

THE EFFECT OF RISK PREFERENCE ON CHOICE BETWEEN PUBLIC AND PRIVATE SECTOR EMPLOYMENT IN INDONESIA

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ABSTRACT

This study explores the role of risk aversion on an individual's occupational choice. It examines the effect of individual risk aversion using the choice between public and private sector employment in Indonesia. Public sector employment is considered relatively more secure than private sector work. The risk aversion of workers was observed and elicited using hypothetical gambling questions from the Indonesian Family Life Survey (IFLS). The findings were analyzed using the Probit model. The results show that more risk-tolerant workers choose the private sector. Those with higher education levels had more individual risk aversion. The findings suggest there may be a need to attract less risk-averse individuals to the public sector in Indonesia. This could be accomplished through a revised recruitment process or by equalizing the level of job security between the public and private sectors.

Keywords: Risk aversion; Public sector

1. INTRODUCTION

Government jobs are considered to be prestigious among Indonesians. In fact, many job seekers have a strong desire to become a PNS (Pegawai Negeri Sipil or civil servant). Prior to a recent civil employment moratorium, large numbers of applicants filed for civil employment. In 2014, there were more than 2.6 million applicants for 100,000 available positions in the public sector (Amindoni, 2016). However, Indonesian public service employees have lower salaries than those working in the private sector (Wargadinata, 2010). Below-market government wages may induce bad behaviors, such as poor work effort and low productivity, as well as a willingness to accept bribes (Simanngkalit, 2012). Because there are significant differences in the salaries between public and private employment, we want to answer why individuals continue to work or seek work in the public sector.

Studies have focused on the differences between the two sectors. The significant wage gap is a common subject of focus (Panizza & Qiang, 2005; Adamchick & Bedi, 2000; Anton & de Bustillo, 2015). However, very limited research exists about the reasons why individuals, particularly in Indonesia, choose the public sector despite its low salaries (Filmer & Lindauer, 2001). Previous

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literature suggests that individuals choose certain types of employment based not only on potential earnings but also because of personal preferences. Job security is the most notable, non-monetary factor that favors public sector work (Pfeiffer 2011; Luechinger, Stutzer, & Winkleman, 2007; Lewis & Frank, 2002). Other factors include promotions (Tucker, 1988; Bonin, et al, 2007; Clark & Postel-Vinay, 2009) and payment systems (Dohmen et al., 2005). In Indonesia, promotions in the public sector are nearly certain (Tjiptoherijanto, 2012), and such high job security tends to attract risk-averse individuals who are willing to earn less (Bellante & Link, 1981; Tucker, 1988; Luechinger, Stutzer, & Winkleman, 2007; Dohmen & Falk, 2010; Pfeifer, 2011). This contrasts with the private sector, where job seekers are faced with a more volatile work environment.

Due to a lack of data on individual risk aversion, research into the heterogeneity of individual characteristics does not include risk-aversion behaviors (Blank, 1985). Despite this lack of data, recent studies have used various proxies and variables as determinants of risk aversion. These include: the selection of investments (using individual/household investment data, insurance ownership/property ownership, etc.); risk behaviors (consumption of cigarettes, alcohol, etc.); and hypothetical questions (questions about choosing a job or an investment). Bellante & Link (1981) and Tucker (1988) studied risk aversion by using investment-related variables such as car insurance ownership, health insurance, and other variables. So-called risky behaviors included smoking, drinking alcoholic beverages, and avoiding seat belts while driving. Christofides & Pashardes (2002) used insurance purchases as a measure of risk aversion. However, some researchers have criticized the use of such variables, which may reflect individual purchasing power rather than individual behavior in avoiding certain risks.

Some empirical evidence about the types of individuals who choose to work in the public sector has emerged in recent years. Panel surveys, such as the German Socio-Economic Panel (GSOEP), the National Longitudinal Study of Youth, the Panel Study in Income Dynamics, and the Indonesian Family Life Survey (IFLS) offer evidence across different countries. However, there is an ongoing debate about self-reported data in eliciting individual risk preferences. For example, using the GSOEP, Bonin et al. (2007) tested the hypothesis of whether risk-averse individuals choose to work in jobs with low salaries. They found that individuals who are risk averse tend to choose jobs in the public sector, despite the relatively low salaries of government work. They also found that the higher an individual's willingness to take risks, the higher the probability of working in jobs with higher salaries.

In order to elicit various degrees of risk aversion in Indonesia, the IFLS used hypothetical gambling questions, similar to those used in Barsky, Kimball, Juster, & Saphiro (1997). For instance, the IFLS incorporated hypothetical questions that asked respondents to choose between a definite outcome and two equal outcomes. However, there are differences. In one hypothetical question used by Barsky, Kimball, Juster, & Saphiro (1997), the focus was on the individual's desire to move if there was a new job opportunity; in the IFLS, the question simply focused on an opportunity to earn extra money.

Based on our findings, this study examines the effect of individual risk aversion on the choice between public and private sector employment in Indonesia. Public sector employment is considered relatively more secure than private sector work. The risk aversion of workers is elicited by using hypothetical gambling questions from the IFLS. The findings are then analyzed using the

Probit model. By determining whether or not risk-averse individuals choose the public sector in Indonesia, this study contributes to the literature on public and private sector employment.

