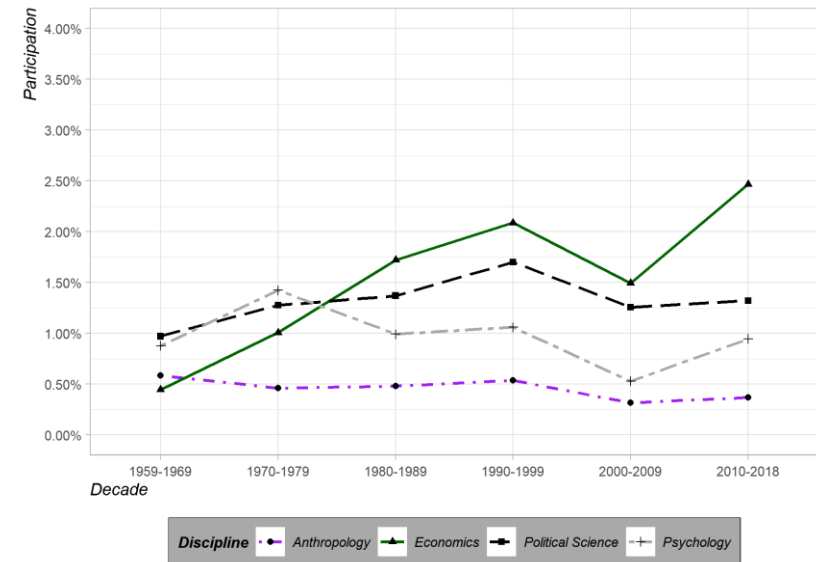
We believe the CIA to be more elucidating than the loose comparison between the absolute levels of interdisciplinary citations among disciplines because the latter does not take into account that disciplines present different institutional and historical patterns of interdisciplinarity. Since this difference exists, analyses of this sort almost inevitably present asymmetry towards the less interdisciplinary discipline, inasmuch as its propensity to cite the neighboring sciences is smaller. The CIA , *au contraire*, takes the different degrees of interdisciplinarity among disciplines as given. In this sense, each discipline's weight in relation to each other is measured exclusively *within* the interdisciplinary citations to the network. It is our claim, therefore, that the CIA allows us to effectively understand asymmetry patterns in terms of the relative relevance among two sciences of a given network.

3. RESULTS: THE EVOLUTION OF INTERDISCIPLINARITY WITHIN THE SOCIAL SCIENCES NETWORK

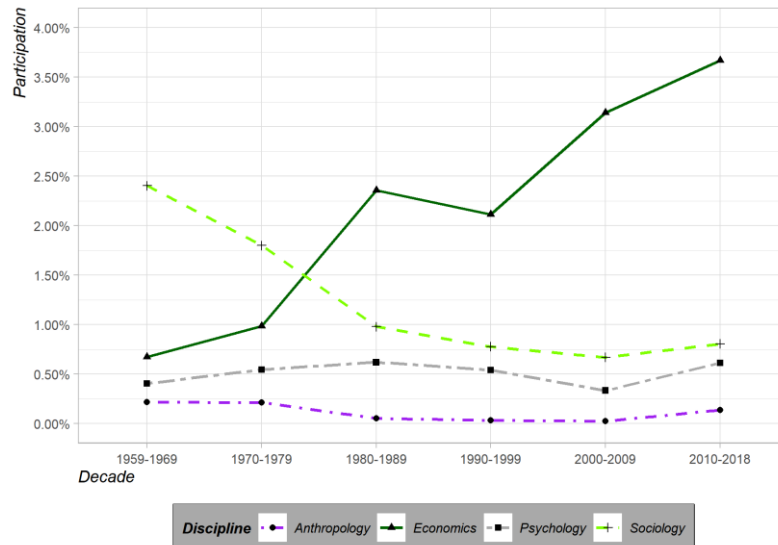
This section aims at presenting economics' degree of interdisciplinarity in relation to the social sciences and its patterns of intertemporal evolution. The main results to be detailed are: (a) the evolution of each discipline's openness to the other social sciences' T25; (b) the evolution of the citations in anthropology, political science, psychology, and sociology to the economics' T25 journals per decade; (c) the aggregated relations between the flagship journals and a group of core journals for each science; (d) the patterns of asymmetry in interdisciplinary citations; and (e) the evolution of each discipline's references to the their own T25. Among these, (a) and (b) yield results that resemble the overall patterns presented by Angrist et al. (2017). Point (e) is close to Fourcade, Ollion, and Algan's (2015, p. 94) perception concerning economics' regard to the top of its internal hierarchy. Despite the prior discussions on these points, we believe our analyses offer new inputs and insights on the nature of these developments in terms of length and focus of our study. Evaluations (c) and (d), nonetheless, offer, to our knowledge, completely novel assessments to the structure of the interdisciplinary citations within the social sciences network. In this sense, figures 1 to 6 serve illustrate the evolution of each discipline's degree of interdisciplinarity in relation to the social sciences.

Figure 1: The Social Sciences in the AA

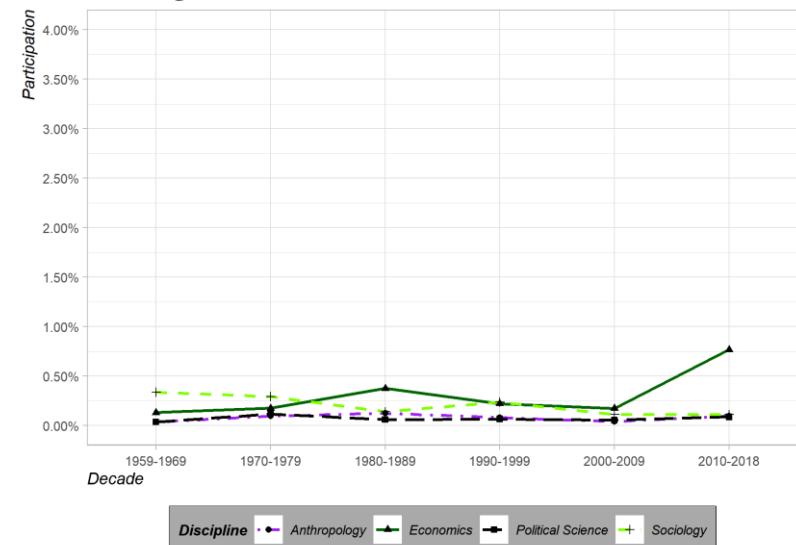
Source: Elaborated by the author from Scopus and WoS databases

