

# Exploring the public-private and company size differences in employees' work characteristics and burnout: data analysis of a nationwide survey in Taiwan

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**Abstract:** Distinct differences exist between public-private sector organizations with respect to the market environment and operational objectives; furthermore, among private sector businesses, organizational structures and work conditions often vary between large- and small-sized companies. Despite these obvious structural distinctions, however, sectoral differences in employees' psychosocial risks and burnout status in national level have rarely been systematically investigated. Based on 2013 national employee survey data, 15,000 full-time employees were studied. Sector types were classified into "public," "private enterprise-large (LE)," and "private enterprise-small and medium (SME);" based on the definition of SMEs by Taiwan Ministry of Economic Affairs, and the associations of sector types with self-reported burnout status (measured by the Chinese version of Copenhagen Burnout Inventory) were examined, taking into account other work characteristics and job instability indicators. Significantly longer working hours and higher perceived job insecurity were found among private sector employees than their public sector counterparts. With further consideration of company size, greater dissatisfaction of job control and career prospect were found among SME employees than the other two sector type workers. This study explores the pattern of public-private differences in work conditions and employees' stress-related problems to have policy implications for supporting mechanism for disadvantaged workers in private sectors.

**Key words:** Public sector, Private sector, Civil servant, Small and medium-sized enterprise (SME), Job stress, Burnout, Company size, Taiwan

## Introduction

The working environment of public sector differs widely from that of private sector due to the differences in

the management objectives, job types and organizational structures<sup>1–6</sup>. Basically, public sector is directed to serve the society and citizens, and is more liable to conflicts of positions among different stakeholders; in addition, it has to assume the responsibility for its policy decision; its operation procedures are more standardized, and hence its organization operates in a more bureaucratic (bureaucratized) manner. By contrast, private sector is rather

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profit-oriented, and is faced with a keenly competitive and changing market environment. It requires greater flexibility in its management in response to the demands of market and customers. Besides, its operation procedures can be flexibly adjusted, and thus it operates in a less bureaucratic manner.

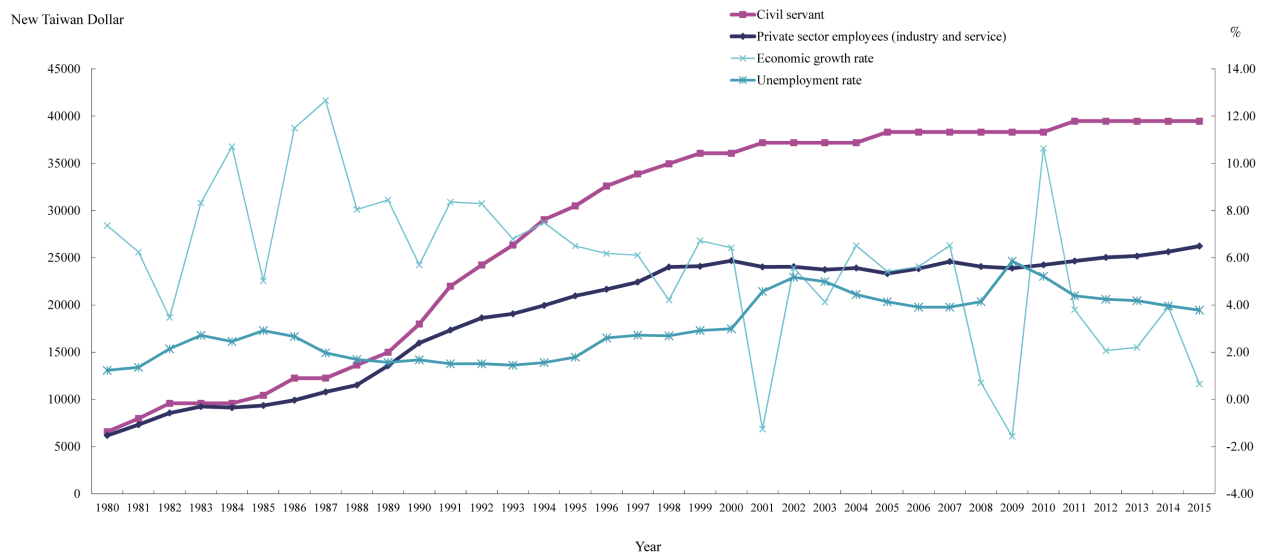
However, previous empirical studies have revealed little about how these organizational distinctions between public sectors and private sectors lead to different ways and feelings of work and workers' health impact. Some studies on work motivation contrasted between public sector and private sector<sup>4, 7, 8)</sup> have found that, compared to those employees in the private sector, civil servants are less inspired by material rewards, take less account of cost control, are more concerned about public interest and public affairs, and give more emphasis to the fairness and justice of the organization. Some other studies<sup>1, 8, 9)</sup> have shown that civil servants' average score for overall job satisfaction is higher than that of private enterprise employees, yet their scores for organization commitment, fulfillment of esteem, task autonomy, and self-actualization are lower than those of private sector employees, respectively. Several studies explored the level of work stress in general and specific dimensions, but their results are somewhat contradictory<sup>4, 6, 10)</sup>. Among previous sporadic research with small sample size and lack to include many potential explanatory variables, we are left wondering and it remains to be clarified whether these differences are caused by the organizational distinctions between public sector and private sector, or by the different demographic backgrounds or work contents. Besides, organizational distinctions between public and private sectors may vary with the different development of economies and public administration across countries; thus, societies, economies and political contexts across countries ought to be taken into consideration.