2. LITERATURE REVIEW

There has been a great deal of discussion about the differences between two major wage-salary sectors. The public and private sectors have notable differences, whether based on monetary rewards or non-monetary rewards. Usually, the public sector offers lower wage rates than its private counterpart but offers a better work environment. Working in the public sector also has higher job security than working in the private sector (Clark & Postel-Vinay, 2003).

The job security found in the public sector attracts more risk-averse people. Bellante & Link (1981) tested this hypothesis using data from the Panel Study of Income Dynamics. But due to the lack of data in eliciting individual risk preference, the researchers replaced it with proxies, such as possession of a car and health insurance and smoking and drinking habits. Those proxies were then converted into an index of risk. Based on the estimation result, the hypothesis is true. But the proxies might actually show an individual's purchasing power rather than risk preferences. Measuring risk preference through proxies was also used by Christofides & Pashardes (2002). Their estimation result shows that possession of insurance raises the probability of working in the public sector. Different proxies were used by Said (2011). This study in Egypt used an index of household responsibility and the number of children as its proxies for risk preference.

Recent changes to panel survey data include self-reported data and hypothetical gambling questions as risk preference elicitation. Bonin et al. (2007) tested the hypothesis of whether risk-averse people choose to work in jobs with low earning risk. Using the German Socio-Economic Panel of 2004, they found that the public sector has lower earning risk than its private sector counterpart; individuals who are risk averse choose jobs with low earning risk. The researchers concluded that the higher an individual's willingness to take risk, the higher the probability of working in jobs with higher wage variability (i.e., the private sector).

Hypothetical gambling question types are available in the fifth wave of IFLS. Therefore, we incorporated the data into our analysis. Earlier studies have debated whether general gambling questions could predict risk attitudes about non-lottery choice, namely occupational choice. Dohmen et al. (2005) argued that subjective measures of risk attitudes, elicited from hypothetical gambling questions, predict human behavior better than other proxies used in older studies, such as smoking behavior and insurance ownership.

3. METHODS

The purpose of this study is to examine individual risk aversion. Data from the fifth wave of the IFLS (IFLS-5) was used, because it was the only wave that included hypothetical gambling questions (Strauss, Witoelar, & Sikoki, 2016). The IFLS-1 was also applied in order to obtain more information about the individuals' families, including parental employment. The hypothetical gambling questions from the IFLS-5 (Book 3A "Risk and Time Preference") were answered by individuals aged 15 and older.

The structure consisted of two sets of gambling questions: one set with low payoffs and penalties, and another set with high payoffs and penalties. Each set consisted of five questions, two of which were used to determine whether the individuals understood the gambling questions. For example, the first question in the first set asked the individual to choose between a guaranteed amount of money (800,000 IDR) and the possibility of receiving less than 800,000 IDR or winning 1.6 million IDR. If the individual selected the first option, then the interviewer asked, "Are you sure? In Option 2, you will have a 50% chance of receiving a lesser amount than 800,000 IDR or winning 1.6 million IDR." Subsequently, the individual had the choice of switching his or her choice or keeping the first option. For those who kept the first option, they were classified as "non-rational" with a low degree of risk preference. The subsequent questions followed the same model: They included a definite choice and a choice between two outcomes.

Based on the literature, two approaches can be used to analyze the responses to the hypothetical gambling questions on the IFLS. The first approach includes providing a score for each set of questions. As shown earlier, each question includes two choices in which one is a guaranteed choice, while the other one involves a 50% chance of receiving less than the guaranteed choice or winning double the amount (see Appendix A for the hypothetical gambling questions from the IFLS-5). The individuals who select the first option receive a score of 0, while those who choose the second option receive a score of 2. Because there were two sets of questions, the highest possible score for both sets of questions together is 4. In addition, the individuals who choose the first option are classified as "risk averse," whereas those who choose the second option are classified as "less risk averse."

The second approach calculates the Arrow–Pratt coefficient of absolute risk aversion (Permani, 2011; Sanjaya, 2013). This method can be used to identify eight degrees of individual risk aversion, instead of the five degrees elicited from the scoring method. This coefficient is obtained by calculating the expected utility of the individual's participation in the hypothetical gambling question. By taking the second order of Taylor expansion from the expected utility (Permani, 2011, Sanjaya, 2013), the calculation is as follows:

$$ARA = \frac{Z_H + Z_L}{Z_L^2 + (Z_H - Z_L)^2 + Z_L(Z_H - Z_L)} \quad (1)$$

where Z_H is the highest payoff value of the hypothetical gambling question and Z_L is the lowest payoff value. From the two sets of hypothetical gambling questions, eight coefficients can be obtained. We then get the value of the ARA coefficient based on the question set 1 and set 2 as shown in Table 1.

Table 1: Absolute Risk-Aversion Coefficient on Two Hypothetical Gambling Questions

No.	Z_h	set 1 (low stakes)			ARA
		Z_l	EV		
1		8	8	8	0.250
2		16	8	12	0.125
3		16	6	11	0.112
4		16	2	9	0.096
5		16	4	10	0.079

set 2 (high stakes)						
No.	Z _h	Z _l	EV	ARA		
1		40	40	40		0.050
2		40	20	30		0.050
3		80	20	50		0.008
4		120	0	60		0.019
5		160	-20	70		0.005

Source: processed from IFLS-5

A problem that emerges from hypothetical gambling questions is whether individuals state their true preferences. Specifically, since the payoffs and penalties are hypothetical, individuals might act differently, as there are no actual stakes involved. Recent work by Dohmen et al. (2011) shows that there is a high correlation between the degree of risk aversion elicited from a hypothetical gambling question and the degree of risk aversion elicited from actual gambling. Thus, the degree of risk aversion elicited from the IFLS might still be reliable.

