Support Programs to Increase the Number of Scientific Publications Using Bibliometric Measures: The Turkish Case

Yaşar Tonta[1]

[1] *yasartonta@gmail.com*
Hacettepe University Department of Information Management, 06800 Beytepe, Ankara (Turkey)

"Not everything that counts can be counted, and not everything that can be counted counts." – William Bruce Cameron

Abstract

Bibliometric measures for scientific journals such as journal impact factor, cited half-life, and article influence score are readily available through commercial companies such as Thomson Reuters, among others. These metrics were originally developed to help librarians in collection building and are based on the citation rates of published papers. Yet, they are increasingly being used, albeit undeservedly, as proxies for peer review to assess the quality of individual papers; and research funding, hiring, academic promotion and publication support policies are developed accordingly. This paper reviews the use of such metrics by the Turkish Scientific and Technological Research Council (TUBITAK) in its Support Program of International Scholarly Publications and concentrates on the most recent policy changes. A sample of 228 journals was selected on the basis of stratified sampling method to study the impact of changing algorithms on the level of support that journals received in 2013 and 2014. Findings are discussed and some recommendations are offered to improve the existing algorithm.

Conference Topic

Country level studies

Introduction

Bibliometric measures such as journal impact factor (JIF) and cited-half life are based on citation rates of published papers in the literature and their aging. They were originally developed to help librarians in collection building and in making decisions as to how long the back issues of journals should be kept in stacks (San Francisco, 2012). Yet, such bibliometric measures are often used to assess the quality of individual papers, authors, and institutions. They are increasingly being used, albeit undeservedly, as proxies for peer review to assess the quality of individual papers; and research funding, hiring, academic promotion and publication support policies are developed accordingly. Algorithms used to rank authors, institutions or even countries are primarily based on such bibliometric measures as JIF and h index (Simons, 2008). This paper reviews the use of such metrics by the Turkish Scientific and Technological Research Council (TUBITAK) in its Support Program of International Scholarly Publications and concentrates on the most recent policy changes.

Literature Review

The drawbacks of citation-based metrics, especially JIF, for research assessment is well documented in the literature (e.g., Seglen, 1997; Guerrero, 2001; Simons, 2008; Browman & Stergiou, 2008; Lawrence, 2008; Todd & Ladle, 2008; Balarama, 2013; Kotur, 2013; Marks, Marsh, Schroer & Stevens, 2013; Marx & Bornmann, 2013; Casadevall & Fang, 2014; Jawaid, 2014). Convincing arguments supported by empirical data were brought forward as to why such measures should not be used to evaluate research (e.g., skewed citation distributions, different publication and citation practices in Science vs. Social sciences, and the manipulation of JIFs by editorial policies). Some researchers stressed the hidden dangers

of a "citation culture" (Todd & Ladle, 2008) while others drew attention to how measurement and "bean counting" harms science (Lawrence, 2008), as such metrics can easily be "gamed" (Marks et al., 2013). The title of the editorial of the special issue on "the use and misuse of bibliometric indices in evaluating scholarly performance" of the journal *Ethics in Science and Environmental Politics* says it all: "Factors and indices are one thing, deciding who is scholarly, why they are scholarly, and the relative value of their scholarship is something else entirely" (Browman & Stergiou, 2008).

The San Francisco Declaration on Research Assessment (DORA), signed by researchers, journal editors and publishers alike, strongly recommends not to use "journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions or in hiring, promotion, or funding decisions" (San Francisco, 2012). "[M]ost experts agree that the JIF is a far from perfect measure of scientific impact" (Bollen, Van de Sompel, Hagberg & Chute, 2009). Even Thomson Reuters, the publisher of such metrics through its Journal Citation Reports (JCR), is against using JIF to measure the quality of scientific papers (Marx & Bornmann, 2013, pp. 62-63). Yet, its use as "a tool of research assessment has reached epidemic proportions worldwide, with countries like India, China and the countries of Southern Europe being among the hardest hit" (Balaram, 2013, p. 1268). Some declared war on the impact factor (Balaram, 2013) and advised that its use should be abolished (Hecht, Hecht & Sandberg, 1998). Nonetheless, it is believed that, despite its misuse and abuse, JIF "will retain its impact and won't fade away" (Jawaid, 2014).

Consequently, policies developed for hiring, academic promotion, research funding, and monetary support to scientific publications in different countries tend to rely increasingly on metrics based on citation rates of published papers. Turkey is no exception (Tonta, 2014). The Higher Education Council of Turkey (YÖK) and the Turkish Scientific and Technological Research Council (TUBITAK) have been using journal impact factors for almost two decades in their academic promotion policies and incentive programs to support scientific papers, respectively.

The use of bibliometric measures for research assessment in Turkey along with their suitability as criteria to evaluate research quality has recently been reviewed (Tonta, 2014). This paper examines the most recent algorithmic changes introduced in 2013 and 2014 to rank the journals in the Support Program of International Scholarly Publications (UBYT) of TUBITAK and compares them with the earlier one (2012). The effects of year-to-year changes on the consistency of the ranks of journals are also studied. Note that, as the timeframe is short (2012-2014), we do not intend to study the impact of such changes on the authors' behaviour in terms of which journals they prefer to submit their papers to, journals' acceptance rates or the length of time it takes to publish therein. Rather, we try to understand the motives behind changes along with their effects on journal scores, which in turn determine the rank of each journal and thus the amount of monetary support that TUBITAK provides to the authors of papers that appeared in a specific journal.