Traditionally, work conditions of public sector are not main focus in the field of job stress research, for the public sector is less susceptible to dynamic changes in the external environment, thus rendering its organizational system more stable than the private sector. However, with the impact of globalization in the recent years, governments as well as private enterprises have been faced with global competition. According to the internationally prevailing ideology of neo-liberalism, public affairs are supposed to be left up to the market forces; in addition, government interventions and regulations ought to be minimized in response to the demand for marketization<sup>1, 11)</sup>. Such an ideology "new-managerialism" has impacts not only on

the government structures of advanced countries in Europe and America, but also on that of Taiwan in the recent years. There gradually emerges a transition, undertaken for improving governments' operational efficiency, towards leaner and meaner organizational structures of the governments. Based on data of the All Civil Servants Database from Taiwan's Executive Yuan, the number of national civil manpower has decreased by 5.8% from 2004 to 2015. Main reason for the reduction in civil manpower is the implementation of downsizing of government manpower and the limits set to its expansion; moreover, the privatization of state-owned enterprises plays a more important role, including the privatization of passenger transport, mechanics, telecommunication industries, and so on. Thus, the number of workers in the public sector is declining steadily.

Despite the continuing cut to the public sector workforce, the payment and welfare gap between the public sector and the private sector has even gradually widened in Taiwan. Figure 1 shows the comparison of initial remuneration, which we use as a proxy for salary, between the public sector and the private sector. In the 1980's, their salaries were rather comparable. With rapid economic growth and rising price index, the civil servants have on the regular basis received a salary raise with an increasing rate far higher than that of private sector employees. Despite the slowdown in Taiwan's economic growth and the rise in unemployment rate in recent years, both of which have led to stagnation or even cut in the salaries of private sector, the impact on civil servants' salaries is rather minor. In 2015, the average initial remuneration of the private sector employees was only 63% as much as that of the civil servants. With the economic downturn in Taiwan, the management of private enterprise has been badly influenced, and the structural differences between public sector and private sector have become more apparent, rendering more intense the competition for the posts of the public sector.

While undertaking massive restructuring in both private enterprises and public institutions to market needs or public demands, job instability remains a key feature of work conditions in public-private sector difference. In Taiwan, permanent-hired public servants have very few possibilities to be dismissed; almost all of them hold secure jobs until retirement on condition that no serious errors or omissions occur. By contrast, job security of private sector employees is much more influenced by businesses' operating in market competition and economic fluctuations, and that is closely linked to underlying welfare of individual



**Fig. 1. Average starting salary of civil servants<sup>a</sup> and private sector employees<sup>b</sup> and the economic growth rate of Taiwan<sup>c</sup>, 1980–2015<sup>d</sup>.**

<sup>a</sup> Military personnel not included. <sup>b</sup>(1) Civil servant: Calculated based on the “Civil servants, Military personnel and Teachers on Compensation Plan”, issued over the years by the Central Personnel Administration, Executive Yuan, Taiwan. (2) Private enterprise employees: according to the results of “survey on wage by occupation” over the years, Council of Labor Affairs, Executive Yuan, Taiwan. <sup>c</sup>National statistics, Directorate General of Budget, Accounting and Statistics, Executive Yuan, Taiwan ([www.stat.gov.tw](http://www.stat.gov.tw)). <sup>d</sup>The exchange rate for the Taiwan New Dollar against the US dollar is about 30:1 (October 2017).

workers. Recent literature have indicated that institutional job instability or perceived job insecurity as new job stress in contemporary work environment due to intensive business competition through personnel cost control and deregulation of labor<sup>12–14</sup>; however, the role of job instability/insecurity in the differences of work stress and health in workers in the public/private sector has rarely been discussed.

