



**High Performance Work Practices and Workplace Training in China:  
Evidence from Matched Employee-Employer Data**

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**Abstract**

This study examines the extent to which high performance work practices (HPWP) are correlated with participation in, and frequency and duration of, workplace training, controlling for worker and workplace characteristics. To do so, the study uses a unique matched employee-employer dataset from Shanghai. The findings suggest that about half of the HPWP considered are positively correlated with the incidence and breadth of workplace training. There is also some support for the view that bundling of HPWP is positively correlated with the provision of workplace training. There is, however, no evidence that the adoption of HPWP polarizes skills through resulting in more training for professional/technical staff over others.

**Keywords:** China, Training, High performance work practices, Shanghai

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## **Introduction**

There is growing interest in life long learning, in particular in the form of education and training, as means to address skill shortages, respond to organizational and technological change in the workplace and counter the potential disruptive effects of the demands for increased labor market flexibility. There are now a large number of studies on the determinants of training in the economics, human resource management and industrial relation literatures (see eg. Green, 1993; Harris, 1999; Murphy *et al.* 2008; Tam & Chiu, 2010; Xu & Lin, 2011). At the same time there is growing interest in the relationship between organizational performance and how work is organized, including high performance work practices (HPWP). The precise definition of HPWP shows considerable variation across studies (Lloyd & Payne, 2006). However, the key features of HPWP are usually taken to include greater participation of, and consultation with, employees in decision-making, innovative payment or incentive schemes, more flexible work practices and progressive employment policies, designed to increase employee commitment and empowerment (see eg. Lloyd & Payne, 2006; Orlitzky & Frenkel, 2005; O'Connell & Byrne, 2009).

With a few exceptions, the existing literature has treated lifelong learning and organizational performance as separate fields. The purpose of this paper is to draw on these largely parallel literatures to examine the relationship between HPWP and on-the-job training. The central hypothesis that we seek to test in the paper is that there is a positive correlation between firms adopting HPWP and employees participating in more on-the-job training. This relationship is expected because on-the-job training can be regarded as enhancing the capacity of employees to implement innovative work practices. In examining the factors correlated with training at work, we consider not only HPWP, but also control for employer and employee characteristics.

We use matched employer and employee cross-sectional data for Shanghai in China. To this point most studies that have examined the determinants of training use data for Europe or the United States. There are few studies of this sort for countries in other regions and, in particular, developing or transition countries. Ng and Siu (2004, p. 879) noted that “there is a paucity of research” on training in developing or transitional economies. There are no studies at all on the relationship between HPWP and training in developing or transitional countries. Several commentators have pointed out that this reflects a gap in our understanding of the factors correlated with on-the-job training (see eg. Ng & Siu, 2004; Ng, 2005; Tam & Chiu, 2010).

As Tam and Chiu (2010, p. 2195) noted: “We know little about the situations in non Anglo-Saxon countries. The political and welfare developmental paths as well as cultural values of learning of other ..... globalized economies give rise to different sets of institutional arrangements for employment relations. These arrangements, in turn, affect training provision by employers”. These observations extend to the adoption of HPWP and how the adoption of HPWP influences employer-provided training. In this respect, China represents a unique opportunity to explore how western management theories pertaining to the relationship between the adoption of HPWP and training fare in a fast moving transitional context (Tsui *et al.*, 2004).

### **High-Performance Work Practices and Training at Work**

The traditional economic framework for explaining participating in on-the-job training has been the human capital approach, derived from Becker (1975). The human capital approach posits that employers are unlikely to fund general training because it is transferable to future employers. However, a large empirical literature suggests that most training is general in

nature and most occurs in the form of employer-funded on-the-job training (see eg., Booth & Bryan, 2002; Lowenstein & Spletzer, 1999; O'Connell & Byrne, 2009). One problem with the human capital approach is that it assumes the existence of competitive labor markets. Once it is recognized that competitive labor markets do not exist in practice, alternative explanations emerge for why it is perfectly reasonable to expect employers to provide on-the-job training of a general nature. For example, Acemoglu and Pischke (1999) show that in the presence of imperfect competition in either labor or product markets, firms will provide general training because they benefit from compressing employees' wages below their marginal productivity. Others, such as Lazear (2003), have argued that employers will provide general training because general training is complementary to specific training and, as such, beneficial to employers.

The dominance of the human capital approach, with its focus on the supply side, has arguably led to a neglect of workplace institutions and policies, including the role of HPWP, in explaining variations in on-the-job training (O'Connell & Byrne, 2009). The central argument is that the adoption of HPWP requires workers to conduct statistical analysis of quality issues, perform more complex tasks, use soft skills such as problem solving and have enhanced interaction skills to engage in teamwork (Osterman, 2006). As Applebaum (2002, p.123) puts it, "workers in an HPWS [high performance work system] need better skills and knowledge across a broad front – including basic skills, technical and occupationally specific skills, and leadership and social skills, in order to be effective decision makers". Employers will encourage participation in training to enhance the capabilities of employees in these skill sets.

Most of these skills are general in nature (O'Connell & Byrne, 2009). Thus, it is rational for firms that adopt HPWP to invest in general on-the-job training. In addition, by investing in general on-the-job training to enhance the skill set employees need to implement HPWP,

firms are implementing human resource policies which encourage organizational commitment. Investment in general training is facilitated by the fact that the implementation of HPWP carries with it the expectation of an enduring employment relationship. Hence, employers are less concerned that trained employees will be poached by other employers (O'Connell & Byrne, 2009).

### **The Chinese Context**

China represents an interesting case study to explore the relationship between HPWP and on-the-job training. The implementation of market reforms in China has brought about rapid change in the labor market. The rapid change in the labor market has generated a serious skill shortage, particularly as China confronts the prospect of transitioning from cheap manufacturing base to higher value-added production in the face of rising wages. There is wide acknowledgement that there is a serious mismatch between the training that graduates from China's universities are receiving and the attributes for which employers are looking. Farrell and Grant (2005) have characterized this as the "paradox of the shortage among plenty". They suggest that it is unlikely China will be able to climb the value added ladder because only 10 per cent of Chinese professionals with at least seven years of experience have the skill set to work for higher value-added firms. China's talent vacuum is particularly acute in the 45-55 age group, in which managers are concentrated, reflecting the legacy of the Cultural Revolution on China's human capital base (Simon & Cao, 2008).