TUBITAK's Support Program of International Scholarly Publications

Since 1993, TUBITAK provides monetary support to the authors of scholarly papers that appear in journals indexed by Thomson Reuters as an incentive to increase the number of such publications. The journal impact factor (JIF) was the sole criterion for support until 2013. As is well known, the impact factor (IF) of a journal is measured by the number of citations it gets in a given year to the papers published in it in the previous two years. Thomson Reuters publishes JCRs annually in which journals in each subject discipline covered by Science Citation Index (SCI) and Social Sciences Citation Index (SSCI) are ranked according to their JIFs. TUBITAK used JCRs to determine the eligible journals and

categorized the top 25% of journals in each subject discipline as Group "A", the next 25% of journals as Group "B" and the remaining 50% of journals as Group "C" (and "Group D" for social science journals—the bottom 10% of the remaining 50% of journals) (UBYT Programı, 2012).[1]

In 2013, TUBITAK has almost quadrupled the amount of support per paper. In parallel with this decision, TUBITAK also changed the rules to further classify journals with high IFs by developing its own "journal impact factor". Rather than simply classifying journals as A, B, C, and D on the basis of JCR's two-year JIF data, TUBITAK decided to use JCR's five-year JIFs and cited half-lives of journals in each discipline and multiplied the two figures to come up with its own JIF and ranked journals accordingly. (Cited half-life of a journal is the median—in years—of citations to papers published in it in a given year and depends on how fast the literature obsolesces in subject disciplines.) TUBITAK then took the average TUBITAK JIF of ranked journals and identified the journals with 2 standard deviations (SD) above and below the average to award them the maximum (5,000.00 Turkish Lira[2]) and minimum (500.00 TL) amount of support, respectively. Journals in between were awarded on the basis of a linear transformation formula taking the number of journals in each JCR discipline into account. This formula was criticized by some (Batmaz, 2013) as it happened to downgrade the ranks of some "A class" Archaeology journals considerably, thereby making them least supported ones. Similarly, the 2013 algorithm ranked 56% of Geology journals lower, including *Tectonics*, one of the most prestigious journals in this discipline (Yaltırak, 2014, p. 18).

Apparently, the new algorithm did not fulfill its objectives and TUBITAK, after using it for only one year, quickly replaced it in 2014 with the one that is based on JCR's article influence score. The 2013 transformation formula was used in 2014 to determine the exact amount to be paid to each journal (TUBITAK, 2013; 2014 Yılı, 2014). Comparable to IF, average influence score (AIS) is "a measure of the average influence, per article, of the papers in a journal" (Bergstrom, West & Wiseman, 2008) and is similar to Google's PageRank algorithm in that citations coming from papers in highly cited journals are weighted more heavily (Franceschet, 2010; Arendt, 2010). It is based on the number of citations, nonetheless. AIS is "the most stable indicator across different disciplines" (Franceschet, 2010) and can therefore be used for interdisciplinary comparisons (Arendt, 2010).

The drawbacks of metrics used by TUBITAK (JIF, TUBITAK's own JIF consisting of JCR's five-year IF and cited-half life and AIS) were discussed in detail elsewhere (Tonta, 2014). What follows is a survey based on a sample of 228 journals supported by TUBITAK to see the impact of changes introduced in 2013 and 2014.

Method

In order to find out the impact of most recent changes introduced in 2013 and 2014, we used TUBITAK's list of journals supported in 2012[3] to draw a sample. The list has a total of 11,562 journals. As explained earlier, TUBITAK categorized these journals in 2012 under Groups A, B, C and D according to JIFs reported in Thomson Reuters' JCR. The distribution of 11,562 journals under categories is as follows: Group A: 4,205 (or 36%) journals; Group B: 2,446 (or 21%) journals; Group C: 4,711 (or 41%) journals; and Group D: 200 (or 2%) journals. Social sciences journals constituted about one third of all journals. We selected a sample 232 journals (or 2% of the population) using stratified sampling method. Journals under Groups A, B, C and D formed the four strata. Two numbers between 1 and 100 were

identified (37 and 54) randomly and every 37th and 54th journal titles were selected. Table 1 provides population parameters and sample statistics.

The distribution of Science and Social science journals in the sample is quite similar to that of population. This can be interpreted as an indication of the generalizability of findings to the population with a calculated margin of error. The original sample size was 232 but 4 journals under Group D were later discarded to simplify the comparisons. Journals supported in 2013 and 2014 are not available as single lists but can be searched using a search engine available at the site.[4] All 228 journal titles in the sample were searched and their journal scores as well as the amount of support they would get were recorded. Six journals[5] in the 2012 list were no longer available in 2013 and 2014 among the supported journals and they were replaced with the next ones (e.g., 38th or 55th record) provided they were in the same category of Science and Social Science journals (e.g., Groups A, B, and C).

Table 1. Population parameters and sample statistics.

