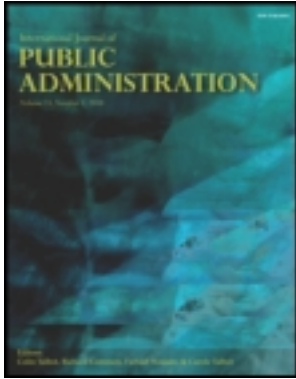


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### An Assessment of Recent Authors and Authorship Patterns in Taiwan's Public Administration Research

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# An Assessment of Recent Authors and Authorship Patterns in Taiwan's Public Administration Research

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The public administration (PA) field in Taiwan has undergone a period of rapid transformation over the past two decades. The purpose of this study is to provide a more recent assessment of Taiwanese PA research. To that end, this study examines the characteristics of contemporary PA authors who published articles in five core PA journals in Taiwan between 1996 and 2007, assesses the journals' co-authorship/collaboration trends over the period, and identifies the publication and funding patterns of the 20 most-frequently published scholars. Implications of the study and suggestions for future research are discussed in the paper.

Keywords: public administration research, journal publications, content analysis

## INTRODUCTION

Much like the society and country itself, the public administration (PA) field in Taiwan has undergone a period of rapid transformation and diversified development over the past several decades (Jan, 2007, 2010). PA in Taiwan used to be a branch of political science. The first independent department of public administration was founded at the National Chengchi University in the 1960s. While other groupings are possible, Jan (2005) believes that the history of public administration research in Taiwan can be broadly divided into three periods: an initial stage (the 1960s to the mid-1980s), an enrichment stage (the late- 1980s to the mid-1990s), and a multi-development stage (the mid-1990s to the present). The first stage was principally about Taiwan learning and grasping the idea of a "public administration" from the West. Many returned scholars from the United States speeded this process of expanding the idea of public administration. The second stage saw Taiwan's incipient public administration research community flourishing rapidly and achieving some level of empirical and epistemological maturity, just as the country underwent peaceful democratic transformation and reform during the mid to late 1980s. The third and current stage may be characterized by a further

expansion of the discipline along multiple dimensions, the coexistence of diverse research paradigms or perspectives, and the uneven movement towards the "indigenization" of public administration research in the country (Chiang, 1997).

The significant growth in the number of scholars, students, and practitioners who study and apply PA knowledge has made the systematic and comprehensive evaluation of the PA field in Taiwan a timely and indispensable topic of academic investigation. Thus, the main purpose of this article is to address this particular gap in the existing PA literature by providing a more recent assessment and perspective of Taiwanese PA research at a period when the discipline has experienced important growth and development in all areas. Since "public administration is defined by those *who write about it*" (emphasis added, Forrester, 1997a, p. 3), this study takes stock and profiles the scholars who have contributed articles to major PA journals in Taiwan between 1996 and 2007. Specifically, using standard content analysis of published research articles from five PA journals in Taiwan, this study examines the characteristics of contemporary Taiwanese PA authors, assesses their co-authorship (or collaboration) trends, and analyzes the publication and funding patterns of 20 most frequently published scholars in these five journals over the 12-year period.

This inquiry is important because Taiwan's experiences are not unique. In an increasingly interconnected world, the prospects and challenges faced by Taiwanese PA have been similar to those faced by the PA field in other developing or democratizing societies. Moreover, this inquiry is of interest

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to PA scholars and students both inside and outside Taiwan because the study of PA itself has endured various contextual changes in response to the forces of globalization in recent decades (Ventris, 1989; Farazmand, 1999). In the introduction of a recently edited volume, *Public Administration in East Asia: Mainland China, Japan, South Korea, and Taiwan*, Berman (2010, p. 2) writes:

As the production of knowledge has become more globally dispersed, a *need* exists to better understand the historic and present contexts and facts of different locales . . . The *need* to increase familiarity of public administration in East Asia is increasingly felt by scholars throughout the world, as well as by scholars and students in the region. (Emphasis added).

Following Berman's lead, the present article is also written with those "needs" in mind. The following section discusses the related literature. Section 3 describes the data and methods used in the study. Section 4 presents the study's principal research findings. The final section discusses the implications of the study's results for Taiwanese PA and provides suggestions for future research.

## LITERATURE REVIEW

Public Administration research has long been an important topic for assessment in academia. Numerous scholars in the past have constructed frameworks to appraise the history and growth of PA research. For instance, Henry (2009) divided the evolution and development of American public administration into six distinct paradigms. Kettl (1993) distinguished between Madisonian and Hamiltonian approaches to public administration. Ostrom (1989) suggested that the traditional "Wilson-Weber" paradigm be replaced with the "democratic administration" paradigm. Moreover, Stillman (1999) categorized PA theories and literature into no-state, bold-state, pre-state and pro-state visions. In addition to these studies which relied on the literature review method to identify and discuss PA research trends, other scholars have used the content analysis method to assess PA research. Usually four kinds of W questions are asked in the literature:

1. Who conducts published research?
2. Why do scholars conduct published research?
3. What are the topics of published research?
4. How do scholars conduct published research?

"Who conducts published research in public administration?" is one of the most important questions among the different W questions that had been investigated before.

Productivity is a frequently analyzed dimension of the studies focusing on the publishers of PA research. Forrester (1996) offered a comprehensive view of faculty productivity in the main PA journals. Douglas (1996) included faculty,

graduate students and graduates in his PA productivity study. In addition to productivity, some studies focused on the contributions that researchers from other disciplines had made in the PA field. For instance, Forrester (1997a, 1997b) found that most articles in the PA journals had come from faculty in business, political science, and sociology departments, as well as from students and practitioners. His finding indicated the interdisciplinary character of PA research, a result that are later corroborated by Rodgers and Rodgers (2000) and Schroeder et al. (2004). Collaboration is another dimension. It is widely documented that the frequency of multiple-authored journal publications has been increasing in most academic fields (e.g., Clarke, 1964; Price, 1963; Zuckerman, 1968), including the social sciences (Enderby, 1996), and particularly in public administration (Corley & Sabharwal, 2010). Furthermore, Slack et al. (1996) examined research-based articles in all issues of *Public Administration Review* during 1940–1995 to investigate the role of women in the discipline. Their research created a new way to analyze the gender question in PA research. Accordingly, productivity, inter-disciplinary, collaboration, and gender are all important issues discussed in the literature that explored the "who" question in public administration.