Notwithstanding various public-private sector differences in working conditions and payments, however, that doesn't mean homogeneity across all private enterprises. In fact, there is wide variation in the management and work type of private enterprises depending on their sizes. According to existing literature, the working environment of small and medium enterprises differs from that of large enterprises in several ways: (1) role of employer: in small and medium enterprises, employers exercise more influence on the working environment. Thus, their task arrangements are more directly related to the personal experience and values of employers; (2) social relationship: in small and medium enterprises, employers' family members are more likely to engage in the operation of enterprises, hence leading to a closer relationship between employers and labors and more opportunities for direct communication; (3) task requirement: small and medium enterprises have simpler organizational structures, less

routines, more opportunities for person-to-person contact, and busier and unscheduled work schedules, and face greater uncertainty<sup>15–17</sup>. As compared to those advanced countries all over the world or Asia (such as European countries, United States, Japan and South Korea), our industry structure is mainly composed of small and medium enterprises. Based on 2015 data from Taiwan Department of Statistics, Ministry of Economic Affairs, the number of small and median enterprises (SMEs) accounted for 97.6% of the total number of enterprises in Taiwan, and the number of employed persons in SMEs represented 78.3% of all employed persons, and therefore play a key role in the economic development of Taiwan. However, half of the SMEs in Taiwan have a short average lifespan less than 10 yr<sup>18</sup> and their employees are more likely to be forced to change their careers very often in their life. Due to the differences in organizational structures, manpower and material resources, SMEs offer less stable salary and welfare than large enterprises; moreover, they are less willing and less able to invest in the protection of employees' health<sup>19–21</sup>, including stress-related problems.

While there has been preliminary exploration of job stress, work experience, and work conditions among public and private sector employees in specific groups of occupations, and there has also been some researches focused on organizational size and workplace health

promotion services, until now, however, few studies have been done on the differences of work characteristics, job instability and work stress problem in public/private sector employees with consideration of company size and various job-related or not job-related factors in a wide range of occupations, including both the industrial and service workers. In addition to establish background data of public/private sector employees in general working population, and to further investigate the effect of sector difference on health inequalities of workers, findings from Taiwan may contribute to enrich job stress literature from an international aspect because there have been few studies from newly-industrialized countries reporting public/private sector differences on employees' work stress and well-being.

By utilizing data from a national survey of representative Taiwanese paid employees, we first aimed to investigate the social distribution of public/private sector employees across various demographic and employment characteristics of general paid employees in Taiwan; moreover, private sector organizations were further classified into "large enterprise (LE)" and "small and medium-sized enterprise (SME)". Secondly, we examined the association of sector types with employees' work characteristics, job instability/insecurity and burnout status. Finally, we examined the associations of sector types with burnout status, with further controlling for potential confounders. In this study, we chose burnout as an indicator of employees' health status, as it is considered an antecedent to various stress-related health outcomes<sup>22-24</sup>.

## Subjects and Methods

### *Study participants and survey procedures*

Institute of Labor, Occupational Safety and Health (ILOSH) of the Taiwan government under the Ministry of Labor had conducted several nationwide surveys concerning occupational safety and health among employed persons every 3-4 yr since 1994. Data for this study were from a cross-sectional survey conducted in March 2013. A representative sample of paid employees in Taiwan was selected by a two-stage random sampling scheme. In the first stage, all districts (in urban areas) and villages (in rural areas) in each city and county of Taiwan were grouped according into appropriate urbanization levels, a list consisted of districts/villages based on the number of households was then drawn from each level, and a sample of districts/villages was selected according to a systematic sampling scheme. In the second stage, a sample of house-

holds was also randomly selected from each selected districts/villages based on a systematic sampling framework; from selected households, all members aged 15 or above who were currently working as employed were identified and invited to participate in this survey.

Standardized self-administered questionnaires were delivered to each selected household by a trained interviewer; within a week, the same interviewer visited the household and collected the answered questionnaires with on-site checking. In the ILOSH 2013 survey, a total of 28,677 workers (including paid employees, employers, and self-employed individuals) were identified; among them, 25,480 workers agreed to participate and finished the valid questionnaires; the valid return rate was 88.9%. We restricted the study population to those aged between 25-64 yr because workers ranging in age 25-64 yr accounted for about 91% of Taiwanese labor workforce, and this group of workers is suitable for international comparison. As a result, 17,016 paid employees were available for analysis. Among them, 15,000 participants (8,403 male and 6,597 female) who worked full-time (working hour  $\geq 40$  h/wk) were selected for comparability among sectors. For more details concerning the sampling and survey procedures, please refer to the ILOSH 2013 survey report<sup>25</sup>.

