Winnowing out high-PSM candidates : the adverse selection effect of competitive public service exams

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Winnowing Out High-PSM Candidates: The Adverse Selection Effect of Competitive Public Service Exams

Abstract

Existing literature based in Western society genrally supports that people who have high public service motivation (PSM) prefer a public service career, and public organizations are likely to recruit high-PSM individuals. This proposition may not hold in cultures where the public service exam is notoriously competitive. The present study, based in Taiwan, provides evidence showing that a competitive, standardized public service exam, along with its unique social symbolism, can deter high-PSM people from entering the public sector. We then discuss the theoretical and practical implications in the conclusion.

Introduction

In the literature on attracting people to public employment, it is generally agreed that people who have strong public service motivation (PSM) or prosocial proclivity prefer a public service career to one in the private sector. This proposition is empirically supported worldwide, in both the West (e.g. Belgium and the United States) (Vandenabeele 2008, Tschirhart et al. 2008) and the East (e.g. China, Korea, and Singapore) (Liu et al. 2011, Ko and Jun 2015). A recent study using data from 26 countries conclude that PSM is indeed positively correlated with public sector preference (Van de Walle, Steijn, and Jilke 2015).

Does attraction lead to selection? Indeed, some confounding factors may deter public organizations from selecting high-PSM individuals. A typical example would be economic situations. For example, economic recession along with a high unemployment rate may encourage people to pursue a public service career (Van de Walle, Steijn, and Jilke 2015, Groeneveld, Steijn, and van der Parre 2009). Individuals who enter the public sector in this situation may care more about job security and stability than the chance to serve. Despite this, existing literature generally supports that public organizations can select high-PSM individuals: public employees demonstrate stronger PSM and prosocial tendency than their business peers (Bullock, Stritch, and Rainey 2015, Houston 2011, Steijn 2008); public servants who report a weak prosocial motive are likely to leave for the private sector (Hansen 2014), whereas high-PSM individuals who do not initially select the public sector are likely to switch to the public sector eventually (Wright and

Christensen 2010); a recent US-based longitudinal study reports that high-PSM students are likely to be sorted into the public sector (Holt 2018).

However, we wonder if the same proposition holds in other cultural settings, especially in places where most people long for a public service job, which leads to a high entry bar for a public service career. For example, in Taiwan, where we collected the data for the present study, a public service position is still considered to be the most ideal job today.[1] According to a recent academic study (Chen, Bozeman, and Berman 2018), a majority of Taiwanese private sector workers (56%) prefer a public service position to a private one, a huge contrast to a low percentage in the US (23%) and New Zealand (13%). However, the public service exam is extremely competitive, with a pass rate as low as 5% on average. *Can high-PSM individuals eventually pass a difficult exam and enter the public sector? Can public organizations select high-PSM individuals?*

An optimistic view suggests that high-PSM people, compared to those whose PSM is low, are more likely to pass competitive public service exams because PSM may serve as an autonomous motive (Vandenabeele 2007, Taylor 2008) that propels people to complete a public service-related task such as passing the public service exam. However, an opposing view suggests that *severe competition often accompanies standardized questions/answers, and requires great time investment in exam preparation. This may, as we will analyze in a later section, winnow out individuals who are passionate about prosocial activities, and meanwhile, select conscientious but low-PSM exam participants.*

The finding in the present study, which supports the latter view, has critical implications to the international society, especially countries where competitive public

service exams are present. For example, in East Asian countries such as South Korea, the average passing rate in 2013 was 74.8 to 1 for the entry level (Level 9).[2] In mainland China, the average passing rate in 2015 was 1.90% for the Central Government Public Service Exam.[3] In South Asian countries such as India and Bangladesh, the average passing rate is usually lower than 0.1%.[4] Many other Asian countries,such as Vietnam, Myanmar, Thailand, Pakistan and the Philippines, also rely on competitive public service exams for recruitment (Berman 2011). If selecting high-PSM individuals is a crucial concern for public organizations, exam designers may need to consider some reforms that remedy this effect.

To elaborate on our views and develop hypotheses, we begin by explaining why a majority of people desire a public service career, and why the public service exam is highly difficult in Taiwan, a democratic East Asian nation that inherits traditional Chinese cultures, including the exam culture. We first introduce Keju, an older form of Chinese public service exam. The success in Keju can bring one enormous power, material rewards, pride, and enhanced family status. Hence, an "exam society" is gradually formed. In an exam society, a majority of people long for a public service position, and public service exams are extremely competitive. Following this section, we discuss how intense competition may eventually winnow out high-PSM individuals by employing the literature of personality, volunteering, and motivation crowding. Data for hypothesis testing were collected in Taiwan. Respondents did the survey during the time between the completion of the exam and release of the exam result. The dependent variable, passing the public service exam (1 = pass; 0 = fail), is an objective, non-survey

item, which eliminates common source bias. T-test and regression results support the presence of adverse selection: hypothesis that high-PSM people are less likely to pass the exam. Theoretical and practical implications follow in the conclusion.

