Organizational Demography, Wage Dispersion, and Employee Turnover: An Organization-level Investigation in Taiwan

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Abstract

Building on prior research of organizational demography, this study extends research on employee turnover to the organizational level by considering demographic compositions of a workforce that affect voluntary turnover: age and seniority, gender, occupation, and wage, plus the interaction effect between age/seniority and wage.   It carries out empirical examination of a different cultural setting, using a sample of 3,796 firms in Taiwan. The results show that voluntary turnover rate is influenced by age and seniority heterogeneity, wage dispersion, and occupational differentiation. In addition, the effect of age and occupational heterogeneity is moderated by the wage dispersion within an organization, suggesting that the effect of organizational demography on employee turnover is cultural and context-specific.

Keywords: Organizational Demography, Employee Turnover

The issue of employee turnover has received significant attention in various disciplines. A recent trend in the turnover studies have moved beyond examining simple individual and market effects to begin examining the effects of organizational demography in determining employee turnover. This approach begins with the premise that compositional structure of a group is an emergent characteristic of the collectivity that cannot be reduced to the attributes of its individual members; the degree of heterogeneity and inequality of various social groups and the interrelations among them govern people's social relations and mobility chances (Blau, 1977; Pfeffer, 1983).

Focusing on different units of analysis, researchers using an *organizational demography model* (Alexander et al., 1995; McCain, O'Reilly, & Peffer, 1983; O'Reilly, Caldwell, & Barnett, 1989; Pfeffer & O'Reilly, 1987; Wagner, Pfeffer, & O'Reilly, 1984) and a *relational demographic model* (Tsui & O'Reilly, 1989; Tsui, Egan, & O'Reilly, 1992) have demonstrated that turnover rates are higher in heterogeneous work groups, and that employees with dissimilar demographic attributes are more likely to depart. Two important themes underlie their formulation of turnover processes: (1) Homogeneous demographic backgrounds facilitate communication and interaction among group members and thus help to instill group cohesion and reinforce solidarity. (2) Dissimilar members are less integrated into the group and therefore more likely to depart. The degree of social integration is an unobservable factor affecting turnover rate (Lawrence, 1997; Tsui et al., 1992).

A primary contribution of organizational and relational demography models has been their explicit focus on structural characteristics of the group in shaping employee perceptions; as in the study of pay-fairness, individuals are no longer viewed as evaluating their careers in isolation but within the context of a complex interpersonal environment. Nevertheless, these models have several limitations. First, this approach relies on a relatively narrow conception of what constitutes employees' reference frames; focusing exclusively on face-to-face work units, it gives no broader consideration to other possible reference groups within which employees evaluate their careers. Furthermore, researchers are often unclear about the criteria used to define a work group. The measurement of group heterogeneity is arbitrary because subunits within an organization will exhibit varying degrees of

demographic heterogeneity, depending on where boundaries are drawn. Whether the findings from such group-level analysis can be inferred to the organizational level remains to be explored. Second, most previous studies have sampled primarily from Western organizations and may not be relevant in other cultural settings where, for example, social dynamics may lead to different work behaviors and career decisions. Finally, there has been a lack of conclusive evidence concerning the effects of demographic diversity on performance outcomes (Tsui et al., 1995).

The current study extends the previous research in three directions. First, it examines the relationship between demography and turnover at the organizational level. Specially, it explores how employee turnover is affected by demographic diversity in age, seniority, wages, and occupation. Second, it carries out empirical examination of a different cultural setting, using a large sample of organizations in Taiwan. Finally, it explores the performance implications of demographic diversity and employee turnover.

Theoretical Framework

1.Organization-level Analysis

Although the demographic composition of a work unit have been shown to be an important predictor of performance at group level, the research lack comprehensive efforts to extend demography model to the organizational level. Several studies have suggested that more research be conducted at organizational level of analysis (Alexander et al., 1995; Tsui et al., 1995). As Tsui and her colleagues note: "There might be a different dynamic associated with age diversity in supervisor-subordinate dyads, in work teams, and in the organization as a total entity... when assessing the dynamics of demographic attributes, the level-of-analysis issue should not be ignored (Tsui et al., 1995: 204)."

There are reasons to believe that the dynamics associated with demographic diversity may be different at the organizational level. For example, while organizational demography model predicts that individual differences in demographic attributes are likely to create "integration problems" or "in-group power

struggles", it can also be argued that, at the organizational level, demographic heterogeneity may be "functional" to the exercise of authorities by reinforcing status distinctions.   On the other hand, similarity in job-relevant attributes may increase role ambiguity or role conflict with different authorities, thereby increasing job competition among members of the work group.   In addition, strong in-group cohesion may result in "generation gaps" among cohorts and thus increase inter-group conflicts (Pelled, 1996).   Homogeneity *within* groups may entail a higher degree of differentiation *between* groups.   Therefore, group level integration may have the paradoxical effect of promoting inter-group conflicts at the organizational level.   There is thus no compelling evidence that organizations consist of homogeneous workgroups will be more socially integrated than organizations consisted of heterogeneous employees.