The estimation model used in this study was adapted from Christofides & Pashardes (2002) and Said (2011). This model assumes that the labor market consists of two sectors: the public sector and the private sector. Equation (2) is the selection function of the individual work sectors:

$$P^* = \alpha Z + u \quad (2)$$

In this equation, P^* is the unobserved latent variable reflecting individual work-sector choices. The observed outcome of the selection process is defined as the dummy variable. Namely, $P = 1$, if the observation indicates that the individual is working in the public sector (i.e., “government employee”), and $P = 0$, if the individual is working in the private sector (i.e., “private employee”). Other work types defined in the IFLS, such as “self-employed,” “self-employed with unpaid worker,” “self-employed with permanent worker,” “unpaid family worker,” “casual worker in agriculture,” and “casual worker not in agriculture” are not included in the sector options. This is in line with the initial assumption that the labor market consists only of the public sector and the private sector. Defining the value of 1 or 0 is based on the following:

$$P = 1 \text{ if } P^* > 0, \text{ dan} \quad (3)$$

$$P = 0 \text{ if } P^* \leq 0 \quad (4)$$

Workers consider their options based on individual preferences as well as on the characteristics of each sector. This removes the assumption that the agent has a risk-neutral nature. Because the purpose of this study is to highlight the role of individual risk aversion, the estimation model is modified as follows:

$$P_i^* = \beta_1 \rho_i + \beta_2 Z_i + u_i \quad (5)$$

In this equation, P_i is the measure of individual relative risk tolerance, based on the hypothetical gambling question in the IFLS-5, while Z_i is the individual characteristic, based on literature for the determination of individual income (i.e., human capital theory and compensating wage differentials). For the control variables, this study uses basic demographics such as education, age,

marital status, sex, and ethnicity (Bellante & Link, 1981; Blank, 1985; Said, 2011). We also assess whether individuals live in urban or rural areas (Boskin, 1974).

Whether the parents also work in the public sector is another control variable. Many individuals want to work as a government employee in Indonesia, and parents most likely influence their children in securing employment in the public sector. According to Scoppa (2009), it is relatively easier for individuals to find work in the public sector if their parents also work in that sector. Our study adds the control variable “parent works in the public sector,” after which the data are integrated into an earlier wave of the IFLS. However, because not all of the observations from the IFLS-5 include parental information from earlier waves, the total number of observations is much smaller than the initial sample. Thus, the second specification is to add this particular variable and use only a subset of the initial data.

Table 2: Variable Descriptions

Variable	Description
<i>Public</i> (dependent variable)	Dummy equal to one if individual works in public sector and 0 if otherwise (works in private sector)
Main explanatory variable: individual risk preference	Degree of risk aversion elicited from hypothetical gambling questions using:
<i>riskav_level</i>	Scoring (with value of 0–4 where 0 is highly risk-averse)
<i>coef_ARA</i>	Assigning ARA coefficient (the greater the value, the more risk averse)
<i>father_public</i> (only on second specification)	Dummy equal to one if the father of an individual works in the public sector and 0 if otherwise
Controls	
<i>urban</i>	Dummy equal to one if individual region of residence is in urban areas and zero otherwise
<i>educ</i>	Dummies of individual’s level of education
<i>age</i>	
<i>male</i>	
<i>marstat</i>	Dummies of individual’s marital status
<i>exper</i>	Gained by subtracting age with total of years of schooling and six (childhood years)
<i>ethnicity</i>	Dummies of individual’s ethnicity. We used 10 ethnic majorities plus Chinese ethnicity on our first specification, but only the largest majority on our specification (1= <i>javanese</i> , 0=otherwise) due to lack of data.

The probability of public sector employment is measured using the Probit model. The dependent variable is the public sector and the main explanatory variable of the degree of risk aversion is measured by either the scoring method (*riskav_level*) or by calculating the absolute risk-aversion coefficient (*coef_ARA*). For the first specification, several explanatory variables are used, including human capital, demographic, and institutional characteristics. The second specification adds the parents’ employment (*bapak_publik*) as an independent variable. These specifications are estimated separately, because there might be some selection bias in the second specification. The