Chinese Public Service Exams: Past and Present

Keju: The Origin of a Competitive Public Service Exam

Contemporary public service exams are historically rooted in an older form of government entrance exam commonly known as Keju in Mandarin Chinese. It formally appeared in AD 605 in China (Liu 1995) and was later adopted by other East Asian nations. Keju had the following features: it was hosted by the central government in order to select competent people; it involved a written exam without a face-to-face interview (to avoid human bias and ensure absolute equity); could be taken by all keen applicants regardless of socio-economic status so that social mobility was ensured (Tian 2004, Liu 2010). A Keju-based public service system, scholars argue, is considered as the origin of modern civil service exams in both East Asia and the West (Kracke 1947, Liu 2001).

To encourage competent people to participate in Keju and serve as a government official, Emperor Song Zhenzong (AD 968-1022.) wrote the Essay of Encouraging Learning, in which he reveals that extremely attractive material rewards (e.g. farms, house, and wagons) accompany success in Keju (Wang 2007). The use of material rewards to encourage citizens to take the public entrance exam resulted in citizens regarding Keju as a way to pursue social status and pride for their respective families and clans (Liu 2010). In fact, the most apparent benefit was power and privilege, not public service . In cases where government suppression and biased treatment had harmed their

family, people hoped to succeed in Keju, and gain power and privilege such that they could protect their family (Wang 2007, Lee 2003, Zheng 2007). Also, because those who succeeded in Keju were considered more knowledgeable and culturally advanced, and public officials enjoyed enormous power and privilege (Wu 2006), an "official-centered culture" emerged. In such a culture, public officials are highly respected and honored (Berman 2010).

After 1300 years of living with Keju and the social mobility it brought, the Chinese have developed a profound faith in education, perceiving education to be "the royal road to the honors and emoluments that the State has to bestow" (Macgowan 1912, 76). Some scholars even claim that China before the 19th century was a mono-occupational society: only positions in government were worthy of pursuit, where all other occupations served as consolation (Zheng 2007). The devotion to Keju peaked in the 19th century; Wang (2007) succinctly represents the public sentiment as follows: "If a man does not take the Keju exam in the age of 15, the father and brothers should consider him useless; if a man fails to do that in the age of 20, everyone in the community can despise him" (p.41). This created enormous pressure for those who took the exams, as their happiness or sorrow was entirely hinged onto the result of the Keju; when they failed, their families urged them to keep trying until they eventually succeeded.

Today's Situations

Keju was officially abolished in 1905 in China. However, the long-term influence of Keju across many generations has culminated in the emergence of an "exam society" and even though the exam itself has been abolished, its social and cultural effects

continue to reverberate strongly in modern society (Elman 2013). Even today, a majority of Chinese (including those in Taiwan) still see a public service position as the most ideal job that brings power and pride, and believe that performing well in exams can enhance their quality of life tremendously (Zheng 2007, Yen 2014). Indeed, a recent Taiwan-based empirical study about young public officials' job choice motivation show that honor, power, good reputation, and family expectation significantly contribute to their determination in taking the public service exam despite its difficulty (Chen, Chen, and Xu 2018). The exam cult still drives young applicants to prove themselves as worthy and capable in a cut-throat competition.

Severe competition accompanies people's thirst for absolute fairness. To ensure equal competition, public service exams in Taiwan today, partly due to the influence of Keju, mainly rely on written exams with clear and standard preparation guidelines, while face-to-face interviews are rarely used. For example, the C-Level Public Service Exam (the exam open to college graduates) often rely on true or false and multiple-choice questions. In addition, exam designers are encouraged to prepare essay questions that have standard answers in textbooks. Questions such as "What are the differences between top-down and bottom-up implementation?" and "What is Policy Delphi and its basic principles?" have appeared in a recent C-Level Public Service Exam. Compared to face-to-face interviews, standardized questions and answers can largely mitigate subjective judgments and human bias, accordingly reducing controversy. Standardization is particularly pertinent and welcomed in Chinese society where pervasive Chinese relationalism (forming informal interpersonal ties through reciprocity: giving insiders

preferential treatment beyond rules but treating outsiders fairly based on rules, see Su and Littlefield 2001 as an example) can sometimes cause corruption, outweigh competence in exam competition, and compromise exam fairness (Luo 2008).

