

Title	Status of mathematical publication in Japan
Author(s)	Namiki, Takao
Citation	
Version Type	
URL	<a href="https://hdl.handle.net/11094/14138">https://hdl.handle.net/11094/14138</a>
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Note	

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# Status of mathematical publication in Japan: SPARC Japan and institutional repositories play an essential role

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## 1. Introduction

When we use MathSciNet, we can find a number of mathematical journals published in Japan. However, it is uncertain how many different titles of mathematical journals are published and how many articles appeared in them.

We should have been aware of this fact. For example, about 10 titles of major mathematical journals, which are supported by SPARC Japan, IR of Kyoto University Library, and IR of the University of Tokyo Library, account for approximately 5 to 10 percent of articles in certain research fields in the world (Figure 1). Also, we can note from this figure that the number of articles published in Japan is not far behind the number published by Springer and Elsevier. From these facts, it is clear that SPARC Japan and institutional repositories play an important role for mathematical publications in the world.

These major journals contain about 1000 articles each. However, according to MathSciNet, there are over 100 titles of mathematical journals and university bulletins containing less than 200 articles each. Including these titles, contributions of Japanese mathematical publication to the world will achieve more recognition.

## 2. List of Journals

In this section we show the list of journals and the number of articles which is published in a journal.

7830 (c,IR) Surikaiseikikenkyusho Kokyuroku  
 2753 (c,EUCLID) Proc Japan Acad  
 2707 (c)Progr Theoret Phys  
 2395 (c,EUCLID) Proc Japan Acad Ser A Math Sci  
 2391 (c,EUCLID) J Math Soc Japan  
 2357 (c,EUCLID) Tohoku Math J  
 2079 (c,EUCLID) Nagoya Math J  
 2010 (c,EUCLID) Osaka J Math  
 1679 (c)J Math Kyoto Univ  
 1529 (c)J Phys Soc Japan  
 1486 (c,EUCLID) Publ Res Inst Math Sci  
 1363 (c)Sugaku  
 1242 (c,EUCLID) Hiroshima Math J  
 1082 (c,EPrints)Hokkaido Math J  
 1028 (c,J-STAGE) Funkcial Ekvac  
 0972 (c,EUCLID) Kodai Math J  
 0952 (c,EUCLID) Tokyo J Math  
 0915 (c)Tsukuba J Math  
 0898 (c,IR) Math J Okayama Univ  
 0897 (c)Kodai Math Sem Rep  
 0771 (c)Internat Econom Rev  
 0656 (IR) J Fac Sci Univ Tokyo Sect IA Math  
 0652 (c)Yokohama Math J  
 0632 (c)J Oper Res Soc Japan  
 0626 Mem Fac Sci Kyushu Univ Ser A  
 0608 (c)Questions Answers Gen Topology  
 0594 (c)Sci Math Jpn  
 0547 Math Sem Notes Kobe Univ  
 0498 Japan J Math  
 0450 (c)J Japan Statist Soc  
 0428 (c)Progr Theoret Phys Suppl  
 0380 (c)Japan J Indust Appl Math  
 0376 (c)Kobe J Math  
 0345 Proc Imp Acad Tokyo  
 0315 (c,J-STAGE)Kyushu J Math  
 0297 (c,IR)J Math Sci Univ Tokyo  
 0271 Sci Rep Tokyo Kyoiku Daigaku Sect A  
 0262 (c)Nihonkai Math J  
 0247 (c)Proc Inst Statist Math  
 0244 (c,web)SUT J Math  
 0241 (EUCLID) Osaka Math J  
 0227 Electron Comm Japan  
 0219 (c,IR)Natur Sci Rep Ochanomizu Univ  
 0218 (c)Mem Fac Sci Kochi Univ Ser A Math  
 0211 (c)Math J Toyama Univ  
 0211 (c)IPSJ J  
 0210 (c)Fluid Dynam Res  
 0206 (IR) J Fac Sci Univ Tokyo Sect I