What is the unit of analysis of these related studies? While some scholars examined doctoral dissertations in the PA field to answer the W questions (e.g., Adams & White, 1994; Brewer et al., 1999; Cleary, 2000; McCormick & Rice, 2001; White et al., 1996), many concentrated on academic journal publications instead. For instance, some scholars used content analysis to find the trend of papers accepted in a single journal, such as *Public Administration Review*, arguably the most widely recognized PA journal in the United States (e.g., Cooper, 1990; Stallings & Ferris, 1988; for a recent review, see Raadschelders & Lee, 2011). On the other hand, other scholars chose to include many academic journals in their analyses. Lan and Anders (2000), for example, reviewed all 634 published articles in eight academic and professional PA journals for the 3-year period from 1993 through 1995.<sup>1</sup> Houston and Delevan (1990) gathered 218 articles by systematically sampling in six academic PA journals from 1984 through 1988.<sup>2</sup> In a subsequent study, Houston and Delevan (1994) added three academic and three practitioner-oriented journals from other disciplines in order to do a comparative study between public administration

<sup>1</sup>The eight journals are *Public Administration Review*, *Administration & Society*, *American Review of Public Administration*, the *Journal of Public Administration Theory and Research*, *Public Productivity and Management Review*, *Public Budgeting and Finance*, the *Review of Public Personnel Administration*, and *Journal of Policy Analysis and Management* (Lan & Anders, 2000, p. 143).

<sup>2</sup>The six journals are *Administration & Society*, *Public Administration Quarterly*, *International Journal of Public Administration*, *Public Budgeting and Finance*, the *Review of Public Personnel Administration*, and *Policy Studies Review* (Houston & Delevan, 1990, pp. 675–676).

and other disciplines. The most complete database is perhaps one collected by Corley and Sabharwal (2010), who examined the entire population of articles published between 1973 and 2007 from all 23 journals listed under the “public administration” category in the Social Science Citation Index.

In the same vein, over the past 20 years many Taiwanese public administration scholars have employed various methodologies to examine the different aspects of the Taiwanese PA field (Chiang, 1997; Sun, 1998a), including the discipline’s intellectual origins, motivations, and historical development (Sun, 1998b; Lu, 2002; Jan, 2005), the overall state of PA education and training (Sun, 1992; Chiang, 1997; Sun & Gargan, 1997; Chiang, 2002), the quality of doctoral education and research (Hsieh & Wang, 2004), and the nature of the nexus between PA theory and practice in the country (Sun, 1992). Yet to the extent that these studies have assisted in advancing knowledge—and generating serious academic discussion—about the state of Taiwan’s PA, they remain the only handful of empirical studies that currently exist on the topic. Perhaps also inadequate are the facts that first, the empirical data used in much of the cited literature above are now somewhat dated, and second, most of this body of knowledge continues to be largely inaccessible for international audiences because of the language barrier (nearly all of the articles are written in Chinese). Therefore, a major contribution of this study is to add to the extant PA assessment literature some empirical evidence from a country in East Asia.

## RESEARCH METHODS

Following previous studies such as Legge and Devore (1987) and Forrester (1996), this study employs journal articles as the basic unit of analysis, because journals serve as the principal avenues for scholars to share their ideas and communicate cutting-edge research results. The data were gathered from a content analysis of published research articles that appeared in five peer-reviewed, PA journals in Taiwan from 1996 through 2007. The journals include *Chinese Journal of Administration (CJA)*, *Chinese Public Administration Review (CPAR)*, *Journal of Public Administration (JPA)*, *Open Public Administration Review (OPAR)*, and *Public Administration and Policy (PAP)*. These five journals were selected primarily for three reasons: the names of the journals contain “Public Administration/Administration” which states their mission clearly to their audiences, their high rankings on the list of Taiwan’s political science journals (Wu et al., 2003)<sup>3</sup>, and the journals’ mission

statement/editorial commitment to advance the study of PA in Taiwan. The authors are aware of the fact that some political science journals do publish PA papers but find that the number of PA papers in any single political science journal is relatively few. Therefore, it is more reasonable to exclude these journals in the sample when considering the principle of proportion. Arguably, the five journals can be considered as the “core” PA journals in Taiwan. As in past studies, this study only considers original, full-length research articles and research notes. Comments, replies, rejoinders, letters, editorials, standard book reviews, and errata were excluded from this study. The data were further restricted to include only articles that had at least one author affiliated with an organization—academic or otherwise—located in Taiwan. This step resulted in the removal of 21 articles. In the end, a total of 722 articles, written by 963 authors, fit the selection criteria. Additional details regarding the five journals used in this study, including their publisher, publishing history, and number of articles published per year, can be found in Appendix A.

Admittedly, this sample of 722 research articles represents only a subset of the entire compendium of PA research conducted in Taiwan, given that there are many other publication outlets, including books, other academic journals not covered in this study, conference proceedings, and reports produced by government, business, or nonprofit organizations. Nonetheless, the sample captures a sizeable and representative portion of the PA scholarship in Taiwan, as well as a significant percentage of the country’s PA researchers active from 1996 to 2007.

Each article in the database was coded according to the general characteristics of the author(s), including their institutional setting, departmental affiliation/field of specialization, academic position/rank, and gender. The number of authors and authorship patterns for each journal article were also recorded and classified. The coding scheme used in this study was adapted from Forrester (1997a, 1997b) and Lan and Anders (2000). Two experienced PA research assistants coded all the articles separately. To ensure the data’s validity, the final coding outcome was determined by comparing the data entries from the two coders. All coding inconsistencies and disagreements were resolved by a meeting of the main researchers of this study.

Once all the articles were coded, classified and tallied, the most frequently published 20 scholars in these five journals were identified. To examine further the linkage between funding levels and publication quantity in PA research, this study then searched for these scholars’ names in Taiwan’s National Science Council (NSC) public database to obtain information on their current and past funding histories between 1996 and 2007. Although the NSC is obviously not the only source of academic research support in Taiwan, it is by most standards the largest and the most prestigious granting agency in the country. Any supplementary background information regarding these authors’ educational and

<sup>3</sup>These five journals occupied top 5, 5 (same rank), 8, 9, and 18 among 138 political science journals in Taiwan during the assessment period according to *A Study on Ranking Political Science Journals* (Wu et al., 2003, p. 17).