Figure 3: The Social Sciences in the ASR

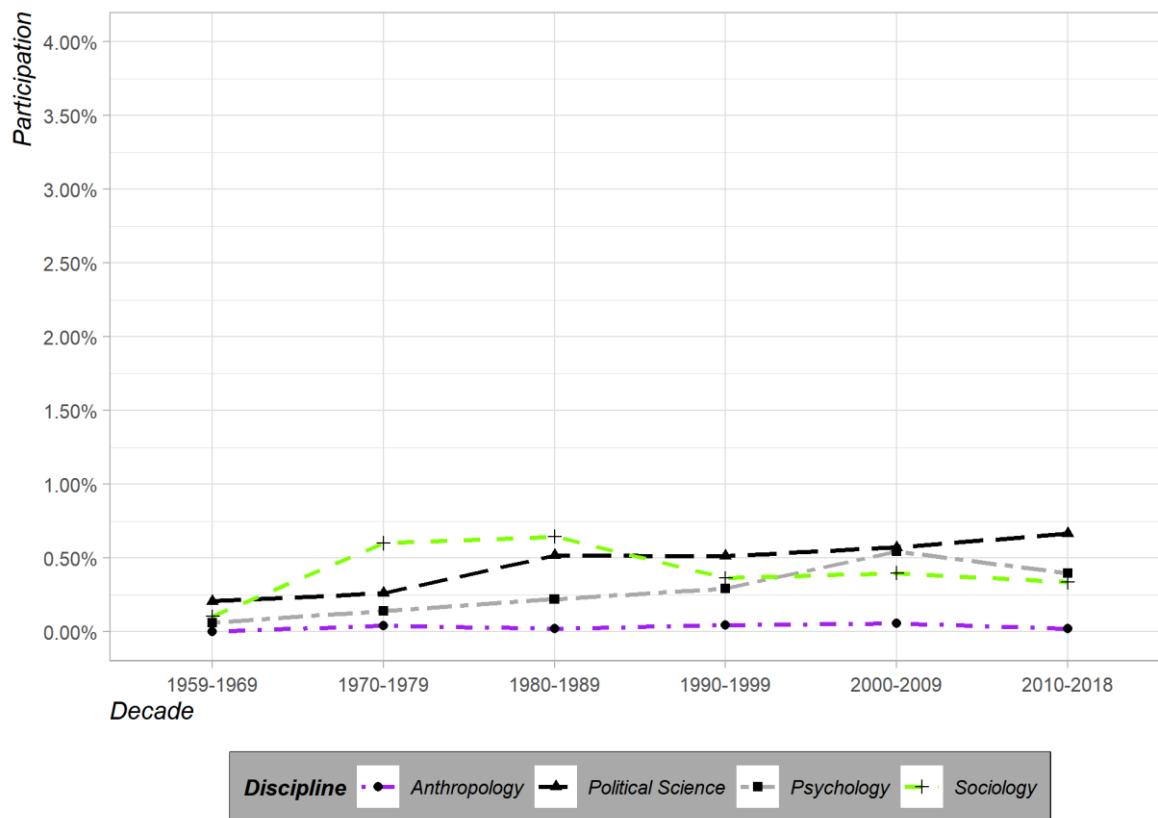
Source: Elaborated by the author from Scopus and WoS databases

Figure 2: The Social Sciences in the APSR

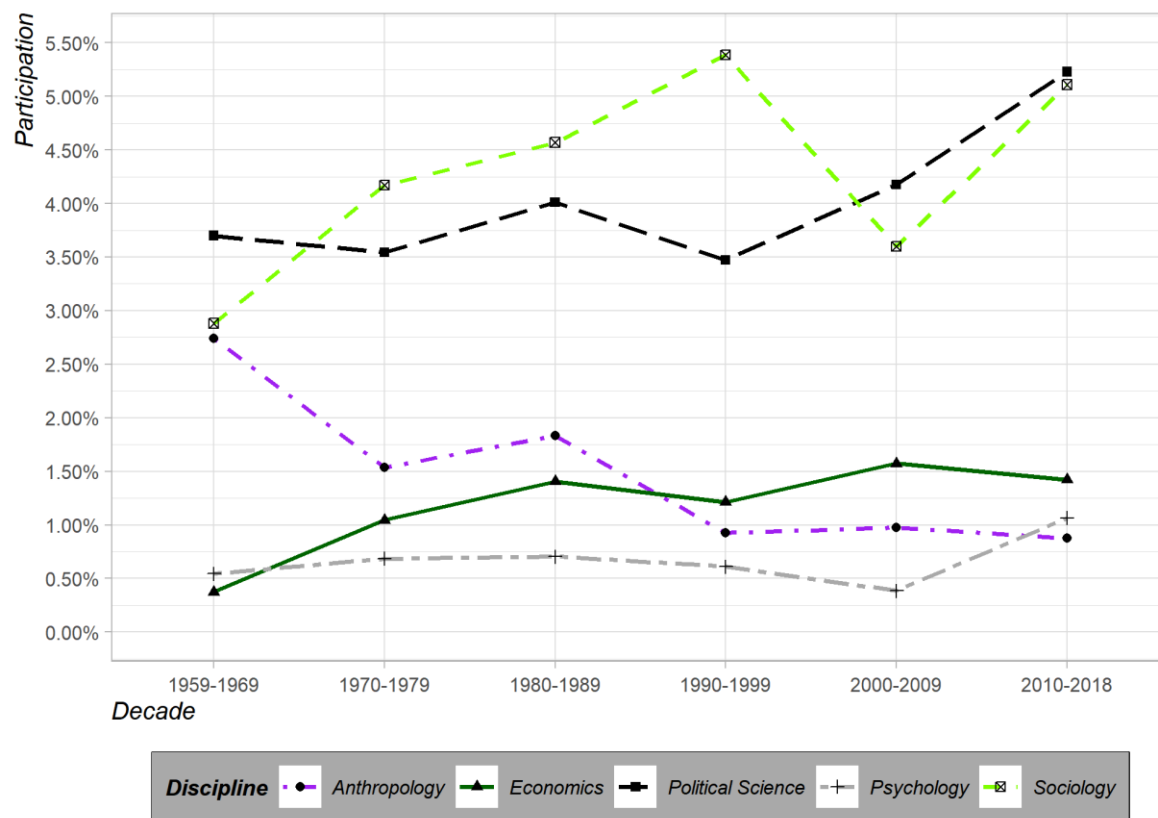
Source: Elaborated by the author from Scopus and WoS databases

Figure 4: The Social Sciences in the PR

Source: Elaborated by the author from Scopus and WoS databases

Figure 5: The Social Sciences in the AER

Source: Elaborated by the author from Scopus and WoS databases

Figure 6: Openness to the Social Sciences in each flagship journal

Source: Elaborated by the author from Scopus and WoS databases

Figures 1 to 5 treat how the individual T25s were cited in particular flagship journals. In these, each line represent the citations to one single alien discipline. Accordingly, figure 1 establishes the evolution of AA's citations to the T25 journals of each discipline, with the exception of anthropology; figure 2 evaluates the progress of APSR's citations to the highest-ranked journals of each discipline, with the exception of political science; and so forth. Angrist et al. (2017, p. 24) present similar figures, whose identified tendencies figures 1 to 5 corroborate.