0198 Electron Commun Japa  
 0195 Trans Inform Process Soc Japan  
 0190 Mem Coll Sci Univ Kyoto Ser A Math  
 0185 Electron Comm Japan Part  
 0184 (c)Sugaku Expositions  
 0182 Bull Fac Sci Ibaraki Univ Ser A  
 0178 Rep Statist Appl Res Un Japan Sci Engrs  
 0172 J Fac Sci Hokkaido Univ Ser I  
 0171 J Sci Hiroshima Univ Ser A I Math  
 0170 J Sci Hiroshima Univ Ser A  
 0167 Japanese J Fuzzy Theory Systems  
 0165 J Operations Res Soc Japan  
 0158 Japan J Appl Math  
 0147 Math Rep Toyama Univ  
 0144 Proc Phys Math Soc Japan  
 0143 (c,IR)Bull Yamagata Univ Natur Sci  
 0142 Tech Rep Osaka Univ  
 0140 J Math Tokushima Univ  
 0138 Ann Inst Statist Math Tokyo  
 0137 (c)J Fac Sci Shinshu Univ  
 0133 (c)Interdiscip Inform Sci  
 0130 Systems Comput Japan  
 0130 Sugakushi Kenkyu  
 0128 Bull Fukuoka Univ Ed  
 0125 J Hokkaido Univ Ed Sect  
 0120 Sci Rep Niigata Univ Ser A  
 0118 Bull Nagoya Inst Tech  
 0116 Mem Fac Engrg Kyoto Univ  
 0116 Bull Tokyo Gakugei Univ  
 0110 (c)Sci Rep Kanazawa Univ  
 0109 Sci Papers College Gen Ed Univ Tokyo  
 0109 Bull Kyushu Inst Tech Math Natur Sci  
 0107 (c)Ryukyuu Math J  
 0105 Proc Fac Sci Tokai Univ  
 0101 (c)Saitama Math J  
 0101 (c)Ann Japan Assoc Philos Sci

The serials above show that there exists various type of publications in Mathematical Community of Japan. But the next table shows that the total number of articles published in Japan is by no means large.

Year	Japan	Total	Ratio
1940	150	4772	0.0314
1945	52	18101	0.00287
1955	451	66995	0.00673
1965	526	176689	0.00297
1975	956	378491	0.00252
1985	1252	694003	0.00180
1995	1718	1115942	0.00153
2005	1157	1687029	0.00068

We have different results if we investigate for each research field.

## 3. Big Deal versus Mathematical Community in Japan

By the following figures we can observe the relative positions of our publications compared with Springer and Elsevier in each research fields. In many research field, we can recognize that publications in Japan keep high performance.