To address the skill shortage both the Chinese government and enterprises have emphasized on-the-job training as a possible solution (Ng, 2005; Ng & Siu, 2004; Li & Sheldon, 2010). However, several studies have highlighted that workplace-based training in China has been lacking in terms of quantity and quality (Cooke, 2005; Jiang *et al.*, 2009; Li & Sheldon, 2010; Warner, 2011). In particular, an often-cited reason for the existence of inadequate training is

that employers are concerned that if they invest in training, they are at risk of losing these staff to poaching (Li & Sheldon, 2010). It has been suggested that one way firms can improve their competitive position in China is through the adoption of HPWP (Qiao *et al.*, 2009; Wang *et al.*, 2011). The adoption of HPWP may increase training levels and improve organizational commitment in the face of poaching. Specifically, because Chinese culture is reciprocal (Farh *et al.*, 1998), it has been argued that employees will respond to HPWP by showing increased commitment and loyalty (Kim & Wright, 2010; Qiao *et al.*, 2009). Qiao *et al.* (2009) and Wang *et al.* (2011) found that the adoption of HPWP is positively correlated with higher organizational commitment, reduced work withdrawal behavior and reduced turnover intentions in Chinese firms.

China is also an interesting case study because, in many respects, China represents a tougher test for the HPWP/training nexus than either the United Kingdom or United States. Su and Wright (2012) have recently argued that compared with western firms, or even firms in Japan or Korea, Chinese firms have tended to adopt cost leading strategies. With cost leading strategies, the focus is typically on enforcing employee compliance with specified procedures and rules and basing employee rewards on measurable output criteria, rather than the adoption of HPWP. Su and Wright (2012) have also noted that Chinese cultural traits undermine the adoption of effective HPWP. HPWP advocate employee empowerment and participation, but China has an authoritarian and hierarchical tradition dating back over centuries. In authoritarian or hierarchical workplaces, human resource practices designed to empower are not as readily accepted by managers or their subordinates. That the adoption of HPWP has been hindered by Chinese cultural practices and Chinese enterprise strategies means that HPWP have been less effective in Chinese firms (Akhtar *et al.*, 2008). Thus, one might expect the relationship between HPWP and training to be weaker in Chinese enterprises than in enterprises in the United Kingdom or United States.

## Existing Literature

While there is a large literature on the determinants of training, only a limited subset of this literature examines the relationship between HPWP and training. Empirical findings on the relationship between HPWP and training in western contexts are mixed, although it is fair to say that there is more evidence supporting a positive relationship. Most of the earlier studies use data for the United States. For example, Osterman (1995), employing firm-level data for the United States, found that some HPWP (quality circles, total quality management and statistical process control) were positively correlated with training, but others (job rotation and teamwork) were not. Frazis *et al.*, (1997), using matched employer-employee data for the United States, found a positive relationship between the prevalence of several HPWP (employee participation, job rotation, quality circles and self-directed teams) and training.

Results for other countries are also mixed. Early studies for the United Kingdom found no relationship between HPWP and training (Ashton & Felstead, 1995; Felstead & Green, 1994). However, more recent studies for the United Kingdom and Ireland have found more evidence of a positive relationship between HPWP and training. Using British data, Whitfield (2000) found a generally positive relationship between the adoption of HPWP and provision of training. O'Connell and Byrne (2009), employing Irish data, found that employees working in firms which had certain HPWP (higher levels of consultation, higher levels of participation, progressive work practices and performance reward systems) received more training, while firms with other HPWP (flexible working arrangements) did not receive any additional training. The generally positive association between HPWP and training has been found in other developed countries as well, such as Australia (Smith *et al.*, 2003). Other studies have found that the implementation of specific HPWP are associated with more training. Examples are worker participation and share ownership (O'Connell, 2007; Pendleton & Robinson,

2011); lean production methods (McDuffie & Kochan, 1995); and total quality management (Lynch & Black, 1997).

The related literature for China is limited. Some studies exist which examine the relationship between the adaption of HPWP and employee attitudes across a range of dimensions, such as job satisfaction and organizational commitment (see eg. Kim & Wright, 2010; Li *et al.*, 2011; Su & Wright, 2012; Qiao *et al.*, 2009; Wang *et al.*, 2011). Other studies have examined the relationship between HPWP and firm performance in China (Zheng *et al.*, 2006; Sun *et al.*, 2007; Zhang & Li, 2009). Tam and Chiu (2010) examined the determinants of training in Hong Kong. Ng (2005) examined the determinants of training in Shanghai. However, neither of these studies examined the relationship between HPWP and training.

To summarize, there are a limited number of studies that have examined the relationship between HPWP and training, primarily for the United Kingdom or United States. While the findings from these studies are not universal, most support the existence of a positive relationship. There are no studies of the relationship between HPWP and training for China or for other developing or transitional economies. This is a gap in the literature which we seek to address in the current study.

## **Data**

We use a matched employer-employee data set from Minhang district in Shanghai collected by the Chinese Academy of Social Sciences (CASS) in 2007. While our data is collected from one city, focusing on Shanghai is somewhat justified by the fact that it is at the forefront in China in terms of providing workplace training. Of all the cities and provinces in China, workplace training has been found to be most common in Guangdong and Shanghai (Child &



Stewart, 1997). Of these two locales, workplace training is most active in Shanghai, reflecting its rapidly expanding business sector and high-level of foreign direct investment (Ng, 2005).

The dataset, which contains information on 784 employees from 78 firms, was selected by Probability Proportion to Size sampling according to a list of all manufacturing firms in Minhang district whose annual sales were at least 5 million RMB. After removing the missing observations we had valid data for all the variables of interest in the study for 571 employees and 70 firms. Table 1 gives descriptive statistics for the firms in the sample and compares them with descriptive statistics for firms in Minhang District and Shanghai as a whole. Table 1 suggest that the sample is generally representative of firms in Minhang District and Shanghai.

We employ three separate measures of training to capture participation, frequency and duration of training. The first is based on a question that asked each employee whether he/she participated in workplace training provided by the firm in which they currently work in the previous 12 months (participation). The second is based on a question that asked each employee the number of times that he/she participated in workplace training provided by the firm in which they currently work in the previous 12 months (frequency). The third is based on a question that asked each employee the number of days he/she participated in workplace training provided by the firm in which they currently work in the previous 12 months (duration).

The survey contained eight questions pertaining to HPWP. As measures of the extent to which employees are consulted and participated in decision-making we used questions asking employees whether they could communicate with their manager and if their employer held regular meetings to discuss employee suggestions. As measures of performance-based

rewards we used questions asking employees whether they had a career-development plan and if promotion in their firm was performance-based. As measures of progressive employment policies we used questions that asked employees whether their employer provided maternity/paternity leave and if their employer had dedicated staff responsible for providing training. Finally, to measure flexible work practices we used questions that asked whether their employer provides additional holidays over and above legal mandated holidays and if their employer provides recreation activities for workers during work hours.