Hypotheses

We are interested to know whether high-PSM individuals can eventually pass the public service exam and enter the public sector. We propose two antagonistic hypotheses in the present study. An optimistic view suggests that PSM functions as an autonomous motive (Vandenabeele 2007, Andrews 2016) that drives people to take actions for public service or make an effort in public service-related behaviors. Evidence also shows that PSM positively predicts employee performance (Bellé 2013, Andersen, Heinesen, and Pedersen 2014). We may think that PSM also propels individuals to invest serious effort and perform well in public service exams. In this regard, PSM increases the likelihood of passing the public service exam.

H1: PSM is positively related to the likelihood of passing the exam. That is, compared to those who fail in the public service exam, those who pass the exam exhibit stronger PSM.

An alternative view suggests that high-PSM individuals are less likely to pass competitive public service exams, or PSM is negatively correlated to passing public service exams. In the following paragraphs, we discuss four reasons that contribute to this effect. The first one concerns how the social status of public servants may create an alternative motivational structure that crowds out PSM, whereas the rest three concern how exam competitiveness is incompatible with PSM.

First, we consider the motivation crowding effect (Frey and Jegen 2001). A commonly addressed crowding effect is crowding-out, meaning that individuals perceive the introduction of external intervention (rules, penalties, incentives, etc.) as external control. This forms controlled motivation and undermines autonomous motivation, such as PSM.[5] A typical research topic in public management is whether monetary reward, particularly pay-for-performance (i.e., employees receive contingent monetary rewards when they outperform colleagues doing similar jobs), crowds out PSM as well as intrinsic work motivation (Georgellis, Iossa, and Tabvuma 2011, Stazyk 2013). In the present study, the main crowding-out sources include various "public sector motivations" (i.e. reasons that may not be necessarily related to altruism but motivate people to choose the public sector or remain in the public sector) (Steen 2006) such as power, pride, social norm, and parents' expectation as mentioned before. If they determine exam participants' effort in preparation and performance in exams while crowding out PSM, we should reasonably suspect that those who pass public service exams have lower levels of PSM than those who fail.

Second, we consider the effect of personality, especially the Big Five (Poropat 2009).[6] Individuals with certain types of personalities have a higher likelihood to be successful in exams with a low passing rate. For example, conscientiousness serves as a crucial motive that drives people to invest time and effort so as to increase the likelihood of passing a competitive exam. However, evidence shows that contentiousness is negatively related to PSM, especially affective PSM (compassion and self-sacrifice) (van Witteloostuijn, Esteve, and Boyne 2016). In other words, public organizations are likely

to select low-PSM individuals when competitive public service exams are present. Openness to new experience matters too, but it works in a slightly different way. Competitive and standardized exams, which limit exam materials within a narrow scope, may be disadvantageous to individuals with high levels of openness to new experience. As openness to new experience is positively related to PSM (Jang 2012), we speculate that those who pass a competitive and standardized exam have lower levels of PSM.

Third, intense competition is incompatible with an altruistic and prosocial tendency. A typical example is the relationship between pay-for-performance and organizational citizenship behavior. Evidence shows that the implementation of pay-for-performance can foster an atmosphere of mutual competition, which forces employees to focus on individuals tasks and disregard extrarole behaviors, such as helping others and tolerating unavoidable irritations out of organizational settings (Deckop, Mangel, and Cirka 1999). We suspect that competition in public service exams may function in a similar way in eroding exam participants' motivation to be involved in extrarole and altruistic behaviors. The more exam participants internalize the value of competition, the more likely they are to outperform others and succeed in exams while becoming less altruistic. Eventually, compared to those who fail in the exam, those who pass may have lower levels of PSM.

Finally, we take into account how public service exams, volunteering, and PSM are intertwined. Difficult, competitive exams require participants to invest time and effort into preparation. A very typical practice is studying in a private tuition school (also translated as "cram school" in some places) to acquire updated learning techniques. In

our sample, 70% of the participants studied in the private tuition school before taking the exam in 2015. Evidence supports that though tuition schooling positively predicts students' academic performance (Liu 2012), it crowds out exam participants' time for other activities, including prosocial activities such as volunteering. Volunteering can reinforce PSM, although most people see the causality the other way around (Ertas 2014). According to Perry and colleagues (2008), those who have participated in volunteering are more likely to report high PSM in post-volunteering surveys than those who have not. If the final success of exams relies on preparation and tuition that take place over a long period of time, and preparation time crowds out volunteering, we should expect less volunteering and lower levels of PSM among those who pass the exam.

Based on aforementioned analyses, we propose an alternative hypothesis:

Alternative H1: PSM is negatively related to the likelihood of passing the exam. That is, compared to those who fail in the public service exam, those who pass the exam exhibit weaker PSM.