### *Measures*

The questionnaire was designed to assess multiple dimensions of work environment and employees' physical and mental conditions. In this study, sector types were classified into three categories: (1) public sector, which included workers employed in Taiwan government administrative agencies, public enterprise organizations, hygiene and medical service organizations as well as public schools. Elected civil servants were also included, but active military personnel were excluded from the survey; (2) private small and medium-sized enterprises (SMEs); (3) private large enterprises (LEs). The definition of SMEs in Taiwan conforms to the following standards: (1) The enterprise is an enterprise in the manufacturing, construction, mining or quarrying industry with either paid-in capital of NT\$80 million or less, or less than 200 regular employees; (2) The enterprise is an enterprise in the industry other than any of those mentioned above and either had its sales revenue of NT\$100 million or less in the previous year, or has less than 100 regular employees<sup>26</sup>. Therefore, in the present study, private enterprise employees were classified as belonging to LEs or SMEs based on their industry sectors and staff size of their companies.

Participants were also asked to provide information on

their age, gender, education level, marital status, and family care workloads. Proxy measures for family care workloads included three items asking participants whether or not they are family's primary bread-earner, they have children under 6 yr old living with them and they have disabled elderly people living together, and the responses were dichotomized into "yes" and "no". Along with the questionnaire, participants were also asked to provide information on their job title, industry, and total working hours in the week prior to the survey. Shift work was also measured by asking the participants if they were working shifts during the time period above. Employment grade was classified in the following 6 categories based on job titles, i.e., grade 1: administrators and managers; grade 2: professionals; grade 3: non-manual skilled; grade 4: non-manual low-skilled; grade 5: manual skilled; and grade 6: manual low-skilled. Industry type was divided into four categories: "manufacturing", "construction, electricity, gas and water", "service", and "others (agriculture, forestry, fishery, animal husbandry, mining and quarrying)".

In order to assess psychosocial work characteristics, work demands (7 items) and job control (9 items) of the Job Content Questionnaire (JCQ) based on Karasek's demand-control model (DC model)<sup>26–28</sup>, also known as the Job Strain model, were also adopted. Items are scored on a four-point scale (1: strongly disagree to 4: strongly agree). This model has been a central piece in the field of job stress research, which postulates that the combination of high psychological work demands and low job control will cause the greatest job strain and then have health-damaging effects on workers. The Chinese version of the Job Content Questionnaire (C-JCQ) have been translated and validated by Taiwanese researchers and widely used in various job stress researches with satisfactory reliability and validity; further information about the C-JCQ can be found elsewhere<sup>12</sup>. In this study population, Cronbach's alpha coefficients for work demands and job control subscales were 0.70 and 0.76, respectively, and no significant difference between genders was found.

Measures for job instability contained four objective or subjective indicators to represent different aspects of workers' protean career life: (1) employment type (permanent or non-permanent); (2) years of employment in the current company; (3) the agreement to the statement "my job is secure"; (4) the agreement to the statement "my career prospect is good". The response of the last two questions were both recorded on a four-point scale (1: strongly disagree to 4: strongly agree) and were then dichotomized (high/low).

Burnout was assessed by the Chinese version of the Copenhagen Burnout Inventory (C-CBI)<sup>23, 29</sup>. In the CBI, the core concept of burnout focus on physical and psychological fatigue and exhaustion, and three dimensions of burnout are identified according to three life domains according to the attribution of burnout status: (1) personal or generic burnout (6 items), which is defined as the degree of burnout experience by the person, no matter he/she is employed or not; (2) work-related burnout (7 items), defines the degree of burnout perceived by the person at work as related to his/her work; (3) client-related burnout (6 items), measures the degree of burnout perceived by the person as related to his or her work with clients, thus is suitable for people whose work involve clients. The responses were recorded on a 5-point scale: from always (score 100) to never (0) or very seriously (100) to very slightly (0). In this survey, only the 'personal burnout' and 'client-related burnout' subscales of the CBI were included because previous studies showed that 'work burnout' and 'personal burnout' subscales were highly correlated and seemed to share overlapping concept after a trade-off consideration about questionnaire length. More information regarding the English version and the Chinese version of the CBI, including the details of all subscales, items and calculation formula, and validation data, can be found elsewhere<sup>23, 29</sup>. In the present study, Cronbach's  $\alpha$  coefficients of the personal burnout and client burnout subscales were both 0.93, with no significant gender differences.

#### *Statistical analysis*

Characteristics of the study population, including distributions of socio-demographics, family care workloads, employment categories, work characteristics and the CBI personal burnout and client-related burnout scores were summarized and the differences between male and female employees were examined with  $\chi^2$  test (for categorical variables) and one-way ANOVA test (for continuous variables). Social distribution of the three sector types was examined across demographic and employment categories and the differences were assessed with the  $\chi^2$  test. To make comparisons among the three different sector employees, the differences in work characteristics, job instability indicators, and burnout scores were tested with the  $\chi^2$  test or one-way ANOVA test. ANOVA was performed with a post-hoc Games-Howell test for non-homogenous variance across three sector groups.