Figure 6, on the other hand, aggregates each discipline's overall openness to the social sciences. Its lines represent how each individual flagship journal evolved in its citations to the aggregated T25 of the other social sciences. Once again, citations to a discipline's own T25 were not taken into consideration. This figure also finds a similar representation in Angrist et al. (2017, p. 23).

Collectively, these figures offer two straightforward and elucidating perceptions. The first is that the overall openness of the social sciences to their sister disciplines has risen in the last sixty years, from 2.05%, in the 1960s, to 2.74%, in the 2010s—the peak throughout the six decades. This represents a growth of 33.74% in the average interdisciplinarity within the social sciences network (with an average growth rate of 5.99% per decade). The second perception is that we may divide the social sciences in three classes of disciplines by interdisciplinarity status. The class of *growing high interdisciplinarity*, which kept its degree of interdisciplinarity growing and above the average overall interdisciplinarity openness throughout the entire series. The class of *growing low interdisciplinarity*, whose interdisciplinarity levels grew along our time span but remained below the interdisciplinarity average of the social sciences. And a class of *decreasing interdisciplinarity*, which presented its interdisciplinarity levels above the average line and had it shrunk to levels below it from certain decade onwards. The first class is composed by political science and sociology; the second class is made up by economics and psychology; the third class is concentrated on anthropology. These same three groups could be inferred from Angrist et al. (2017, p. 23)—even though the authors do not do it.

Political science and sociology answer for the highest degrees of interdisciplinarity. Their levels of interdisciplinarity are so relatively high, that their lowest decennial percentages (3.47% and 2.88%, respectively), never found themselves surpassed by the highest decennial percentages of the other three disciplines. In fact, if it were not for these two disciplines—i.e., if we eliminated them from our narrative—, the aggregated average of interdisciplinarity openness of the social sciences would have decreased in the sixty years analyzed (from 1.22% in the 1960s to 1.12% in the 2010s). Additionally, in the 2010s, political science and sociology combined answered for more than three-quarters (75.46%) of the interdisciplinarity citations within the network.

Economics and psychology show low but intertemporally growing degrees of interdisciplinarity. Economics departs from 0.37% in the 1960s to reach 1.42% in the 2010s, while psychology departs from 0.55% and finishes with 1.06%. Economics departs from a lower degree of interdisciplinarity openness and evolves prominently in relation to its first observation, nearly quadrupling it, while psychology's decennial percentages nearly double. Still, both economics and psychology remain below the average of interdisciplinarity openness through all the decades (economics would find itself above the decennial averages from the 1980s onwards if political science and sociology were set aside in the calculation, as suggested above; psychology, however, would all the same remain below the new average throughout the entire account).

Anthropology, at last, is the only discipline whose degree of interdisciplinarity openness decreased throughout our period of analysis. In the 1960s, anthropology found itself above the average of interdisciplinarity openness, with 2.74% of its citations directed to its fellow social sciences. From the 1970s onwards, however, anthropology became progressively less prone to cite these disciplines, until it reached 0.88% in the 2010s, its lowest degree of social science interdisciplinarity in our sample.

On these grounds, table 1 compares the sampled points of departure and arrival of each science. Political science, sociology, and psychology did not have their positions altered between the 1960s and the 2010s, remaining in the first, second, and fourth positions, respectively. Economics, however, rose from the fifth to the third place, overriding psychology and anthropology. Anthropology, given its progressively decreasing regard for the social sciences, descended from the third to the fifth position—in Angrist et al.'s (2017, p. 23) remark, anthropology also presents decreasing levels of social science interdisciplinarity, but

it manages to remain above the levels of economics and psychology in terms of interdisciplinary citations, from 1970 to 2015.

Table 1: The evolution of the social sciences in terms of interdisciplinarity

Position	1960s		2010s		$\Delta\%$	
	<i>Discipline</i>	%	<i>Discipline</i>	%	<i>Discipline</i>	%
1	Political Science	3.70%	Political Science	5.23%	Economics	279.65%
2	Sociology	2.88%	Sociology	5.11%	Psychology	95.33%
3	Anthropology	2.74%	Economics	1.42%	Sociology	77.31%
4	Psychology	0.55%	Psychology	1.06%	Political Science	41.32%
5	Economics	0.37%	Anthropology	0.88%	Anthropology	-68.07%

Source: Elaborated by the author

The first four columns, regarding the starting and final stages of interdisciplinary openness, are important to situate economics in relation to its fellow social sciences. Economics, accordingly, is much below political science and sociology in terms of interdisciplinarity citations to the other social sciences. This was true in the 1960s and it remains true in the 2010s. Economics, however, managed to improve its situation and to become more mindful of the social sciences than psychology and anthropology.⁹ In the case of the latter, this is partially to blame on anthropology's contraction of its own interdisciplinarity levels. The escalation of economics' degree of interdisciplinarity *vis-à-vis* those of psychology, political science, and sociology, however, surpassing the first and reducing the gap with respect to the remaining two, is to be accredited exclusively to economics itself.

Among all the five disciplines, economics is the one that became more open in relation to its self-former levels. This is what the last two columns of table 1 show. As already presented, anthropology is the only discipline whose degree of interdisciplinary openness decreased. It had a growth rate of -68.07%. Among those whose interdisciplinary citations increased, psychology nearly doubled, growing 95.33%, while sociology and political science also grew significantly, having 77.31% and 41.32%, respectively, as growth rates. It must be noted that the latter two disciplines already departed from relatively high degrees of interdisciplinarity, which makes these numbers even more expressive. Economics, finally, even though it might be argued that its point of departure was ridiculously low, grew 279.65%. This means that, in the 2010s, within the universe of *AER* citations, articles originally published in the highly ranked journals of the alien social sciences occupied a space nearly four times bigger than they did in the 1960s. When we compare economics in the 2010s with economics in the 1960s, therefore, we do not have any option but to conclude that our study do not find enough substance to reject the hypothesis defended by Fontaine (2015, p. 3) and Mäki (2017) and measured by Angrist et al. (2017, p. 23-24): the attention of economics to the other social sciences—as long as the *AER* as a proxy is concerned—has indeed become more prominent.

This is however, a two-way street: if the attention of economics to its sister social disciplines has risen, the attention of the alien social sciences to economics has risen in return—and much more incisively. Table 2 compares these rates of growth. The overall openness of the social sciences went up 33.74%, with an average growth rate of 5.99% per decade, as aforementioned. Meanwhile, the citations of economics to the T25s of anthropology, political science, psychology, and sociology augmented 279.65%, with an average growth rate of 30.58%. At the same time, the average of citations to economics by the other social sciences grew 333.52%, with an average growth rate of 34.09% per decade.