	Population parameters						Sample statistics					
	Science		Social Science		Total		Science		Social Science		Total	
Group	N	%	N	%	N	%	N	%	N	%	N	%
A	2037	48	2168	52	4205	100	40	48	44	52	84	100
B	1824	75	622	25	2446	100	36	72	14	28	50	100
C	3763	80	948	20	4711	100	77	82	17	18	94	100
D	--	--	200	100	200	100	--	--	4	100	4	100
Total	7624	100	3938	100	11562		153		79		232	

It should be noted that the minimum and maximum amounts for 2012, 2013 and 2014 were fixed (433.00 TL and 1,300.00 TL for 2012 and 500.00 TL and 5,000.00 TL for 2013 and 2014). As journals in 2012 were awarded fixed amounts of support depending on which group they belonged to, the figure for each journal was obtained by checking its group (e.g., A, B, C) as well as its being a Science or Social science journal. Social science journals were paid twice the amount of what is determined for each group (e.g., the author of a paper published in a Social science journal under group A was awarded 2,600.00 TL instead of 1,300.00 TL).

Findings

Table 2 below provides descriptive statistics for 228 journal titles including the quartiles. Despite the fact that the amount of support was increased in 2013 to 5,000.00 TL, the mean and median values do not seem to be affected much from this increase. The percentage of increase for the journals in the 3rd quartile is noticeable (19%), the reasons for which will be discussed shortly.

Figure 1 provides the scatter graph of the amount of support given by TUBITAK in 2012, 2013 and 2014 to the authors of papers that appeared in 228 journals sampled. Note that the blue line represents the 2012 figures and ranked in descending order by the amount of support. The amount was fixed depending on which group the journal belonged to. The authors of articles that appeared in Groups A, B, and C journals were paid 1,300.00, 867.00, and 433.00 Turkish Lira (TL), respectively.[6] If the paper appeared in a Social science journal,

---

[4] http:// http://www.ulakbim.gov.tr/

[5] Or, they might have been discontinued or their names might have changed. Replaced journal titles are: *Journal of Dental Research, Tulsa Studies in Women's Literature, Journal of Electronic Imaging, Plasma Physics Reports, and Vie et Milieu – Life and Environment.*

[6] The authors of case studies, technical communications, letters to the editors, etc. received half this amount.

the amount of support is doubled so that the authors of Social science papers will be further encouraged. Therefore, the solid blue line at 2,600.00 TL and 1,733.00 TL represent both 43 Group A and 14 Group B Social science journals, respectively, whereas the blue line at 1,300.00 TL represents 41 Group A Science journals. The 867.00 TL band represents both 35 Group B Science journals and 17 Group C Social science journals. The 433.00 TL band represents 78 Group C Science journals.

Table 2. The amount of support (in Turkish Lira*).

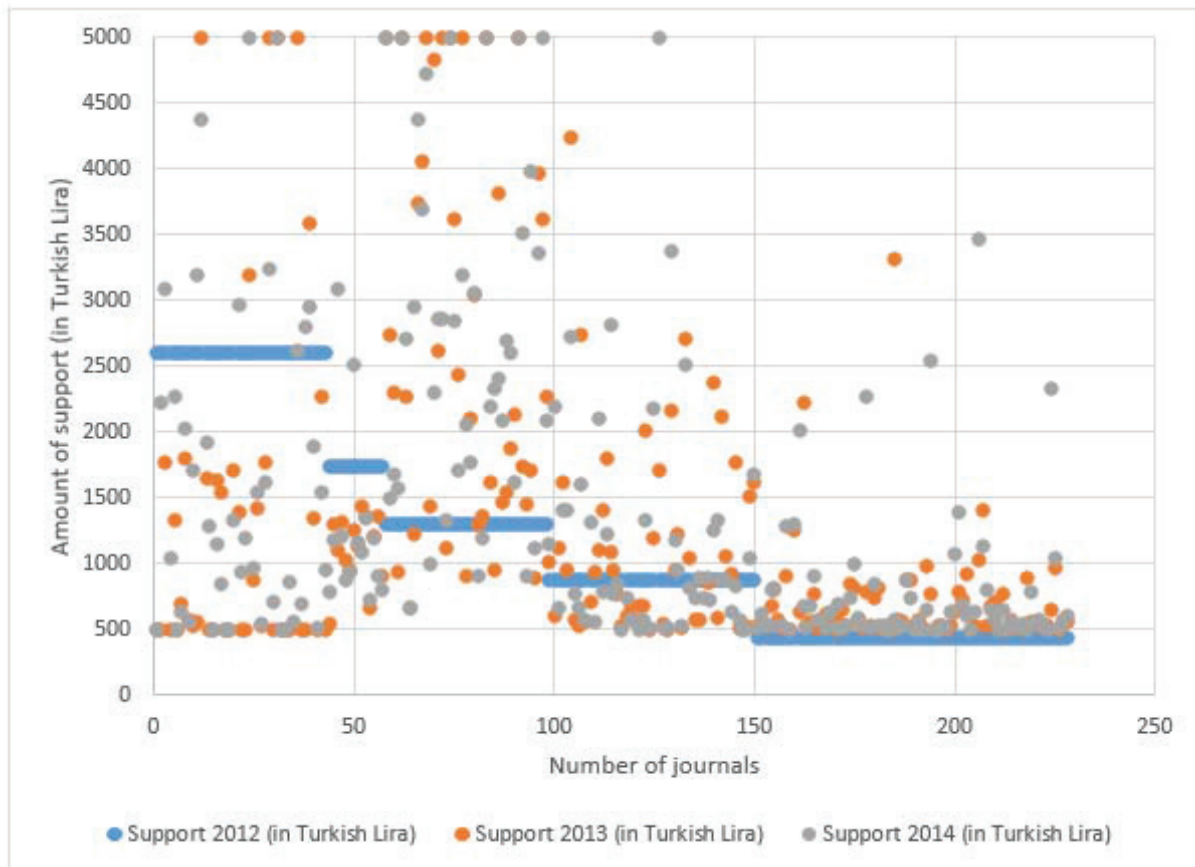|	2012	2013	2014	Increase 2013-2014 (%)
Mean	1176	1317	1403	7
Minimum	433	500	500	0
1st quartile	433	533	558	5
Median	867	829	874	5
3rd quartile	1408	1518	1806	19
Maximum	2600	5000	5000	0