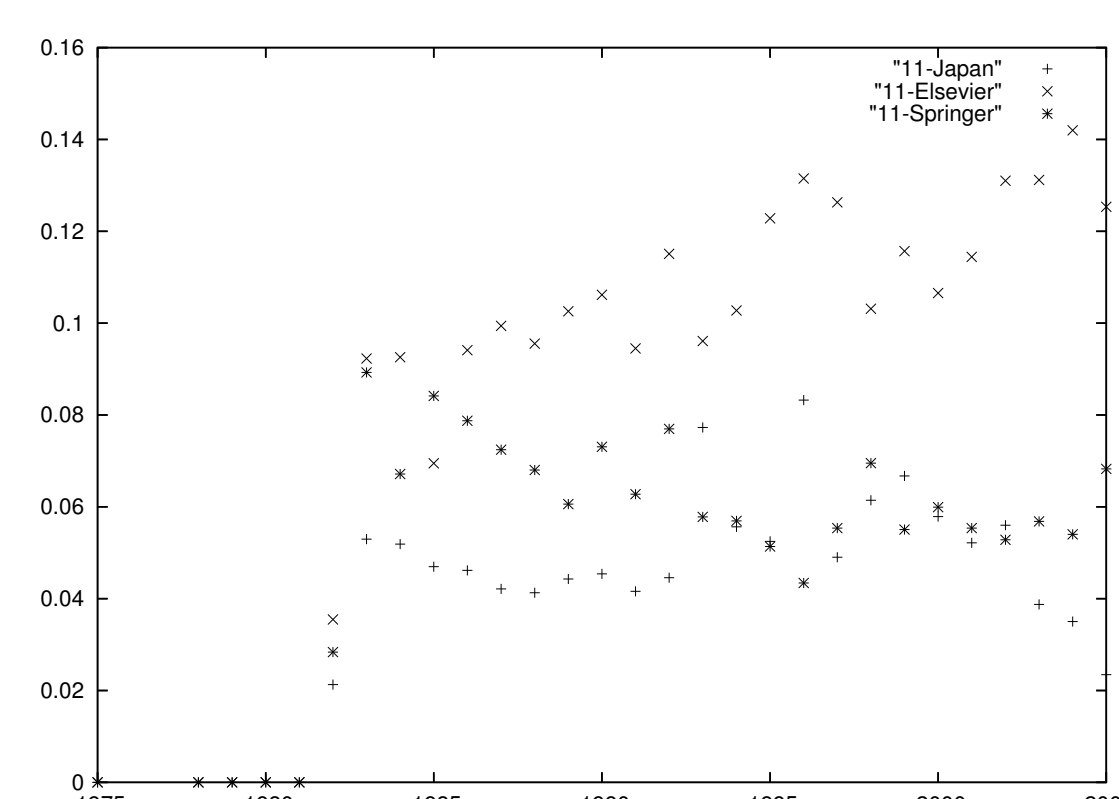


Figure 1: 11: Number Theory (1766/34968)

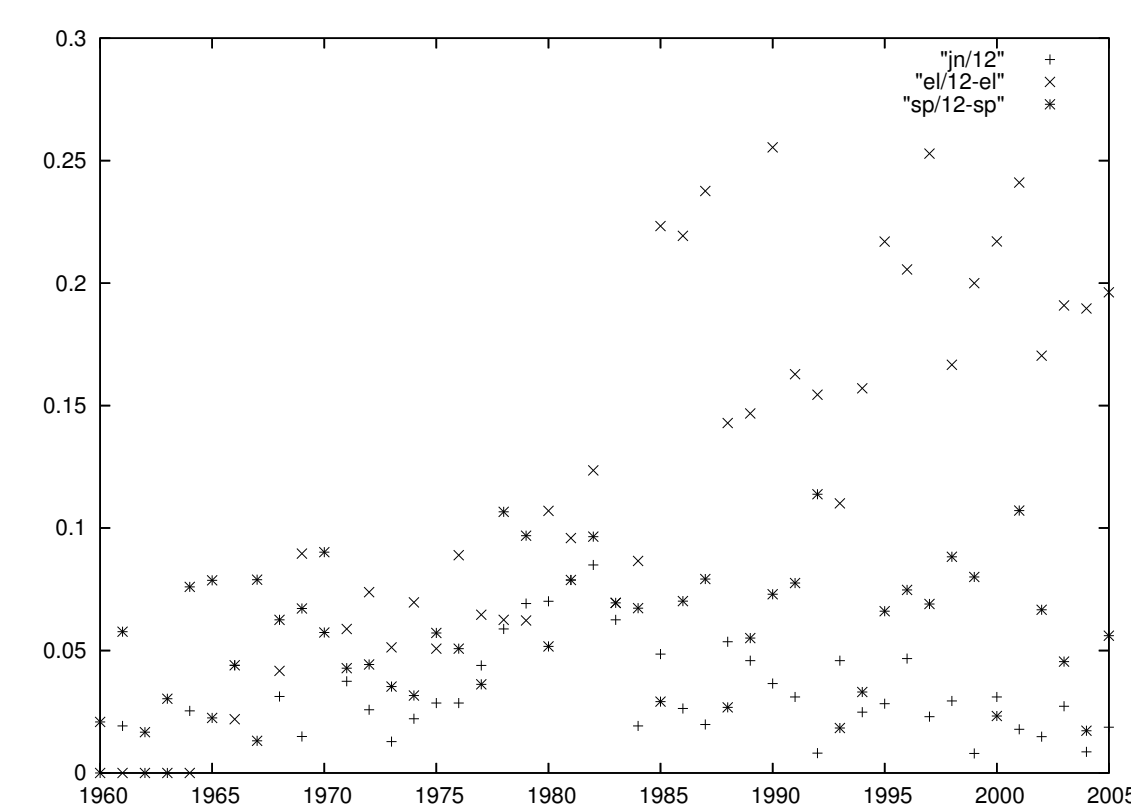


Figure 2: 12: Field theory and polynomials (507/6595)