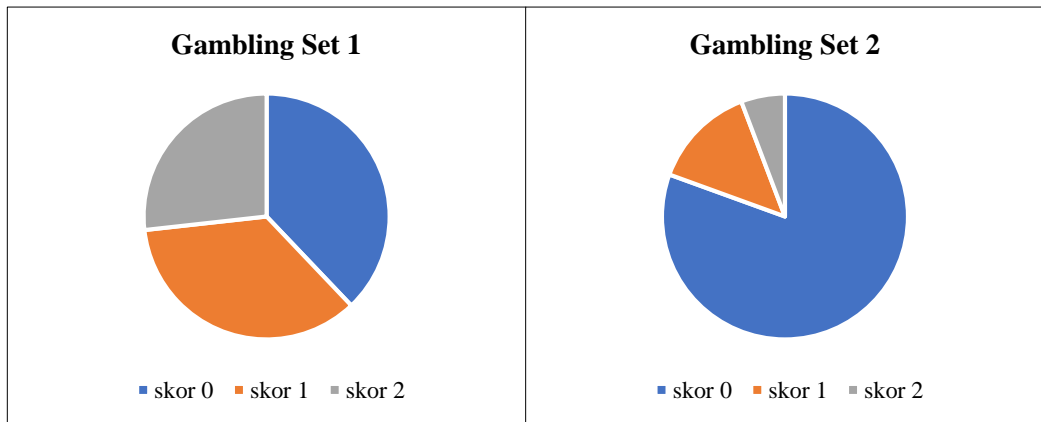
first specification can be used to improve consistency. Given the non-linear nature of the model, this study uses maximum likelihood estimation to estimate the model.

4. RESULTS

4.1. Risk Elicitation

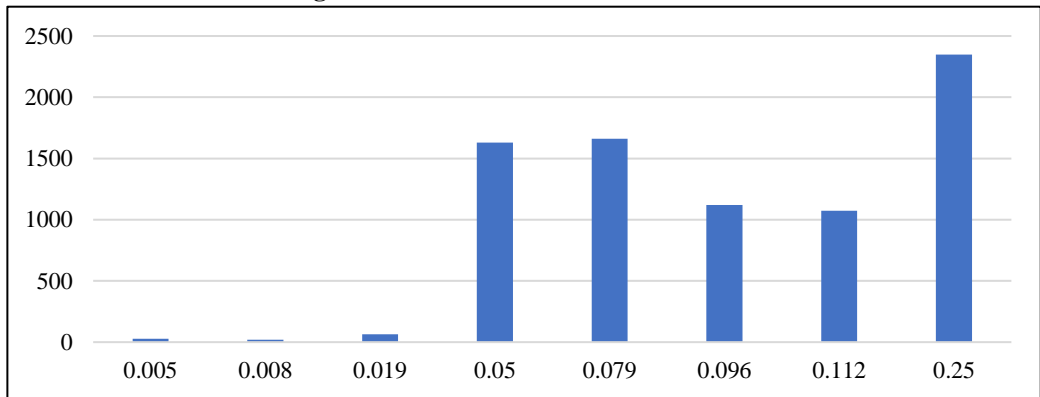
The degree of risk aversion was measured according to the two sets of hypothetical gambling questions. After classifying certain individuals as “not rational” and having a low degree of risk aversion, these observations were excluded, leaving a total of approximately 7,000 observations. Those who understood the level of risk and selected the second option in the questions were assigned a degree of risk aversion. This was based on one of the two methods: scoring or calculating the Arrow–Pratt coefficient of absolute risk aversion.

Figure 1: Distribution of Scores on Hypothetical Gambling Questions



Source: Processed from hypothetical gambling questions IFLS-5

From Figure 1, at the time of payoff and with low-value stakes, many samples still choose risky steps. At the time of payoff and as bets increase, fewer samples take risky steps. Each score on each set of hypothetical gambling is then summed to get the degree of individual risk aversion. The value ranges from 0 to 4, with 0 indicating that the individual is very risk averse. A value of 0 means the individual does not choose to place a bet in either set of hypothetical gambling and chooses only a certain amount of money.

Figure 2: Distribution of ARA Coefficients

Source: Processed from hypothetical gambling questions IFLS-5

Figure 2 shows that the number of individuals who were “very risk averse” (coefficient = 0.25) was large, while the frequency of those who were “very risk-seeking” (coefficient = 0.005) was much smaller, with a mean value of 0.13 and a standard deviation of 0.81. Based on the degree of risk aversion (either by scoring or calculating the Arrow–Pratt coefficient), the majority of the sample showed risk-averse behaviors. This finding satisfies the initial assumption that the labor market is dominated by risk-averse individuals (King, 1974; Bellante & Link, 1981). Table 3 presents the distribution of the degree of risk aversion in the sample.

Table 3: Crosstab of Sector Selection and Degree of Risk Aversion

	Risk-Aversion scores (0=highly risk averse)					Total
	0	1	2	3	4	
Sector						
Private	3,076 47.0%	1,579 24.1%	1,319 20.1%	360 5.5%	213 3.3%	6,547
Public	726 51.8%	298 21.3%	257 18.3%	75 5.4%	45 3.2%	1,401
Total	3,802	1,877	1,576	435	258	7,948

Source: processed from IFLS-5

Because most people are risk averse, both sectors are concentrated with risk averse individuals.

4.2. Estimation results

Table 4 shows the results of the first specification of the model: the probability of obtaining employment in the public sector. Columns (1) and (2) include all individuals who work in either the public or the private sector. Those who reported that they were “self-employed” or “unpaid workers” were excluded, based on the assumption that the labor market consists of only two sectors (public and private). Columns (3) and (4) show only individuals who are new high school graduates.