Table 2 shows the prevalence of HPWP according to whether workers received training. There is a lot of heterogeneity in the extent to which HPWP practices are followed, ranging from the existence of career development plans (16.8 per cent of the sample have career development plans) to performance-based promotion (89.8 per cent of the sample work in firms with performance-based promotion). A clear pattern that emerges in Table 2 is that participation in training is considerably higher in firms in which employees report that their employers implement HPWP. This is true for all eight measures of HPWP, but is particularly apparent for certain measures; namely, employee states he/she can communicate with manager, employee states firm holds regular meetings to discuss their suggestions, employee states he/she has a career-development plan and employee states that the firm arranges recreation activities.

While Table 2 is suggestive of a positive relationship between HPWP and training, it does not control for worker or other workplace characteristics that are potentially correlated with whether workers participate in training. Table 3 provides descriptive statistics for the three measures of training as well as a range of control variables for the sample. Overall, 42.2 per cent of the sample participated in training; the average number of times in which workers

participated in training was 1.22 and the average amount of time spent training in the previous 12 months was 18.2 days.

Of the control variables, the average age was 34 years, 53.9 per cent of the sample were male, 73 per cent of the sample were married, 8.9 per cent of the sample were a member of the Communist Party and 59.7 per cent had an urban *hukou* (household registration). The average years of schooling of respondents was 11.5 years and average time with the firm five years. We also control for firm size, the ownership and industry in which the firm is located and occupation of the respondent.

### **Methodology**

In each case we regress our measure of training for participation, frequency and duration on our proxies for HPWP and control variables, which are standard in the literature. In the case of participation in training, the dependent variable is binary; hence, we use a logit model. To examine the number of times which employees participate in training and the number of days they spend training we use a Tobit model. A Tobit model is appropriate because when measuring the frequency and duration of training the dependent variable is truncated at zero, reflecting the fact that large numbers of employees in the sample have no training at all (see Whitfield, 2000 who also uses a Tobit model for the same reason). In each case we report marginal effects to ease interpretation of coefficients. We use Tobit, rather than ordered probit, to model frequency of training to ease the interpretation of the marginal effects. The results for the ordered probit for frequency of training (not reported) are quantitatively similar in terms of statistical significance of the coefficients.

### **Main Results**

Table 4 reports the marginal effects for a logit model for whether employees participate in training. The first column presents results without variables for HPWP or industry,

occupation and ownership dummies. Columns 2-5 progressively add variables measuring HPWP, occupation, ownership and industry dummies. The final column contains the full specification with all variables included.

We begin by discussing the results for the control variables. In each specification age is significant with a negative coefficient. Depending on the exact specification, a 1 per cent increase in age reduces the probability of participating in training by between 26.9 per cent and 34.8 per cent. This result reflects the fact that older workers benefit less from investment in human capital and thus participate in less training. In each specification years of schooling is significant with a positive coefficient. Each additional year of schooling increases the probability of participating in training by 1.5 per cent to 2.6 per cent, depending on the exact specification. This result is consistent with the generally accepted notion that education and training are complementary activities – ie. education is a proxy for cognitive skills, suggesting that training those with better education will yield higher returns at lower cost.

Length of time with the firm is positive and significant in each specification. A 1 per cent increase in duration with the firm increases the probability of training between 8.1 per cent and 9.1 per cent. This finding is consistent with the notion that the longer the length of employment with the firm, the greater the stock of firm-specific human capital and the lower the risk of turnover. Firm size is also positive and significant in each specification. A 1 per cent increase in the number of employees is associated with between a 4.2 per cent and 5.7 per cent increase in the probability of participating in training. This result reflects the fact that larger firms tend to have higher monitoring costs, which induces them to provide more training to improve productivity and reduce turnover (Oi, 1983; Harris, 1999). Moreover, larger firms often operate in more stable markets and have longer time horizons with better developed internal labor markets which reduces the risk of turnover (Harris, 1999). Finally,

larger firms have a resource advantage and because of high fixed costs in the provision of training benefit from having more employees which reduces the average cost of providing training in large firms (Lynch & Black, 1997; Whitfield, 2000).

Among the occupational dummies, the results suggest that business service personnel (such as clerical staff) have a lower probability of participating in training than professional and technical personnel, which is the reference group in columns 4 and 5. This result is to be expected given that clerical staff typically perform more routine roles and their level of firm-specific human capital is likely to be relatively low in that they perform essentially the same functions across firms. Among the ownership dummies, participation in training is lower in shareholding, foreign and private firms than state-owned enterprises, which is the reference group. Previous studies have reached mixed conclusions about the provision of training in state-owned enterprises versus non-state-owned enterprises in China (see, for example, the discussion in Ng & Siu, 2004). The results, here, are consistent with the existence of a public sector advantage in participation in training, which has been observed in other countries such as the United Kingdom (see eg. Murphy *et al.*, 2008). The results also accord with studies such as Zhu (1997), which have found that participation in training is higher in state-owned enterprises than other ownership forms in Shanghai.

The other control variables (gender, marital status, membership of the communist party and urban *hukou*) are statistically insignificant across most, or all, of the specifications. Overall, though, we find more evidence that demographic controls are correlated with participation in training than Ng (2005), who also modeled participation in training in Shanghai. Ng (2005) concluded that employees participated in training in Shanghai regardless of personal background. He argued that his result was consistent with workers having inadequate skills during the transition, such that training occurred on a 'need' basis. Ng's (2005) study was

based on a survey administered in 2000. While we still find mixed results for the demographic variables, we do find that certain variables, such as age, education and length of time with the firm, are important, which differs from Ng. Compared with the findings reported in Ng (2005), this result could reflect the fact our survey was administered later in time (in 2007) when the market reforms were more entrenched.

We now turn to the results for the HPWP variables. Beginning with our proxies for employee consultation/participation, if the employee states he/she can communicate with their manager this has a positive effect on participation in training. Employees who state that they can communicate with their manager have a 17.2-20.4 per cent higher probability of participating in training. However, if the employee states that the firm holds regular meetings to discuss workers' suggestions, this has no effect on participation in training. Among the measures for performance-based rewards, if the employee has a career development plan, this is associated with a 11.7-13 per cent higher probability of participating in training, although having performance based promotion has no statistically significant relationship with participation in training. Among the measures of flexible work practices, if the firm arranges recreation activities, this is associated with an 11-14.7 per cent higher probability of participating in training, but offering holidays over mandated legal holidays has no relationship to training. Finally, both measures of progressive employment policies are generally statistically insignificant, although in column 5 the firm having staff responsible for training is weakly significant with a positive coefficient. If the firm has staff responsible for training, participation in training is about 10 per cent higher.