After bivariate analyses were used to gain initial understanding of the relative differences among employees in the three sector types, multivariate linear regression analy-

ses were further performed to examine the independent effects of sector types on “personal burnout” and “client burnout” scores in male and female employees. Demographics (age, marital status), family care workloads, employment grade, work characteristics (working hours, shift work, work demands and job control) as well as non-permanent employment and seniority were controlled in the models because these factors were identified in previous studies to predict burnout status<sup>11, 23, 30</sup>. Subjective measures (perceived job insecurity and career prospect) were not included in regression models to avoid over-control. In regression analyses, the scores of work demands and job control were ranked and divided into tertiles (low, medium and high). Education level was not included in the regression models due to its high correlation with employment grade.

All statistical analyses were performed with SAS software version 9.3<sup>31</sup>, and any  $p$ -value  $<0.05$  was considered statistically significant. Stratified analyses were also performed in male and female subgroups to explore potential moderating effects of gender. For all scales, scores of reversed items were re-ordered to make the items additive in the same direction.

## Results

### *Comparisons of sector types in personal/socio-economic backgrounds, work characteristics, and burnout*

Characteristics the studied sample are summarized in Table 1. Of the 15,000 participants, 44% were female. In the study sample, public sector employment was more prevalent in older, higher employment grade and in service industry than those in private sector employees. Considering company size of private sector enterprises, compared to employees in LEs, SME employment was more common in workers who were with lower employment grades and was more in service industry. Besides, in men, the proportion of SME employment significantly declined with age; but in women, SME employment was more prevalent in older groups. In terms of psychosocial work conditions, employment type, job instability indicators as well as burnout scores of the three sector type employees, overall, for both male and female, employees in the private sector (regardless of company size) worked longer hours than their public sector counterparts; considering company size, among the three sectors the level of work demands was the highest in LE employees; these workers also reported the highest-level scores of personal burnout and work burnout. On the other hand, in SME employees,

job control was found to be the lowest. Concerning job instability, compared with public sector employees, those in private sector enterprises had less seniority, higher job insecurity and lower career prospect, especially for SME workers. In addition, in LE workers the percentage of non-permanent employment was lower than public sector workers and SME workers.

### *Burnout scores in association with sector types in multivariate analyses*

Table 2 presents the results of multiple linear regression analyses of the three sector types on personal burnout and work burnout scores in the study sample as well as in male and female subgroups, after adjusting for demographics, job characteristics and family care burdens. After controlling for the above-mentioned covariates, in the total sample model, as compared to men, women had significant higher levels of personal burnout and work burnout. In terms of sectoral differences in employees' burnout, results showed that in men who worked in private sector had significantly higher scores of personal burnout and work burnout, even after adjusting for work characteristics, employment grade, and industry. However, significant relationships between sector type and burnout measures were not found in women, despite the significant risk factors of burnout (i.e., younger age, shift work, high work demands, and less seniority) were similar to those in men. In the total sample model, such relationships were not significant either.

## Discussion

The results from this study indicated that in total study sample of paid employees in Taiwan, about 15%, 17% and 68% of employees were employed in the public sector, private LEs, and private SMEs, respectively. Compared to international statistics, the proportion of public sector employment found in Taiwan appears to be much lower than that reported in the OECD countries in 2013 (average rate was about 21%)<sup>32, 33</sup>. As the ideological trend of “small-scale government with efficiency” have been advocated in Western countries as efficient strategies to promote operation flexibility and reduce personnel costs<sup>1, 11</sup>, the organizational structure of Taiwan Government has already been relatively small than Western countries. As for the distribution of company size in the private sector, in Taiwan, about 56% of private sector employees were in enterprises fewer than 50 employees (data not shown); the proportion was higher than the average rate (49%) in the

**Table 1. Personal background, employment categories, work characteristics and burnout scores in both genders (n=15,000)<sup>#</sup>**