Another problem with organizational demography studies using group-level data is that they have been unable to observe the effect of broader organizational context.   Because organizational demography has traditionally been used to represented multiple subjective concepts such as communication difficulty, power struggle, and conflicts, research should take into consideration the possible situational factors that might affected it's interpretations and meanings (Lawrence, 1997; Mittman, 1992; Tsui et al., 1995).

2.Cross-cultural Applications

A related issue is whether the relationship between organizational demography and voluntary turnover persist over different cultures.   Social norm regarding tenure and corresponding rewards distribution may vary across nations, and different cultures may subjectively ascribe different meanings to demography (Tsui et al., 1995; Wiersema & Bird, 1993).

In some Asian-pacific countries, a certain degree of age and tenure differentiation is considered functional to organizations because of the prevailing norm of " respect for age" and the seniority-based reward system (Lockett, 1988; Navis, 1983).   Asian cultures also place great value on social considerations and harmony in the work environment (Clark, 1979; Silin, 1976; Wiersema & Bird, 1993).   It seems plausible that the effects of demographic heterogeneity on

organizational outcomes are more likely to manifest in a culture that emphasizes social homogeneity and conformity. For example, Wiersema and Bird (1993) find that the effects of demographic heterogeneity on top management team turnover is stronger in Japan than those of comparable studies in the United States. Empirical examination in a setting different from those of previous demographic studies— namely, Taiwanese organizations—thus serves the second purpose of this research.

Hypotheses

Building on prior research of organizational demography, this study extends research on employee turnover to the organizational level by considering demographic characteristics that affect voluntary turnover: age and seniority, gender, occupation, and wage, plus the interaction effect between age/seniority and wage. It also explores performance implications. Following past research that emphasized the social context of evaluations, we posit that employees' perceptions about their existing jobs will be affected by the demographic distribution of employees within the organization.

1.Age and Seniority Heterogeneity

Lawrence (1997) distinguished two different commonly adopted interpretations of the linkage between organizational demography and turnover. One approach uses a social psychological scheme and interprets the effect of organizational demography indirectly, arguing that a higher degree of homogeneity reduced turnover through increasing social integration within a work unit. An alternative explanation comes from studies on status attainment and job mobility. Based on the vacancy chain model (Stewman & Konda, 1983; White, 1970), this approach suggests that large tenure cohorts and large gap between cohorts may result in promotion blockages, which may engender more inter-cohort conflict and turnover (Pfeffer, 1983). Consistent with previous assertion that demography heterogeneity may lead to integration problems or result in limited advancement opportunities, we maintain that there is a positive relationship between demographic heterogeneity and turnover.

Hypothesis 1. Turnover rate will be higher in organizations with a higher degree of age and seniority heterogeneity.

2.Degree of Occupational Differentiation

Implicit in the social integration interpretation of the demography predictor is that coordination is more difficult among employees with dissimilar attributes. Greater occupational differentiation creates specialization and interdependence and thus requires a higher degree of coordination among work units.   Such organizations are more likely to experience high turnover rates because of problems with communication, poor group cohesion, impersonalization (Terborg & Lee, 1984). Organizations with a higher degree of occupational differentiation are also less likely to develop *occupation internal labor market*, and therefore will be less likely to reduce turnover through a "promotion- from within" policy.   Furthermore, organizations with a higher degree of specialization may create job simplifications, providing minimum incentives, to both employers and employees, to invest in firm-specific skills (Stolzenberg, 1988; Althauser, 1989).   Based on these arguments, we hypothesize:

Hypothesis 2. Turnover rate will be higher in organizations with a higher degree of occupational differentiation.

3.Wage Dispersions

Turnover studies based on pay-fairness and equity theory have argued that voluntary departures may result in part from perceived inequity.   An important contribution of this line of work is that it recognizes the importance of reference groups within an organization and highlights the role of interpersonal comparison in determining one's job satisfaction/dissatisfaction.   Social comparison constitutes an essential ingredient in an employee's evaluation process; an individual's job satisfaction is viewed as a function of not only the absolute level of rewards one received but also the rewards received by others in the organization.   An employee occupying a relatively low-paying position may feel aggrieved or experience relative deprivation when large wage gap exist between jobs.   A number of studies have demonstrated that perceived inequity was related to job dissatisfactions and turnover (Dailey & Kirk, 1992; Dittrich & Carrell, 1979; Pfeffer & David-Blake, 1992).