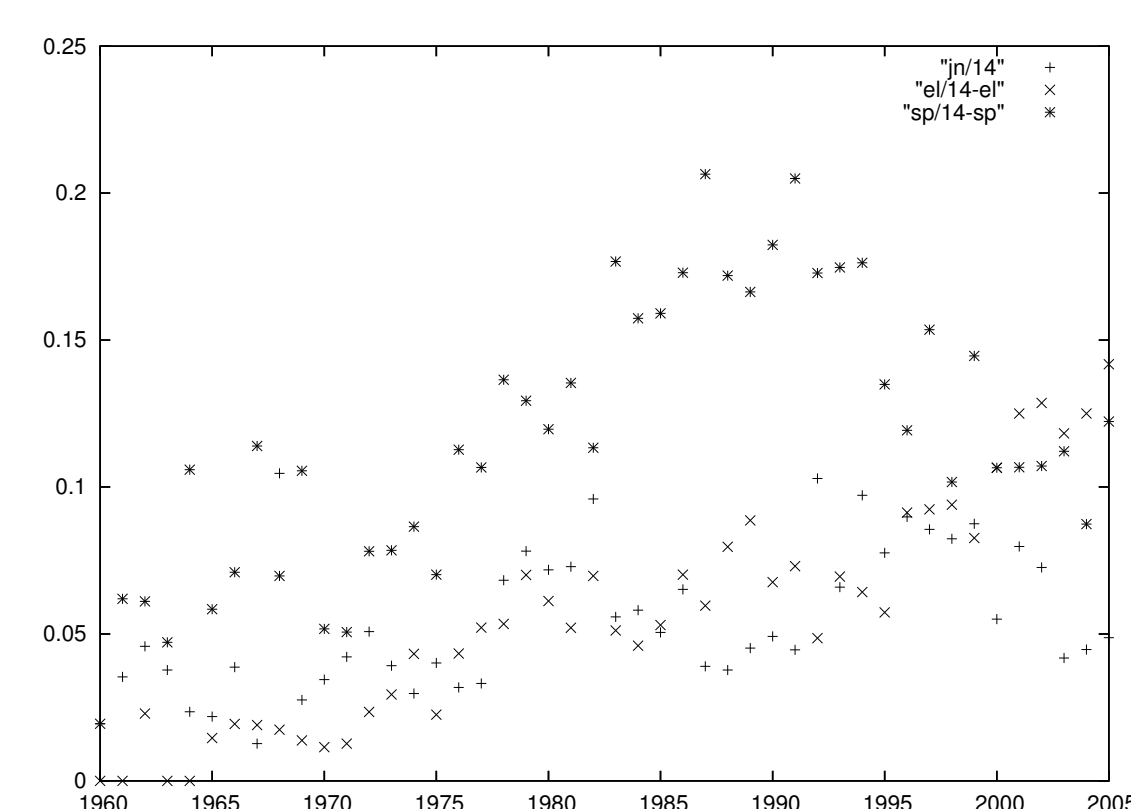


Figure 3: 14: Algebraic Geometry (1916/19744)