*Rounded to the nearest whole number.

Figure 1. The scatter of journals by the amount of support in 2012, 2013 and 2014 (N = 228).

As indicated earlier, the maximum amount of support in 2013 was increased to 5,000.00 TL (the minimum being 500.00 TL). Note that the Group A journals of 2012 received relatively less support in 2013 and 2014. Out of 84 journals classified under Group A in 2012, only 15 (18%) maintained their top positions in the following years.[7] However, the positions of Social

---

[7] The amount between 500.00 TL and 5,000.00 TL was divided into three equal groups and the ones that were awarded between 3,500.00 TL and 5,000.00 TL are considered as top journals.

science journals classified under Group A fluctuated more than that of Science journals. Only 3 out of 43 Social science journals (7%) maintained their top positions as opposed to 12 out of 41 Science journals (29%).

Note that 2013 and 2014 figures are scattered without seemingly any discernible pattern (Fig. 1), as the 2012 figures are ranked in descending order by the amount of support and they do not necessarily correspond with the amounts in 2013 and 2014. Although statistically significant, the correlation between the amount of support to journals in 2012 and 2013 and that in 2012 and 2014 was rather low (Pearson's r = .289 and .231, p = .000, respectively). The correlation between the 2013 and 2014 journals was moderate (Pearson's r = .767, p = .000) (see Fig. 2).
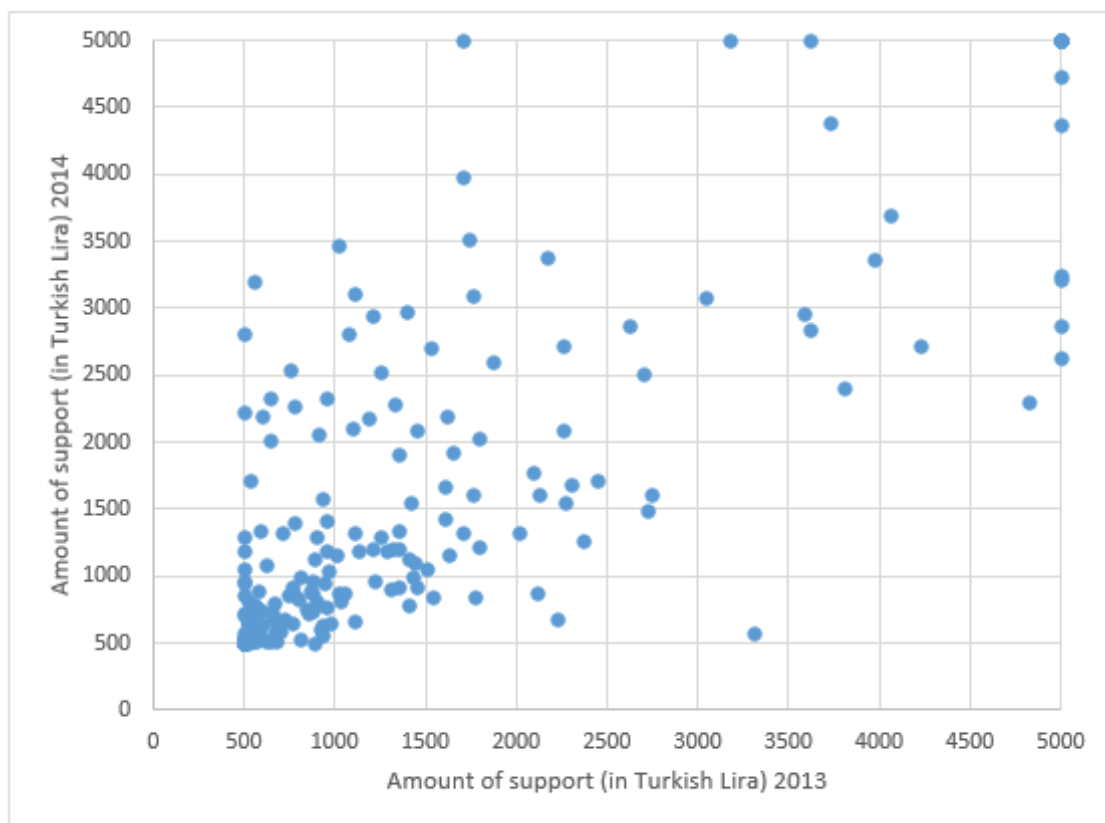

Figure 2. The scatter of journals by the amount of support in 2013 and 2014 (N = 228).