Following previous studies, we hypothesize that turnover rate is positively associated with wage dispersion:

Hypothesis 3. Turnover rate will be higher in organizations with a higher degree of wage dispersion.

4.Degree of Occupational Gender Segregation

Gender difference in quit propensity is amply demonstrated in the turnover literature. Viscusi (1980) discovered that females had significantly higher quit rates than males during the first years on the job; furthermore, the probability of quitting increases with tenure for females and decreases with tenure for males. Blau and Kahn (1981) also found that among younger workers, women quit more frequently than men. The sex differences in the departure rate reflected the traditional division of labor in the household and the subordination of wives' careers to husbands' employment needs (Petersen & Spilerman, 1990).

Studies have also shown that gender composition of work groups is related to subjective variables such as psychological commitment, intent to stay, role ambiguity and performance rating (Tsui et al., 1992; Tsui & O'Reilly, 1989). In Taiwan, there is a sharp distinction between female and male occupational role. Chang (1995) found that occupational sex segregation in Taiwan steadily increases from 1981 to 1991, especially in traditional male-dominated industry. The increasing trend in occupational gender segregation suggests that there is a strong gender norm regarding job specialization within the work units. Therefore, we expect that firms with a higher degree of occupational gender differentiation will have a lower turnover rate.

Hypothesis 4. Turnover is positively associated with proportion of female employees in the organization and negatively associated with degree of occupational gender segregation.

5.Interaction Effect

An organizational hierarchy contains at least two forms of differentiation: the differentiation of employees along multiple social dimensions and the distribution of rewards along various organizational positions. The process by which individuals

with different attributes are sorted into differentiated positions not only affects their career development but also their motivations and work attitudes. While researchers of organizational demography have centered attention on the distribution of demographic attributes in the organization, few studies have considered the corresponding distribution of rewards within the organizations and its impact on employee motivation.

This hypothesis tests the extent to which turnover rates will be affected by the degree of "match" between human resources and rewards distribution within a firm. When a high degree of demographic heterogeneity is accompanied by a correspondingly high degree of inequality, the structural differentiation may be "functional" to the organization. This is because wage inequality may reinforce the status distinction which resulted from the differentiation of employees along other social dimensions. As Baron and Pfeffer (1994) note: "In a group of individuals in a position to make fairness comparisons the greater the number of separate job titles or other organizational categories differentiating the group, the less negative the reactions to unequal treatment." On the other hand, if the degree of heterogeneity is incongruent with the degree of inequality, the incentive structure may violate the underlying "distributive norm". For example, within a homogeneous workforce, a large wage dispersion may intensify job competition; those with relative lower pay may perceived the system as "unfair". Therefore, we expected an interaction effect between the degree of demographic heterogeneity and internal wage dispersions.

Hypothesis 5. The effects of age/seniority heterogeneity on turnover will be moderated by the degree of wage dispersion.

6. Organizational Performance

Tsui (1995) reviewed the linkage between demography and performance outcomes and concluded that although research suggests a positive relationship between demography and process outcomes such as cohesion, commitment and turnover, theory seems to be equivocal concerning the influence of diversity on performance outcomes such as production and financial performance. On the one hand, a heterogeneous workforce may increase performance through a greater diverse abilities and skills, especially on tasks requiring creativity and innovation

(Jackson, 1992). At the same time, the organization may also be more conflict-laden and less effective as diversity increase. Because of the benefits and the cost associated with diversity, we expected no direct effect of demography on an organization's performance outcomes. Rather, the effect of diversity is indirectly related to performance through its impact on an organization's turnover rate.

Hypothesis 6. Higher turnover rate is negatively associated with an organization's productivity and financial performance, but organizational demography has no direct effect on productivity and financial performance.

Methods

1.Sample

The data were taken from three related surveys administered by the fifth division of *the Directorate-General of Budget, Accounting and Statistics (DGBAS)* in 1991. The first survey--*"Occupation-specific Employee Earnings Survey"*-- was conducted in July. An initial sample of 9,800 firms was selected based on a stratified sampling method. A questionnaire was sent to the personnel director, owner, or chief managers to obtain detailed salary information by occupational categories. Of the 9,800 firms, 9,345 of them were able to complete the questionnaire, yielding a response rate of 95.4 percent. A second questionnaire--*"The Survey on Status and Movement of Employees"*-- was sent to the same firm in December. In addition to the annual inflow/outflow rates of employees, the data in the followup survey consists of information on a wide-range of the a firm's human resource characteristics and practices, including: (1) the distributions of employees by occupation, gender, age, seniority, and salary categories (2) a matched sub-sample detailing the demographic characteristics of departers and reasons for departures (3) various fringe benefits provided by the firms. The followup survey was completed by 8,519 firms, yielding a response rate of 91.2 percent. Because 1991 was also the census year, we are able to obtain financial data for most of the firms from *"The Report on 1991 Industrial and Commercial Census in Taiwan-Fuckien Area."* The final sample consists of 6,952 firms with complete data on all three surveys.