TABLE 1  
Organizational Affiliation of Public Administration Authors in Five Domestic Journals, 1996–2007

Organizational Affiliation of Authors	Journal <sup>†</sup>					Total
	CJA	CPAR	JPA	OPAR	PAP	
Public University	76 (65.0)	202 (58.4)	136 (63.0)	84 (56.7)	89 (65.4)	587 (61.0)
Private University	37 (31.6)	107 (30.9)	63 (29.2)	46 (31.1)	36 (26.5)	289 (30.0)
Research Institute	0 (0.0)	12 (3.5)	1 (0.4)	1 (0.7)	1 (0.7)	15 (1.6)
Government	3 (2.6)	9 (2.6)	9 (4.2)	10 (6.8)	5 (3.7)	36 (3.7)
Business/Private Corporation	0 (0.0)	1 (0.3)	0 (0.0)	1 (0.7)	0 (0.0)	2 (0.2)
Other*	1 (0.8)	15 (4.3)	7 (3.2)	6 (4.0)	5 (3.7)	34 (3.5)
Total	117 (100.0)	346 (100.0)	216 (100.0)	148 (100.0)	136 (100.0)	963 (100.0)

<sup>†</sup>Cell entries are frequencies, and numbers in parentheses are column percentages.

\*These include authors who are located outside Taiwan, or those whose affiliation is unclear, unknown, or missing.

career histories was acquired from their *curriculum vitas* located on their personal or university homepages.

## FINDINGS AND DISCUSSIONS

The overarching goal of this study is to report on the findings of a systematic review of five major PA journals in Taiwan between 1996 and 2007 to determine the characteristics of authors and the co-authorship patterns found in the articles. The exploratory findings as well as discussions, organized in three parts, are presented below.

### Author Characteristics

The answers to the basic question, “*who publishes in Taiwan’s core PA journals?*” are presented in Tables 1 to 5. As data reported in Table 1 shows, 91 percent of the article authors from these five PA journals were located in Taiwan’s public and private universities, only 9 percent of the authors were based elsewhere (i.e., research institutes, private corporations, government agencies, etc.). This 9-to-1 academic to non-academic ratio of journal article authors is almost identical to previous studies of PA literature, including Houston and Delevan (1994, Table 1) Lan and Anders (2000, Figure 1), and Watson et al. (2005, Table 4). Among the university-based authors (91 percent), researchers from public universities represent 61 percent (587/963), whereas private university researchers compose 30 percent. This difference (61 percent vs. 30 percent) clearly indicates PA researchers in public universities outperformed their counterparts in private universities, despite the fact that PA faculty and graduate students in public universities are slightly outnumbered those in private universities.<sup>4</sup> This result is

consistent with the general expectations about Taiwanese public universities: Public universities in Taiwan have traditionally outperformed private universities in scientific article output, usually because the public universities have been established longer, enjoy a higher reputation, offer more doctoral programs, and often get more government funding and other resources. The confluence of factors generally put the newer less resourceful, private universities at a disadvantage when it comes to recruiting and retaining the best research-oriented minds.

The departmental affiliations of the authors are presented in Table 2. As the table illustrates, a majority (57.8 percent) of the PA authors belonged to public administration/management/affairs/policy departments; 13.5 percent came from business and economics, 8.1 percent contributors were affiliated with political science, and the rest 20.6 percent were from other academic disciplines or non-academic sectors. Judging solely from the journal authors’ departmental affiliations, Taiwanese PA literature might not be as *inter-disciplinary* or *multi-disciplinary* as elsewhere. In his analysis of American PA authors, for example, Forrester (1997a) found that the PA field in the United States was “more or less a quadripartite field of study,” with nearly equal contributions from public administration, business and economics, political science, and general practice. In Taiwan, the intra-disciplinary effects are much stronger and voices from inside public administration tend to dominate the academic dialogue in journals.

In Table 3 articles by job position or academic rank of the authors are cross-tabulated. As the table indicates, all five journals showed similar percentages across the job positions Overall, and not too surprisingly, a significant majority (62.5 percent) of the articles were written by tenured or tenure-track faculty members (i.e., full, associate and assistant professors), with associate professors being the most productive at 28.2 percent. What is somewhat unexpected from the table, however, is that lecturers and graduate students (at both Ph.D. and master’s levels) were the second most industrious group in terms of journal article production (21.8 percent), outperforming both full and

<sup>4</sup>Currently, there are 32 PA departments as members of Taiwan Association for Schools of Public Administration and Affairs (TASPAA). 17 of the members are in public universities while 15 are in private universities. In addition, 6 departments in public universities offer doctoral programs while only 2 departments in private universities have doctoral programs.

TABLE 2  
Departmental Affiliation of Public Administration Authors by Journal

Departmental Affiliations of Authors	Journal†					Total
	CJA	CPAR	JPA	OPAR	PAP	
Public Administration/Management/Affairs/Policy	68 (58.1)	174 (50.3)	134 (62.0)	82 (55.4)	99 (72.8)	557 (57.8)
Business & Economics	35 (29.9)	54 (15.6)	18 (8.3)	14 (9.5)	9 (6.6)	130 (13.5)
Political Science	4 (3.4)	35 (10.1)	26 (12.0)	12 (8.1)	1 (0.7)	78 (8.1)
Others*	10 (8.6)	83 (24.0)	38 (17.6)	40 (27.0)	27 (19.9)	198 (20.6)
Total	117 (100.0)	346 (100.0)	216 (99.9)	148 (100.0)	136 (100.0)	963 (100.0)

†Cell entries are frequencies, and numbers in parentheses are column percentages; column percentages total s may not add up to 100 due to rounding.

\*These include academic disciplines not listed in the table, as well as scholars and practitioners from non-academic sectors.

TABLE 3  
Position/Rank of Public Administration Authors by Journal

Position/Rank of Authors	Journal†					Total
	CJA	CPAR	JPA	OPAR	PAP	
Full Professor	20 (17.1)	61 (17.6)	36 (16.7)	18 (12.2)	26 (19.1)	161 (16.7)
Associate Professor	28 (24.0)	103 (29.8)	53 (24.5)	54 (36.5)	34 (25.0)	272 (28.2)
Assistant Professor	19 (16.2)	50 (14.4)	46 (21.3)	24 (16.2)	30 (22.1)	169 (17.6)
Lecturer/Student*	33 (28.2)	81 (23.4)	49 (22.7)	23 (15.5)	24 (17.6)	210 (21.8)
Non-University Researchers**	0 (0.0)	11 (3.2)	2 (0.9)	2 (1.4)	3 (2.2)	18 (1.9)
Other***	17 (14.5)	40 (11.6)	30 (13.9)	27 (18.2)	19 (14.0)	133 (13.8)
Total	117 (100.0)	346 (100.0)	216 (100.0)	148 (100.0)	136 (100.0)	963 (100.0)

†Cell entries are frequencies, and numbers in parentheses are column percentages.

\*Includes Ph.D. and master's students.

\*\*Includes full, associate, and assistant researchers from research institutes and centers.

\*\*\*Includes authors from government and business and those whose positions/ranks are missing.

assistant professors over the examined period (16.7 and 17.6 percent, respectively).