It is estimated that some 30,000 scholarly journals are published in the world. Thomson Reuters indexes about 12,000 of them and TUBITAK supports almost all of them (TUBITAK's 2012 journal list had 11,562 journal titles). It should be pointed out that TUBITAK's threshold for support is rather low. As Figures 3 and 4 below show, about one third of journals barely meet the minimum criteria and get the minimum amount of support (500.00 TL). It is reasonable to suggest that after careful consideration support to more than 3,000 journals can easily be discontinued.
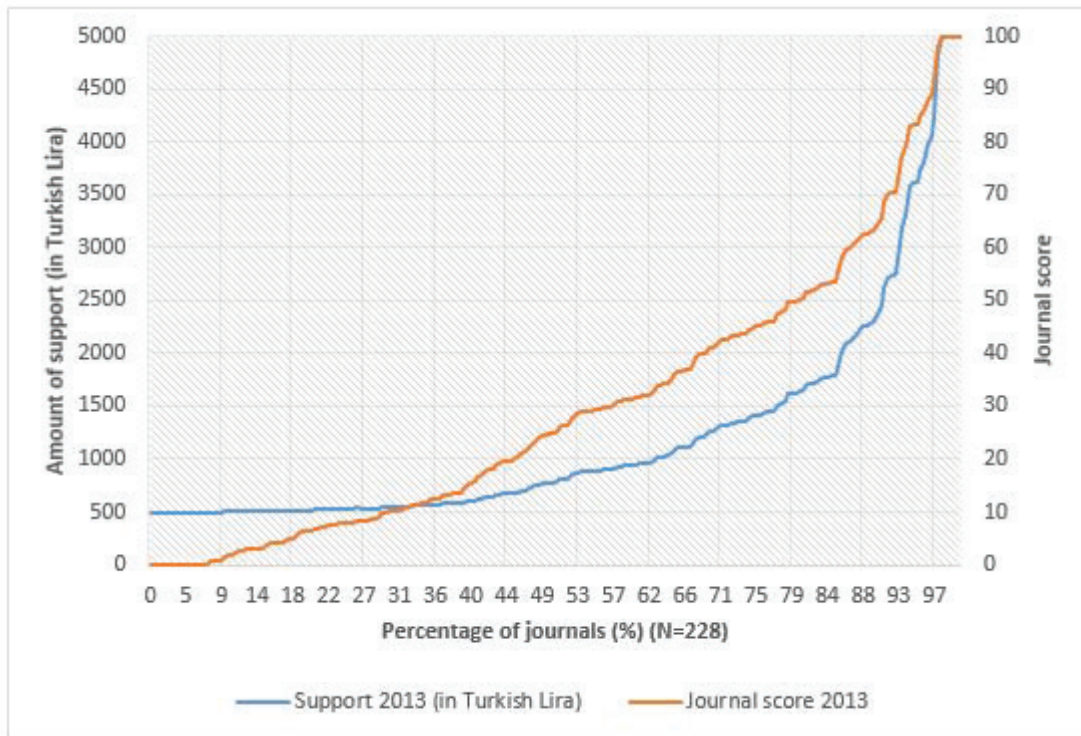
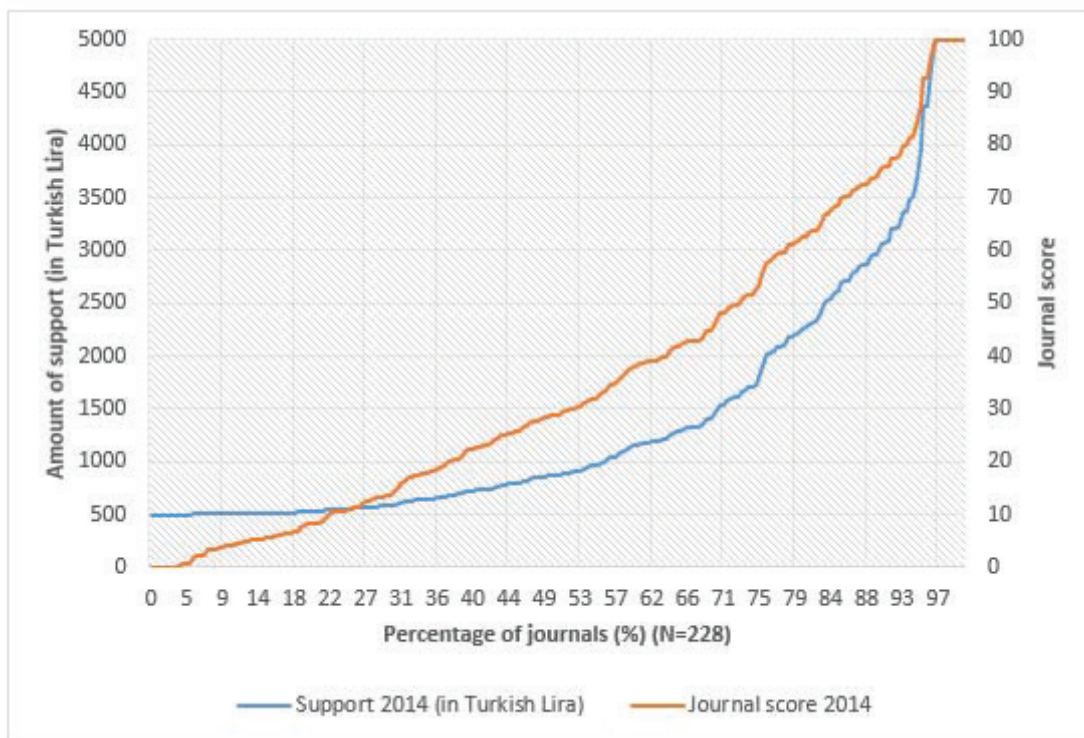**Figure 3. Relationship between journal score and the amount of support in 2013.**