Firms in this sample range in size from one person to 36,634 employees and included both private owned and government owned firms. Because the measurement of organizational demography is based on the group level data, we excluded organizations with less than 30 employees (44.4%) from our analyses to ensure a minimum amount of variations on the major explanatory variables. Also excluded are government owned firms and non-for-profit organizations. This procedure yielded 3,541 firms.

2.Dependent Variables

(1)Voluntary turnover rate.

Researchers on job separation have suggested that it is important to distinguish types of departure; at a minimum, they should be classified as voluntary or involuntary (Shaw, Delery, & Gupta, 1998). In the followup survey, each informant was first asked to document the total number of departing employees in the following two categories: (1) departure for career-related reasons or dismissal (2) departure for other reasons. A subsequent question then asked the respondents to fill out the demographic characteristics and reasons for departures from a randomly selected sub-sample of the departing employees. The sub-sample of the departing employees provides a more refined categorization, distinguishing seven reasons for termination. We constructed an adjusted voluntary turnover rate by multiplying a firm's annual departure rate with the percentage of career-related departure in the sub-sample.

(2)Organizational performance.

Two commonly used organizational performance measures—return on sales and return on assets--were constructed from the census data. In addition to the financial performance measures, we calculated the average labor productivity by adopting the usual formula of dividing the total value added over total employment.

3.Independent Variables

(1)Organizational demography.

This study measures the distribution of employees along three important

demographic dimensions: gender, age and seniority. Because the original survey was conducted at the firm level, detailed information on individual demographic trait is not available. However, each informant was asked to document the frequency distribution of employees in terms of age, seniority, gender, and occupational categories. Seniority measures the length of employment in the organization in terms of six categories: < 1 years, 1-3 years, 3-5 years, 5-10 years, 10-25 years, and > 25 years. Age measures the proportional composition of employees in six categories: <20 years old, 20-30, 30-40, 40-50, 50-60, > 60 years old. The occupational differentiation is based on the proportional representation of employees in the following 10 categories: (1) mangers/supervisors (2) clerical worker/administrative assistant (3) engineer (4) technical workers (5) professional (6) traders/sales person (7) service workers (8) skilled labors (9) machine ope_ _rs (10) physical labor.

Based on the midpoint of each group range, we used the coefficient of variations to measure the degree of age/seniority heterogeneity within the organization. The degree of occupational heterogeneity was measured using the *Blua* index, which equals the sum of squared proportion of incumbents in each of the 9 occupational categories. The degree of gender differentiation is defined as:

$$G = \sum_{i=1}^{10} D_i P_i$$

where D_i = percentage of dominating gender in occupational category i

P_i = percentage of incumbents in occupational categery i.

The possible value of this index was confined within the range of 0.5 to 1, with G equaling 0.5 when female and male were equally distributed in every occupational category, and G approaching 1 when each occupational category was completely dominated by female or male employees.

(2)Wage dispersion.

The salary information was taken from the "*Occupation-specific Employee Earnings Survey*". This survey contained detailed information on the base salary for 82 occupational categories, with each firm reported an average of 14

categories.   The degree of wage dispersions in an organization is calculated with coefficient of variations.

4.Control Variables

(1)Organizational controls.

Firms characteristics derived from previous research on turnover (Powell, Montgomery, & Cosgrove, 1994; Shaw et al., 1998) are used here as control variables to avoid bias in the estimation of organizational demography effects. The basic control variables include geographic locales, two-digit SIC dummy, and type of ownership (partnership or corporation).   Organization age is the number of years an organization had been in existence (1991 minus year of founding). Firm employment as of July 1991 is used as a proxy for firm size.   Labor intensity is defined as the ratio between annual salary expenses and annual operating expenses.   Fixed assets per employee is defined as the total fixed assets (e.g., building and equipment) divided by firm employment.   Several important variables on the workforce characteristics are also controlled for, including average age and seniority, the proportion of female workers, managers, and highly-skilled technical employees.

(2)Industry controls.

In addition to organizational characteristics, we also included characteristics of four-digit level industry as control variables.   Industry concentration ratio is the share of sales by the top eight firms in the industry.   Industry average wage, calculated by dividing the total wage expenditure by the total employment in the industry, is a control for the effect of a firm's compensation level relative to the industry average.   Because organizational performances vary across different industries, we also introduced average ROA, ROS, and productivity in the industry to account for between-industry variations.