In addition, we believe that testing whether volunteering (the last point in earlier analyses) differs between those who pass and those who fail in exams can further validate the results of the test for H1 (and Alternative H1). Therefore, we propose the following hypothesis:

H2: Volunteering is negatively related to the likelihood of passing the exam. That is, compared to those who fail in the public service exam, those who pass the exam spend less time on volunteering.

Methodology

Data

Data for analysis were collected in Taiwan, where the influence of Confucianism is strong and Chinese culture is dominant. We surveyed exam participants of the 2015 College-Level (C-Level) Public Service Exam in Taiwan. The C-Level exam comprises of three levels, where each level is carried out at a different time: C3 is open to those holding a polytechnic diploma or a bachelor's degree and higher; C2 is open to those holding a master degree and higher; C1 is open to those holding a PhD degree and/or its equivalent. There are significantly more participants in C3 as compared to C2 and C1, thus we choose to focus on C3 participants in this study. This provides us with a greater sample size.

The sampling process is as follows. In 2015, there were 35,015 participants in the C3 exam. As soon as the exam was over, the Ministry of Examination sent out an email invitation to all 35,015 participants on our behalf, seeking their participation in the survey. In total, 3651 of the exam participants accepted our invitation.[7] We then surveyed these 3651 people using SurveyMonkey, an online tool, between August/19/2015 and September/22/2015, right before the exam result was released. At the end of the survey, we collected 3153 responses. We found out that 78 out of 3153 responses were inadequate for analysis as the answers in the PSM section were missing. We thus conducted the analysis using the remaining 3075 valid cases.

Variables

The dependent variable, the outcome of the exam, is a dichotomous variable (1 = pass, 0 = fail). Response to this variable is not derived from self-report in the survey, thus the concern for common source bias is reasonably reduced. Regarding the main predicting variable, PSM, we follow Wright, Christensen, and Pandey (2013) by using the five-item scale (Cronbach's alpha = .80)[8]. These items "represent the affective or normative motives most closely associated with the altruistic appeal of public sector values" (Wright, Christensen, and Pandey 2013, 207). Regarding volunteering, the second predicting variable, we asked respondents, "In the last year, how much time did you spend on voluntary help to the following organizations, groups, or people?" Following Perry and colleagues (2008), we identified nine types of formal and informal voluntary work, such as helping in religious organizations, helping in schools and educational organizations, helping in political parties and governmental agencies, providing transportation support to friends or strangers, providing childcare support to friends or strangers, etc. For each type of volunteering, we allowed respondents to choose among the following options: 1 = less than an hour, 2 = one to nineteen hours, 3 = twenty to thirty nine hours, 4 = forty to seventy nine hours, 5 = eighty to a hundred and fifty nine hours, and 6 = over a hundred and sixty hours. We then created a volunteering index by summing up the nine items.

We consdier the following control variables. First, as mentioned, fulltime preparation and enrollment in tuition schools are common exam preparation practices. Evidence also shows that enrollment in tuition schools positively predicts academic

performance among high school students (Tsai and Kuo 2008, Liu 2012). We controlled the two variables and anticipate that they are positively correlated with the likelihood of passing the exam. In addition, we considered several demographic variables such as gender (1 = male; 0 = female), education (1 = polytechnic; 2 = university; 3 = postgraduate), age, and marital status (1 = married; 0 = not married). Gender is also used as a moderation variable in the analysis. We also controlled the number of children, and the extent to which the respondent's family relies on his or her income (1 = 0%; 2 = 1-20%; 3 = 21-40%; 4 = 41-60%; 5 = 61-80%; 6 = 81-100%). These two conditions may motivate exam participants to strive harder in the exam. Please refer to Table 1 for descriptive statistics.

[Insert Table 1 Here]

Analyses

Sample Representativeness Tests and Raking

To address the issue of a relatively low response rate (approximately 10.4%), before testing hypotheses, we first examined the representativeness of our sample by running three Chi-square tests on age, gender, and education. All three tests showed significant p values, a sign that our sample may not truly reflect the population in the three aspects. In situations like this, weight calibration is often used to correct nonresponse and coverage errors (Kott 2006). Weight calibration adjusts the survey weights so that the weighted totals in the sample are in line with those in the population (Kolenikov and Hammer 2015). One commonly used method for weight calibration is iterative proportional fitting, or raking (Deming and Stephan 1940). This technique is

employed in the present study, where we used weighted data to test hypotheses. Please refer to Appendix A for detailed results of raking.