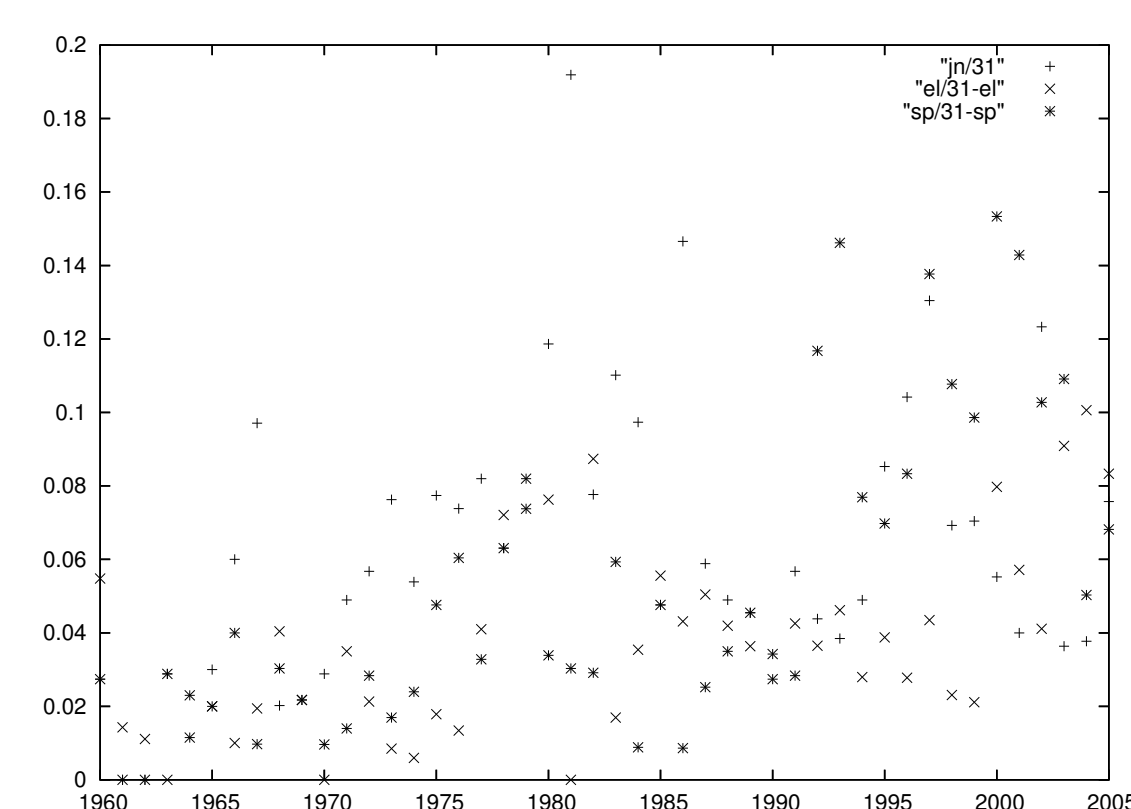


Figure 4: 31: Potential Theory (540/5366)