(3)Compensation and benefits.

It is well documented in the turnover literature that employees move in response to favorable wages to maximize their earnings.   However, little empirical work has been published on the relationship between an organization's

compensation level and turnover rates. Insufficient data on compensation at the organizational level is the major reason for this shortage. We used two alternative measures to represent an organization's compensation level. First, we calculated the average annual wage per employee by dividing the total wage expenditure by total employment. Although the salary survey reported detailed information on each firm's base salary, there is no corresponding information on the characteristics of the incumbents. This makes the comparison of wage level across firms difficult.

Alternatively, the current study uses a second measure--the starting salary differentials--to represent an organization's compensation level. In the salary survey, each informant was asked to provide the typical starting salary the organization is willing to offer for nine occupational categories, with each category further broken down by five educational levels and by gender. Appendix A shows the average starting salary for each occupation subgroup across all firms.

To make the starting salary comparable across firms with different size, industries, and locales, we measured a firm's starting salary level relative to other similarly-situated firms. We first calculated the "expected" starting salary for each occupational subgroup, and then measured the extent to which a particular firm's offer deviated from this "expected" level. Following Levine's (1993) measurement of "wage residuals", we constructed the starting salary differential by using a regression formulation.

The regression equation expresses the starting salary of a particular occupational subgroup i within the firm j as a function of firm size, gender, educational level, occupational categories, industries, and geographic location of the firm. The predicted value of the regression equation represents the average salary level in the "local" labor market. The corresponding residual term thus indicates the extent to which the starting salary of a given occupation deviated from the prevailing market rate. The occupation-specific residuals of the same firm were then aggregated to obtain the average starting salary residuals. In addition to organizational pay level, a set of indicator variables was included in the regression to gauge the effects of company-wide benefit programs on performance.

Results

1.The Effect of Organizational Demography

Table 1 reports means, standard deviations, and correlations for selected variables used in the multivariate analyses. Table 2 presents the result of the effect of organizational demography on turnover. Model 1 included only the control variables. In Model 2, we entered the organizational demography variables in addition to the control variables to see whether they have an independent effect on turnover. Except for occupational gender differentiation, all heterogeneity measures have a positive effect on turnover. Taken together, these results support Hypotheses 1 (p < .00 for both age and seniority C.V.), 2 (p <.03), and 3 (p <.00), indicating that firms with a greater degree of age and tenure heterogeneity, a large wage gap between occupations, and a higher occupational differentiation have a higher turnover rate. This result is consistent with the social psychological interpretation of the effects of organizational demography on turnover, which states that a homogeneous workforce reduces turnover through increasing the level of social integration and facilitating coordination among work members. If age and seniority homogeneity intensify promotion competitions and result in "promotion blockage," then we should observe an opposite effect. Furthermore, the positive effect of wage dispersion on turnover suggested that a large wage gap creates grievances rather than provides incentives for employees. Therefore, we found little support for the alternative arguments derived from the macrosociological perspective.

The positive effects of percentage of female employees on turnover in Model 1 indicated that firms with a higher percentage of female employees have a higher turnover rate. However, Model 2 shows that the coefficient of occupational gender segregation has an expected negative sign but the effect is not significant (p < .32). There is thus limited support for Hypothesis 4.

(1)The Interaction Effects

Organizational demography and wage dispersion. Model 3 of Table 2 presents the result of interaction effects. The study found that the effects of organizational demography on turnover vary with the degree of wage dispersion.

Table 1 Means, Standard Deviations, and Correlations of Selected Variables[a]