The data suggest that those at the lower rungs of the university hierarchy were also very active in advancing PA scholarship: About one of every five articles in the Taiwanese PA literature was written or co-written by lecturers or students. This finding is in direct contrast with the study conducted by Watson and colleagues (2005), who found merely 5 percent of the articles published in 13 journals associated with the various sections of the American Society for Public Administration (ASPA) had listed students as authors. In fact, most previous studies of American PA journals and literature found that the number of graduate student publications was generally quite low, and that the proportion of published articles was much more concentrated towards the top of the academic pecking order (Douglas, 1996; Houston & Delevan, 1990; Lan & Anders, 2000). Why are PA lecturers and graduate students in Taiwan relatively productive? Appendix A lists the publication requirements of eight public administration and policy Ph.D. programs. Many programs require Ph.D. students to publish in peer-review journals before they can be a Ph.D. candidate or finish their degree. In most cases, Ph.D. students need to publish two articles before they enter their academic career path. The publication requirements explain the high productivity of Ph.D. students in these journals.

Tables 4 and 5 provide information regarding the gender of PA authors in Taiwan. The data reported in indicate that, on average, the percentage of women authors in core PA journals is still far less than that of male authors (16.3 percent vs. 83.7 percent). However, when the publication trends are divided into two equal six-year periods, as in Table 5, the data show that female authors progressively increased their share of articles. In the period 1996 to 2001, 13.7 percent of all articles listed a woman as one of the contributors, but between 2002 and 2007 this percentage improved to almost 19 percent, a 5 point upswing that is statistically significant at the 0.05 level ( $\chi^2 = 4.61$ ,  $df = 1$ ,  $p = .032$ ). According to Ministry of Education data, the average female-male ratio in PA faculty over the last decade was 0.2, which implies that the contribution of women to journal publications is proportionate to female faculty representation.

#### Authorship Patterns and Collaboration Trends

Moving beyond article author's individual characteristics, this article now turns to the issue of authorship patterns in Taiwan's PA literature. Modern science is, in fact, characterized by cooperative research between not only the individual scientists, but also among research groups, teams, institutions, and sometimes nations. In the era of so-called "big science," multi-authored publications are a salient feature,

TABLE 4  
Gender of Public Administration Authors by Journal

Author's Gender	Journal†					Total
	CJA	CPAR	JPA	OPAR	PAP	
Women	15 (12.8)	58 (16.8)	46 (21.3)	18 (12.2)	20 (14.7)	157 (16.3)
Men	102 (87.2)	288 (83.2)	170 (78.7)	130 (87.8)	116 (85.3)	806 (83.7)
Total	117 (100.0)	346 (100.0)	216 (100.0)	148 (100.0)	136 (100.0)	963 (100.0)

†Cell entries are frequencies, and numbers in parentheses are column percentages.

TABLE 5  
Number of Articles by Gender in Two Six-Year Periods,  
1996–2001 and 2002–2007

Author's Gender	Time Period†		Total
	1996–2001	2002–2007	
Women	64 (13.7)	93 (18.8)	157 (100.0)
Men	404 (86.3)	402 (81.2)	806 (100.0)
Total	468 (100.0)	495 (100.0)	963 (100.0)

( $\chi^2 = 4.61$ ,  $df = 1$ ,  $p = .032$ ).

†Cell entries are frequencies, and numbers in parentheses are column percentages.

the norm rather than the exception (Wuchty et al., 2007). And, even though the social sciences generally lag behind the hard sciences in scientific collaboration and co-authorship rates (Endersby, 1996), over the past 40 years modern social science has also become more collaborative in terms of co-authorship rates. The upward trend in published research collaboration has been reported in several disciplines intellectually close to the field of PA, including political science (Baum et al., 1976; De Maio & Kushner, 1981; Miller et al., 1996; Fisher et al., 1998), sociology (Patel, 1972; Hunter & Leahey, 2008), and economics (McDowell & Melvin, 1983; Barnett et al., 1988; Hudson, 1996). With the exception of a recent study of scholarly collaboration in PA carried out by Corley and Sabharwal (2010), few studies have systematically analyzed the extent to which collaborative or multiple-authored papers have become more common in the PA literature.

Overall, as shown in Table 6, a total of 24 percent of all articles published in the five Taiwanese PA journals between 1996 and 2007 were collaborative efforts by two or more scholars. As Table 6 also makes clear, the vast majority of these multiple-authored papers involved exactly two authors; less than 8 percent of all papers had three or more authors. Compared with the aggregate multiple-authorship totals in six US-based journals (Houston & Delevan, 1990, Table 1), the Taiwanese journals' multi-authorship percentage totals are about 12 percent lower.

To put the results obtained so far in a wider international context, additional authorship information was collected from four very well-respected, general PA journals published outside of Taiwan, including *Public Administration Review*

(*PAR*), the *Journal of Public Administration Research and Theory* (*JPART*), the *International Review of Administrative Sciences* (*IRAS*), and the *International Journal of Public Administration* (*IJPA*). Specifically, *PAR*, *JPART*, and *IJPA* were chosen because these three journals are ranked among the best journals in the field of PA (Forrester & Watson 1994; for a recent update of PA journal rankings, see Bernick & Krueger, 2010), and *IJPA* and *IRAS* were selected for their international and comparative PA focus. Each of these four journals can be considered representative of the type of cutting-edge research that is conducted throughout the field of PA. In collecting the data from these foreign PA journals, the same research protocol was used for the collection of article data from Taiwanese journals, including the same study time frame. The intent is to explore any co-authorship trends and differences that may exist between Taiwan's PA journals and the leading international PA journals.

The percentage of multiple-authored articles in each of the four foreign journals is reported in Table 7. As can be seen in Table 7, there is a clear difference in the authorship trends among the journals themselves. Roughly speaking, *JPART* and *PAR* have higher levels of collaborative writing (55.7 percent and 51.3 percent), as compared to *IJPA* (37.6 percent) or *IRAS* (34 percent). Overall, as Table and Table 7 indicate, 43.6 percent of all published articles in leading international PA journals were joint-authored (2 or more authors), which is on average nearly 20 percent more than the percentage of multi-authored articles in the five domestic journals (i.e., 24 percent) in Taiwan.

Figure 1 plots the average multi-authorship trends in the leading Taiwanese and foreign PA journals side-by-side across the entire 12-year period, including the addition of best-fitting trend lines for both. Figure 1 shows that:

- the four foreign journals contain, on average, 15 to 20 percent more collaborative articles than the five Taiwanese journals in any given year
- in terms of overall percentages, Taiwan's journals lag behind their foreign counterparts by about ten years
- the annual growth rate of co-authorship for both foreign and domestic PA journals are nearly identical
- the multi-authorship percentages for both foreign and domestic journals have shown signs of leveling off in the last five years of data collected.