⁹ Interestingly, a measure of average journal turnover regarding each social science's T25 ranks the disciplines exactly as in the 2010s ranking in terms of interdisciplinarity. The journal turnover measures how much a discipline's T25 in a given decade differs from that discipline's immediately preceding T25. Accordingly, political science leads with the highest average turnover (36.67%), followed by sociology (30.67%), economics (28.67%), psychology (27.33%), and anthropology (22.67%).

Table 2: Growth rates per decade (economics and overall)

Decade	Average overall openness	Growth rate (Δ)	Average citations to economics	Growth rate (Δ)	Economics' openness	Growth rate (Δ)
1960s	2.05%	—	0.40%	—	0.37%	—
1970s	2.20%	7.20%	0.55%	37.88%	1.04%	179.14%
1980s	2,50%	14.05%	1.14%	106.42%	1.41%	34.55%
1990s	2,32%	-7.30%	1.14%	-0.47%	1.21%	-13.68%
2000s	2,14%	-7.77%	1.24%	8.71%	1.57%	29.65%
2010s	2,74%	27.95%	1,74%	40.77%	1.42%	-9.67%
Growth rate		33.74%		333.52%		279.65%
Average growth rate		5.99%		34.09%		30.58%

Source: Elaborated by the author from Scopus and WoS databases

This intertemporal evaluation further indicates that economics rose to the highest rank among the social sciences in terms of prestige in the 1980s, after an increase of 106.42% in citations directed to its T25. From this decade onwards, as displayed in figures 1 to 4, economics became the most cited discipline in political science, psychology (both of which had had sociology as most cited discipline in 1960s-1970s),¹⁰ and sociology (in psychology's stead)—the exception here is anthropology, in which sociology remained the most cited discipline from the 1960s to the 2010s.

This movement of economics towards the center of the social sciences network may be inferred from table 3 and figure 7. Table 3 contains information regarding the proportions of interdisciplinary (abbreviated as ID in the table) citations to and from economics. The first three columns tell us that, among all the interdisciplinary citations to social sciences (abbreviated as SS in the table)—accounted by the simple addition of the absolute number of interdisciplinary citations—, the *AER* evolved from representing merely 2.19% in the 1960s to representing 19.23% in the 2010s—nearly one-fifth, among the five disciplines. The final three columns, alternatively, illustrate that economics, which represented 15.90% of all the anthropology, political science, psychology, and sociology interdisciplinary citations to neighboring social sciences in the 1960s, accounted for 56.01% of these citations in the 2010s. Naturally, the absolute number accounted here disregards the *AER* citations, because we are looking for interdisciplinary references, and *AER* citations to economics would constitute a case of *intra*-, instead of interdisciplinary interaction. Accordingly, these columns inform the reader that economics, from the 1990s onwards, became the target of more than half of the absolute number of interdisciplinary citations to the social sciences employed by anthropology, political science, psychology, and sociology. Still, if we had not disregarded the *AER* interdisciplinary citations, economics would significantly represent 45.24% of the interdisciplinary citations in our network—naturally, *AER* citations to economics were not taken into account.

Figure 7, on the other hand, shows that this rise in attention towards economics was more conspicuous in political science and in sociology, while anthropology actually contracted its utilization of citations to economics.

Economics' movement towards higher prestige before the social sciences coincides with what has been conventionally called “empirical turn¹¹ in economics,” alleged to have taken place in the last decades of the twentieth century (BACKHOUSE & CHERRIER, 2017, p. 2). Hamermesh's (2013, p. 168) bibliometric investigation shows that a shift towards more empirical work in economics actually took place

¹⁰ Psychology's citations to economics oscillated in the following decades. In the 1990s, sociology was the most cited discipline in the *PR*, but economics reclaimed this position in the two following decades.

¹¹ Mäki (2017) defends that the terminology of *turns* is constantly used in a careless fashion, causing the term to lose its meaning.

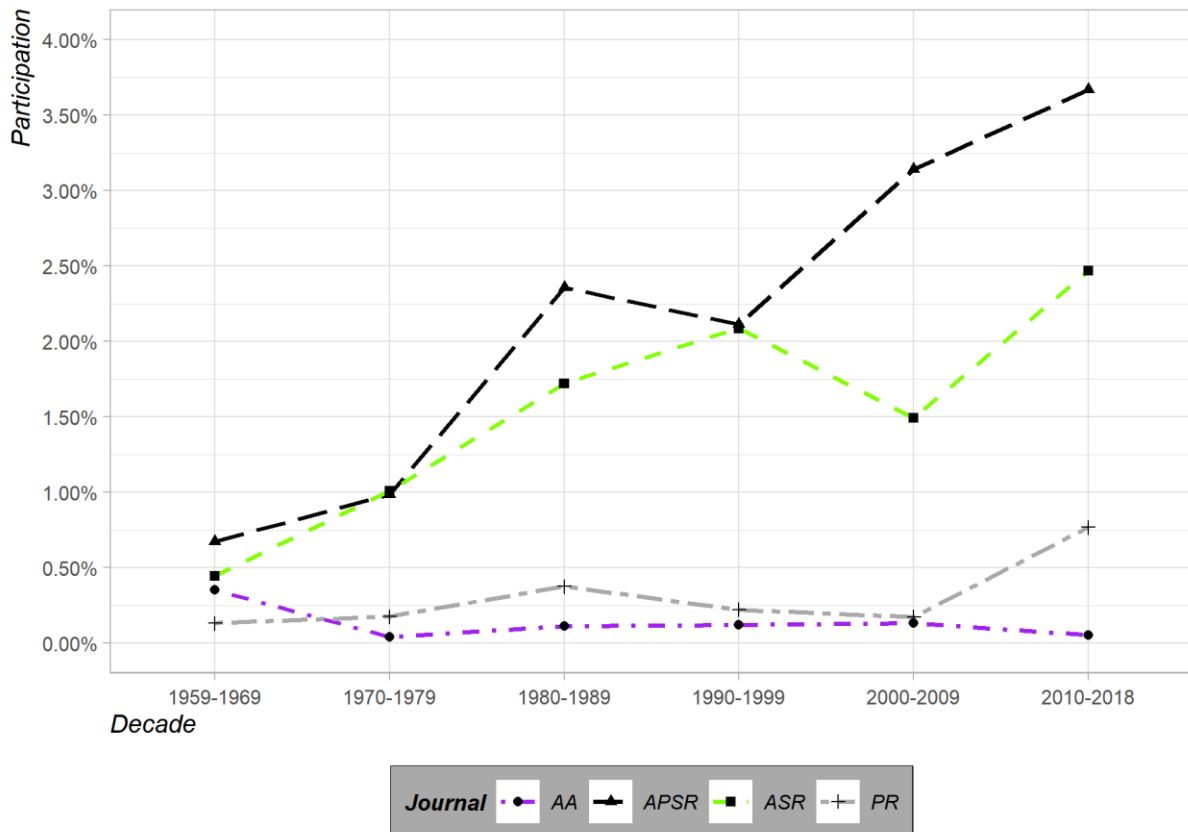
between 1983 and 1993. Angrist et al. (2017, p. 38), in addition, display a rise in the interest of the social sciences for economics' empirical works. It is interesting to notice, therefore, that economics' effective rise as the most prestigious social science coincides precisely with the steering of its attention towards empirical research. Notwithstanding the importance of this potential relation and the discussion opportunities available regarding this particular subject, there are numerous questions and puzzles circumscribed to this so-called empirical turn whose disputes escape the purpose of this essay.