Variable	Public (n=2,252; 15.0%)		Private: LE (n=2,529; 16.9%)		Private: SME (n=10,219; 68.1%)		p	ANOVA Post-hoc Games-Howell test
	n/mean	(%)/(SD)	n/mean	(%)/(SD)	n/mean	(%)/(SD)		
	Demographic characteristics							
Gender								
Male	1,160	(51.50%)	1,518	(60.00%)	5,725	(56.00%)	***	
Female	1,092	(48.50%)	1,011	(40.00%)	4,494	(44.00%)		
Mean age (yr)	44.3	(9.9)	38.6	(9.4)	40.4	(10)	***	1>2,1>3,2<3
Age								
25–34	463	(20.60%)	1,038	(41.00%)	3,532	(34.60%)	***	
35–44	658	(29.20%)	826	(32.70%)	3,083	(30.20%)		
45–54	746	(33.10%)	472	(18.70%)	2,569	(25.10%)		
55–64	385	(17.10%)	193	(7.60%)	1,035	(10.10%)		
Employment categories								
Employment grade								
Grade 1: Administer	64	(2.80%)	136	(5.40%)	283	(2.80%)		
Grade 2: manager or professional	618	(27.40%)	658	(26.00%)	817	(8.00%)		
Grade 3: Non-manual skilled	570	(25.30%)	631	(25.00%)	1,922	(18.80%)		
Grade 4: Non-manual low-skilled	659	(29.30%)	350	(13.80%)	2,839	(27.80%)		
Grade 5: Manual skilled	62	(2.80%)	161	(6.40%)	1,846	(18.10%)		
Grade 6: Manual low-skilled	279	(12.40%)	593	(23.40%)	2,512	(24.60%)		
Non-permanent employment (yes)	339	(15.20%)	171	(6.80%)	1,709	(16.80%)	***	
Pay system								
Fixed salary	2,145	(95.40%)	2,045	(80.90%)	7,263	(71.40%)		
Performance-based pay (with a basic salary)	73	(3.20%)	421	(16.70%)	1,315	(12.90%)		
Piece-rated/time-based pay (without a basic salary)	31	(1.40%)	61	(2.40%)	1,599	(15.70%)		
Seniority (yr)	14.4	(10)	9.3	(8.2)	8.3	(7.7)	***	1>2,1>3,2>3
Industry								
Manufacturing	65	(2.90%)	1,571	(62.10%)	3,590	(35.10%)		
Construction, electricity, gas and water	214	(9.50%)	24	(0.90%)	1,233	(12.10%)		
Service	1,947	(86.50%)	929	(36.70%)	5,258	(51.50%)		
Other (agriculture, forestry, fishery, animal husbandry, mining and quarrying)	26	(1.20%)	5	(0.20%)	138	(1.40%)		
Work characteristics								
Working hours (h/workday) (range 40–119)	43.3	(6.5)	45.6	(7.2)	46.3	(7.7)	***	1<2,1<3,2<3
Working hours ≥48 (yes)	400	(17.80%)	951	(37.60%)	4,613	(45.10%)	***	
Shift work (yes)	263	(11.80%)	491	(19.60%)	812	(8.00%)	***	
C-JCQ: Work demands (range 7–28)	17.9	(3)	18.6	(2.8)	17.9	(2.7)	***	1<2,2>3
C-JCQ: Job control (range 9–36)	23.1	(3.5)	23.1	(3.8)	22.2	(3.6)	***	1>3,2>3
Perceived job insecurity (high)	587	(26.10%)	1,182	(46.90%)	5,751	(56.30%)	***	
Perceived career prospect (low)	1,283	(57.00%)	1,541	(61.00%)	6,987	(68.50%)	***	
Work stress (high)	371	(16.50%)	558	(22.10%)	1,513	(14.80%)	***	
Job satisfaction (low)	117	(5.20%)	193	(7.60%)	882	(8.60%)	***	
Family care workloads								
Bread-earner (yes)	1,441	(64.20%)	1,496	(59.20%)	5,822	(57.00%)	***	
Disabled or Child(ren) (age under 6) (yes)	427	(19.30%)	594	(23.70%)	2,132	(21.20%)	***	
Burnout scores								
C-CBI: Personal burnout (range 0–100)	29.1	(21.2)	30.1	(21.2)	27.8	(20.7)	***	1>3,2>3
C-CBI: Client-related burnout (range 0–100)	31.3	(20.9)	32.5	(19.3)	28.2	(19.8)	***	1>3,2>3

<sup>#</sup> $\chi^2$  test (for categorical dependent variables) and one-way ANOVA test (for continuous dependent variables) for significance of the difference among different sectors.

\* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$ .