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.Turnover rate	.31	.29																		
2.Productivity (log)	6.18	.66	-.09**																	
3.ROS	.05	.14	-.09	.38**																
4.ROA	.10	.22	-.03**	.19**	.45**															
5.Firm size (log)	4.70	.97	.03*	.25**	.00	-.10**														
6.Average seniority	4.69	2.67	-.27**	.18**	.01	-.10**	.17**													
7.Average age	33.73	4.86	-.22**	.01	.02	-.04*	-.15**	.47**												
8.% female	.45	.24	.16*	-.23**	-.04*	-.04*	.11**	-.07*	-.25**											
9.% technical employees	.10	.14	-.03	.17**	.02	.01	.07**	.01	-.09**	-.14**										
10.% managers	.11	.08	.01	.24**	-.11**	-.06**	-.06**	.10**	-.05**	-.09**	.16**									
11.Labor intensity	.24	.16	-.01	-.30**	.01	.02	.02**	.01	.08**	.04*	.12**	-.08**								
12.Fixed asset per capital (log)	6.54	1.14	.02**	.56**	.05**	-.11**	-.11**	.10**	-.02	-.16**	.15**	.27**	-.25**							
13.Average wage (log)	5.60	.42	-.09	.72**	-.02	-.07**	-.07**	.21**	.02	-.23**	.20**	.28**	-.06**	.39**						
14.Starting salary differential	.01	.70	-.03**	.21**	.05**	.03	.03	.08**	.04*	-.16**	.03	.05**	-.07**	.13**	.22**					
15.Seniority heterogeneity	.75	.26	.14**	.11**	.07**	-.05**	-.05**	.10**	-.07**	.04*	.07**	.08**	-.09**	.04*	.09**	.04*				
16.Age heterogeneity	.25	.05	.16**	.03*	.03	-.05**	-.05**	.10**	-.02	.17**	-.07**	.06**	-.08**	.05**	.03	-.01	.38**			
17.Wage dispersion	.36	.17	.13**	.16**	-.09**	-.07**	-.07**	.02	-.14**	.20**	.13**	.29**	-.11**	.17**	.17**	.01	.10**	.10**		
18.Occupatoinal differentiation	.35	.20	.06**	-.23**	.03	.02	.01	-.07**	-.06**	.34**	-.22**	-.35**	.14**	-.21**	-.27**	-.09**	-.10**	-.04**	-.19**	
19.Occup. gender differentiation	.81	.11	-.09	.00	-.03	.00	-.13**	.08**	.11**	-.15**	.02	-.10**	.05**	-.08**	.04*	.06**	-.06**	-.11**	-.08**	.00

* p < .05   ** p < .01

[a] N = 3,541 for all variables.

Table 2   Results of Regression Analyses for Voluntary Turnover[a]

Variable	Model 1	Model 2	Model 3
Organization characteristics			
Years in existence (log)	.003	-.021**	-.021**
Establishment size (log)	.082*	.060+	.061+
(Establishment size)²	-.007*	-.006+	-.006+
Partnership	-.013	-.009	-.007
Characteristics of workforce			
Average seniority	-.027**	-.025**	-.026**
Average age	-.002*	-.002	-.002
% of females	.073**	.025	.021
% of technical workers	-.085*	-.088*	-.096*
% of managers	.277**	.190**	.201**
Labor intensity	.081*	.088**	.086*
Fixed capital per employee (log)	.018**	.017**	.017**
Compensation and benefits			
Average wage (log)	-.017	-.017	-.015
Starting wage residual	.002	.001	.001
Housing arrangement	.022*	.018+	.017+
Housing/emergency loans	-.028*	-.030**	-.029**
Childcare facility	-.030	-.039	-.042
Preferred provider organization	.001	.005	.007
Company stock purchase plan	.013	.018	.018
Pension plan	.008	-.006	-.007
Characteristics of Industry			
4-digits SIC concentration ratio	.062+	.059+	.055
4-digits SIC average wage	-.073*	-.070*	-.068*
Organziational Demography			
Seniority coefficient of variation		.155**	.167**
Age coefficient of variation		.572**	1.088**

Variable	Model 1	Model 2	Model 3
Occupational differentiation		.056*	-.025
Occupational gender differentiation		-.042	-.038
Wage coefficient of variation		.123**	.414**
Interaction terms			
Wage CV x Seniority CV			-.034
Wage CV x Age CV			-1.504*
Wage CV x Occupational differentiations			.278*
(Constant)	.638**	.454*	.327
Adjusted R^2	.151	.189	.192

[a] N=3,541. All models included 26 2-digit SIC dummy variables and 25 city/county dummy variables.

The coefficients for these dummy variables are omitted.

[+]p<.10

[*]p<.05

[**]p<.01

There are only two statistically significant interactions with the wage dispersion measure: between age heterogeneity and occupational differentiation. These results indicate that firms with a higher degree of wage dispersion are differentially affected by age heterogeneity and occupational differentiation. In particular, the negative interaction effect between age heterogeneity and wage dispersion (p <.01) indicated that the positive main effect of age heterogeneity on turnover is weaker in firms with a large wage gap. In contrast, the interaction between occupational differentiation and wage dispersion is positive (p <.02), accentuating positive main effects of occupational differentiation on turnover. This result suggests that a match between the distribution of job-relevant attributes and rewards distribution helps to reduce turnover, providing some support for Hypothesis 5.

(2)The Effects of Organizational Demography on Performance

Table 3 shows the analysis of organizational performance. Controlling for the average performance level in the industry, we found that organizational

demography variables are not good predictors of organizational performance. In particular, seniority heterogeneity is marginally associated with productivity (p < .10), and has a significantly positive effect on ROS (p<.001). Gender differentiation is also found to be negatively related to ROS (p<.03). No other organizational demography variables affect performance outcomes.