Regarding sample representativeness, we also noticed that the percentage of participants who passed the exam is 10% in the current sample, which is very close to the actual pass rate for the exam in 2015 (9.78%). In addition, the average PSM for those who passed the exam is 4.79. This is very close to the result of a 2014 Taiwan-based survey that was aimed at newly hired C3-Level public servants. The PSM was 4.74 among the newly hired in that sample. Overall, the use of the raking technique along with the statistics of key variables adequately mitigates the concern for sample representativeness in the present study.

Hypothesis Testing

We employed logistic regression with several controls to test hypotheses, and reported the findings in Table 2.[9] Polytechnic in education is used as the base category. The coefficient of PSM is negative and statistically significant ($p<.05$), a finding that supports Alternative H1. The odds ratio = 0.851 means that the probability of passing the exam is 14.9% (1 – 0.851 = 0.149) lower when PSM increases from 1 to 6. The coefficient of volunteering is also negative and statistically significant ($p<.01$), which supports H2. Regarding controls, both enrollment in tuition schools and engagement in full-time preparation significantly increase the likelihood of passing the exam. Attending tuition school for exam preparation can increase the possibility by 47.3% (1.473 – 1 = 0.473), whereas full-time preparation can increase the possibility of passing the exam by 85.7% (1.857 – 1 = 0.857). Coefficients of other variables are not statistically significant.

Variance inflation factors (VIFs) were used to test whether multi-collinearity is present, especially if we consider possible high correlation between PSM and volunteering (both are grounded in altruism). The results of VIFs show that no individual VIF score exceeds 2, which mitigates the concern for multi-collinearity. In addition, the correlation coefficient between PSM and volunteering is only 0.22, far lower than the cut-off point of 0.70.

[Insert Table 2 Here]

We further employed t-tests to examine whether the results are line with regression findings. The unmatched column in Table 3 shows that the levels of PSM for those who passed the exam are significantly lower ($p<.01$) than that of those who failed. The difference in the amount of time spent on volunteering is statistically significant as well ($p<.01$), with those who passed the exam reporting a shorter duration. Therefore, the findings reject H1, but support both Alternative H1 and H2.

[Insert Table 3 Here]

Propensity Score Matching

Although aforementioned analyses (t-tests and regression) show that levels of PSM and volunteering are lower among those who passed the exam than those who failed, conditions of the two groups (pass vs. fail) may differ initially, resulting in possible biases in sample selection as well as analytical results. This is particularly the case if we consider that PSM is largely constructed socially and determined by various demographic factors (Perry 1997, Vandenabeele 2011). One way to fix this problem is randomly assigning members into two groups before the treatment. However, it is not

viable in the present study. An alternative way that is employed after the treatment is propensity score matching. Through matching, researchers can ensure that individuals in the two groups up for comparison are similar in various demographic aspects and thus, more comparable. In this study, we have considered gender, age, education, and family reliance (the extent to which the respondent's family relies on his or her income) for matching.

The matching method used is the nearest-neighbor matching with caliper (Stuart 2010), where the neighbor value was set up as 4, and caliper was 0.007 ($0.25\hat{\sigma}_{pscore} \approx 0.25 * 0.028 \approx 0.007$). After matching, we conducted t-tests again. As the matched column in Table 3 shows, the levels of PSM and volunteering still differed significantly between the two groups, with those who passed reporting lower scores. To ensure that the matching method is adequate (i.e., the method makes demographic features of the two groups for comparison more equivalent), we examined standardized biases for all demographics employed in matching. As Figure 1 shows, standardized biases of age and family reliance had increased slightly, but those of other factors had reduced greatly, supporting our matching method (Leuven and Sianesi 2003).

[Insert Figure 1 Here]

Conclusion

The major focus of this article is the interface between PSM and a competitive public service exam. Theories suggest two contradicting possibilities: (i) high-PSM individuals are *more* likely than low-PSM individuals to be screened into the public sector through competitive public service exams; (ii) high-PSM individuals are *less* likely

than low-PSM individuals to be screened into the public sector through competitive public service exams. Statistical results supported the latter view. Moreover, this view is further endorsed by another finding that those who passed the exam spent less time in volunteering than those who failed. The implications are two-fold: theoretical and practical.

Theoretical Implications

This study first adds to the literature of public employee selection, an underdeveloped topic in public administration research. In Western literature regarding public employee recruitment, scholars put disproportionate emphasis on attraction and the decline of young generations' interest in public service (see Bright and Graham 2015 as an example), perhaps because culturally and historically, Westerners are relatively more interested in private sector jobs than public sector ones. In Asia, where the majority's strong demand for a public service position exceeds the supply, selection through a competitive public service exam becomes a much more crucial concern as compared to attraction of public service candidates.