**Table 2. Multivariate-adjusted beta coefficients of sector types on C-CBI burnout scores**

Independent variables	All (n=15,000)				Male (n=8,403)				Female (n=6,597)			
	Personal burnout		Client burnout		Personal burnout		Client burnout		Personal burnout		Client burnout	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>
Sector type												
Public (ref)												
Private: LE	0.6	ns	1.1	ns	0.2	ns	2	ns	1.3	ns	0.4	ns
Private: SME	1.8	**	3.3	***	0.5	ns	3.1	***	3	***	3.7	***
Demographic background												
Gender												
Male (ref)												
Female	4.6	***	0.2	ns								
Age												
25–34 (ref)												
35–44	0.1	ns	–1.4	*	0.5	ns	0.4	ns	0.2	ns	–2.8	**
45–54	–0.5	ns	–1.6	*	0	ns	–0.3	ns	–0.4	ns	–2.7	**
55–64	–0.6	ns	–3.1	**	0.1	ns	–1.9	ns	–1.1	ns	–3.8	**
Job/employment categories												
Employment grade												
G1/G2 (ref)												
G3/G4	–0.9	ns	–0.5	ns	0.1	ns	0.4	ns	–1.7	*	–0.9	ns
G5/G6	–0.8	ns	–5.4	***	–0.4	ns	–5	***	–1.7	ns	–4.6	**
Working hours (h/wk) $\geq$ 48 (yes)	2.7	***	0.7	ns	2.6	***	1.2	ns	3	***	0.2	ns
Shift work (yes)	1.6	**	2.3	***	1.4	*	1.3	ns	2.3	*	3.1	**
Industry												
Manufacturing (ref)												
Construction	–0.4	ns	0.6	ns	0.2	ns	0.2	ns	–3	ns	0.9	ns
Service	0.3	ns	–2.3	***	0.1	ns	–2.8	**	0.2	ns	–1.4	ns
Other	–1.7	ns	0.1	ns	0.8	ns	5.8	ns	–6	*	–8.8	ns
Non-permanent employment (yes)	3.5	***	3.3	***	3	***	3.3	**	3.7	***	3.2	**
Seniority (yr)												
<5 (ref)												
5–10	0.1	ns	0.2	ns	0	ns	–1.2	ns	0.3	ns	1.5	*
$\geq$ 10	1.2	**	–0.1	ns	1.5	**	–1.4	ns	0.9	ns	0.9	ns
C-JCQ: Work demands												
Low (7–17) (ref)												
Median (17–19)	5.3	***	3.9	***	4.6	***	2.8	**	6.1	***	5	***
High (19–28)	14.3	***	11.9	***	13.3	***	10.6	***	15.4	***	13	***
C-JCQ: Job control												
Low (9–21) (ref)												
Median (21–24)	–0.3	ns	–0.6	ns	–0.5	ns	0.4	ns	–0.1	ns	–1.3	*
High (24–36)	–0.5	ns	–2.1	***	–0.6	ns	–0.4	ns	–0.6	ns	–3.7	***
Family care workloads												
Bread-earner (yes)	3.1	***	0.4	ns	1.5	**	0.7	ns	4.4	***	0.1	ns
Disabled or child(ren) (age <6) (yes)	4	***	1.4	*	4	***	2	**	4.3	***	0.6	ns

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; ns: non-significant; ref: reference group.

OECD countries in 2013<sup>31</sup>). The dominance of SMEs has long been a key feature of Taiwan's corporate structure; in order to face fierce market competition, SME is character-

ized by high work motivation, high flexibility, high adaptability to market changes, and low dismissal protection for workers.



Substantial differences in socio-demographic and employment groups among the three sector types could reflect diversities of job career routes due to various aspects of structural limitations in the whole labor market. With regard to public sector workforce, we found in this study that as compared with private sector counterparts, public sector employees were more likely to be female, older, with higher education and employment grade. This finding was consistent with those in previous studies<sup>5, 11, 24</sup>) and was to be expected, as Taiwan Government has downsized for years, there are fewer opportunities for younger workers to compete for civil service vacancies. Additionally, since the labor composition in the public sector is mainly civil service (white collar) workers, the public sector would tend to employ workers with higher educational attainment in higher employment grade positions than the private sector. Concerning the social distribution of LE and SME workforce in the private sector, SME employees' jobs tended to be more concentrated in low-skilled and manual, often accompanying with lower quality of work and occupational safety issues.

When further looking at work characteristics and burnout status among employees in the three groups, LE and SME employees were much more likely to work longer hours than public sector counterparts. It had been found that public sector employees were often less committed to work, less motivated by money and work challenge, and more motivated by work-family balance than private sector counterparts<sup>5, 7, 8</sup>); and our findings are in accord with the results of previous studies. With consideration of differences in market competition, management objectives, and organizational structures as well as legal protection of the rights and benefits between public/private sectors, the results of multivariate regression models partially support our expectations concerning the structural differences of public/private sectors in employees' burnout status. Though the results of intersectional analysis and reasons to explain observed differences in work stress between public/private sector employees is still inconclusive as indicated in previous studies<sup>1, 4, 6, 8</sup>)—some may argue that these differences may be explained by demographic or work content factors—however, our study findings showed that the association of public/private sector with personal/client burnout held in a large sample even after the adjustment of a variety of demographic, family, employment and work characteristics. In the bivariate and multivariate analyses the direction of sectoral differences in burnout status are not the same, it could be important potential confounders (e.g., gender, employment categories, senior-

ity, industry, shift work, family care workloads...) not taken into account in the bivariate analysis. So we adjusted these confounders in multiple regression models to clarify the effects of sectoral differences in burnout status. The result was found that private sector had higher levels of personal burnout and client-related burnout than public sector counterparts, which may need further investigation to explain how demographic/work contexts and burnout are interacted.