TABLE 6  
Number of Authors per Article in the Five Taiwanese PA Journals, 1996–2007

Number of Authors	Taiwanese PA Journals†					Total
	CJA	CPAR	JPA	OPAR	PAP	
1	65 (73.1)	171 (70.1)	115 (73.7)	120 (89.6)	78 (77.8)	549 (76.0)
2	18 (20.2)	48 (19.7)	26 (16.7)	14 (10.4)	10 (10.1)	116 (16.1)
3	5 (5.6)	20 (8.2)	11 (7.1)	0 (0.0)	7 (7.1)	43 (6.0)
4 or more	1 (1.1)	5 (2.0)	4 (2.6)	0 (0.0)	4 (4.0)	14 (1.9)
Total	89 (100.0)	244 (100.0)	156 (100.1)	134 (100.0)	99 (100.0)	722 (100.0)

†Cell entries are frequencies, and numbers in parentheses are column percentages; column percentages totals may not add up to 100 due to rounding.

TABLE 7  
Number of Authors per Article, in Four Selected Foreign Public Administration Journals, 1996–2007

Number of Authors	Foreign PA Journals†				Total
	PAR	JPART	IRAS	IJPA	
1	320 (48.7)	133 (44.3)	260 (66.0)	517 (62.4)	1230 (56.4)
2	244 (37.1)	132 (44.0)	101 (25.6)	239 (28.8)	716 (32.8)
3	71 (10.8)	24 (8.0)	32 (8.1)	58 (7.0)	185 (8.5)
4 or more	22 (3.4)	11 (3.7)	1 (0.3)	15 (1.8)	49 (2.3)
Total	657 (100.0)	300 (100.0)	394 (100.0)	829 (100.0)	2180 (100.0)

†Cell entries are frequencies, and numbers in parentheses are column percentages.

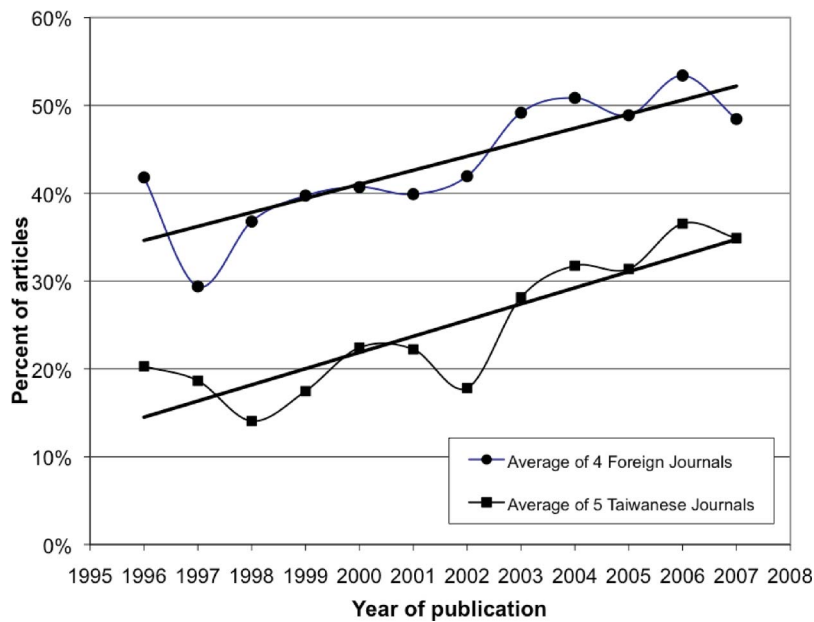


FIGURE 1 Multi-authored publication trends in selected public administration journals, 1996–2007: Foreign vs. Taiwanese journals (color figure available online).

The former hovered at around 50 percent, and the latter fluctuated between 30 and 40 percent.

This study further examines the patterns of collaborative authorship in the five Taiwanese PA journals by gender for the period 1996 to 2007. Overall, the last row of Table 8 shows that single-authored articles were predominantly written by men (though their percentage share is decreasing

over time), and the majority of multiple-authored articles were produced by all-male teams of researchers. The percentage of articles written by women working alone fluctuated between 4.3 and 20.5 percent across all years, whereas articles written by all-female teams were virtually non-existent (4/722 or 0.6 percent). Mixed-gender collaborative teams produced approximately 7.6 percent of



TABLE 8  
Type of Article Authorship by Gender and Year, in Five Taiwanese PA Journals, 1996–2007

Year	Type of Authorship†							Total
	Single-authored articles			Multiple-authored articles				
	Women	Men	Subtotal	All Women	All Men	Mixed	Subtotal	
1996	3 (4.3)	52 (75.4)	55 (79.7)	0 (0.0)	11 (15.9)	3 (4.3)	14 (20.3)	69 (100.0)
1997	6 (10.2)	42 (71.2)	48 (81.4)	0 (0.0)	6 (10.2)	5 (8.5)	11 (18.6)	59 (100.0)
1998	4 (6.3)	51 (79.7)	55 (86.0)	1 (1.6)	7 (10.9)	1 (1.6)	9 (14.0)	64 (100.0)
1999	10 (15.9)	42 (66.7)	52 (82.6)	0 (0.0)	6 (9.5)	5 (7.9)	11 (17.4)	63 (100.0)
2000	3 (5.2)	42 (72.4)	45 (77.6)	1 (1.7)	10 (17.2)	2 (3.4)	13 (22.4)	58 (100.0)
2001	8 (12.7)	41 (65.1)	49 (77.8)	0 (0.0)	9 (14.3)	5 (7.9)	14 (22.2)	63 (100.0)
2002	15 (20.5)	45 (61.6)	60 (82.2)	0 (0.0)	8 (11.0)	5 (6.8)	13 (17.8)	73 (100.0)
2003	7 (10.9)	39 (60.9)	46 (71.8)	1 (1.6)	12 (18.8)	5 (7.8)	18 (28.2)	64 (100.0)
2004	8 (12.7)	35 (55.6)	43 (68.3)	0 (0.0)	13 (20.6)	7 (11.1)	20 (31.7)	63 (100.0)
2005	6 (11.8)	29 (56.9)	35 (68.6)	0 (0.0)	11 (21.6)	5 (9.8)	16 (31.4)	51 (100.0)
2006	10 (19.2)	23 (44.2)	33 (63.5)	0 (0.0)	15 (28.8)	4 (7.7)	19 (36.5)	52 (100.0)
2007	4 (9.3)	24 (55.8)	28 (65.1)	1 (2.3)	6 (14.0)	8 (18.6)	15 (34.9)	43 (100.0)
Total	84 (11.6)	465 (64.4)	549 (76.0)	4 (0.6)	114 (15.8)	55 (7.6)	173 (24.0)	722 (100.0)

all publications, but there is no clear indication of whether this trend is upward or downward-sloping.