Overall, there is mixed evidence of a positive relationship between HPWP and participation in training. For three of the eight measures of HPWP there is a demonstrated positive relationship with participation in training across all specifications. One further measure (firm

has staff responsible for training) is significant at 10 per cent in the full specification, reported in column 5.

While participation in training is a key barometer with which to measure investment in skills, other measures, such as the intensity of training, can be equally important and paint a very different picture (Felstead *et al.*, 2010). Table 5 reports the number of times which respondents participated in training. Of the 42.2 per cent who participated in training, three quarters participated in training between one and three times. Table 6 uses a Tobit model to examine the factors associated with the frequency with which respondents participated in training. The signs and statistical significance of most of the control variables are similar to that reported in the logit model in Table 4. Differences are that firm size is statistically significant only in the first column and that membership of the communist party has a positive effect on the frequency of training in columns (1)-(3) and (5). Those who are members of the Communist Party, on average, do 0.40 to 0.59 times more training than non-members. Training can be conceived as a form of rent sharing between employers and employees (Murphy *et al.*, 2008). This result could reflect economic rents to what is a privileged group in Chinese society. Alternatively, it could reflect complementarity between training and innate ability or other unobservable positive characteristics of workers, for which membership of the Communist Party is likely, at least in part, to be a proxy through its screening function (Bishop & Liu, 2008).

The three HPWP variables that have a positive effect on the frequency of training across all, or most, specifications are whether the employee states he/she can communicate with their manager, whether the firm has staff responsible for training and whether the firm arranges recreation activities. Employees who state that they can communicate with their manager do about 0.6 times more training. If the firm has staff responsible for training, employees do 0.29

to 0.36 times more training. If the firm arranges recreation activities employees do 0.24 to 0.30 times more training. The latter variable, though, is only weakly significant in columns 2-4 and is insignificant in column 5. Overall the strongest result, in terms of statistical significance, and marginal effect, is for the respondent stating that he/she can communicate with their manager. This result carries over from participation in training in Table 4.

Table 7 tabulates the number of days spent in training which each respondent reported doing in the previous 12 months. Of the 42.8 per cent who reported doing training, a majority reported doing in excess of four weeks training. Thus, a bimodal distribution emerges with concentrations at zero training and in excess of four weeks training. Table 8 reports the results of a Tobit model in which the dependent variable is the number of days spent training in the previous 12 months. Education and time with the firm consistently have a positive effect on education. Each additional year of schooling is associated with 0.7-1.2 extra days of training. A 1 per cent increase in job tenure is associated with 0.05-0.06 extra days of training. Age has a negative effect on duration of training. A 1 per cent increase in age is associated with 0.13-0.17 days less training. The results for the occupation and ownership dummies are similar to the earlier tables. Business service personnel do about seven days less training than professional and technical staff. Employees in shareholding, foreign and private firms do seven-eight days less training than workers in state-owned enterprises.

Four of the eight measures of HPWP have a positive and significant effect on duration of training. Employees who report that they can communicate with their managers do 7.8-8.8 more days training, depending on the exact specification. Employees who report that they have career development plans do 5.6-6.1 extra days of training. Employees working in firms which have performance-based promotion do 5.8-8.1 extra days of training. Employees in



firms which arrange recreation activities for their employees during work hours do 3.7-4.3 extra days of training.

### **Robust Checks and Extensions**

A potential problem with the above findings is that workers from the same firm may be more alike in their attitudes towards training and HPWP than workers chosen at random from a variety of firms. This problem occurs because many datasets, including our dataset, have a hierarchical or clustered structure. Multilevel models recognize the existence of such data hierarchies by allowing for residual components at each level in the hierarchy. In the two-level hierarchy, as in our case, the residual variance is partitioned into a between-firm component (the variance of the firm-level residuals) and a within-firm component (the variance of the worker-level residuals). One must choose between the random intercept and random slope alternatives. To do so we rely on an LR test. If the LR test is significant, this suggests that the random slope alternative is to be preferred. Table 9 reports the results for a multi-level model for participation in training (column 1) and multi-level mixed-effects linear regression for frequency and duration of training (columns 2 & 3). All the specifications are based on a random intercept model. We conducted an LR test between the random intercept model and random slope model. The results are not reported, but the LR test statistic was insignificant in all cases. In some specifications the random slope model did not converge, reflecting the non-concave surface of the likelihood function. This further suggests that the random intercept model is the best fit for our data.

One can also use an LR test to ascertain whether the multi-level logit model is preferable to the logit model and if the multi-level mixed effects linear model is preferable to a linear model. The LR statistic, reported at the bottom of Table 9, is significant for participation and frequency, but not duration of training. Note, in the case of frequency and duration of training the choice is between a multi level mixed effects linear model and a linear model, not a Tobit model. A multi-level Tobit model has not yet been developed in the literature. This is an important point because while the multi-level mixed effects model allows for residual components at the employer and employee level, it has the limitation, common with all linear models, that the estimates will be biased downwards because training duration and frequency are truncated. Thus, in the process of addressing one potential bias due to clustering, one is introducing another bias because the linear regression does not explicitly address the fact that 58 per cent of respondents did not participate in any training at all.

With this proviso in mind, it is comforting that the results reported in Table 9 are similar to those reported in the tables above. There is slightly less evidence of a positive association between HPWP and participation in training (employees have career development plans and firm have staff responsible for training cease to be significant). However, there is more evidence of a positive association between HPWP and duration of training (firm provides additional holidays becomes significant). The findings for the other variables, including the control variables, are similar in terms of sign and statistical significance to those reported in earlier tables.

A key issue in the literature is whether firms which have introduced only some HPWP increase their training by as much as those that introduce a comprehensive suite of HPWP. Several studies suggest that firms which introduce ‘bundles’ of work practices, as opposed to

individual work practices in isolation, have a stronger effect on firm outcome variables, including the provision of training (MacDuffie, 1995; Huselid, 1995; Whitfield, 2000). The theoretical rationale is that the full benefits of complementarities or synergies related to HPWP are only realizable when introduced as a suite of internally consistent work systems (MacDuffie, 1995).