Although our findings indicate that competitive and standardized public service exams can winnow out high-PSM individuals, we encourage researchers to replicate our research design, or develop even more rigorous design to examine if the same results appear in other countries where competitive public service exams exist. After all, this is a pioneer study. Institutional settings in different countries may complicate the results. We see the present study as a start towards a more generalizable theory of competitive public service exams.

This study also echoes the call for international PSM research (Perry 2014, Perry and Vandenabeele 2015). Differing from previous cultural studies that emphasize on construct development (Vandenabeele, Scheepers, and Hondeghem 2006), measurement (Kim et al. 2013), social desirability in different cultures (Kim and Kim 2016), cultures as antecedents (Kim 2015, Vandenabeele and Van de Walle 2008), and consequences of PSM in different cultures (Lee and Choi 2016, Liu et al. 2011, Liu, Tang, and Zhu 2008), we examined whether a seemingly universal, but in fact Western-driven proposition can be applied to an entirely different cultural and institutional setting. More precisely, while existing evidence based in Western society generally suggests that public organizations are likely to attract high-PSM people (Vandenabeele 2008), high-PSM people are interested in a public service career (Van de Walle, Steijn, and Jilke 2015), and high-PSM individuals are thus likely to be screened into the public sector (Holt 2018), we questioned whether competitive public service exams can deter high PSM individuals from entering the public sector. In this regard, the present study also advances the theory of PSM by addressing the applicability of PSM-related propositions.

Practical Implications

As our findings show that a competitive public service exam may winnow out high-PSM people, practically, we invite researchers to consider the following questions: How desirable is PSM? Is sacrificing PSM a bearable result? If not, can we reduce the difficulty of public service exams? Can we make it less competitive? If the answer is still negative, what can we do?

We begin with the discussion of PSM. Certainly, PSM has its drawbacks. For example, high-PSM people can easily experience frustration if the organizational culture is perceived as incompatible with their prosocial values (Steen and Rutgers 2011). High affective PSM can lead to resigned satisfaction, a phenomenon during which "a person feels indistinct work dissatisfaction and decreases the level of aspiration in order to adapt to negative aspects of the work situation" (Giauque et al. 2012, 177). Compassion may be in conflict with neutrality, a crucial public value (Vandenabeele, Scheepers, and Hondeghem 2006). However, a systematic review of PSM research in the last two decades reveals that PSM tends to be, in most cases, positively related to many outcome factors such as job satisfaction, individual and organizational performance, organizational and job commitment, person-environment fit, and organizational citizenship behavior (Ritz, Brewer, and Neumann 2016). Thus, sacrificing PSM may not be an ideal solution.

Then, can we make exams less competitive? This seems implausible. As we analyzed earlier, intense competition is actually a phenomenon that forms naturally. It is not the purpose of the exam. Public service exams were first introduced to enhance social mobility and ensure the competence of the public service team. Exams become competitive today because public service jobs, historically, have been accompanied by a high social status, attractive benefits and security, and privileges that allow one to protect the family. Accordingly, people deem the public service job to be a noble occupation, and obtaining a public service position as a way to glorify the family name. In addition, in cultures where a majority of young people long for a public service career, a competitive exam seems to be the most efficient and acceptable approach (Elman 2013).

In this, what can we do to secure PSM when high competition is unavoidable? A recent public service exam reform proposed by the South Korean government may shed some light here. As mentioned, high competition often requires a standardized form of exam, as it is effective in preventing patronage and political spoils (Sundell 2014). However, standardization may create rigidity, stifle creativity, and as we analyzed earlier, compromise PSM. Therefore, since 2010, the Korean government has made a serious effort gradually to replace standardized exams with decentralized face-to-face interviews in selecting Grade-5 public servants (Lee 2010).[10] This bold attempt aims to promote greater diversity and flexibility, but triggers some people's concern that it may actually favor students from the privileged class and do harm to equity and social mobility (Lee 2010). An issue more related to the present study is PSM: By replacing standardized exams with interviews, can we mitigate the effect of winnowing out high-PSM individuals in countries where public service exams are competitive? In theory, both competition and standardization can contribute to compromised PSM. Will the removal of standardization promote PSM when public service exams remain competitive? More evidence is required to answer this interesting question.

Perhaps we can also consider post-exam training activities, through which individuals enhance their PSM. Specifically, using self-determination theory, Vandenabeele (2007) argues that PSM, as a type of autonomous motivation, may increase when employees are satisfied with three psychological needs: autonomy, relatedness, and competence. For example, public managers may consider introducing community-based volunteering, through which employees retrieve relatedness to people, and therefore

regain PSM (Perry et al. 2008). Formal training for skill upgrading, especially for the skills required for policy making or public problem solving, may enhance employees' perceived competence and consequently improve their PSM. Indeed, scholars argue that the change of value through training is possible (Warr, Allan, and Birdi 1999). Finally, practices that contribute to employees' perceived autonomy, such as participation in decision making, should also be considered by managers.