Table 3: The rise of economics' significance within the social sciences network

Decade	SS Overall ID citations (with economics')	Economics' ID citations to the SS	Economics' ID citations within the SS network	SS Overall ID citations (without economics')	Overall ID citations to economics from the SS	ID citations to economics within the SS network
1960s	823	18	2.19%	805	128	15.90%
1970s	1,589	132	8.31%	1,457	340	23.34%
1980s	1,982	209	10.54%	1,773	779	43.94%
1990s	2,017	220	10.91%	1,797	809	45.02%
2000s	1,978	390	19.72%	1,588	818	51.51%
2010s	2,564	493	19.23%	2,071	1,160	56.01%

Source: Elaborated by the author from Scopus and WoS databases

Figure 7: References to economics' T25



Source: Elaborated by the author from Scopus and WoS databases

A comparison between figures 5 and 7 yields a source for introducing the asymmetric relations between economics and the other social sciences, presented especially by Fourcade, Ollion, and Algan (2015, p. 94). The comparison between these figures allow us to pair economics with each one of the other four disciplines per decade. This gives us twenty four pairing observations, summarized in table 4. The first

column in each box gives economics' citations to the paired discipline, while the second column gives the opposite relation. The higher percentages in each comparison are in bold. In twenty two out of the twenty four observations, economics' space in the paired social science is bigger than the space of the paired social science in economics. The only exception is psychology both in the 1990s and 2000s.

Table 4: Unweighted asymmetric relations between Economics and the fellow Social Sciences

Decade	Economics vs Anthropology		Economics vs Political Science		Economics vs Sociology		Economics vs Psychology	
1960s	0.000%	0.354%	0.208%	0.675%	0.104%	0.445%	0.062%	0.132%
1970s	0.040%	0.043%	0.261%	0.986%	0.602%	1.008%	0.142%	0.177%
1980s	0.020%	0.112%	0.518%	2.358%	0.646%	1.723%	0.222%	0.376%
1990s	0.044%	0.122%	0.513%	2.115%	0.364%	2.088%	0.292%	0.223%
2000s	0.056%	0.132%	0.573%	3.142%	0.399%	1.494%	0.545%	0.175%
2010s	0.020%	0.054%	0.666%	3.669%	0.337%	2.468%	0.398%	0.769%
Growth rate	--	-84.84%	220.20%	443.36%	224.36%	454.66%	537.63%	484.10%
Average growth rate	--	-31.43%	26.21%	40.29%	26.53%	40.87%	44.85%	42.33%

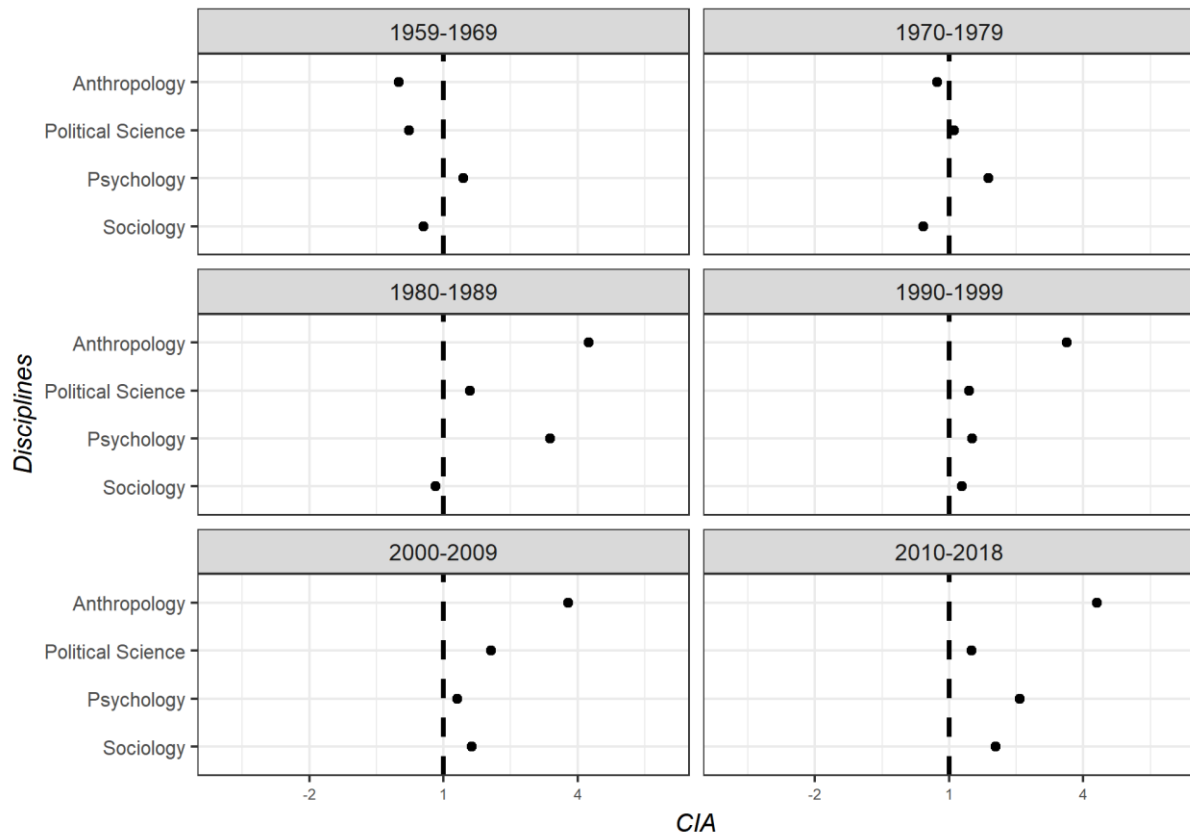
Source: Elaborated by the author from Scopus and WoS databases

From this table, it is straightforward that economic knowledge flows into the other social sciences more than the contrary. In percentage terms, we find that economics began our series as more important to each alien discipline than each alien discipline to economics, and that this relation remained nearly untouched across time.