Table 3   Results of Regression Analyses for Firm Performance[a]

Variable	Model 1 Productivity	Model 2 ROS	Model 3 ROA
Organization characteristics			
Years in existence (log)	.009	.004	-.017**
Establishment size (log)	-.104*	-.054**	-.036
(Establishment size)^2	.013**	.005**	.003
Partnership	-.009	.018	.102**
Characteristics of workforce			
Average seniority	.004	-.001	-.001
Average age	-.002	.000	-.001
% of females	-.045	.016	.003
% of technical workers	.054	.036+	.057+
% of managers	-.273**	-.212**	-.069
Labor intensity	-.915**	.000	-.055*
Fixed capital per employee (log)	.134**	.012**	-.017**
Compensation and benefits			
Average wage (log)	.872**	-.011	.008
Starting wage residual	.018*	.010**	.011*
Housing arrangement	.009	-.001	.000
Housing/emergency loans	.007	.009	.005
Childcare facility	-.013	-.004	-.004
Preferred provider organization	.038**	-.004	-.007

Variable	Model 1 Productivity	Model 2 ROS	Model 3 ROA
Company stock purchase plan	.023	.001	-.004
Pension plan	-.020	-.008	-.029**
Characteristics of Industry			
4-digits SIC concentration ratio	-.081	-.036[+]	-.039
4-digits SIC average wage	.087	.025	.051[+]
4-digits SIC average productivity	.181**	--	--
4-digits SIC average ROS	--	.099	--
4-digits SIC average ROA	--	--	.389**
Organziational Demography			
Seniority coefficient of variation	.050[+]	.046**	.014
Age coefficient of variation	-.087	.039	-.031
Wage coefficient of variation	.011	-.021	-.010
Occupational differentiation	.047	.015	.011
Occupational gender differentiation	-.028	-.050*	-.031
Voluntary turnover rate	-.051*	-.041**	-.024[+]
(Constant)	-.698*	.039	.082
Adjusted R²	.673	.064	.071

[a] N=3,541. All models included 26 2-digit SIC dummy variables and 25 city/county dummy variables.

The coefficients for these dummy variables are omitted.

[+] p<.10

* p<.05

** p<.01

In contrast, turnover rates have negative and consistently significant effects on productivity (p<.04) and ROS (p<.001), and are marginally associated with ROA (p<.08). These results seemed to suggest that organizational performance is not directly related to the demography. Rather, the relationship is mediated through turnover, which supports Hypothesis 6.

(3)The Effects of Other Control Variables

Previous studies on the relationship between organizational demography and turnover largely ignored the impacts of some important situational factors. Without considering the relevant confounding factors, these studies failed to support the argument that organizational demography has an independent effect on turnover. Since this study represents one of the few attempts to examine turnover at the organizational level, interesting findings on several control variables deserve special attention. We will discuss these findings in the discussion section.

Discussion

While organizational demography has been linked to performance outcomes at the group and individual level, few researchers have studied the effect of organizational demography at the organizational level. Empirical research at this different level of analysis is of utmost importance to determine the utility of demographic variables as predictors of important organizational outcomes and to further our understanding of the subject. This research makes a step toward developing an effective approach for integrating micro- and macro-level demography processes. The empirical focus of the study was on the ways by which demographic composition within the organization affects employee career choices. Focusing on voluntary turnover in the organization, we investigated the effect of age and tenure heterogeneity, occupational differentiation, wage dispersion and gender segregation on employee departure decisions.

We first demonstrated that age and seniority heterogeneity is positively associated with turnover rate, and that the effects are independent of the average seniority level of employees in the organization. Furthermore, organizations with a higher degree of wage dispersions experienced a higher turnover rate. The degree of occupational complexity is also found to be positively related to turnover. Finally, although much research in the U.S. has found a strong effect of gender differentiation on turnover, the current study found the effect is either too weak or nonsignificant. Overall, the findings of this study suggest that organizational

demography is an important factor in determining voluntary turnover.

There are important situational factors that moderated the demography process. In addition to the direct effect of organizational demography on turnover, we found that the effect of demography heterogeneity is moderated by the degree of vertical differentiation within an organization. In particular, the positive effect of age heterogeneity on turnover was substantially reduced in organizations with a higher degree of wage dispersions. On the other hand, the positive effect of occupational differentiation on turnover was amplified in organizations with a higher degree of wage dispersion. This finding suggested that the impact of demography process is context-specific.