Future Research Directions

We face a few limitations in this study, and encourage future studies to address these limitations so as to improve the quality of research. Regarding methodology, as mentioned, we did not manage to obtain the list of participants from the Ministry of Examination before the exam in 2015, so random sampling was not permitted. Seeking the government's approval in releasing exam participants' contact information is an important task for researchers who are interested in replicating our research design in other countries. In addition, limited budget only allowed us to conduct the survey in a single country. A large-scale, multi-national survey will certainly improve the generalizability of our findings. Finally, we encourage scholars to use mixed methods to test hypotheses in order to reduce possible bias from a single method.

As we are mainly interested in the interface between PSM and competitive public service exams, it is unavoidable that we omit multiple variables that determine the success in public service exams. In addition to fulltime preparation and enrollment in tuition schools, two factors covered in the present study, we discussed a few controlled motives that may contribute to the outcome of the exam (i.e., pass or fail). Which ones

are more decisive? Family pressure, peer pressure, power, privilege, or ambition? Future studies may want to address these issues by including more variables and adopting advanced methods such as mediation analysis.

Scholars who plan to broaden the knowledge base of PSM may consider enlarging the scope of sample by including those who do not take the public service exam. Are they not interested in a public service career in an exam society? If so, is their PSM really lower? Is it possible that they are interested in a government position, but do not take the exam? If so, is it because they are not confident of passing the exam and so choose not to waste time preparing for the exam? Do these people have higher PSM compared to those who take the exam? If so, should the exam be redesigned so that public organizations can attract and hire these people? In sum, many questions related to public service exams in East Asia remain unanswered. The present study is a start to future incremental steps.

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Tables and Figures

Table 1. Descriptive statistics (N=3075)

	Mean	SD	Min	Max
Passing the exam	0.10	0.30	0	1
PSM	4.75	0.74	1	6
Volunteering	15.91	6.42	9	54
Tuition schooling	0.70	0.46	0	1
Fulltime preparation	0.35	0.48	0	1
Male	0.37	0.48	0	1
Education	2.36	0.50	1	3
Age	30.40	6.26	22	65
Marital status	0.17	0.38	0	1
Family reliance	1.90	1.31	1	6
Number of children	0.20	0.58	0	5

Table 2. Logistic regression

	Coef.	SE	Odds Ratio
PSM	-0.16*	(0.08)	0.851
Volunteering	-0.03**	(0.01)	0.967
Tuition schooling	0.39**	(0.15)	1.473
Fulltime preparation	0.62***	(0.13)	1.857
Male	0.13	(0.13)	1.144
University degree	0.19	(0.13)	1.205
Postgraduate degree	-0.60	(0.64)	0.551
Age	0.11	(0.63)	1.116
Marital status	-0.01	(0.01)	0.986
Family reliance	0.28	(0.21)	1.325
Number of children	-0.02	(0.06)	0.983
Constant	-0.87	(0.86)	0.417
N	3075		
Chi2	81.47		
Prob > Chi2	0.000		

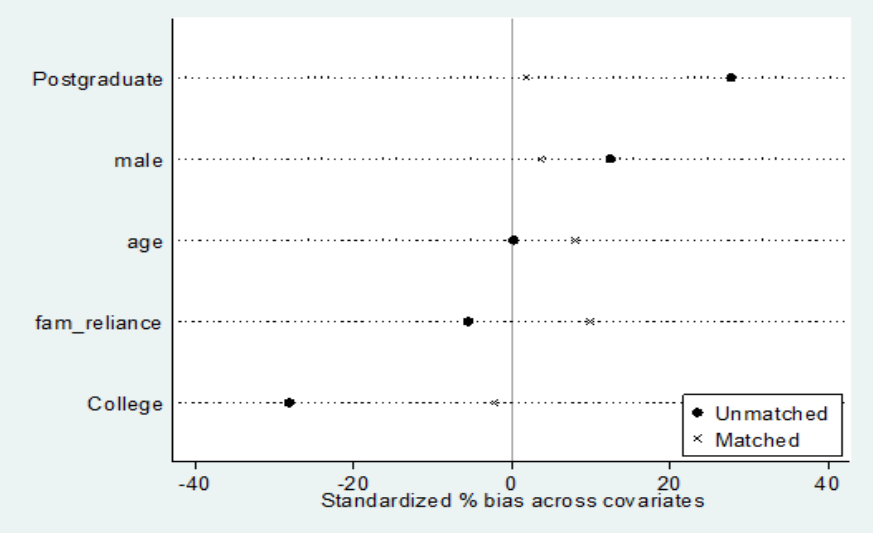
*** p<.001; **p<.01; *p<.05 (p values in parentheses)