In terms of growth rates, anthropology's citations to economics is the only one to have decreased, at an average of 31.43% per decade—still, economics never cited anthropology more than anthropology cited economics in any given decade. Political science's and sociology's growth of citations to economics were much more prominent than the opposite. Psychology, alternatively, grew in significance to economics more than economics to psychology. Given that economics' representation in psychology's articles remained higher than psychology's representation in economics' articles (exception made to the 1990s-2000s observations), one might loosely infer that this movement actually represented a reduction of the asymmetry between economics and psychology, or that the asymmetry took place towards psychology in 2000s-2010s.¹²

However, this result is unweighted for interdisciplinary citations within the social sciences network. In order to further our understanding of the asymmetry patterns, we must resort to the CIA. Accordingly, figure 8 offers a visualization of how economics' asymmetry with the neighboring social sciences evolved between the 1960s and the 2010s.

¹² Exclusively in mathematical terms, we could also say that economics' asymmetry with anthropology was reduced between the 1960s and the 2010s. However, this is the case because there was *no* citation to anthropology in the AER during the 1960s. From the 1970s onwards, we find an actual decrease in economics' citations to anthropology as well.

Figure 8: Economics' Coefficient of Interdisciplinary Asymmetry

Source: Elaborated by the author from Scopus and WoS databases

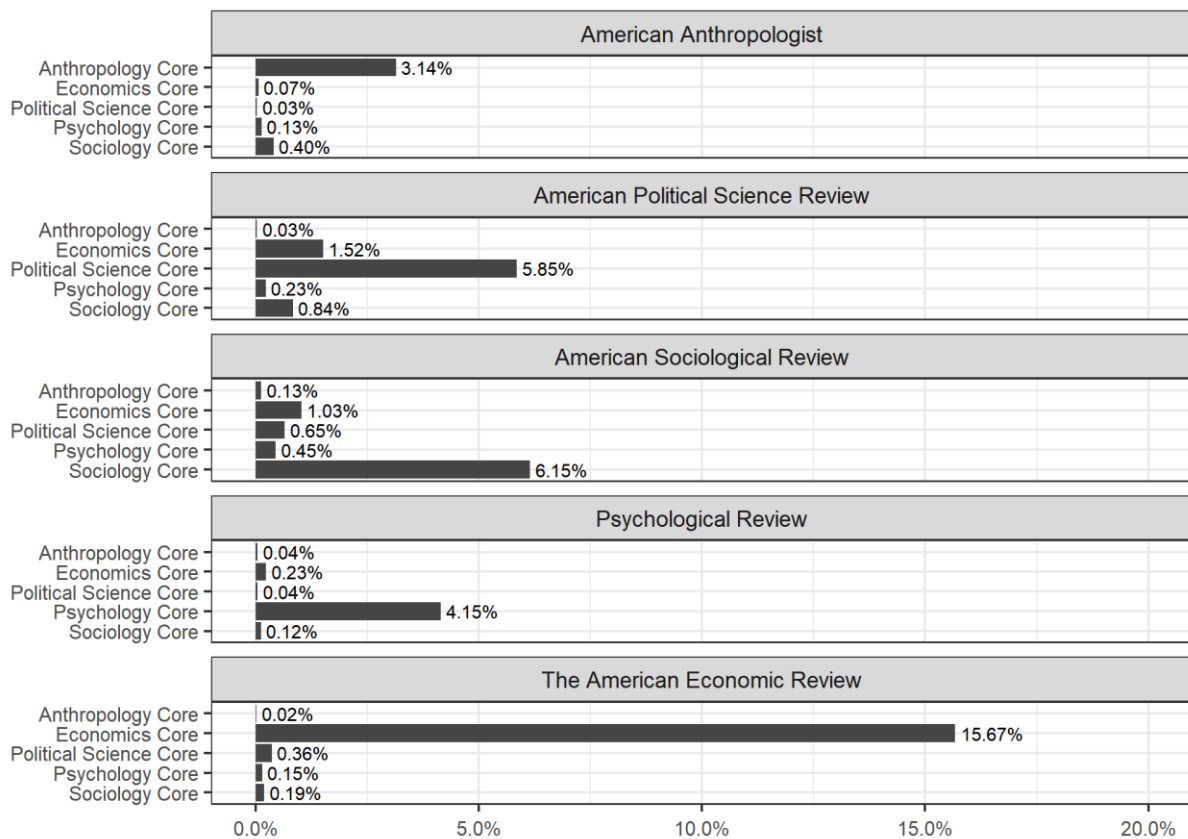
The information displayed in figure 8 is read as follows: the closer a point is to the dashed line in the center of each facet (which represents $CIA = 1$), the more symmetric is the relation between economics and the indicated sister discipline. Points to the left of the line mean that economics is *less* representative for that science than otherwise—*asymmetry outwards economics*. Points to the right of the symmetry line, on the other hand, mean that economics' weight in the interdisciplinary citations to the social sciences in that specific discipline is greater than the opposite—*asymmetry towards economics*. The figure, accordingly, shows us that economics weighted less on the social sciences' interdisciplinary citations in the 1960s than the opposite, with the exception of psychology. In fact, psychology is the only discipline in which asymmetry was never outwards economics. In the 1970s, economics grew in significance within the network, and an asymmetry towards economics surfaced in political science. In the 1980s, only sociology kept a pattern of asymmetry outwards economics. From the 1990s onwards, sociology joined the other disciplines and all the observations now give us asymmetry towards economics.

There is a further aspect regarding this figure that inspires caution. A difference exists between economics' relatively symmetric relations with, for example, both sociology in the 1980s and anthropology in the 1970s. While the former is symmetric because sociology was as important to economics as economics to political science in the 1980s, the latter is symmetric because anthropology was as *unimportant* to economics as economics to anthropology in the 1970s. Therefore, again, we must reiterate that these plots represent reciprocal importance within the network, not absolute relevance of disciplines to each other.

It also does not mean that a rise in asymmetry towards economics indicates that economics became more cited in that discipline in absolute terms. It means that economics rose in *significance*. Accordingly, this can also be a product of a discipline's reduction in citations to *other* social sciences. This is the case, for example, for psychology, whose citations to political science and sociology decreased across time. We have seen that the number of *AER* citations to psychology have grown more than the number of *PR* citations to economics. Still, the asymmetry towards economics in relation to psychology was enlarged between the 1960s and the 2010s.