Table 4: Estimated Results of the Probability of Working in the Public Sector (Marginal Effect)

		Dependent Variable: <i>public</i>			
		Whole sample		High school fresh grad.	
		1	2	3	4
riskav_level		-0.011*** (0.003)		-0.052*** (0.015)	
coef_ARA			0.082** (0.044)		0.685*** (0.194)
urban		-0.064*** (0.008)	-0.065*** (0.008)	-0.115*** (0.033)	-0.122*** (0.033)
marstat	Never				
	Married	0.033*** (0.011)	0.033*** (0.011)	0.052 (0.042)	0.059 (0.042)
	Separated	-0.048 (0.044)	-0.049 (0.044)	-0.013 (0.215)	-0.013 (0.212)
	Divorced	-0.012 (0.025)	-0.012 (0.025)	0.188 (0.144)	
	widow/er	0.031 (0.032)	0.032 (0.032)		
educ	less				
	junior high	-0.010 (0.017)	-0.009 (0.017)		
	senior high	0.040* (0.022)	0.041* (0.022)		
	college	0.193*** (0.041)	0.192*** (0.040)	0.113* (0.064)	0.110* (0.063)
sex	female				
	male	-0.008 (0.008)	-0.011 (0.008)	-0.056* (0.033)	-0.063* (0.033)
age		0.028 (0.004)	0.027 (0.004)	0.050*** (0.014)	0.045*** (0.014)
exper		-0.020*** (0.004)	-0.020*** (0.004)	-0.037** (0.015)	-0.032** (0.015)
ethnicity	other				
	javanese	-0.130 (0.014)	-0.132 (0.014)	-0.208*** (0.048)	-0.214*** (0.048)
	sundanese	-0.122*** (0.016)	-0.123*** (0.016)	-0.199*** (0.069)	-0.205*** (0.069)
	balinese	-0.072*** (0.020)	-0.074*** (0.020)	-0.019 (0.078)	-0.041 (0.078)
	minang	-0.010 (0.021)	-0.013 (0.021)	-0.050 (0.074)	-0.050 (0.075)
	betawi	-0.176 (0.021)	-0.033 (0.024)	-0.273** (0.122)	-0.289** (0.118)
	batak	-0.031 (0.023)	-0.033 (0.023)	-0.041 (0.082)	-0.052 (0.082)

	Dependent Variable: <i>public</i>			
	Whole sample		High school fresh grad.	
madura	-0.083 (0.024)	-0.083 (0.024)	-0.165** (0.085)	-0.179** (0.086)
bugis	0.020 (0.028)	0.017 (0.028)	-0.003 (0.088)	0.029 (0.089)
banjar	-0.035 (0.027)	-0.036 (0.027)	-0.081 (0.094)	-0.087 (0.095)
other sum	-0.066 (0.026)	-0.065 (0.026)	-0.218** (0.097)	-0.208** (0.101)
chinese	-0.238*** (0.026)	-0.241*** (0.026)		
Obs.	7839	7835	623	623
Pseudo R2	0.3283	0.3273	0.2813	0.2819

Source: processed from IFLS-5 data

Description: The value of standard error is inside parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 presents the marginal effect of the first specification (without the parents' employment as an explanatory variable). Columns (1) and (3) show the marginal effect of the specification using the degree of risk elicited from the scoring method, while Columns (2) and (4) use the Arrow–Pratt coefficient to determine the degree of risk aversion. The difference between Columns (1) and (3) and between Columns (2) and (4) are the samples; in other words, Columns (1) and (2) use all the individuals working in either the public or the private sector, while Columns (3) and (4) use only the new high school graduates. This study's use of sub-samples follows what Pfeiffer (2011) achieved in his study with the GSOEP. The sub-sample of new high school graduates illustrates how those individuals have a greater propensity to enter public employment, due to the high demand for such positions.

The estimation results show that both methods of elicitation can provide significant results. In the scoring method, a higher score indicates that the individual is more risk-tolerant. When calculating the Arrow–Pratt coefficient, a higher value indicates that the individual is more risk averse. This result also shows a negative marginal effect of *risk_level* and a positive marginal effect of *coef_ARA*. This means that if an individual is more risk-tolerant, then he or she is more likely to choose work in the private sector. The marginal effect on the degree of risk aversion, as measured by the scoring method, shows that individuals who are more risk averse have a greater probability (1%) of working in the public sector. This result is in line with the findings of previous studies. Interestingly, the effect on risk preference is greater on those with higher education levels, as shown in the estimation results of new high school graduates. This finding also suggests that for individuals with less education, the choice of employment is not affected by their preferences. The marginal effect on some of the control variables generated intriguing results. Characteristics that increase an individual's tendency to work in the public sector are rural location, marital status, a high level of education (junior high school, senior high school, and college), experience, and ethnicity. Gender is only significant in explaining the selection of public employment for those with higher education levels; in those cases, males are less likely to choose employment in the public sector. Individuals who live in urban areas are also less likely to work in the public sector.

A possible reason for this finding: There are more opportunities to find work in the private sector in urban areas as compared to rural areas. In fact, the tendency of urban individuals to work in the public sector is approximately 6.5% lower than rural individuals. The tendency to work in the public sector for married individuals is approximately 3.3% higher than for those who are single (or “never married” in the IFLS-5). Other statuses such as “separated,” “divorced,” and “widow/widower” were not statistically significant.