Table 3. Propensity Score Matching and T-Tests

	Unmatched			Matched		
	Fail	Pass	Sig	Fail	Pass	Sig
PSM	4.76	4.65	**	4.75	4.65	**
Volunteering	16.05	14.68	**	15.96	14.68	**

*** p<.001; **p<.01; *p<.05

Figures 1. Standardized percentage bias across covariates



Appendix A

Table A1. The distribution of gender before and after raking

	Sample before raking	Sample after raking	Population	After-raking result
Male	1137 (37.0%)	1268 (41.2%)	14436 (41.2%)	Chi square = 0.000
Female	1938 (63.0%)	1807 (58.8%)	20579 (58.8%)	df = 1
Total	3075 (100%)	3075 (100%)	35015 (100%)	p>.05

Table A2. The distribution of age before and after raking

	Sample before raking	Sample after raking	Population	After-raking result
18-25	744 (24.6%)	990 (32.2%)	11273 (32.2%)	Chi square = 0.003
26-30	1033 (32.8%)	957 (31.1%)	10895 (31.1%)	df = 6
31-35	743 (23.6%)	611 (19.9%)	6958 (19.9%)	p>.05
36-40	329 (10.4%)	289 (9.4%)	3286 (9.4%)	
41-45	143 (4.5%)	143 (4.7%)	1630 (4.7%)	
46-50	60 (1.9%)	58 (1.9%)	633 (1.9%)	
51 and above	24 (0.8%)	27 (0.9%)	310 (0.9%)	
Total	3075 (100%)	3075 (100%)	35015 (100%)	

Table A3. The distribution of education before and after raking

	Sample before raking	Sample after raking	Population	After-raking result
High school diploma	3 (0.1%)	4 (0.1%)	50 (0.1%)	Chi square =
Associate degree	22 (0.6%)	21 (0.7%)	238 (0.7%)	0.036
Bachelor degree	1910 (60.7%)	2236 (72.7%)	25461 (72.7%)	df = 6
Master degree	1117 (35.5%)	803 (26.1%)	9140 (26.1%)	p>.05
PhD degree	24 (0.8%)	11 (0.4%)	126 0.4%)	
Total	3075 (100%)	3075 (100%)	35015 (100%)	

Endnotes

[1] https://www.1111.com.tw/news/surveyns_con.asp?ano=112096

[2] Please refer to http://koreajoongangdaily.joins.com/news/article/Article.aspx?aid=2983750 for statistics of 2013. More recent reports (http://www.koreatimes.co.kr/www/nation/2017/06/371_230941.html and http://www.koreaherald.com/view.php?ud=20180408000131) show that a majority of Korean young generations still long for a public service position, and the competition remains severe today.

[3] http://news.ftv.com.tw/NewsContent.aspx?ntype=class&sno=2015B29I04M1

[4] https://en.wikipedia.org/wiki/Civil_Services_Examination_(India) and https://en.wikipedia.org/wiki/BCS_Examination

[5] An alternative, but less common crowding effect is crowding-in, meaning that the introduction of external intervention can foster individual autonomous motivation as long as the intervention is deemed supportive by actors. For example, student scholarship financially supports many students from low-income families. In this situation, yearly renewal of scholarship (based on academic performance) may not form a sense of control for students, but instead, foster students' autonomous motivation in study.

[6] The Big Five personality traits include openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism.

[7] The Ministry of Examination refused to provide us the name list of exam participants and any of their background information due to the concerns for confidentiality and unforeseeable impact on exam participants. We thus could not use more advanced sampling techniques such as stratified sampling.

[8] Literal translation of "Meaningful public service is important to me" sounds awkward in Chinese. In our questionnaire, this item was slightly amended as "I am eager to know what the public need and accordingly serve them."

[9] The use of logistic regression is appropriate, according to King and Zeng (2001). Rare events (only 10% in the sample passed the exam) should not prohibit the use of logistic regression, unless there are a small number of cases on the rarer of the two outcomes. For example, there is a problem if we have a sample size of 1000 but only 20 events. However, there should not be a problem if we have a sample size of 10000 with 200 events. In the present study, we have over 300 events in the sample.

[10] According to the cited article, for those passing the exam and entering the public sector at the fifth level, this is equivalent to 25 years of seniority working from the bottom up. The Grade 5 civil service position is the stepping stone to a top government official. More than 200,000 young people apply for the test each year.