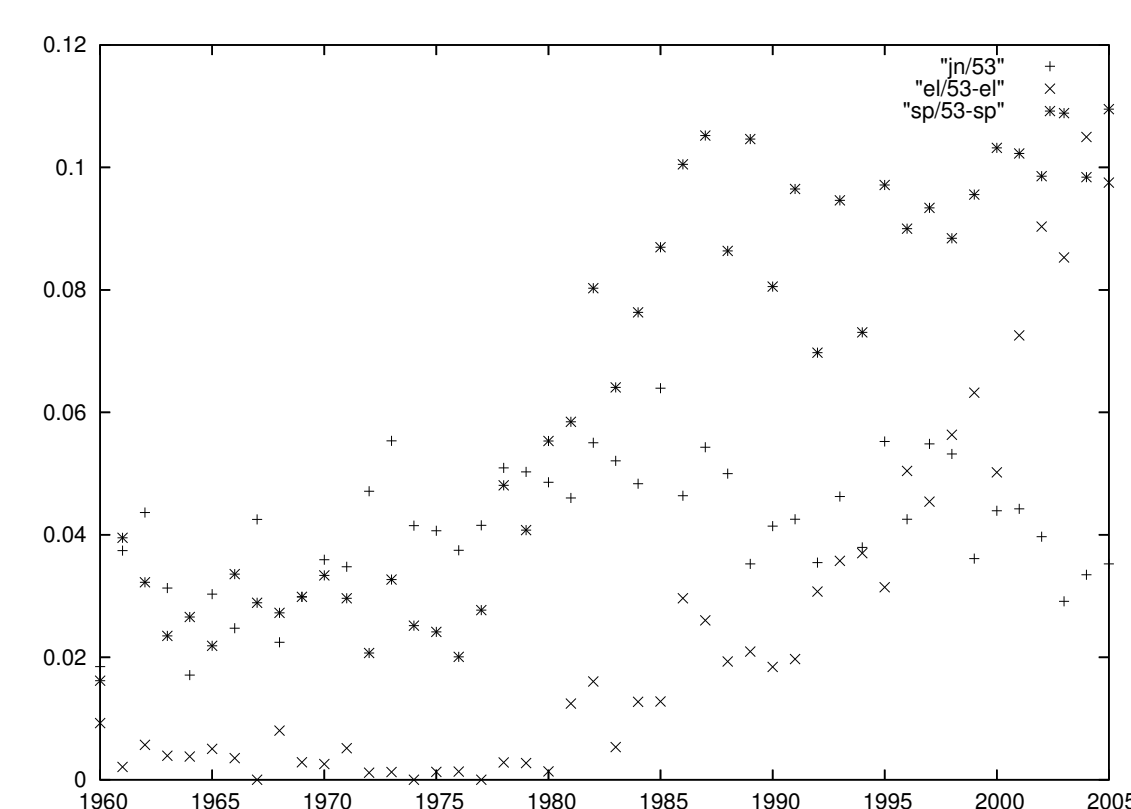


Figure 5: 53: Differential geometry (3210/39080)

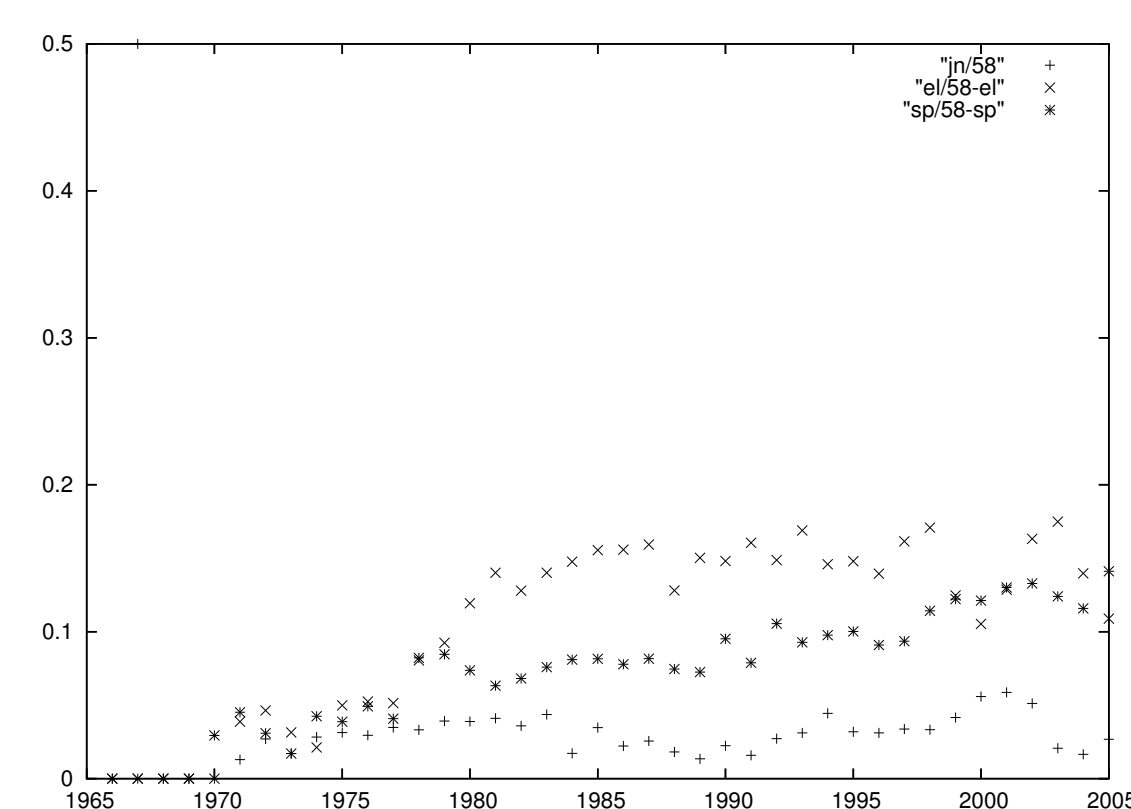


Figure 6: 58: Global analysis, analysis on manifolds (1983/36832)

## 4. Conclusion

There was no quantitative investigations about publications related to mathematics in Japan. In this research we found that our publications were kept its performance high even if these are compared with Big Deal.