To examine this issue we first regressed each of our measures of training on the full set of variables (as per specification 5 in Tables 4, 6 and 8) plus a dummy variable set equal to 1 if the firm in which the respondent worked adopted all eight HPWP. With the inclusion of this dummy variable, we can test whether there is a stronger association between introducing a bundle of HPWP and workplace training than between introducing individual HPWP and workplace training. The results for participation, frequency and duration are reported in Table 10. The HPWP bundle dummy variable is significant with a positive sign in the participation regression. In firms which adopt all eight HPWP measures, employees have a 34.7 per cent higher probability of participating in training than in those which do not. This figure is higher than the results for specific HPWP (employee states he/she can communicate with manager, 19.9 per cent; firm has staff responsible for training, 9.8 per cent; firm arranges recreation activities 10 per cent). However, the dummy variable depicting the bundle of HPWP is insignificant when frequency and duration of training are the dependent variables. A possible explanation for this finding is that only 2.8 per cent of employees work in firms which have all eight HPWP. This reflects the relatively embryonic nature of HPWP in China (Su & Wright). A number of the firms in the sample have introduced one or more HPWP in isolation, but few firms have introduced the full suite of HPWP and this is affecting the findings.

An alternative approach to tackling the bundling issue is to replace the dummies for individual HPWP with a HPWP index. The HPWP index takes a value between zero and eight, depending on the number of HPWP adopted by the firm in which the respondent works. The results of this exercise are also reported in Table 10. The HPWP index is significant with a positive sign in the participation, frequency and duration regressions. Introduction of each additional HPWP increases the probability of participating in training by 8 per cent and increases the number of times which people do training by 0.18. Introduction of each additional HPWP also increases the duration of training by 3.16 days. Thus, while there is no statistically significant relationship between adopting the full suite of HPWP and the frequency and duration of training, this likely reflects the small percentage of respondents which work in firms which have the full range of HPWP. There is clear evidence from the HPWP index that adding additional HPWP measures is positively associated with participation, frequency and duration of training, which supports bundling.

A related issue is whether the adoption of HPWP has altered the distribution of training across occupational groups. Specifically, the high-performance variant of the polarization hypothesis states that the link between HPWP and training will be positive and stronger for those at the upper end of the occupational scale (Whitfield, 2000). Evidence from the United States and United Kingdom is mixed. Some studies have found a positive association between skill level and access to training (see eg. Lynch & Black, 1997), although Whitfield (2000) found no evidence that the presence of HPWP promoted the polarization of skills. To test this hypothesis, in alternative empirical specifications we interacted a dummy variable for professional and technical staff with each of the eight HPWP, a dummy variable set equal to one if the firm had all eight HPWP and the HPWP index. The results are not reported, but in each case the interaction term was statistically insignificant. Thus, we find no support for the

hypothesis that adoption of HPWP results in more training for the upper end of the occupational scale than for other occupational groups. This result is consistent with the findings for the United Kingdom reported in Whitfield (2000).

## **Conclusion**

The purpose of this paper was to test the hypothesis that there is a positive relationship between the prevalence of HPWP and participation, frequency and duration of training in the workplace. This was the first study to test this hypothesis using data for a developing or transition economy. We find that about half of the HPWP considered in this paper do have a positive association with participation in training and/or with the duration and frequency of training. We find slightly more evidence that individual HPWP matter for the duration of training than for participation in training, although this is not true when we consider the bundle of HPWP. In terms of frequency and duration of training, we find more support for bundling using an additive measure (HPWP index) than the multiplicative measure (a dummy variable if the firm has all eight HPWP measures). This likely reflects the small percentage of firms in the sample which have adopted the comprehensive suite of all eight HPWP examined in the study. We find no support for the hypothesis that the introduction of HPWP leads to a polarization of skills across occupations.

Many of the results are consistent across participation, frequency and duration of training. The two HPWP that consistently have a positive association with each of participation, frequency and duration of workplace training are that the employee states he/she can communicate with their manager and that the firm arranges recreation activities. Several of the worker and workplace characteristics also exhibit consistent findings across different measures of training. These include demographic and human capital characteristics of

employees, such as age, education and time spent with the firm as well as the occupational and ownership dummies.

However, there are some notable differences in findings across participation, frequency and duration of training. Having staff responsible for training results in higher participation and frequency of training, but not longer duration of training. This could reflect that in firms with dedicated training staff, there are likely to be more regular training sessions and that when offered regular training sessions more employees will participate on more occasions. This is consistent with findings for Canada reported in Xu and Lin (2011). But, this does not necessarily make a significant difference when it comes to the total number of accumulated hours of training. Alternatively, it may be that firms which do not have dedicated training staff tend to outsource their training needs and, in so doing, attempt to economize on their training budget by having fewer, but longer, training sessions.

Having a career development plan is positively associated with participation in, and duration of, training, while having performance-based promotion is positively associated with duration of training. That both measures of performance-based rewards are positively associated with the duration, as opposed to the frequency, of training suggests that provisions for career development and performance based promotion motivate employees to take fewer, but longer, training sessions in order to increase their promotion, or broader career, prospects. This conclusion is consistent with findings that it is depth of training, as opposed to the frequency of training, which has the strongest effect on career progression (Adda *et al.*, 2007).

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## **Tables**

**Table 1 Representativeness of the Sample**

	Sample	Minhang District	Shanghai
Number of Employee (person)	182.82	202.83	190.38
Sales Revenue (10 thousand RMB)	8896.69	11974.22	12445.22
Profits (10 thousand RMB)	675.27	800.10	866.94
Average Wage of Employees (RMB/month)	2145.55	2383.42	2423.25

Source: The data for Minhang District and Shanghai are from SBS (2008).

**Table 2 – Prevalence of HPWP by Whether Workers Receive Training**

	Full Sample	Receive Training	Not Receive Training
<b>Participation/Consultation</b>			
Employee can Communicate with manager (Yes=1)	48.69%	61.83%	39.09%
Firm holds regular meetings to discuss worker suggestions (Yes=1)	63.92%	68.88%	60.30%
<b>Performance-based rewards</b>			
Employees have career-development plans (Yes=1)	16.81%	23.24%	12.12%
Firm has performance-based promotion (Yes=1)	89.84%	93.36%	87.27%
<b>Progressive employment policies</b>			
Firm has paid maternity/paternity leave (Yes=1)	53.06%	56.43%	50.61%
Firm has staff responsible for training (Yes=1)	68.65%	74.27%	64.55%
<b>Flexible Work Practices</b>			
Firm provides additional holidays over mandated legal holidays (Yes=1)	38.53%	44.81%	33.94%
Firm arranges recreation activities (Yes=1)	47.29%	60.17%	37.88%
Sample Size	571	241	330
Percentage	100%	42.2%	57.8%