Education levels also produced some interesting results. A lower education level was not statistically significant for explaining public or private sector employment. But a higher education level showed significant results. For example, individuals with college degrees were 19% more likely to choose the public sector than those without such degrees. One possible reason for this finding: The public sector in Indonesia usually demands a high level of education as a primary qualification, followed by a series of tests in order to become an official government employee. This finding for higher education levels is in line with the results of previous studies (Bellante & Link, 1981; Blank, 1985; Luechinger, Stutzer & Winkleman, 2007; Pfeiffer, 2011).

For the second specification, one variable was added in order to explain the probability of working in the public sector: whether the parents of the individuals work in the public sector (specified as *father_public*).

Table 5: Estimated Results of the Probability of Working in the Public Sector 2nd Spec (Marginal Effect)

		Dependent Variable	
		<i>Public</i>	
		(1)	(2)
		Whole sample	High school fresh grad.
riskav_level		-0.007 (0.005)	-0.049*** (0.017)
urban		-0.075*** (0.013)	-0.150*** (0.038)
marstat	never		
	married	0.051*** (0.015)	0.028 (0.043)
	separated	-0.062 (0.054)	
	divorced	-0.007 (0.033)	0.372 (0.183)
	widow/er	-0.008 (0.066)	
educ	less		
	junior high	-0.014 (0.026)	
	senior high	0.037 (0.030)	
	college	0.198*** (0.057)	0.091 (0.071)

		Dependent Variable	
		<i>Public</i>	
father_public		0.059*** (0.013)	0.106** (0.041)
sex	Female		
	male	-0.009 (0.012)	-0.033 (0.038)
age		0.023*** (0.006)	0.049*** (0.016)
exper		-0.018*** (0.006)	-0.035** (0.018)
ethnicity	other		
	javanese	-0.084*** (0.112)	-0.143*** (0.038)
Obs.		3185	433
Pseudo R2		0.2654	0.303

Source: processed from IFLS-5 data

Description: The value of standard error is inside parentheses,

* p < 0.10, ** p < 0.05, *** p < 0.01

Among the sample of 8,000 individuals working in the private or public sector, there were 3,185 who provided information about a parent who was employed in the public sector (obtained by searching the data from IFLS-1 onward). The estimation results show that the parents' employment is statistically significant in explaining the individuals' public or private employment. In addition, persons whose parents work in the public sector have a greater tendency (5.9%) of working in the public sector, compared to those whose parents work in other sectors. This finding indicates that there is an intergenerational transfer of jobs among public sector employees (Scoppa, 2009).

Risk preference, as measured by the scoring method, becomes statistically significant only for the sub-sample of new high school graduates (Table 5). In this sub-sample, risk preference variables have a negative and significant effect. If the risk level increases (i.e., the individual is more risk-tolerant), then it will decrease the tendency of individuals to work in the public sector by 4.7%. Importantly, the role of the parent's job sector has a significant effect on the possibility of the individual (i.e., the child) working in the same sector. Thus, individual preferences may be far less influential.

5. CONCLUSION

This study examined the effects of individual risk aversion on the choice between public and private sector employment in Indonesia. Public sector employment is considered relatively more secure than private sector work (Filmer & Lindauer, 2001). Previous studies have found that more risk-averse individuals tend to choose public sector employment. However, based on empirical results from this study, the roles might not be as strong among all individuals as suggested by previous findings (Bellante & Link, 1981; Tucker, 1988; Luechinger, Stutzer, & Winkleman, 2007; Dohmen & Falk, 2010; Pfeifer, 2011). We found that risk preference applies only to those

with high education levels. Among individuals with high school or college degrees, risk aversion has a strong relationship with the choice of working in the public sector. The results may explain why Indonesians tend to choose the public sector over the private sector, despite relatively low government salaries.

Even among the sub-sample of new high school graduates, parents' employment in the public sector affected the individuals' choice of employment. This interesting finding indicates that there is an intergenerational transfer of jobs among public sector employees and was confirmed in a study in Italy (Scoppa, 2009). However, we cannot conclude that such job transfers are caused by nepotism or other reasons, such as genetically transmitted preferences, the transfer of capital, or the transfer of abilities.

Many factors determine individual tendencies for working in the public sector. However, the results of this study indicate that risk preference significantly affects such tendencies, especially among those who reach a high educational level. Moreover, individuals who are risk averse tend to choose the public sector and receive wages that are much lower than those in the private sector. However, if the security gained from working in the public sector attracts risk-averse individuals, then the civil service will be filled with such individuals.

Some studies have suggested that risk-averse behaviors result in a lack of innovation (Dong, 2014), which is commonly used to describe civil servants and government organizations. In order to improve government operations, we believe there should be an effort to attract to the public sector individuals who are less risk-averse. This could involve improving the recruitment process or equalizing the level of job security between the public and private sectors. Furthermore, our results demonstrate how a parent's employment affects an individual's future career. It's important to consider the intergenerational transfer of jobs and the level of nepotism in the public sector. Based on our findings, we recommend a regulatory overhaul of Indonesian civil service recruitment practices in order to provide opportunities for other applicants.