Figure 4. Relationship between journal score and the amount of support in 2014.

It should also be pointed out that the new policy discourages the authors of papers that appear in journals with low Article Influence Scores to seek support. As Figure 3 and 4 show, the gap between the journal scores and the amount of support starting from about 27%-35% gets widened. In other words, the amount of support is not that high for journals with relatively

lower AISs. More than 90% and 80% of journals received less than 2,500.00 TL (half the full amount of 5,000.00 TL) in 2013 and in 2014, respectively. Journals that received more than 4,000.00 TL support were about 5% of all journals in both 2013 and 2014. The situation was even worse for Social science journals (Fig. 5). This trend can also be followed from the last column of Table 2. The percentage of increase for the journals in the third quartile between 2013 and 2014 was 19% while it was only 5% for the journals in the first and second quartiles. This could be interpreted as a positive sign to encourage the authors to publish in more prestigious journals with higher AISs. Note that if the amount was less than 100.00 TL per co-author for papers with multiple authors, no support is provided. This is a further disincentive for authors not to claim the TUBITAK support for papers that appear in journals with low impact factors or article influence scores.
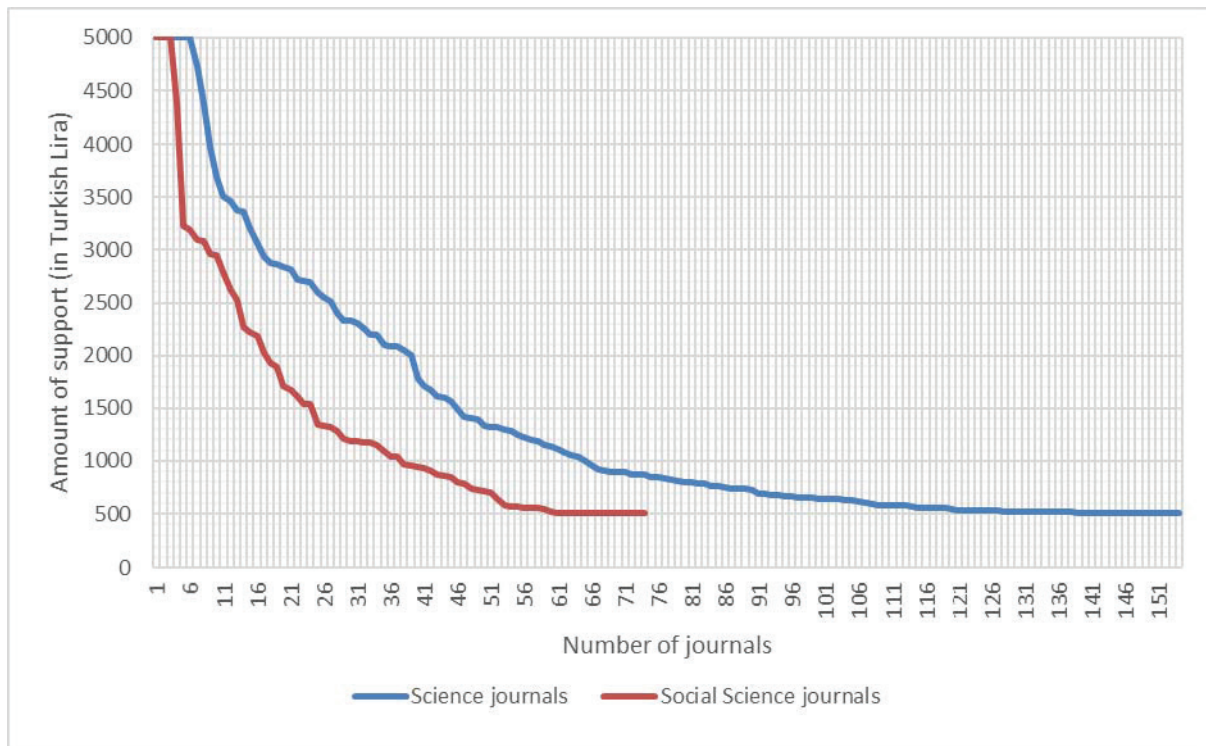

Figure 5. The amount of TUBITAK support for Science and Social science journals in 2014.