**Table 3: Descriptive Statistics**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>
Receive training (Yes=1)	42.21%	
Number of times participated in training	1.22	2.54
Days spent training	18.24	35.93
Age (Years)	33.97	10.39
Male (Yes=1)	53.94%	
Married (Yes=1)	73.03%	
Years of Schooling	11.48	3.01
Member of Communist Party (Yes=1)	8.93%	
Urban Hukou (Yes=1)	59.72%	
Job Tenure / Time with firm (Years)	5.04	5.31
Firm Size (Number of employees)	156.19	207.46
Ownership	State/Collective Owned Firm (8.06%) Share holding/Public Firm (34.15%) Foreign/Taiwan/HK JV Firm (38.35%) Private Firm (19.44%)	
Occupation	Professional and technical personnel (21.37%) Production transport and related worker (24.52%) Business service personnel (16.11%) Equipment operators and related workers (38.00%)	
Industry	Chemical, Rubber and Plastics (21.54%) Machinery (39.23%) Metals and Minerals (8.76%) Textile and Fur (10.51%) Others (19.96%)	

**Table 4: Logit for ‘Received Training’ (Marginal Effects)**

<b>Variables</b>	(1)	(2)	(3)	(4)	(5)
ln(Age)	-0.296*** (-6.165)	-0.329*** (-6.195)	-0.348*** (-6.031)	-0.285*** (-4.468)	-0.269*** (-4.074)
Male	0.0776* (1.729)	0.0419 (0.883)	0.0309 (0.643)	0.0286 (0.589)	0.0334 (0.685)
Married	0.0699 (1.268)	0.0378 (0.639)	0.0462 (0.777)	0.0337 (0.553)	0.0497 (0.811)
Years of Schooling	0.0229*** (2.891)	0.0147* (1.704)	0.0175* (1.948)	0.0207** (2.232)	0.0261*** (2.645)
Member of Communist Party (Yes =1)	0.0940 (1.210)	0.0588 (0.718)	0.0652 (0.783)	0.0129 (0.152)	0.0152 (0.179)
Urban Hukou (Yes=1)	0.0285 (0.576)	0.0351 (0.672)	0.0493 (0.932)	0.0312 (0.582)	0.0450 (0.816)
ln(Time With Firm)	0.0869*** (3.786)	0.0907*** (3.671)	0.0918*** (3.683)	0.0810*** (3.189)	0.0892*** (3.434)
ln(Firm Size)	0.0573*** (2.825)	0.0423* (1.935)	0.0443** (1.983)	0.0417* (1.782)	0.0437* (1.846)
<b>Participation/Consultation</b>					
Employee can Communicate with Manager (Yes=1)		0.172*** (3.856)	0.189*** (4.120)	0.202*** (4.302)	0.204*** (4.327)
Firm holds regular meetings to discuss worker suggestions (Yes=1)		0.0349 (0.688)	0.0242 (0.472)	0.0292 (0.563)	0.0228 (0.430)
<b>Performance-based rewards</b>					
Employees have career- development plans (Yes=1)		0.117* (1.829)	0.118* (1.817)	0.119* (1.832)	0.130** (1.966)
Firm has performance-based promotion (Yes=1)		0.0559 (0.682)	0.0700 (0.863)	0.0578 (0.687)	0.0112 (0.122)
<b>Progressive employment policies</b>					
Firm has paid maternity (Yes=1)		0.0150 (0.296)	0.0150 (0.294)	0.0207 (0.389)	0.0386 (0.711)
Firm has staff responsible for training (Yes=1)		0.0701 (1.308)	0.0556 (1.019)	0.0749 (1.333)	0.101* (1.774)
<b>Flexible Work Practices</b>					
Firm provides additional holidays over mandated legal holidays (Yes=1)		-0.0115 (-0.233)	0.0199 (0.389)	0.0204 (0.375)	0.0131 (0.238)
Firm arranges recreation activities (Yes=1)		0.147*** (3.213)	0.140*** (3.026)	0.131*** (2.797)	0.110** (2.226)
<b>Occupation Dummies</b>					
Production transport and related worker			-0.0468 (-0.720)	-0.0518 (-0.799)	-0.0517 (-0.789)
Business service personnel			-0.114 (-1.640)	-0.124* (-1.800)	-0.130* (-1.880)
Equipment operators and related workers			0.0723 (1.127)	0.0752 (1.165)	0.0943 (1.436)
<b>Ownership Dummies</b>					

Share holding/Public firm				-0.178**	-0.205**
				(-2.036)	(-2.341)
Foreign/Taiwan/HK JV Firm				-0.183**	-0.199**
				(-2.057)	(-2.228)
Private Firms				-0.254***	-0.281***
				(-3.354)	(-3.690)
<b>Industry Dummies</b>					
Machinery					-0.0532
					(-0.594)
Metals and Minerals					-0.137
					(-1.306)
Others					-0.189**
					(-2.321)
Textile and Fur					-0.154*
					(-1.740)
Observations	571	571	571	571	571

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z-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5: Number of Times Participated in Training**

Number of times participated	Frequency	Percent
0	330	57.80
1	113	19.79
2	43	7.53
3	24	4.2
4	9	1.58
5	23	4.03
6	3	0.53
7	4	0.7
8	5	0.88
9	8	1.4
10 or more	9	1.59
Total	571	100