The relatively smaller negative effect of age heterogeneity in firms with a higher degree of wage dispersion may be attributed to several factors. First, the salience of demographic attributes is contingent upon the degree of match between the distribution of job-relevant attributes and the distribution of rewards within an organization. When the distribution of job-relevant attributes such as age and seniority is incongruent with the degree of inequality, the incentive structure may violate the underlying "distributive norm." Second, and more importantly, the sociocultural setting may prescribe a certain age norm regarding the power and reward distribution within an organization. Nevis (1983) points out that "the underlying principle that governs Chinese management is 'respect for age.'" Hofstede (1980) who reports research based mainly on Taiwan and overseas Chinese, notes the desire for a relatively large "power distance" with subordinates when compared to other cultures, with managers wanting clear distinctions between themselves and subordinates. Therefore, a certain degree of age heterogeneity may be "functional" to the exercise of authorities by reinforcing status distinctions, particularly when the age status is associated with a corresponding vertical differentiation such as wage inequality.

In summary, there are at least three reasons why the cultural setting cannot be ignored: first, social norms regarding demographic and corresponding reward distribution may vary across nations. Second, different cultures may subjectively ascribe different meanings to demography. Third, the dynamics of demographic diversity may be influenced by local human resources practices. Extending the

demography research to non-U.S. settings may be helpful in identifying when and why demography may or may not be relevant.

Finally, this study represents an early effort at organizational-level analysis on voluntary turnover. It extends previous research by incorporating several important situational factors that might influence turnover process. Of particularly interesting is the effects of firm size, workforce characteristics, and compensation and benefits.

Firm size. The equation predicting quit rate shows a positive effect for the logarithm of firm size but a negative effect on the quadric term. This result suggests that the relationship between quit rates and firm size has an inverse U-shape functional form, indicating that turnover rates steadily increase with firm size, but beyond a certain threshold, the effect of firm size on turnover becomes negative. Previous empirical studies and theoretical model suggested that employees of large organizations are less likely to change employers because of better chances of promotion and greater job security. On the other hand, researchers of organizational behaviors have pointed out that job satisfaction is inversely related to organizational size because of the fewer opportunities for intrinsic rewards (Porter & Lawler, 1965; Mowday, Porter, & Steers, 1982). It would be interesting to learn why medium-size firms are more vulnerable to employee turnover.

The effect of workforce characteristics. The theory of job-shopping has pointed out that less experienced workers are more likely to try a variety of jobs in order to find the best match (Johnson, 1978). In Table 2, average tenure has a consistently negative effect on turnover rates. This result is consistent with most of the previous findings (Baron & MccCafferty, 1977; Johnson, 1978; Parsons, 1977; Viscusi, 1980).

Previous research has argued that firms with a large proportion of technical employees and engineers are more likely to develop firm-specific skills, with most incumbents' career paths well-specified in the *firm internal labor market*. On the other hand, professionals and managers have a high degree of occupational commitment, and are more willing to switch their employers to pursue their personal career goals (Kalleberg & Berg, 1987). Our results are in line with this argument, showing that firms with a higher percentage of managerial employees have a higher turnover rate, and that proportion of technical employees and engineers is negatively

related to turnover.   Because most of the Taiwanese firms are small or medium in scale, few companies can be characterized by an internal labor market with clear career tracks for managers and administrative employees.   Lacking promotion opportunities within organizations, young managers often seek advancement through inter-firm mobility.   Future research could explore the possible moderating role of occupations on the relationship between organizational demography and turnover.

Compensation.   Although studies have shown that individuals who received higher wages are less likely to quit their jobs (Parsons, 1977; Salop, 1974), little empirical evidence is available on the relationship between firm wage rates and quit rates (Powell et al., 1994).   We use the starting salary differentials and average wage per employee to represent an organization's overall compensation level.   Controlling for the average wage level of the industries, we found no statistically significant effect of organizational pay level on quit rates.   Although this finding seems to contradict the efficiency wage literature, previous empirical studies have also found that the effects were either too small or non-existent (Leonard, 1987; Powell et al., 1994; Wilson & Peel, 1991).

While a firm's compensation level is not related to turnover, the significant negative coefficient for four-digit SIC average wages suggested that firms located in industries with higher average wage tended to have lower turnover rates.   Kreger and Summers (1988) also found a negative relation between turnover and industry wage differentials, suggesting that workers in high wage industries receive wage premiums.   This finding indicated that efficiency wages are paid in certain industries, but wage differentials within the same industry do not affect turnover.

In summary, these results provide new insights into how structural features of an organization affect turnover processes.   Because most of the Taiwanese companies are small or medium in scale, the number of large organizations surveyed was quite small in our study.   Empirical study similar to those reported here should be conducted using different populations.

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