As we explained earlier, TUBITAK classified the second half of journals in Science disciplines listed in JCR under Group "C" and provided minimum support (433.00 TL per article) for these journals. (For Social Science disciplines, the second half of journals were divided into two: the top 40% of them being labeled as Group "C" and the remaining 10% as Group "D". Later, TUBITAK stopped supporting the authors of papers publishing in journals under Group "C" in Sciences (i.e., the last 50% of journals) and Group "D" in Social Sciences (i.e., the last 10% of journals) (UBYT Uygulama, 2012). As Group C Science journals constituted about one third of all journals supported in 2012, we wanted to see if they get supported after the policy changes in 2013 and 2014. Our sample included 77 Group C Science journals (one third of all sampled journals) (Table 1). It appears that all of them got supported both in 2013 and 2014. However, the overwhelming majority of them received very little support. As mentioned earlier, the 2013 algorithm was based on five-year JIFs and cited half-lives whereas the 2014 algorithm was based on article influence scores. Recall that the amount of support was increased almost four times starting from 2013. If TUBITAK were to continue supporting Group C Science journals, the amount would have been equal to 1,665.00 TL. Yet, the number of Group C Science journals receiving 1,665.00 TL (or higher) support

was only 2 in 2013 and 5 in 2014. The average amount of support in 2013 and 2014 were 701.00 TL (median=564.00 TL) and 770.00 TL (median=577.00 TL), respectively.

As JIFs and article influence scores are both based on the number of citations, it is not that surprising to see that journals that performed poorly in 2012 did so, too, in 2013 and 2014. What is surprising to see though is that TUBITAK seems to have nullified its earlier decision of not supporting Group C Science journals. A very few of those journals performed differently in 2013 and 2014 when new algorithms were used.

Discussion and Conclusion

It appears that the two algorithms used by TUBITAK in 2013 and 2014 are not that different from each other after all, even though the former was based on Thomson Reuters' JIFs and cited half-lives and the latter on article influence scores (AIS). However, as mentioned earlier, AIS is the most stable indicator and the average influence of journals can therefore be comparable across disciplines (Franceschet, 2010; Arendt, 2010). JIFs and AISs are highly correlated with each other and papers published in high impact journals usually have high AISs (Arendt, 2010; Rousseau & STIMULATE 8 Group, 2009). Arendt (2010) examined the relationship between the two metrics using 5,900 journals listed in JCR Science Edition (2007) and found that both JIFs and AISs vary by discipline. Moreover, the correlation between the two metrics was quite high (Pearson's r (172) = .896) and statistically significant ($p < .001$). Arendt (2010) cautioned that these two metrics should not be used formulaically for research assessment and for ranking scientific papers, authors or institutions.

This advice should be taken into account by TUBITAK as well. As the algorithm based on AIS is more stable and does not vary that much by scientific disciplines (Arendt, 2010; Franceschet, 2010), its use should be monitored closely by TUBITAK to see if it merits further refinement.

The support to journals in the lower end of the scale should be discontinued. Having decided in 2012 to discontinue support to Group C Science journals, it is not clear why TUBITAK reversed its decision the following year without monitoring how these journals performed with the new algorithms used in 2013 and 2014. In fact, the performance of all journals should be monitored to fine-tune the algorithms used.

TUBITAK is of the opinion that its support program caused to increase the number of scientific publications over the years. Turkey has indeed performed very well and became the 18th country in the world in terms of the number of scholarly papers published in ISI-indexed journals. However, the positive correlation between the amount of support provided by TUBITAK and the number of papers with Turkish affiliations is not a strong argument in and of itself[8] to justify the continuance of the support program because correlation does not necessarily mean causation. The existing support to papers published in low impact journals could very well be the main cause of this positive correlation. This merits further research because TUBITAK support does not seem to have encouraged the authors to publish in more prestigious journals.

In conclusion, bibliometric performance measures alone are not the sole criteria for research assessment and, as the Board of Directors of IEEE recently recommended, they "**should be applied only as a collective group (and not individually)**" (IEEE, 2013, original emphasis).

References

2014 yılı UBYT Programı teşvik miktarları hesaplama yöntemine dair bilgi notu (A note on the calculation of the amounts of support in TUBITAK's UBYT Program of 2014). (2014). Retrieved, January 25, 2015, from http://ulakbim.tubitak.gov.tr/sites/images/Ulakbim/ubyt_2014_hesap.pdf.

---

[8] The number of universities and researchers in Turkey have also increased tremendously during this period.

Arendt, J. (2010). Are article influence scores comparable across scientific fields? *Issues in Science and Technology Librarianship*, No. 60. Retrieved, January 25, 2015, from http://www.istl.org/10-winter/refereed2.html.

Balaram, P. (2013, May 25). Research assessment: Declaring war on the impact factor. *Current Science*, *14*(10), 1267-1268.

Batmaz, A. (2013, June 14). Türkiye'de bilim üretimi ve arkeoloji (Science production in Turkey and Archaeology). *Cumhuriyet Bilim ve Teknoloji*, (1369), 18. Retrieved, January 25, 2015, from http://www.arkeolojikhaber.com/?p=2569.

Bergstrom, C.T., West, J.D., & Wiseman, M.A: (2008). The Eigenfactor[TM] metrics. *The Journal of Neuroscience*, 28(45): 11433-11434. Retrieved, January 26, 2015, from http://www.jevinwest.org/Documents/Bergstrom_J_neurosci_2008.pdf

Bollen J., Van de Sompel, H., Hagberg, A., & Chute, R. (2009). A principal component analysis of 39 scientific impact measures. *PLoS ONE*, *4*(6), e6022. Retrieved, January 26, 2015, from doi:10.1371/journal.pone.0006022.