Furthermore, an additional and elucidating investigation arises from citations to what we defined here as *Core Journals*. The results are summarized in figure 9. The core journals of a discipline are taken to be those that appeared in the T25 of that discipline in all the decades analyzed here, from the 1960s to the 2010s. All the disciplines have closely the same number of core journals, which range from four to six. Economics has six core journals (*AER*, *Econometrica*, *Economic Geography*, *Journal of Political Economy*, *Quarterly Journal of Economics*, and *Review of Economic Studies*).¹³ Psychology (*Advances in Experimental Social Psychology*, *Annual Review of Psychology*, *Psychological Bulletin*, *PR*, and *Psychosomatic Medicine*) and sociology (*American Journal of Sociology*, *ASR*, *British Journal of Sociology*, *Journal of Marriage and the Family*, and *Social Problems*) have five core journals. Finally, political science (*American Journal of Political Science*, *APSR*, *Journal of Conflict Resolution*, and *Journal of Politics*) and anthropology (*American Anthropologist*, *American Journal of Physical Anthropology*, *Current Anthropology*, and *Journal of Human Evolution*) have four core journals.

Figure 9: Unweighted references to Core Journals



Source: Elaborated by the author from Scopus and WoS databases

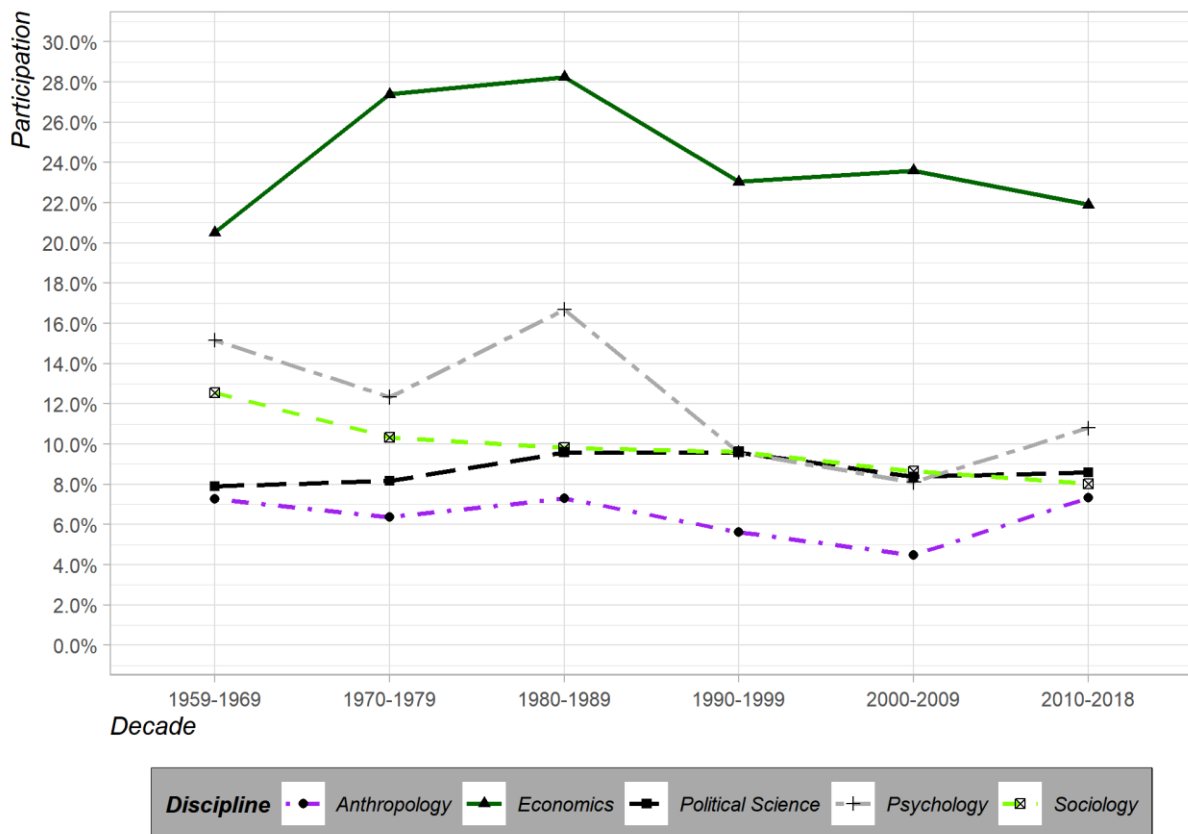
Figure 9 does not weight the references for interdisciplinary citations to the social sciences. This is intended to offer, beyond the recognition of the overall interdisciplinary citations to key journals, a point in case regarding the disciplines' citations to their *own* cores as well. From this figure, we may realize that, in regard to unweighted overall citations, economics' core is the most representative one for political science (1.52%), psychology (0.23%), and sociology (1.03%). For economics, on the other hand, the political science core is the most representative one (0.36%). These results endorse the weighted investigation, which places economics as the most relevant social science citation-wise within the network, and political science as the discipline to which economics directs more attention. Moreover, once again, we can easily identify political science and sociology ahead of anthropology, economics, and psychology in

¹³ Five of the six journals in our list are present in the frequently used Blue Ribbon Eight. The only exception is *Economic Geography*. The three journals in Conroy et al.'s (1995, p. 1966) Blue Ribbon Eight absent from our list of Core Journals are *International Economic Review*, *Journal of Economic Theory*, and *Review of Economics and Statistics*.

terms of citations to its neighboring disciplines. It is worth highlighting, nonetheless, that anthropology and psychology are worse off than economics in terms of social science interdisciplinarity.

Additionally, it is important to realize the significantly higher percentage of economics' citations to its *own* most prestigious journals. While the other four disciplines have the citations to their own cores ranging between 3.14% and 6.15%, economics' resort to the economics core is 15.67%. This corroborates Fourcade, Ollion, and Algan's (2015, p. 96) realization that economics, besides looking more inward than the other social sciences, also displays a much higher reliance on knowledge produced at the top of its internal hierarchy. This relationship is illustrated in figure 10. This figure presents each discipline's citations to its *own* T25 across the decades. The much higher level in which we find economics is likely to represent that economics has much more regard to the top of its internal hierarchy than do the other four disciplines.

Figure 10: Disciplines citations to their *own* T25



Source: Elaborated by the author from Scopus and WoS databases

This figure points to the fact that, in relation to the social sciences, the most prestigious economics journals occupy a much more central position in the network of intradisciplinary knowledge transmission. Accordingly, it is remarkable that, even though knowledge produced in other sources has, by definition, less space to be preserved and replicated within the discipline, economics managed to become a more interdisciplinary social science in relation both to itself and to anthropology and psychology. We have a lot of ground to cover, if we want to become as welcoming to social science knowledge as political science and sociology, but we cannot deny that our situation has been improved in such matters.