**Table 6: Tobit for ‘Number of Times Participated’ (Marginal Effects)**

<b>Variables</b>	(1)	(2)	(3)	(4)	(5)
ln(Age)	-0.974*** (-6.587)	-1.018*** (-6.696)	-1.046*** (-6.535)	-0.903*** (-5.070)	-0.824*** (-4.523)
Male	0.240* (1.685)	0.109 (0.781)	0.0811 (0.580)	0.0777 (0.560)	0.0983 (0.716)
Married	0.261 (1.497)	0.161 (0.918)	0.191 (1.105)	0.193 (1.112)	0.217 (1.252)
Years of Schooling	0.0451* (1.824)	0.0238 (0.946)	0.0301 (1.175)	0.0364 (1.414)	0.0571** (2.121)
Member of Communist Party (Yes =1)	0.592** (2.128)	0.522* (1.949)	0.546** (2.035)	0.403 (1.545)	0.438* (1.674)
Urban Hukou (Yes=1)	0.228 (1.458)	0.217 (1.413)	0.265* (1.727)	0.201 (1.302)	0.223 (1.431)
ln(Time With Firm)	0.366*** (4.987)	0.383*** (5.219)	0.379*** (5.203)	0.355*** (4.805)	0.378*** (5.112)
ln(Firm Size)	0.147** (2.312)	0.0924 (1.460)	0.0977 (1.543)	0.0883 (1.346)	0.0891 (1.361)
<b>Participation/Consultation</b>					
Employee can Communicate with Manager (Yes=1)		0.559*** (4.036)	0.600*** (4.290)	0.623*** (4.413)	0.617*** (4.414)
Firm holds regular meetings to discuss worker suggestions (Yes=1)		-0.112 (-0.732)	-0.132 (-0.867)	-0.108 (-0.717)	-0.119 (-0.790)
<b>Performance-based rewards</b>					
Employees have career- development plans (Yes=1)		0.229 (1.225)	0.212 (1.143)	0.227 (1.238)	0.272 (1.463)
Firm has performance-based promotion (Yes=1)		0.101 (0.406)	0.143 (0.586)	0.123 (0.499)	-0.0629 (-0.232)
<b>Progressive employment policies</b>					
Firm has paid maternity (Yes=1)		0.152 (1.042)	0.156 (1.079)	0.165 (1.110)	0.209 (1.393)
Firm has staff responsible for training (Yes=1)		0.312** (2.000)	0.252 (1.604)	0.286* (1.795)	0.358** (2.256)
<b>Flexible Work Practices</b>					
Firm provides additional holidays over mandated legal holidays (Yes=1)		-0.0949 (-0.654)	-0.00732 (-0.0494)	-0.0213 (-0.138)	-0.0607 (-0.397)
Firm arranges recreation activities (Yes=1)		0.300** (2.133)	0.272* (1.940)	0.237* (1.707)	0.150 (1.057)
<b>Occupation Dummies</b>					
Production transport and related worker			-0.220 (-1.209)	-0.245 (-1.370)	-0.248 (-1.391)
Business service personnel			-0.322 (-1.600)	-0.345* (-1.753)	-0.347* (-1.771)
Equipment operators and related workers			0.177 (0.944)	0.148 (0.796)	0.218 (1.162)
<b>Ownership Dummies</b>					

Share holding/Public firm				-0.296	-0.437*
				(-1.205)	(-1.762)
Foreign/Taiwan/HK JV Firm				-0.348	-0.449*
				(-1.405)	(-1.793)
Private Firms				-0.670***	-0.797***
				(-2.964)	(-3.452)
<b>Industry Dummies</b>					
Machinery					-0.144
					(-0.598)
Metals and Minerals					-0.581**
					(-2.250)
Others					-0.539**
					(-2.378)
Textile and Fur					-0.432*
					(-1.781)
Observations	571	571	571	571	571

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z-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7: Number of Days Spent in Training**

Number of days spent in training	Frequency	Percent
No Training	330	57.80
Upto 1 week	42	7.36
1 to 2 weeks	6	1.05
2 to 3 weeks	30	5.25
3 to 4 weeks	1	0.18
More than 4 Weeks	162	28.37
Total	571	100

**Table 8: Tobit for ‘Number of Days Spent in Training’ (Marginal Effects)**

<b>Variables</b>	(1)	(2)	(3)	(4)	(5)
ln(Age)	-15.74*** (-7.206)	-16.59*** (-7.380)	-16.78*** (-7.122)	-14.31*** (-5.447)	-13.43*** (-4.991)
Male	1.806 (0.855)	-0.282 (-0.137)	-0.920 (-0.448)	-1.060 (-0.516)	-0.970 (-0.475)
Married	2.902 (1.119)	1.772 (0.688)	2.183 (0.866)	1.604 (0.624)	1.904 (0.738)
Years of Schooling	1.206*** (3.275)	0.689* (1.859)	0.793** (2.109)	0.876** (2.295)	1.065*** (2.655)
Member of Communist Party (Yes =1)	6.097 (1.557)	4.447 (1.206)	4.584 (1.256)	2.812 (0.784)	3.053 (0.850)
Urban Hukou (Yes=1)	-0.285 (-0.121)	-0.172 (-0.0750)	0.463 (0.204)	-0.308 (-0.134)	-0.171 (-0.0729)
ln(Time With Firm)	5.746*** (5.254)	5.552*** (5.108)	5.357*** (5.002)	4.851*** (4.434)	5.035*** (4.575)
ln(Firm Size)	2.320** (2.501)	1.466 (1.591)	1.389 (1.521)	1.331 (1.390)	1.456 (1.513)
<b>Participation/Consultation</b>					
Employee can Communicate with Manager (Yes=1)		7.797*** (3.836)	8.280*** (4.071)	8.808*** (4.244)	8.738*** (4.233)
Firm holds regular meetings to discuss worker suggestions (Yes=1)		1.372 (0.629)	0.774 (0.359)	0.622 (0.287)	0.498 (0.228)
<b>Performance-based rewards</b>					
Employees have career- development plans (Yes=1)		5.835** (2.043)	5.606** (2.000)	5.750** (2.053)	6.065** (2.142)
Firm has performance-based promotion (Yes=1)		7.497** (2.327)	8.117*** (2.627)	7.305** (2.283)	5.771* (1.671)
Firm has paid maternity (Yes=1)		1.184 (0.550)	1.258 (0.597)	1.660 (0.762)	1.929 (0.875)
Firm has staff responsible for training (Yes=1)		-1.048 (-0.434)	-2.127 (-0.878)	-1.085 (-0.443)	-0.186 (-0.0759)
<b>Flexible Work Practices</b>					
Firm provides additional holidays over mandated legal holidays (Yes=1)		1.177 (0.544)	2.883 (1.310)	2.991 (1.285)	2.745 (1.179)
Firm arranges recreation activities (Yes=1)		4.281** (2.058)	3.950* (1.924)	3.723* (1.809)	2.868 (1.356)
<b>Occupation Dummies</b>					
Production transport and related worker			-1.310 (-0.480)	-1.414 (-0.520)	-1.517 (-0.558)
Business service personnel			-7.006** (-2.487)	-7.165** (-2.562)	-7.234** (-2.583)
Equipment operators and related workers			3.833 (1.389)	3.907 (1.416)	4.741* (1.693)
<b>Ownership Dummies</b>					

Share holding/Public firm				-6.992**	-8.254**
				(-2.019)	(-2.322)
Foreign/Taiwan/HK JV Firm				-6.556*	-7.488**
				(-1.849)	(-2.064)
Private Firms				-7.161**	-8.322**
				(-2.095)	(-2.314)
<b>Industry Dummies</b>					
Machinery					-2.902
					(-0.834)
Metals and Minerals					-6.065
					(-1.479)
Others					-6.257*
					(-1.883)
Textile and Fur					-3.790
					(-1.009)
Observations	571	571	571	571	571