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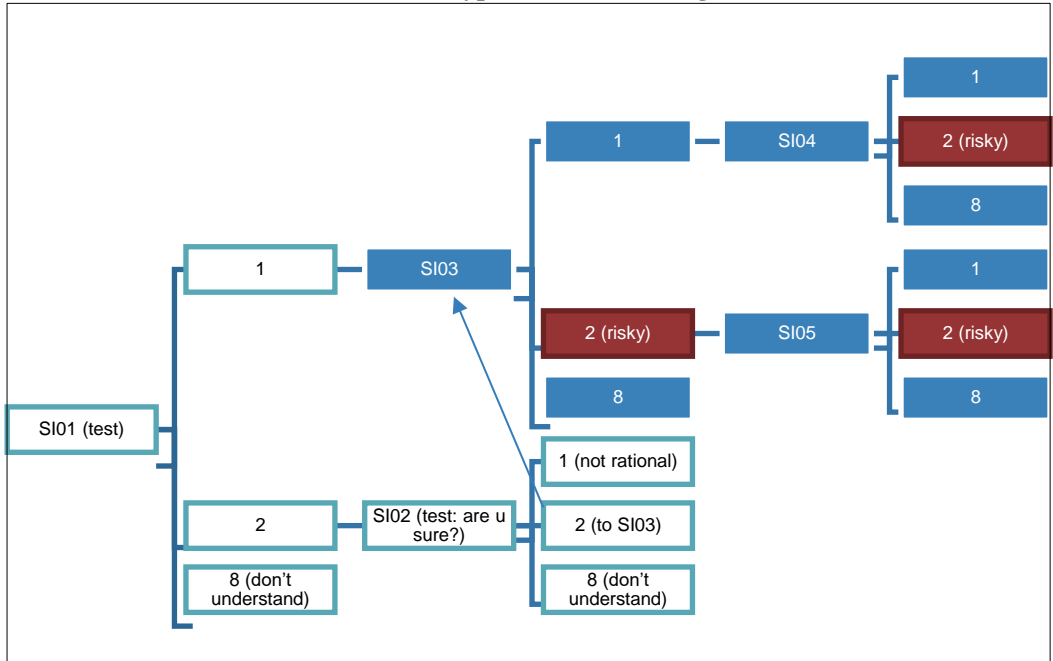
Appendix A

Section SI (Hypothetical Gambling Questions) from IFLS-5

SECTION SI: RISK AND TIME PREFERENCES	
RANDOM SI: A	
<p>SI01. Suppose you are offered two ways to earn some money.</p> <p>With option 1, you are guaranteed Rp 800 thousand per month.</p> <p>With option 2, you have an equal chance of either the same income, Rp 800 thousand per month, or, if you are lucky, Rp 1.6 million per month, which is more.</p> <p>Which option will you choose?</p>	<p>1. Rp 800 thousand per month</p> <p>2. Rp 1.6 million or Rp 800 thousand per month → SI03</p> <p>8. DON'T KNOW</p>
<p>SI02. Are you sure? In option 2 you will get at least Rp 800 thousand per month and you may get Rp 1.6 million per month. In option 1 you will always get Rp 800 thousand per month.</p>	<p>1. Still picks option 1 → SI11</p> <p>2. Switches to option 2</p> <p>8. DON'T KNOW</p>
<p>SI03. Now, in option 2 you have an equal chance of receiving either Rp 1.6 million per month or Rp 400 thousand per month, depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 800 thousand per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 800 thousand</p> <p>2. Rp 1.6 million or Rp 400 thousand → SI05</p> <p>8. DON'T KNOW</p>
<p>SI04. Now, in option 2 you have an equal chance of receiving either Rp 1.6 million per month or Rp 800 thousand per month, depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 800 thousand per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 800 thousand</p> <p>2. Rp 1.6 million or Rp 800 thousand</p> <p>8. DON'T KNOW</p> <p>→ SI11</p>
<p>SI05. Now, in option 2 you have an equal chance of receiving either Rp 1.6 million per month or Rp 200 thousand per month, depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 800 thousand per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 800 thousand</p> <p>2. Rp 1.6 million or Rp 200 thousand</p> <p>8. DON'T KNOW</p> <p>→ SI11</p>
<p>SI11. Suppose you are offered two ways to earn income.</p> <p>With option 1, you are guaranteed an income of Rp 4 million per month.</p> <p>With option 2, you have an equal chance of earning either the same income, Rp 4 million per month, or, if you are unlucky, Rp 2 million per month, which is less.</p> <p>Which option will you choose?</p>	<p>1. Rp 4 million → SI13</p> <p>2. Rp 4 million or Rp 2 million</p> <p>8. DON'T KNOW</p>
<p>SI12. Are you sure? In option 1 you will always get Rp 4 million per month but in option 2 you may get Rp 4 million per month but you may get only Rp 2 million per month.</p>	<p>1. Still picks option 1 → SI21</p> <p>2. Switches to option 2</p> <p>8. DON'T KNOW</p>
<p>SI13. Now, in option 2 you have an equal chance of receiving either Rp 12 million per month or nothing, depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 4 million per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 4 million</p> <p>2. Rp 12 million or Rp 0 → SI15</p> <p>8. DON'T KNOW</p>
<p>SI14. Now, in option 2 you have an equal chance of receiving either Rp 8 million per month or Rp 2 million per month, depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 4 million per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 4 million</p> <p>2. Rp 8 million or Rp 2 million</p> <p>8. DON'T KNOW</p> <p>→ SI21</p>
<p>SI15. Now, in option 2 you have an equal chance of receiving either Rp 16 million per month or having to pay out Rp 2 million per month depending on how lucky you are.</p> <p>Option 1 guarantees you an income of Rp 4 million per month.</p> <p>Which option will you choose?</p>	<p>1. Rp 4 million</p> <p>2. Rp 16 million or -Rp 2 million</p> <p>8. DON'T KNOW</p> <p>→ SI21</p>