Looking from another perspective, the table indicates that the two most common forms of authorship for male PA scholars in Taiwan are single-authorship and working with an all-male team. For female scholars, on the other hand, their two predominant forms of authorship are single authorship and mixed-gender collaborations. The authorship patterns that emerge from the data yield the following empirical observation: For both male and female PA scholars in Taiwan, their publication strategy (or preference/habit) is first, to write the article alone, and second, to co-author with their male peers.

Data from Table 6 and Table 8 indicate that although multiple authorship in PA has indeed increased (especially after 2002), single authorship remains the most common form of authorship in contemporary Taiwanese PA literature. The next pertinent questions are evident: What factors explain the comparatively lower levels of co-authorship within the PA field in Taiwan? Why has the field not become more collaborative in nature, as in global PA research or the other social sciences? Does the traditional picture of the “lone scholar” laboring independently on his or her own still apply to most of the PA community in Taiwan?

To answer these questions, it is perhaps useful to list the most commonly hypothesized forces or mechanisms that contributed to the increasing co-authorship and collaboration patterns found in modern academic research. According to the extant literature, the rising trend in multiple authorships is due to several interconnected and mutually enforcing factors taking place:

- a. the quantification of research has led modern social science to become more of an experimental or

technical science (Patel, 1972; DeMaio & Kushner, 1981)

- b. social problems have become too “complex” for the lone scientist to solve by himself or herself (Endersby, 1996)
- c. the growth in the size of the profession, from which suitable collaborators can be found (Hudson, 1996; Fisher et al., 1998)
- d. technological advances made collaborative research much more accessible across time and space (Fisher et al., 1998);
- e. the prevalence of large-scale, long-term, and multinational scientific projects (Fisher et al., 1998); and,
- f. collaboration is sometimes a requirement specified by government and other funding agencies (Hudson, 1996), among others.

When applied to the state of PA research in Taiwan, some of the listed explanations above are more convincing than others. It is highly possible that the trend towards multi-authored publications in the discipline is the direct result of the growth in the size of the PA profession in Taiwan over the past two decades. However, the fact that the share of multi-authorship publications is small in Taiwan compared with other countries may also be caused by:

1. despite a large influx of new Ph.D.s into the profession, scholars in Taiwan are still searching for “suitable” collaborators to complement their research skills and/or interests
2. Taiwan's PA scholarship remains largely in the theoretical/conceptual stage and is resistant to becoming more quantitative, empirical, or statistically sophisticated

3. relatively few large PA research projects exist in Taiwan, hence limiting the opportunity for collaboration at all levels
4. collaborative work remains largely discounted in tenure, promotion and merit decisions in Taiwan so few scholars bother with it (Su, 2004).

To elaborate, it is possible that single-authorship has been historically “overvalued” or “overemphasized” within the academic community in Taiwan, which is reflected by the Ph.D. publication requirements (see Appendix B) as well. Although few would question the unequivocal need for faculty members to fully demonstrate their research independence and creativity (in addition to their ability to thrive under the universal “publish or perish” mantra), many in the academic profession feel that this task is perhaps best achieved by writing articles and conducting research alone. Opportunities for partnership are then often disregarded because they do not align well with the overall academic incentives structure in Taiwan, a system that usually encourages competition—rather than cooperation—among researchers (Su, 2004).

#### The Most Frequently Published Scholars in These Five Journals

Data collected for this study allow the identification of the most frequently published PA scholars who published in the five Taiwanese journals during 1996–2007. Table 9 lists the 20 most frequently published scholars in these five journals, their article totals, their university affiliations (first and last reported during 1996–2007), their number and total amount (in NT\$, New Taiwan Dollars) of National Science Council (NSC) grants, their number of single and co-authored publications, their gender, and where they received their Ph.D. Note these scholars have been ranked according to their “adjusted” publication totals, using a procedure known as *fractional counting*.<sup>5</sup> For all authors, publication credit for each article published is first divided by the number of authors, and then summed across all articles. It must be emphasized that these 20 scholars should not be mistaken as the most productive PA scholars in Taiwan, because the ranking is solely based

on the five listed journals only, and there are many other publication outlets (e.g., books, other journals not covered in this study) and alternative methods of measuring scholarly productivity.

Caveats about interpretation aside, several noteworthy and surprising observations can be extracted from Table 9. First, this 20 scholars list is consisted with 17 male and 3 female scholars, which is roughly proportionate to the average male-female ratio in PA faculty in Taiwan over the last decade. Second, among these 20 scholars, 12 are foreign Ph.D. holders, 7 are Taiwanese Ph.D. holders, and 1 has both foreign and Taiwanese Ph.D. degree. Given the fact that the majority of faculty in the field of PA in Taiwan earned oversea Ph.D., it is impressed to learn the high productivity of Taiwanese Ph.D. holders. Third, observing first and last reported university affiliation type, it demonstrates again the high productivity of graduate students: 35 percent (7 out of 20) of most frequently published scholars have started their scholarly publication career since they were graduate students (even 2 have published since they were master students). The most extreme case is scholar N (rank 14), who published 7 single-authored and 2 multi-authored articles while he was a graduate student earning his double Ph.D. degrees from Taiwan and the United States.

In addition, if only observing the last reported university affiliation type, it is likely to conclude that more scholars (12 of the 20 scholars, 60 percent) are affiliated with Taiwan’s public universities. But if taking both first and last reported affiliation into account, scholars E, M and Q (i.e., rank 5, 13, and 17) started their publications when they were in private universities. Fourth, of the 219 articles produced by these 20 scholars combined, 168 (or about 77 percent) were single-authored publications, leaving the remaining 51 (or 23 percent) for co-authored publications. Last, looking at grants or funding performance, all but three researchers on the list received research support from the NSC during the period 1996 to 2007. The reason of these three scholars did not have NSC grants is that they were not eligible to apply because they were graduate students at the time.