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z-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 9: Multilevel Logit and Multilevel Mixed-Effects Linear Regression Models**

<b>Estimation Method →</b>	Multilevel Logit	Multilevel mixed-effects linear regression	
<b>Dependent Variable →</b>	Training received (marginal effects)	Training Times	Training Days
<b>Independent Variables</b>	(1)	(2)	(3)
ln(Age)	-0.267*** (-2.921)	-0.349 (-1.098)	-11.91*** (-2.923)
Male	0.0237 (0.409)	0.0542 (0.256)	-3.793 (-1.254)
Married	0.000901 (0.0121)	0.0837 (0.306)	2.147 (0.548)
Years of Schooling	0.0315*** (2.577)	0.0703* (1.670)	1.505** (2.553)
Member of Communist Party (Yes =1)	0.0368 (0.370)	0.899** (2.473)	3.719 (0.708)
Urban Hukou (Yes=1)	-0.00114 (-0.0171)	0.312 (1.310)	-0.745 (-0.219)
ln(Time With Firm)	0.102*** (3.243)	0.500*** (4.553)	6.148*** (3.958)
ln(Firm Size)	0.0584 (1.423)	0.00960 (0.0688)	2.896* (1.859)
<b>Participation/Consultation</b>			
Employee can Communicate with Manager (Yes=1)	0.238*** (4.294)	0.646*** (3.046)	9.165*** (3.011)
Firm holds regular meetings to discuss worker suggestions (Yes=1)	0.0453 (0.481)	-0.328 (-1.011)	-1.458 (-0.415)
<b>Performance-based rewards</b>			
Employees have career-development plans (Yes=1)	0.121 (1.512)	0.258 (0.896)	8.899** (2.207)
Firm has performance-based promotion (Yes=1)	-0.00189 (-0.0117)	-0.107 (-0.197)	9.350 (1.573)
<b>Progressive employment policies</b>			
Firm has paid maternity (Yes=1)	0.0387 (0.400)	0.323 (0.988)	4.760 (1.337)
Firm has staff responsible for training (Yes=1)	0.133 (1.333)	0.607* (1.702)	-5.664 (-1.463)
<b>Flexible Work Practices</b>			
Firm provides additional holidays over mandated legal holidays (Yes=1)	0.000820 (0.0117)	-0.172 (-0.678)	6.277* (1.812)
Firm arranges recreation activities (Yes=1)	0.122* (1.890)	0.0953 (0.393)	3.936 (1.222)
<b>Occupation Dummies</b>			
Production transport and related worker	-0.0732 (-0.987)	-0.289 (-1.001)	-0.326 (-0.0774)
Business service personnel	-0.149*	-0.263	-9.314**

	(-1.881)	(-0.802)	(-1.971)
Equipment operators and related workers	0.0803 (1.048)	0.272 (0.971)	7.286* (1.805)
<b>Ownership Dummies</b>			
Share holding/Public firm	-0.254* (-1.779)	-0.652 (-1.151)	-8.427 (-1.320)
Foreign/Taiwan/HK JV Firm	-0.273* (-1.908)	-0.685 (-1.236)	-8.023 (-1.279)
Private Firms	-0.345*** (-3.131)	-1.265** (-2.075)	-3.245 (-0.473)
<b>Industry Dummies</b>			
Machinery	-0.131 (-0.915)	-0.130 (-0.240)	-0.801 (-0.134)
Metals and Minerals	-0.202 (-1.333)	-0.904 (-1.298)	-3.608 (-0.463)
Others	-0.263** (-1.975)	-0.549 (-1.082)	-6.109 (-1.085)
Textile and Fur	-0.242* (-1.845)	-0.509 (-0.879)	0.186 (0.0287)
Observations	571	571	571
Number of groups	70	70	70
LR test: ChiBar2	35.73***	24.77***	0.62

Notes: z-statistics in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The LR test in specification 1 is between a multilevel logit model and logit model, whereas the LR test in specification 2 and 3 is between the multilevel mixed-effects linear model and linear model. In specification 1, it was not possible to compute marginal effects for models that have both fixed and random components (using Stata margins or mfx commands). Hence the above reported marginal effects are from the fixed part of the model; calculated using the procedure described at the following URL: [http://www.ats.ucla.edu/stat/stata/faq/xtmelogit\\_prob.htm](http://www.ats.ucla.edu/stat/stata/faq/xtmelogit_prob.htm)

**Table 10: HPWP ‘Bundle’ and HPWP ‘Index’ and training (Marginal Effects)**

Method → Dependent Variable →	Logit Training	Tobit Training Times	Tobit Training Days	Logit Training	Tobit Training Times	Tobit Training Days
<b>Participation/Consultation</b>						
Employee can Communicate with Manager (Yes=1)	0.199*** (4.204)	0.608*** (4.352)	8.612*** (4.173)			
Firm holds regular meetings to discuss worker suggestions (Yes=1)	0.0224 (0.422)	-0.124 (-0.821)	0.440 (0.202)			
<b>Performance-based rewards</b>						
Employees have career-development plans (Yes=1)	0.0862 (1.235)	0.184 (0.943)	4.904* (1.649)			
Firm has performance-based promotion (Yes=1)	0.00570 (0.0617)	-0.0767 (-0.282)	5.617 (1.621)			
<b>Progressive employment policies</b>						
Firm has paid maternity (Yes=1)	0.0289 (0.530)	0.189 (1.258)	1.687 (0.762)			
Firm has staff responsible for training (Yes=1)	0.0983* (1.729)	0.354** (2.237)	-0.238 (-0.0969)			
<b>Flexible Work Practices</b>						
Firm provides additional holidays over mandated legal holidays (Yes=1)	-0.00414 (-0.0740)	-0.0979 (-0.631)	2.239 (0.946)			
Firm arranges recreation activities (Yes=1)	0.100** (2.015)	0.132 (0.930)	2.651 (1.250)			
<b>HPWP Bundle Variables</b>						
HPWP Bundle (Multiplicative)	0.347** (2.150)	0.517 (1.092)	6.501 (0.964)			
HPWP Index (Additive)				0.0803*** (5.469)	0.183*** (4.479)	3.163*** (5.266)
Observations	571	571	571	571	571	571

Notes: z-statistics in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Full specification estimated in specification 5 in Tables 4, 6 and 8. The coefficients of other control variables not reported. Specifications with HPWP Index do not include individual HPWP variables to avoid perfect collinearity.