Appendix B

Plot of First Set of Hypothetical Gambling Questions



Appendix C

Estimated Results of Probability of Working in the Public Sector 1st Spec (Coefficient)

		Dependent var: <i>public</i>			
		Whole sample		Highschool freshgrad	
		(1)	(2)	(3)	(4)
riskav_level		-0.062*** (0.019)		-0.201 0.061	
coef_ARA			0.465** (0.250)		2.637 0.768
urban		-0.365*** (0.046)	-0.371*** (0.046)	-0.444*** (0.131)	-0.470*** (0.131)
marstat	Never married	0.194*** (0.069)	0.196*** 0.069	0.195 (0.155)	0.222 (0.154)
	separated	-0.339 (0.353)	-0.350 0.353	-0.052 (0.848)	-0.052 (0.839)
	divorced	-0.077 (0.166)	-0.075 0.167	0.679 (0.501)	0.800 (0.520)
	widow/er	0.182 (0.178)	0.187 0.178		
educ	Less junior high	-0.079 (0.134)	-0.074 0.134		
	senior high	0.273* (0.165)	0.278* 0.165		
	College	0.965 (0.220)	0.961*** 0.220	0.435* (0.248)	0.424* (0.247)
sex	Female				
	Male	-0.043 (0.043)	-0.062 0.043	-0.213* (0.128)	-0.242* (0.127)
age		0.157*** (0.021)	0.156*** 0.021	0.191*** (0.056)	0.175*** (0.055)
exper		-0.105*** (0.022)	-0.104*** 0.022	-0.150* (0.074)	-0.134* (0.073)
exper2		0.000 (0.000)	0.000 (0.000)	0.000 0.002	0.001 0.002
lamakerj		0.000 (0.001)	0.000 (0.001)	0.002 0.002	0.001 0.002
ethnicity	other				
	1 javanese	-0.668 (0.063)	-0.674*** (0.063)	-0.771*** (0.176)	-0.790*** (0.176)
	2 sundanese	-0.612 (0.082)	-0.614*** (0.082)	-0.731*** (0.272)	-0.752*** (0.269)
	3 balinese	-0.334 (0.095)	-0.344*** (0.095)	-0.065 (0.267)	-0.140 (0.268)

		Dependent var: <i>public</i>			
		Whole sample		Highschool freshgrad	
		(1)	(2)	(3)	(4)
4	minang	-0.042 (0.091)	-0.056 (0.091)	-0.173 (0.258)	-0.172 (0.258)
5	betawi	-0.999 (0.152)	-1.008*** (0.152)	-1.065* (0.586)	-1.136* (0.585)
6	batak	-0.136 (0.103)	-0.147 (0.103)	-0.141 0.284	-0.180 0.284
7	madura	-0.390 (0.119)	-0.392*** (0.119)	-0.596* 0.325	-0.646* 0.333
	bugis	0.084 (0.117)	0.070 (0.117)	-0.011 0.303	0.099 0.303
	banjar	-0.156 (0.121)	-0.160 (0.121)	-0.281 0.334	-0.301 0.337
	other sum	-0.303 (0.126)	-0.300** (0.126)	-0.814* 0.334	-0.764* 0.410
	chinese	-1.758 (0.461)	-1.802*** (0.463)		
	constant	-4.423 (0.254)	-4.519 (0.255)	-4.199 0.985	-4.375 0.989
	Obs.	7839	7835	623	623
	Pseudo R2	0.3283	0.3273	0.2813	0.2819
	Prob>chi2	0.0000	0.0000	0.0000	0.0000
	log likelihood	-2466.6597	-2468.7333	-286.6338	-286.3935

Appendix D

Estimated Results of Probability of Working in the Public Sector 2nd Spec (Coefficient)

		Dep. Var: Public	
		(1)	(2)
riskav_level		-0.037 (0.028)	-0.203*** 0.073
urban		-0.416*** (0.072)	-0.616*** 0.162
marstat	never		
	married	0.292*** (0.091)	0.113 0.174
	separated	-0.496 (0.569)	
	divorced	-0.045 (0.220)	1.369 0.703
	widow/er	-0.054 (0.440)	
educ	less		
	junior high	-0.145 (0.236)	
	senior high	0.281 (0.269)	
	college	1.014*** (0.352)	0.373 0.298
bapak_publik		0.325*** (0.073)	0.434** (0.174)
sex	female		
	male	-0.048 (0.067)	-0.134 (0.155)
age		0.126*** (0.033)	0.200*** (0.067)
exper		-0.111*** (0.035)	-0.180** (0.090)
exper2		0.000 (0.000)	0.003 (0.003)
ethnicity	other		
	1 javanese	-0.477*** (0.067)	-0.588*** (0.163)
constant		-3.982 0.417	-4.527 1.231
Obs.		3185	433
Pseudo R2		0.2654	0.303

Source: processed from IFLS-5 data

Description: The value of standard error is inside parentheses,

* p < 0.10, ** p < 0.05, *** p < 0.01