As a group, the 20 most frequently published scholars in the five journals produced an average of 8.4 single-authored and 2.6 multi-authored publications between 1996 and 2007. On average, they received 5.7 grants from the National Science Council, for a combined amount of over 2.2 million NT\$, over the 12-year period. Table 9 indicates that the publications of the 20 scholars were mostly single-authored (average of 8.4 single-authored vs. 2.6 multi-authored publications). In order to investigate the relationship between authorship and grant, this study calculates two correlation coefficients after removing the three scholars who were not eligible for NSC grants. With respect to authorship patterns, multi-authored publications are strongly related with both the number of NSC research grants ( $r = .82, p < .01$ ) and the research grants’ total amount ( $r = .83, p < .01$ ). This

<sup>5</sup>In addition to *fractional counting*, alternate ways of allocating authorship credit include: a) *normal* (or standard) counting, where full publication credit is given to all contributors of a multi-authored article; b) *first author* (or straight) counting, where only the first author receives publication credit, and, c) *proportional* counting, where publication credit is allocated according to authorship order (that is, the first author would receive more credit than the second, and so on). Each of these counting methods has its supporters and critics, and there is no consensus—in theory or practice—on how publications with multiple authors should be accredited (see more discussion in Zuckerman 1968; Lindsey 1980; Fine & Kurdek 1993; Spiegel & Keith-Spiegel 1970; Van Hooydonk 1997; Hagen 2008). Publications with only one author obviously do not have any problems attributing credit.

TABLE 9  
The 20 Most Frequently Published Scholars, Ranked by *adjusted total articles*, in Five Taiwanese PA Journals, 1996–2007

Rank	Scholar	Gender	Nation of Ph.D. degree	First reported university affiliation type	Last reported university affiliation type	Single authored articles	Multi-authored articles	Total articles	Total articles (adj)*	Number of NSC grants	Total grant amount (in NT\$)
1	A	M	USA	Private	Private	14	2	16	15	11	\$2,447,900
2	B	F	JAPAN	Private	Private	14	0	14	14	4	\$1,155,900
3	C	M	TAIWAN	Public (Ph.D. student)	Public	14	0	14	14	4	\$984,100
4	D	M	USA	Public	Public	11	1	12	11.5	3	\$1,181,800
5	E	M	USA	Private	Public	9	3	12	10.5	3	\$1,277,000
6	F	M	JAPAN	Private (Ph.D. student)	Private	10	1	11	10.5	0	\$0
7	G	M	USA	Private (Ph.D. student)	Public	7	7	14	10.16	8	\$2,706,600
8	H	M	TAIWAN	Public (Master student)	Public	10	0	10	10	1	\$152,400
9	I	F	USA	Private	Private	8	2	10	8.83	8	\$2,943,800
10	J	M	USA	Private	Private	7	4	11	8.66	13	\$5,602,889
11	K	M	TAIWAN	Public	Public	8	1	9	8.5	6	\$2,303,300
12	L	F	TAIWAN	Public (Ph.D. student)	Private	8	1	9	8.25	4	\$772,700
13	M	M	USA	Private	Public	6	6	12	8.16	11	\$7,011,000
14	N	M	TAIWAN and USA	Public (Master student)	Public (Ph.D. student)	7	2	9	8	0	\$0
15	O	M	TAIWAN	Public (Ph.D. student)	Private	8	0	8	8	0	\$0
16	P	M	USA	Public	Public	2	13	15	7.4	18	\$7,549,400
17	Q	M	USA	Private	Public	7	1	8	7.33	2	\$660,000
18	R	M	TAIWAN	Public	Private	6	3	9	7.08	6	\$3,325,700
19	S	M	USA	Public	Public	5	4	9	7	11	\$4,264,200
20	T	M	TAIWAN	Public	Public	7	0	7	7	1	\$246,900
Mean						8.40	2.55	10.95	9.49	5.70	\$2,229,279

\*The variable *Total articles (adjusted)* allots publication credit according to the number of authors listed in each article. Ties are broken (in order) by total articles, number of NSC grants received, and total grant amount.

suggests that research collaboration (as proxied by publications that have two or more authors) and research funding tend to vary together.

## IMPLICATIONS AND FUTURE RESEARCH

A picture of a representative Taiwanese PA scholar could be drawn following the findings in the last section—male, obtained his Ph.D. abroad, affiliated with a public university, mostly in the public administration/policy/management department, not very willing to collaborate with other scholars but gradually moving in that direction, recognizes the positive correlation between publications and research grants. This emblematic portrait of PA scholars in Taiwan has the following four implications.

First, the majority of journal article authors come from universities, especially from the public universities. The results are consistent with the previous findings in the United States and also with the general impression in Taiwan that public universities outperform private universities in terms of academic research. The main reasons why more authors were from public universities might be:

1. public universities are more resourceful, including having more Ph.D. and graduate students
2. the teaching load is usually heavier in private universities.

Consequently, private university's faculty, on average, becomes less productive in terms of academic journal publications. However, according to the data, there are several exceptions to the norm, given the facts that about half of the 20 most frequently published PA scholars, especially the top two, were from private universities. This suggests that exceptional faculty will still find ways and means to publish no matter how busy they are involved with teaching and how limited resources they have with research. Nevertheless, private universities as a whole still underperform on average relative to public universities. Administrators from private universities ought to consider reducing teaching loads and try increasing research resources for their faculty in order to improve research performance.

Second, the findings indicate that both collaboration across disciplines and collaboration among scholars are not very common occurrences in the PA field in Taiwan. Although a significant percentage of journal article authors came from disciplines outside of PA proper, this lack of inter- or cross-disciplinary cooperation with related social science fields may limit the theories and methods used in PA research from reaching new audiences or attaining new heights. Moreover, article co-authorship has an upward trend between 1996 and 2007, but it remains very limited. This may be the consequence of both the academic incentive system (single-author articles are rewarded the most) and

cultural factors (the tradition of “scorn among intellectuals” in Confucian philosophy) in place. But it is difficult for any individual scholar to carry out big and interdisciplinary research projects. Without a doubt, collaborative research is a future trend, but how to set up a mechanism that further promotes cooperation among different departments and mostly self-relying scholars remains a fundamental problem. The founding of the TASPAA (Taiwan Association for Schools of Public Administration and Affairs) in 2003 signified that many scholars in PA are cognizant of the importance of collaboration in both research and teaching. The increasing number of academic conferences in the country, joint research projects and multi-authored articles all demonstrate that PA research will likely to become more collaborative in the future.

Third, a very distinctive feature of Taiwanese PA is that lecturers and graduate students have authored more than 20 percent of the articles in the data sample. As mentioned earlier, the publication requirements found in many domestic Ph.D. programs possibly play a crucial role here. Apparently, the well-known pressure to “publish or perish” affects lecturers and graduate students as well. The main benefit of this system is that these academic candidates are socialized early about the essence of scientific inquiry and thus have the opportunity to demonstrate their research capacity before they start their academic careers, but at the same time some adverse effects (including a few ethical questions) can also arise if the pressure to rack up publications becomes too great. Students may prefer to work on topics which are relatively easier to publish, rather than tackling the most important issues or problems facing the discipline. Moreover, growing anecdotal evidence of academic misconduct, dishonesty, and infighting over co-authorship order, for example, also seems to be unintended consequences of this system as well.