In terms of job instability indicators, private sector employees' work were more likely to be characterized by shorter work experience, more threat to job continuity and poorer career advancement opportunities. The findings of sectoral difference in job instability are in consistent with the results of previous studies in western countries<sup>34, 35</sup>) as well as in Taiwan<sup>11, 12</sup>). Furthermore, the results of regression models showed that sectoral difference of employees' burnout was significantly diminished after the adjustment of these job instability indicators (details not shown); it seems that job instability may be a strong indicator of personal/client burnout. As in developed countries there have been growing epidemiologic evidences to indicate that "precarious employment" is likely to increase health risks, including stress-related illnesses<sup>12, 36–38</sup>). In this study, precarious employment was found to have deleterious effects on Taiwanese employees' burnout problems. In Taiwan's labor market, higher job instability often not only relate to fewer opportunities for job keeping and promotion, also imply less salary, benefits, and pension calculated based on continuing work. It is possible that fear of job instability may be associated with perception to relative deprivation as compared to stable job-holders, and then leads to vulnerability to psychological stress. With a further comparison of precarious employment among the three sector types, it was revealed that in the public sector the proportion of precarious employment was higher than private LEs, notwithstanding that in private SMEs was even higher. As public organizations are more closely connected to public affairs and often operate in less flexible ways<sup>1, 5, 6</sup>), public organizations also use precarious workers in various ways—such as contract workers, agency workers, and dispatched workers—and its proportion of precarious employment is no less than that in private organizations in Taiwan. Such result is consistent with that in previous studies concerning employment condition in the public sector<sup>11, 25</sup>) and may expand the previous findings of the social distribution of precarious employment and its deleterious health effects on employees.

This study has some limitations. First, the cross-

sectional survey design may limit the causal inference of our findings, despite in most cases workers had chosen to enter the public/private sector labor market before they experienced work stress and burnout from work organizations. Especially for private sector employees, it is usually difficult for them to transfer to government employees because of relatively strict employment qualifications in the public sector. Secondly, about 11% of selected subjects failed to participate in this survey and without follow-up investigation, the representativeness of the study sample might be questionable. Thirdly, so far in international social surveys the definition and classification of SME were varied by national contexts, which limits the comparability of our study results. Future studies should further explore the complexity of company size and develop a more comparable classification of SME. Fourthly, several items of the JCQ work demands subscale may need to be revised because in this study and in prior surveys lower internal consistency for the scale was found<sup>12, 23, 24</sup>; future studies may be needed to improve these measures. Lastly, we cannot rule out the possibility that the observed associations between sector types and burnout might be confounded by other organizational/personal factors that were not measured in this study, such as administration style, workplace social support, social security system, coping behaviors and so on. More extensive research would be necessary to get a more comprehensive understanding of the causal mechanism.

Despite of the mentioned limitations above, this study still provides important information about the distribution of sector types, and it documents the differences of employees' work characteristics, job instability, and burnout status among a representative sample of paid employees from a wide range of occupations and industries with consideration of various demographic/family background, and employment status indicators. The findings of this study have implications for policies and legislations that affect the labor regime and work environment. Although the differences of management style and organization characteristic between public/private sectors often seem to be apparent, with empirical evidence as shown in this study support the notion, a stronger foundation was built to appeal to public administration and labor policies and execution strategies to take into account the reproduction of social inequalities in the workplace. Also, labor inspection practices and workplace health promotion programs should also pay more attention to stress-related health risks of employees in private sectors, especially for SME workers. These claims may be more significant for countries

with weak social security system and collective bargaining mechanism for private sector employees, such as Taiwan.

It is generally agreed that the quality of the organization, of the work environment, and of work itself may affect employees' experience of job stress. The findings of this study indicated that there were significant differences of work characteristics among employees in public sectors, private large enterprises, and private small and median sized businesses. Private sector employment was associated with disadvantaged work situations and increased levels of job stress indicators. In dealing with career development possibilities, SME employees in the private sector were often in particularly difficult situations. As structural differences of organizations among different sectors have been frequently stated, the stress-related health implications behind such intersectional analysis of social hierarchies should receive more policy consideration.

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