Browman, H.I. & Stergiou, K.I. (2008). Factors and indices are one thing, deciding who is scholarly, why they are scholarly, and the relative value of their scholarship is something else entirely (editorial). *Ethics in Science and Environmental Politics*, *8*, 1-3. Retrieved, January 26, 2015, from http://www.int-res.com/articles/esep2008/8/e008p001.pdf.

Casadevall, A. & Fang, F.C. (2014). Causes for the persistence of impact factor mania. *mBio*, 5(2). Retrieved, June 25, 2014, from http://mbio.asm.org/content/5/2/e00064-14.full.pdf.

Franceschet, M. (2010). Journal influence factors. *Journal of Informetrics*, 4(3), 239-248. Retrieved, January 26, 2015, from https://users.dimi.uniud.it/~massimo.franceschet/publications/joi10b.pdf

Guerrero, R. (2001, August). Misuse and abuse of journal impact factors. *European Science Editing*, 27(3): 58-59.

Hecht, F., Hecht, B.K. & Sandberg, A.A. (1998, July 15). The journal "impact factor": A misnamed, misleading, misused measure. *Cancer Genetics*, *104*(2), 77-81.

IEEE. (2013, September 9). Appropriate use of bibliometric indicators for the assessment of journals, research proposals, and individuals. Retrieved, April 7, 2015, from http://www.ieee.org/publications_standards/publications/rights/ieee_bibliometric_statement_sept_2013.pdf

Jawaid, S.A. (2014). Despite misuse and abuse, journal impact factor will retain its impact and won't fade away soon (editorial). *Journal of Postgraduate Medical Institute*, *28*(1), 1-4.

Kotur, P.F. (2013, August 10). Impact factor – the misnamed, misleading and misused measure of scientific literature. *Current Science*, *105*(3), 289-290. Retrieved, January 26, 2015, from http://www.currentscience.ac.in/Volumes/105/03/0289.pdf.

Lawrence, P.A. (2008). Lost in publication: how measurement harms science. *Ethics in Science and Environmental Politics*, *8*, 9-11. Retrieved, January 26, 2015, from http://www.int-res.com/articles/esep2008/8/e008p009.pdf.

Marks, M.S., Marsh, M., Schroer, T.A., & Stevens, T.H. (2013, June). Misuse of journal impact factors in scientific assessment (editorial). *Traffic*, *14*(6), 611-612. Retrieved, January 26, 2015, from http://onlinelibrary.wiley.com/doi/10.1111/tra.12075/full.

Marx, W. & Bornmann, L. (2013). Journal Impact Factor: "the poor man's citation analysis" and alternative approaches. *European Science Editing*, 39(2), 62-63. Retrieved, January 25, 2015, from http://www.ease.org.uk/sites/default/files/aug13pageslowres.pdf.

San Francisco Declaration on Research Assessment: Putting science into the assessment of research. (2012, December 16). Retrieved, January 25, 2015, from http://am.ascb.org/dora/files/SFDeclarationFINAL.pdf.

Simons, K. (2008, October 10). The misused impact factor. *Science*, 322, 165. Retrieved, January 26, 2015, from https://java-srv1.mpi-cbg.de/publications/getDocument.html?id=8a8182da238c39d10123955066a00100.

Rousseau, R. & STIMULATE 8 Group. (2009). On the relation between the WoS impact factor, the eigenfactor, the SCImago journal rank, the article influence score and the journal index. (Technical report). Retrieved, January 26, 2015, from http://eprints.rclis.org/16448.

Seglen, P.O. (1997). Why impact factor of journals should not be used for evaluating research. *British Medical Journal*, 314, 497-502.

TÜBİTAK Türkiye Adresli Uluslararası Bilimsel Yayınları Teşvik Programı Uygulama Esasları (TUBITAK's Principles to Support International Scientific Publications with Turkish Affiliations). (2013). Retrieved, January 25, 2015, from http://www.tubitak.gov.tr/sites/default/files/esaslar_v_2_vers.2_2.pdf.

Todd, P.A., & Ladle, R.J. (2008). Hidden dangers of a 'citation culture'. *Ethics in Science and Environmental Politics*, *8*(1), 13-16. Retrieved, January 26, 2015, from http://www.int-res.com/articles/esep2008/8/e008p013.pdf.

Tonta, Y. (2014). Use and misuse of bibliometric measures for assessment of academic performance, tenure and publication support. *Metrics 2014: Workshop on Informetric and Scientometric Research (SIG/MET). 77th Annual Meeting of the Association for Information Science and Technology, October 31-November 5, 2014, Seattle, WA*. Retrieved, January 26, 2015, from http://yunus.hacettepe.edu.tr/~tonta/yayinlar/tonta-asist2014-seattle-sig-met-misuse-of-bibliometric-indicators.pdf

Yaltırak, C. (2014, June 21). TÜBİTAK yayın teşvik sistemini değiştirmeli! (TUBITAK has to change its publication support system!) *Cumhuriyet Bilim ve Teknoloji*, (1409), 18.