Last, statistics regarding gender indicates that men continue to dominate PA research in Taiwan. However, the data also show that women scholars have begun to publish more than ever before. Public administration did not pay much attention before in gender differences in research productivity either in the United States or in Taiwan. But with the share of female faculty and authors increasing in the discipline, questions and issues related to gender must be faced. The most common reason cited to explain why female faculty productivity is relatively lower or why they tend to collaborate more with their male partners is that, perceivably, female faculty bear more housework burden at home than their male colleagues in the traditional Taiwan society. A very encouraging sign is that Taiwan's National Science Council recognizes the disadvantages faced by female scholars in balancing their work and family lives, and has adopted several female-friendly policies, such as extending the tenure-clock by two years when a female faculty member has a baby, and initiating several large projects to empower female researchers and students.



This study provides an overall answer to the question “who writes PA journal articles in Taiwan” from different angles, with the goal to shed light on the state of PA research in the country. Of course, many interesting questions about the discipline remain, including what are the research topics, what theories have been applied, what methodologies have been used, and so forth. But knowing the picture of authors absolutely is the first step to understand PA academic society in Taiwan. By having the data of these journal articles, the authors will address these issues in the future research.

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## APPENDIX A

## Additional Information on Taiwan's Major Public Administration Journals

Each of the five Taiwanese public administration journals considered in this study has its own unique publishing history and characteristics, which mirror the growth and diversity in the field. Despite some basic editorial differences, all five journals use a peer-review system, accept manuscripts written in both Chinese and English, and are dedicated to promoting the study, research, and analysis of public administration, management, and governance issues in Taiwan. Table A1 below lists the number of articles that appeared in the five journals between 1996 and 2007.

- *Chinese Journal of Administration (CJA)* - jointly published by the Department of Public Administration and the Center of Business Management at National Chengchi University since 1963. *CJA* is the oldest of the five journals considered in this study, and is among the oldest public administration journals in Taiwan. Its publication frequency is two issues per year.
- *Chinese Public Administration Review (CPAR)* - a quarterly founded by the Chinese Society of Public Administration in 1991. *CPAR* was discontinued in September 2006 (after the 15(4) issue), but it resurfaced again in December 2007 after a one-year absence. *CPAR* experimented with publishing English-only articles between December 2004 and September 2006, which contributed to a drastic reduction in the number of articles that appeared in its issues for that time period. Starting in December 2007 *CPAR* has reverted to its old format of accepting both English and Chinese manuscripts.

TABLE A1  
Number of Articles Published by Each Journal, 1996–2007

Year	Journals					Total
	CJA	CPAR	JPA	OPAR	PAP	
1996	9	21	—	35	4	69
1997	7	24	15	8	5	59
1998	8	24	9	15	8	64
1999	8	24	12	13	6	63
2000	7	23	14	9	5	58
2001	9	24	7	10	13	63
2002	11	25	11	11	15	73
2003	6	28	8	12	10	64
2004	10	24	16	5	8	63
2005	5	13	17	8	8	51
2006	5	10	24	4	9	52
2007	4	4	23	4	8	43
Total	89	244	156	134	99	722

- *Journal of Public Administration (JPA)* - published by the Department of Public Administration at National Chengchi University since January 1997. From its inception through 1999, *JPA* appeared once a year; between 2000 and 2003, it published two issues per year. Beginning with its March 2004 issue, *JPA* became a quarterly.
- *Open Public Administration Review (OPAR)* - published by the Department of Public Administration at National Open University since May 1994. The journal publishes two issues per year, except between 1997 and 2004 when it appeared once a year.
- *Public Administration and Policy (PAP)* - published by the Department of Public Administration and Policy at National Taipei University since 1968. Originally known as *Public Administration*, the journal changed its name to *Public Administration and Policy* in 1999. Between 1968 and 2000, the journal appeared once a year; beginning with the December 2001 issue, *PAP* became a semi-annual publication.

## APPENDIX B

## Publication Requirements for Ph.D. Students in Taiwan's Public Administration and Policy Programs

<i>University (ordered by Ph.D. program founding year)</i>	<i>Institutional Type</i>	<i>Publication Requirements</i>
National Taiwan University - <i>Department of Political Science</i> (1976)	Public	Before entering Ph.D. candidacy, student must have: <ol style="list-style-type: none"> <li>1. Presented a conference paper</li> <li>2. Published at least one paper in SSCI or TSSCI journal (as first or single author); or two publications in a peer-reviewed journal or book (as first or single author); or one peer-reviewed book</li> </ol>
National Chengchi University - <i>Department of Public Administration</i> (1989)	Public	Department uses a point-allocation system: <ol style="list-style-type: none"> <li>1. Publication in SSCI journal = 20 pts.</li> <li>2. Publication in TSSCI journal = 16 pts.</li> <li>3. Publication in foreign peer-reviewed journal or in foreign language = 16 pts.</li> <li>4. Publication in domestic peer-reviewed journal = 8 pts.</li> <li>5. Publication in international conference = 8 pts.</li> <li>6. Publication in domestic conference = 4 pts.</li> <li>7. Publication in externally-reviewed government report = 1 pt.</li> </ol> In collaborative work (where N = number of authors) first author receives $2/(N+1)$ credit; all others receive $1/N$ credit Must obtain 28 points before taking Ph.D. dissertation qualifying exams Two single-authored publications
National Taipei University - <i>Dept. of Public Administration and Policy</i> (1994)	Public	Two publications in SSCI, SCI, TSSCI, or other peer-reviewed journals approved by department
National Sun Yat-sen University - <i>Inst. of Public Affairs Management</i> (1998)	Public	Two publications in SSCI, SCI, TSSCI, or other peer-reviewed journals approved by department
Soochow University - <i>Department of Political Science</i> (1998)	Private	Two conference papers, or one publication in an academic journal
National Chung Cheng University - <i>Department of Political Science</i> (2002)	Public	At least one publication in SSCI or TSSCI journal. Must be the first author in collaborative paper
Shih Hsin University - <i>Dept. of Public Policy and Management</i> (2005)	Private	Two publications in peer-reviewed journals. Must be first author in collaborative paper
National Chi Nan University - <i>Dept. of Public Administration and Policy</i> (2006)	Public	Two single-authored publications in peer-reviewed journals (domestic/foreign), or two conference papers written in foreign language

Source: Authors' compilation from departmental websites.

Note: SCI: Science Citation Index; SSCI: Social Science Citation Index; TSSCI: Taiwan Social Science Citation Index.