4. DISCUSSION

A study like this is unlikely to be free of particular limitations, beyond the general ones remarked by Cherrier and Svorencik (2018, p.368, 372). First, even though citations to periodical literature are a useful market-based measure of research quality, they are imperfect measures of interdisciplinary

influences¹⁴ (HAMERMESH, 2018, p. 125; RIGNEY & BARNES, 1980, p. 116). The results here, therefore, ought to be interpreted cautiously. Second, we restricted our analysis to the flagship journal of each social science—and, no matter how well justified this process may be, it is perhaps the greatest particular limitation of our analysis. Third, the citation patterns analyzed comprise uniquely journal *articles*. Other sources such as books, book reviews and conference proceedings are entirely absent in our sample. This might be debilitating, because book reviews tend to occupy a privileged position in citation index reports, while books and conference proceedings are very important as sources of scholarly knowledge (HU et al., 2018, p. 1134; PIETERS & BAUMGARTNER, 2002, p. 505). Fourth, our ranking definitions for the T25 articles in each social science per decade had to extrapolate impact factors listed between 1979 and 1981 all the way back to 1960s. The implicit assumption here is that the influence of the journals remained unaltered from the 1960s to the early-1980s. Finally, there are many factors that influence one discipline's citations to another, in addition to the influence of the cited discipline *per se*. Among these, Rigney and Barnes (1980, p. 125) highlight the observed scientific status of the cited discipline, the perceived relevance of the cited discipline's subject matter, and the amount of literature available for citation. These factors escape our analysis.

Still, despite these shortcomings, the findings of this essay are compelling in two senses. First, our results excavate the asymmetry of knowledge transfer between economics and the social sciences found in the literature: anthropology, political science, psychology, and sociology resort more to economics than economics to each one of them. This pattern was intensified in the last sixty years, especially from the 1980s onwards. This result is given both by the absolute number of citations and by economics' CIA with each one of the sister disciplines. Second, the results also point that three classes of disciplines may be distinguished: one of growing high interdisciplinarity (political science and sociology), one of growing low interdisciplinarity (economics and psychology), and one of decreasing interdisciplinarity (anthropology). This shows that economics has space to intensify its interdisciplinary ventures, but that it is not—as the prior particular impressions of this author had him believe—the most insular social science.

Therefore, the main conclusion of this essay should be read parsimoniously in the following sense. If we rely on the American associations' flagship journals as proxies for entire disciplines, understand journal articles as the main sources of knowledge diffusion, and count the best-ranked journals as more pervasive influences, the estimates laid down in this study indicate that, between 1959 and 2018, economics has become (a) a more interdisciplinary social science—even though the openness to economics in the social sciences grew much more acutely than the openness to the social sciences in economics—; and (b) the most important discipline within the social sciences interdisciplinary network. Nevertheless, the percentages of economics' openness to the social sciences remain below the average interdisciplinarity within the social sciences network all along our time span (from 0.37% *vis-à-vis* 2.05%, in the 1960s, to 1.42% *vis-à-vis* 2.74%, in the 2010s).

This conclusion includes the perception that economics rose from the fifth to the third position in terms of interdisciplinarity within the social sciences network—and this goes against the usual portrait of economics as the least interdisciplinary social science, as Fontaine (2015, p. 3) punctuates. Additionally, it is interesting to notice that this rise contradicts the survey conducted in 2006 and reproduced by Fourcade, Ollion, and Algan (2015, p. 95), according to which economists are the only professionals (in comparison with sociologists, historians, political scientists, financiers, and psychologists) whose majority believe knowledge obtained by a single discipline to be better than interdisciplinary knowledge.

Furthermore, between 1936 and 1975, Rigney and Barnes (1980, p. 122) identified that “[...] the only social science discipline that has cited economic literature to any important degree is political science, followed at a distant by sociology.” Our results show that, from 1959 to 2018, there was a change in this picture, especially from the 1980s onwards, when economics became the most cited discipline in political science, psychology, and sociology—anthropology here, as in other aspects of our study, is a particular

¹⁴ Citations and publication follow many other criteria that transcend the search for quality ideas. For a fuller comprehension of the subtleties behind these processes in economics, see Laband and Piette (1994), Kapeller (2010), Brogaard, Engelberg, and Parsons (2014), Colussi (2018), and Heckman and Moktan (2018).

case. The average participation of economics in the citations employed by the four remaining social sciences grew from 0.40% in the 1960s to 1.74% in the 2010s, which marks a growth of 333.52%.

These conclusions are in line with part of the literature on the subject, which places economics precisely in this progressive state of interdisciplinarity. Fontaine (2015, p. 3), for example, defends that, even though economists misinterpret interdisciplinarity for economics imperialism, economics “has appeared more cross-disciplinary than expected” from World War II onwards. Bögenhold (2018, p. 1126), in addition, insightfully concludes that *pari passu* with the decline in sociology’s public reputation, economics embraced the earlier discussions on the social dimension of economic behavior, moving toward the other social sciences.

Finally, in a 2017 *American Economic Association* discussion panel,¹⁵ which examined publishing and promotion in economics, Angus Deaton asserted that economics, in relation to other fields, is a relatively open discipline. Our data show that economics is not among the most open social sciences, but that Deaton is not wrong: economics is not the most insular as well. George Akerlof, alternatively, defended that there is almost a total disconnect between economics and sociology and that, perhaps, some combination of both would be more appropriate to deal with the type of situations economists tend to look at. We believe this idea to be extendable to all the social sciences analyzed in this essay. Strictly speaking, the data have shown that economics is indeed paying more attention to these disciplines, getting therefore closer to Akerlof’s ideal. As Angrist et al. (2017, p. 22) postulate in their conclusion, “[...] economists are also increasingly likely to read other social sciences. [...] economic scholarship has never been more exciting or useful than it is today.” Evaluating the substance of economics, however, it is straightforward that the economics profession, if it aims at honoring Akerlof’s plea and follow the examples laid down by political science and sociology, still has a long way to go.

5. FINAL COMMENTS

This essay represents the amalgam of two subjects dear to these authors: the study of economics as an interdisciplinary social science and the application of quantitative methods to further our understanding on the history of economics. We genuinely believe our field could benefit from both enterprises. In relation to the general trends Fontaine (2015), Angrist et al. (2017), Mäki (2017), and Bögenhold (2018) identified and our study confirmed, we see promising research opportunities. Given the wide range of our analysis, we were not able to scrutinize particular movements throughout the history of economic thought in terms of social science interdisciplinarity. We hope, nonetheless, this paper may instigate some more focused analyses. If nothing else, this might help us understand the particular events that, taken together, constitute the overall movement presented in this study.

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¹⁵ Available at <https://www.aeaweb.org/webcasts/2017/curse>. The participants were George Akerlof, Angus Deaton, Drew Fudenberg, Lars Hansen, and James Heckman.

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